



Less Is Not Enough: Reflections on China’s Military Trajectory and the U.S. Pivot¹

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Introduction

After having spent its first year in office trying to enlist China into a “comprehensive partnership” of shared leadership to solve global challenges, in 2010 the Administration of President Barack Obama received a series of jolts from Beijing, that along with a growing chorus of concern from Washington’s friends in Asia, promoted what in late 2011 the Administration started calling a “Pivot” or “Rebalancing” of U.S. strategy toward Asia. A parallel U.S. Defense Department (DoD) strategy shift began before the Obama Administration with the 2003-to-2005 gathering consensus that China was largely pursuing an anti-access/area-denial (A2/AD) strategy designed to prevent U.S. forces from thwarting Chinese ambitions such as forcing “reunification” with Taiwan and imposing control over the South China Sea. At an institutional level, DoD’s response was signified by the November 2011 establishment of the Air-Sea Battle Office, which ostensibly would seek craft joint-service solutions to anti-access threats, with care taken to announce it was not directed specifically at China, though meeting a Chinese-level of challenge was the measure for success.

Politically and militarily the Obama Administration has sought to add heft to its Pivot. North Korea’s savage March 2010 sinking of a South Korean corvette, followed by threatening Chinese pushback of U.S. and allied attempts to pressure Pyongyang, have resulted in improvements in bi-lateral U.S.-South Korean military cooperation, and have even spurred progress in trilateral U.S.-South Korean-Japanese strategic cooperation. China’s aggressive claims in the South China Sea has resulted in rising Southeast Asian demands for greater U.S. leadership and has prompted a revival in U.S.-Philippine military cooperation. To a previously planned shift in U.S. forces to Asia and a modest buildup on Guam, the U.S. started other small but politically significant deployments to Australia, and soon, to Singapore and perhaps the Philippines.

However, a crisis requirement to reduce U.S. government spending has forced reductions in the growth of U.S. military spending, forcing the Department of Defense to work within existing force levels, cancel some significant programs, plus extended modernization plans to attempt to give military credibility to the political Pivot. The Air Sea Battle Office is not charged with devising new programs to meet China’s challenge but to devise suggestions to enable better joint service cooperation, but the services do have their priorities, from the Navy’s preservation of its carrier and submarine force plus the development of new anti-ship missiles, to the Air Force’s top priority of a new manned or unmanned penetrating bomber, plus support for the Lockheed Martin F-35 as its only alternative to build a 5th generation combat force.

While the political and military Pivot by the Obama Administration has generally received a bi-partisan welcome in Washington, one regular criticism is that the new strategy may not realize its

full potential due to underfunding, despite Administration promises that defense spending cuts will not affect the U.S. posture in Asia. A second weakness is that in its attempt to be “non-confrontational,” which does allow for acknowledgement that China is deepening its A2/AD challenge, the Pivot does not place this PLA buildup in the more pressing context of China’s preparations for future war on four fronts: Korea, the Taiwan Strait, the South China Sea and against India. This means that simply countering China’s developing A2/AD is only the beginning of the military modernization/resource challenge facing the United States. A third challenge that the Pivot is simply not intended to address, but which is nonetheless directly related to the second and crying for response, is the increasing interrelationship between China’s development of a globally deployable military force and its buildup of nuclear and non-nuclear armed “allied” or even “proxy” states. This trend constitutes the unfolding of potentially many “Chinese Pivots” that could quickly overstress and thus limit or deter U.S. strategy. A fourth weakness of U.S. strategy, again one that the “Pivot” is not intended to confront but which in fact could constitute a decisive threat to this strategy, is the potential for a large Chinese nuclear “breakout.”

Though it may not be politically correct or economically opportune, it is the conclusion of this analyst that the U.S. must invest in new and in some cases expensive military system if it is to sustain a military edge against China that will continue to deter potential adventurism and possibly encourage China to consider non-military security solutions.

Building Toward the Pivot of 2011

Libertarian scholar Ted Galen Carpenter has noted that most recent U.S. Presidents have campaigned criticizing their predecessor’s China policy: Ronald Reagan criticized Jimmy Carter’s abandonment of Taiwan; Bill Clinton criticized George H.W. Bush’s human rights policy; and George W. Bush called China a “strategic competitor” to contrast Clinton’s call for a “strategic partnership,” but all quickly sought pragmatic relations with Beijing that tempered earlier criticism of their opponent.² George W. Bush’s early willingness to break from Clinton’s refusal to sell new weapons to Taiwan and offer a significant new arms package in March 1981 abated soon after his priorities were up-ended by 9-11, devolving to his December 9, 2003 statement in the White House with visiting Chinese Premier Wen Jiabao that the U.S. “opposed” a planned national referendum in Taiwan on China’s missiles pointed at Taiwan, that Wen stated was a step toward “independence.”³

Carpenter, however, in noting the Obama Administration’s “pivot” of late 2011 “seemed intended to counter China’s rise,” did not acknowledge Obama’s almost immediate effort to try to craft what Secretary of State Hillary Clinton called a “comprehensive partnership” with China. The idea was to deliberately downplay human rights, continue to constrain support for Taiwan, while seeking to elevate China in hopes of gaining its positive contributions to solving an expanded list of global concerns like arms control, climate change and financial stability, in addition to regional concerns like North Korea.⁴ But by 2010 this hope was dashed, as China advanced its own interests rather than share burdens with Washington, be it on climate change, arms control or its vigorous support for North Korea following its sinking of a South Korean corvette that March, plus its rejection of mediation of conflicting claims in the South China Sea at the July 2010 summit of the Association of Southeast Asian Nations (ASEAN).

So it was largely due to rising regional anxiety caused by China's actions, combined with years of anxiety stemming from its galloping military buildup that prompted the Obama Administration to "rebalance" toward Asia. In her October 2011 *Foreign Policy* magazine article, Secretary of State Hillary Clinton said the U.S. had reached a "pivot point" that required renewed U.S. emphasis on Asia, and while taking care to reject that China is a "threat," made clear that U.S. military "treaty alliances with Japan, South Korea, Australia, the Philippines, and Thailand are the fulcrum for our strategic turn to the Asia-Pacific."⁵ During President Obama's mid-November 2011 visit to Australia it was announced that the U.S. would station/rotate up to 2,500 Marines in Darwin by 2016 and then that the U.S. may rotate up to four Littoral Combat Ships in Singapore.⁶ In January 2012 it emerged that U.S. and Philippine officials were discussing a major revival in military alliance cooperation, potentially to include regular rotations of U.S. surveillance aircraft and about 500 troops through Philippine bases and increased exercises.⁷ Then in late August 2012 it was revealed that the Administration was planning to move a second long-range X-Band radar to one of Japan's southern islands while considering placing a third X-Band radar in the Philippines.⁸ This could create the basis for far more effective broad-Asian coalition defense cooperation, as will be explored later in this paper.

Developing Air Sea Battle. Though diverted by two wars for most of the last decade, for the Department of Defense the origins of the most recent "pivot" date back to early in the last decade when it started becoming clear that China was building an "asymmetric" force of space, submarine and innovative anti-ship ballistic missile (ASBM) weapons to execute "anti-access" and "area denial" (A2/AD) strategies against U.S. forces. Early open indications of PLA interest in terminally-guided medium range ballistic missile emerged in 1996⁹ that would be acknowledged as an anti-ship threat in the 2005 Pentagon China Military Report.¹⁰ By 2003 or so it was becoming clear that the PLA was in the midst of a buildup of a space-radar-communications-computers based C4ISR (command, control, communications, computers, intelligence, surveillance and reconnaissance) system that would cue and control a force of ballistic and cruise strike missiles, 4th and then 5th generation combat aircraft, plus modern submarine, surface ship and mine naval forces.¹¹ Early assessments of the A2/AD challenge also emerged from the Center for Strategic and Budgetary Assessment (CSBA),¹² which has since contributed to the development of the Air-Sea Battle concept.¹³

A focus of extensive inter-service and Department of Defense development and review, by early November 2011 the Pentagon announced the formation of its new Air-Sea Battle Office.¹⁴ Though in itself a military-diplomatic statement, the Obama Administration has gone to some length to deny that the new office's main mission was "Anti-China,"¹⁵ but was to be focused on the "generic" anti-access challenge that could also come from other states like Iran. The new Air-Sea Battle Office reportedly is not advocating any "new" capabilities or programs for the U.S. Department of Defense. Rather, it is charged with proposing ways to better link existing capabilities and programs to promote its larger goal of leveraging far greater capabilities from better "jointness" between U.S. military services.¹⁶ One report notes that about 100 such proposals are being considered.

Nevertheless, the services do have their priorities: the USAF wants a new penetrating bomber, a new aerial tanker, as it hopes to acquire enough of its planned 1,700 Lockheed-Martin F-35As; the Navy seeks to preserve core force levels like its 11 carrier battle groups, force goals like 48

nuclear attack submarines as it seeks a more capable/affordable distribution of “fire” capabilities between stealthy and unstealthy “platforms” and new and more capable “payloads.” For the US Navy, the speed at which threats are developing is forcing reevaluations of the correct numbers for the stealthy F-35C and less stealthy Boeing F/A-18E/F, or even stealthy versus stealthy future unmanned platforms. Recognition of these threats has also forced an increased emphasis on developing new smart weapons, or “payloads,” to perform military missions instead of placing great reliance on increasingly vulnerable “platforms.”¹⁷

Budgetary Uncertainty. Budgetary uncertainty for the Department of Defense, however, is regarded as one of the main weakness of the “pivot.”¹⁸ Though the August 2011 Budget Control Act requires the U.S. Department of Defense to implement spending reductions of \$487 billion over ten years, in November 2011 President Obama told the Australian Parliament that, “reductions in U.S. defense spending will not -- I repeat, will not -- come at the expense of the Asia Pacific.”¹⁹ Indeed, there are plans to shift 60 percent of the U.S. Navy to the Pacific over ten year,²⁰ but budget realities also dictate that the number of U.S. Navy ships will not grow for the next five years and number of submarines required, about 48 or so, may not be sustainable.²¹ Defense planning guidance issued by President Obama in January 2012 also spelled the end of the previous “two-war” defense budget planning guidance, now reduced to planning to fight one major conflict and a smaller “holding” conflict.²²

The current wars and rising costs caused Bush to end or cut back programs that would have been appropriate for confronting China, such as the F-22 5th generation fighter and the medium-weight and more deployable U.S. Army Future Combat System. The Obama Administration cancelled the Marine’s very fast Expeditionary Fighting Vehicle, reduced the advanced electronic and stealthy DDG-1000 destroyer to three ships, ended production of the Lockheed-Martin F-22 5th generation fighter at 187 and is considering further reductions in U.S. nuclear weapons after having agreed to a new limit of 1,550 deployed warheads in 2010 and the 2009 retirement of the nuclear-armed U.S. Navy Tomahawk cruise missiles. This followed the previous Bush Administration’s cancellation of the medium-weight and more deployable Future Combat System family of weapons for the U.S. Army and its elimination of advanced anti-missile programs.

Hovering above DoD’s weak fiscal condition is the guillotine of “sequestration,” or the legal requirement of the August 2011 Budget Control Act which could force an immediate \$1 trillion reduction in U.S. government spending in January 2013 to meet budget deficit goals, which could mean an additional \$55 billion budget reduction for the Department of Defense. It appears in July 2012 that the intense politics of this issue are driving Republicans and Democrats to wait until after the November 2012 election to take any remedial actions, meaning DoD may have to at least tip over, or even fall down this “fiscal cliff.”²³

Addressing the Additional China Challenges. There is a clear need for leadership in Washington to avoid this cliff, if only to avoid what could become tragic delays in developing needed new systems to sustain a deterrent edge against PLA or China-centric threats that are not sufficiently acknowledged in Air Sea Battle related literature or in the Pentagon’s annual China Reports. Addressing China’s anti-access challenges in East Asia is essential, but should be combined with a strategies and capability developments that address additional Chinese strategic

challenges. First, while the PLA is rapidly improving its capabilities in the East Asian theater, it is also quickly building the global reach to enable its own “pivots” in regions that could quickly strain America’s ability to fight one war plus one holding action. In addition, the Pivot does not address China’s central role in helping its clients become nuclear missile powers. This provocation contributes to the fourth weakness of this strategy, an unwillingness to hedge sufficiently against the growing uncertainties regarding China’s nuclear arsenal.

Increasing A2/AD Challenges As China Prepares for War On Multiple Fronts

While there appears to be acknowledgement between the lines of Pentagon statements and carefully tailored reports like the annual China Report for the U.S. Congress that the PLA A2/D2 challenges are increasing, what is not conveyed sufficiently by U.S. government spokesmen is that the PLA is increasing this level of capabilities directed at forward deployed American forces in Asia at the same time that it is preparing for future large-scale conventional wars on multiple fronts. Its not just the PLA’s gathering integrated information/command/cyber/long-range strike forces that constitute the front of the spear of the PLA’s A2/AD challenge that should concern the U.S., but also the PLA gathering of modern “informationalized and “mechanized” Army forces increasingly deployed for potential Korean and Indian war scenarios, the large Army amphibious forces gathering for a potential conflict to settle the future of Taiwan, plus naval combat and Marine amphibious forces that could handily impose China’s claims to the South China Sea and undertake significant “raiding” operations against the Philippines, Malaysia or even Vietnam to punish their opposition to Beijing’s dictat.

The gathering of such forces, however, does not auger for their use in all-out campaigns. Traditional Chinese statecraft seeks to assemble and deploy multiple elements of power, not just the military, in order to bend/convince/coerce target elites to its goals over time. Advantageous timing, successful deception and surprise operations, the preoccupation of other opponents and the determination of high benefits versus costs will figure into Chinese decisions to use force, and how much. But what is different in this decade versus earlier decades is that China’s greater global economic and political authority allows for much greater freedom from sanction if it uses force, and the phenomenal development of its internal lines of communication, rail lines, roads, tunnels, airline networks, the gathering of 1,000+ airliners and cargoliners, plus its well developed cyber and communications infrastructure, is now enabling largescale and rapid trans-regional force movements to rapidly reinforce a chosen theater of operations for coercive or operational goals. It is perhaps the PLA growing capability to exploit its central location on the Asian land mass and deploy decisive force in these strategic directions that may constitute one of the most powerful non-nuclear PLA A2/AD assets.

Korean/Japan Theater For as long as the CCP retains its current priorities and configuration, it will support the continuation of a dictatorship in North Korea. This allows for the manipulation of Seoul, either through a continuation of terror/psy war, gaining a potential reversal of its traditional alliances in exchange for unification, which it also hopes will result in further isolation of Japan. In addition to keeping the Kim regime afloat in a sea of human desperation, Beijing will continue its direct and indirect military assistance, to include direct and indirect support for Pyongyang’s nuclear missile goals. But a steady modernization of forces in the Shenyang, Beijing and Lanzhou Military regions, nearly as extensive as that versus Taiwan, is

intended to guarantee swift intervention should “stabilization” be required to sustain a chosen regime and to deter any potential South Korean and/or allied military action against Pyongyang. The PLA’s growing naval forces in all three fleets, plus its rapidly growing “civilian” navy, can be brought to bear to bully Japan from defending its maritime claims and interests in the East China Sea, increasing chances for incidents, skirmishing and then arms racing.

Taiwan Theater. Far from simply retaining the “option to use force” against Taiwan, the PLA is still heavily investing in that option. Still the priority for military preparations even though economic integration has helped ameliorate the political tensions of the Lee Teng Hui and Chen Shi-bien years, PLA preparations have shifted from priority attention on missile, SAM and air force modernization in this theater, to a far more serious investment in the informatization, mechanization/brigadization and continual modernization of Army, Amphibious Army, Marine and Airborne forces needed to invade Taiwan. A few spearhead Amphibious Army divisions and brigades are moving into their 3rd generation of amphibious armor systems but up to 300,000-500,000 PLA troops may have some degree of amphibious training. Formal PLA Navy and Army amphibious lift is usually credited with the ability to lift about one division to Taiwan, which will increase somewhat by the introduction of three 28,000-ton Type 071 LPD amphibious assault ships. But what is less analyzed is the PLA’s ability to mobilize a far larger number of large and small passenger/vehicle ferries, rail ferries, roll-on/roll-off (RORO) cargo and vehicle ships, plus a wide variety of dry cargo ships that use China’s growing number of container ports for loading military equipment. In 2006 Taiwan’s Ministry of Defense estimated the PLA could mobilize 800 ships that could transport an additional 5-7 divisions,²⁴ and the number of new large ferries has only increased since then. The PLA can also use up to 80 or so Boeing cargoliners used by Chinese airlines, and any part of their over 1,000 Boeing and Airbus airliners, to exploit captured large airports on Taiwan.

South China Sea Theater. China’s claims to practically the entire South China Sea and its very gradual constriction of this region belie a very serious purpose: this region and Hainan Island will become of paramount military and strategic-economic importance for China. As such securing this region is imperative for Beijing. Hainan Island will serve as the host for: the PLAN’s new second strike SSBN deterrent force; a main base for global maritime power projection, hosting both aircraft carrier and amphibious battle groups; and a new space port that will become China’s main access point for the Moon and strategic deep space. For several years there has been a steady increase in the political/military anxieties between China, the Philippines and Vietnam over respective claims to the South China Sea/West Philippine Sea, which has worn on Singapore, Malaysia and Indonesia to the point of their welcoming varying degrees of better U.S. political-military engagement in their region. The April-May 2012 and subsequent Philippine-Chinese standoff over Scarborough Shoal demonstrated a slightly more active Chinese military stance, refusing Manila any back-down or face-saving and pressing its confrontation in the presence of a large U.S. force package for the April *Balikatan* exercises. During this period nationalist Chinese media commentary suggested interest in punishing military raids against the Philippine island of Palawan and the consideration of moving two Brigades or Divisions of troops to this area, most likely Hainan.²⁵ There have been previous suggestions by retired PLA officers that the South China Sea must be consolidated militarily and “wired” with airborne, radar and underwater sensor, plus building a new large airbase on Mischief Reef.²⁶

Estimated Improvements in PLA A2/AD Capabilities, 2010 to 2020+		
	2010	2020+
Cyber Warfare	The world's most active practitioner of cyber espionage with presumed world class cyber warfare capabilities.	Far greater cyber espionage penetration and cyberwarfare potential due to far greater PRC corporate penetration into global electronic infrastructures.
C4ISR	Uneven, but pockets approaching US Gulf War level of C4ISR; extensive national fiber optic, sitcom, HF com network; 8 or so surveillance satellites; initial OTH radar.	Far greater C4ISR capabilities due to expansion and improvement of surveillance satellites, new Compass navsat network, far better comsats, long range APAR network, OTH network, pervasive advanced digital connectivity, with large numbers of ground force units so equipped.
Space Warfare	SC-19 ASAT, ground based laser, potential Shenzhou interceptor.	Combat Space Station, Combat Space Plane, Moon ISR, smaller ASATs also on ships; air launched ASATs, airborne laser ASAT.
Energy Weapons	Extensive research into laser, electromagnetic railgun; high power microwave; possible prototypes	Introduction of early weaponized lasers, railguns and high power microwave weapons.
IRBMs	@ 10 DF-4, 5,000km range.	@50+ DF-XX, 4,000km range then greater; 3x warheads and then ASBM/ASAT versions.
MRBM	@80-100 DF-21A, C; DF-21D ASBM in advanced development; DF-16, 800km just starting production.	200-300 DF-21C+; 200+ DF-21D+; 400-600 DF-16, DF-16+; possible SSB launched ASBM.
LACM	200-500 DH/CJ-10 ground based LACM, 1,500km range; 100 YJ-62 land based anti-ship, 400km range.	1000 DH/CJ-10+; 800 CJ-10K; 400 YJ-62, land, ship and SSK/SSN launched versions.
SRBM	@400 DF-15, DF-15B, DF-15C, with 600km range; 750 DF-11Mod1, 360+km range	@600 DF-15X class; @600 DF-11X class; 500-1,000 new class SRBM, likely based on Arty rocket or new short range missiles.
4 th Gen SAM	@ 1,000+ S-300PMU/1/2; @ 200-300 HQ-9, 150km range; @ 100 HQ-16, 40-50km range	@600 S-300PMU-/2; 200 S-400, w 400km range; 800 HQ-9/+, up to 200km range; HQ-XX, 400km range; HQ-XX ASAT, ATBM; 800 HQ-16+
5 th Gen Fighters	Chengdu J-20 in testing.	50+ J-20; Shenyang J-XX in production, slated for carrier; Possible Chengdu medium weight JSF-like in testing, slated for carrier/LHD.
Bomber	80-100 H-6	50+ H-6K, w 6 LACM, PGM; 10-20 H-X; 20 J/JH-X, new stealthy attacker
UAV/UCAV	Few HALE UAV; MALE UAV/UCAV in development.	Multiple types HALE/MALE UAV and MALE UAV/UCAV
4 th , 4+ Gen Fighters	500+ total: @160 J-10A/S; 100 J-11A; 40 J-11B/BS; 140 JH-7/A; 96 Su-30MKK; 70+ Su-27SK/UBK	1,000+ total: 150+ J-10B; 220 J-10A; 260 J-11B/BS; 100 J-16; 40-60 J-15; 100 JH-7A; 100 JH-7B
Attack Submarines	60-70 total: 4 Type 091 SSN; 2 Type 093 SSN; 12 Kilo; 4 Yuan; 14Type 039; 20 Type 035; 10+ Type 033 in reserve.	60-70 total: 2 Type 093; 5 Type 095; 8 SSB/G-X; 8 Kilo; 15 Yuan-A/B; 2 SSK-X; 10 Type 093; 10+ Type 035 in reserve; UUVs
Large Aircraft Carrying Ships	1x Varyag CV in advanced re-building; 12-18 J-15; 6+ AEW/ASW helo.	By 2025: 3 Varyag class level CVs; 12-18 J-15; new Shenyang or Chengdu fighter; better AEW/ASW helo; 1 st CVN building; 2-3 LHD launched, possible Chengdu STOVL; carrier UCAV
Source: Estimations based on author's decade+ monitoring of PLA modernization; estimates for previous publications and for author's 2008 book.		

Indian Theater. Having turned Pakistan into a nuclear missile state that allows it to sustain a low-level insurgency, and pose a growing threat of nuclear terrorism, all of which serves to

sustain India's debilitating strategic preoccupation with Pakistan, in the last decade China has also decided to pursue a considerable buildup of forces vis-à-vis India. With the focus of targeting its border areas, but in particular, its outrageous claims to the Indian state of Arunachal Pradesh, China may be far more interested in deterring Indian support for simmering Tibetan nationalism, but its military buildup is a most serious matter. In addition to an expensive expansion of new railways that link Tibet and the border regions to China, and the expansion of strategic tunnels for nuclear missile and other high priority forces, this region is also seeing a steady modernization of PLA ground and air forces. Ground forces are receiving the latest T-99A3 heavy main battle tanks and new 8-wheel armored fighting vehicles are appearing. In the last year PLA Airborne forces have conducted high-altitude exercises in this region. At least one high-altitude airfield hosts new Chengdu J-10 fighter-bombers.

For its part, India has taken notice and while placing great emphasis on building up its nuclear missile deterrent, has also invested in new road/base infrastructure in Arunachal Pradesh. It is buying new Russian fighter-bombers, new Boeing C-17 large transport aircraft and Boeing AH-1 *Apache* attack helicopters that would be most useful in countering a PLA attack. What this means for the PLA is that it may not have the option to mount a brief punishing skirmish similar to its 1963 attack, with a probable intent to reinforce of the shame/resentment of that period. In order to succeed the PLA may have to opt for a far more violent campaign that would entail risks of rapid horizontal and vertical escalation; it may even assume that a tactical nuclear exchange would be needed in order to shock New Delhi into concessions. But unlike 1963 India will not be a pushover; a Chinese strike against India would not end easily or quickly.

Though the above chart is meant to summarize one estimate of how the PLA's A2/AD capabilities may grow, it also provides a partial picture of the range of new forces that the PLA can call on for coercive or operational demands in its chosen strategic direction. This chart may be in under-estimation, as unforeseen PLA/PRC scientific breakthroughs in fusion energy, quantum computing or Low Earth Orbit energy gathering could open doors to also unforeseen military technical opportunities. But in the hard slough of creating new scientific and engineering breakthroughs, China has already devoted enormous resources to the areas of computing, robotics and advanced materials and as this decade unfolds, can be expected to make progress in the areas of advanced aircraft engines, space and missile technologies, armor and energetics, unmanned systems plus a range of naval technologies that will contribute to ever better weapon systems.

China's Unopposed Proxy Campaign To Tie Down U.S. Forces

A second Chinese challenge that is not intended to be addressed by the range of US Pivot strategies, but which could produce major effects, is that of China's continued creation of ever more dangerous proxy threats. Despite nearly three decades of complaining to Beijing about its nuclear and missile proliferation, while occasionally administering wrist-slap sanction, and decades of vigorous diplomacy to gain China's "help" with North Korea, Iran, Pakistan, Libya, Sudan, Syria and likely more to come, there is no U.S. policy that starts from the premise that

China's proliferation of nuclear and missile technology in addition to its building of proxy threats is in fact a deliberate indirect attack against the interests of the United States.²⁷ There is no effort to identify publicly these Chinese actions which produce threats to more than just Americans, as there is no U.S. effort to lead a multilateral campaign of pressure. China's proliferation and proxy-building should be a regular section in the annual DoD China Reports, but they are not.

Most recently this American reluctance to respond to China's proliferation and proxy-building has been illustrated in North Korea. While Beijing had gained considerable plaudits since its 2003 decision to take a leadership role in promoting the "Six Party Talks" ostensibly aimed at reversing North Korea's nuclear weapons progress, it has also become the principle economic and political protector of the Kim dynasty dictatorship. But this support has been escalated dangerously as seen during the April 15, 2012 military parade, when Pyongyang revealed its new large three-stage mobile KN-08 missile, quite likely the "mobile ICBM" that former Secretary of Defense Robert Gates warned of in June 2011, which he said would pose a "direct threat to the United States?"²⁸ There was an additional surprise: the 16-wheel transporter-erector-launcher (TEL) carrying this new missile was a derivative of the WS2600 or WS51200 made by the Sanjiang Space Wanshan Special Vehicle Co. of the China Aerospace Science and Industry Corporation (CASIC), raising the prospect that the actual missile may be a derived from a new IRBM also made by CASIC, which also uses a TEL from the Sanjiang Company.²⁹

The KN-08 may have the potential to reach targets out to 5,000 to 6,000km, possibly far enough to place a nuclear warhead on an American city such as Anchorage. It is likely that this missile and technology for its TEL will be sold by North Korea to Iran, extending its nuclear threat to all of Europe. As of this article's publication neither the Chinese government nor the Obama Administration has offered any clarity regarding this direct Chinese enabling of a North Korean nuclear missile capability. On April 19, 2010, the Chinese Foreign Ministry denied the TEL was from China, saying, "China consistently opposes the proliferation of weapons of mass destruction and their carriers."³⁰ In the April 19, 2012 edition of the *New York Times* an unidentified White House official stated the transfer of the TEL was "poor Chinese performance in sanctions implementation, and not willful proliferation."³¹

But subsequent revelations, reportedly from Japanese intelligence sources, point to likely Chinese government collusion at high levels. The Chinese company conducting the exports, the Wuhan Sanjiang Import Export Co., is a subsidiary of CASIC and would have operated under strict control from the PRC government and the PLA.³² This source also noted that the shipment of the TELs was tracked by Japanese satellites, and that bribes of 40,000 to 60,000 Pounds (\$62,200 to \$93,300) were paid for "missile parts."³³ One report states, "Personnel from North Korean banks and trading companies regularly meet at Beijing International Airport to deliver large sums of money earned from weapons deals. This happens with the 'connivance of Chinese authorities and the customs office,'"³⁴

The *Asahi Shimbun* also reported that the U.S., Japan and South Korea, knowing of China's role in providing the TELs, chose not to publicize this information in hopes of gaining Beijing's assistance in stopping the next North Korean nuclear weapon test.³⁵ That the U.S. would allow one threat to proceed in the false hope of stopping another is astounding. China's consistent

denials that it sold large TELs to North Korea is enough of an indication that China's interest in seeing North Korea armed with nuclear missiles is far greater than its concern for the safety of Americans or the stability of Northeast Asia. Until Washington can build a coalition of allies that will join a graduated effort to sanction China's proliferation and proxy building, the PIVOT will remain vulnerable to China's increasing ability to stoke diversionary crises.

Could China's Emerging Power Projection Capabilities Also Undermine the Pivot?

When China builds far larger global power projection capabilities, will it use them to prop up its authoritarian friends and allies, in effect, creating new "Chinese Pivots" that would potentially overburden U.S. diplomatic and military resources? One indication emerged from the 2011 Libyan Civil War, in captured Libyan documents that revealed how China almost arranged for large Chinese origin weapon stocks in Algeria to be shipped to support Muammar Gaddafi's losing war against his own people, and then replace those weapons in Algeria.³⁶ Even China, in uncharacteristic candor, acknowledged that it allowed Gaddafi's representatives to visit Chinese arms companies in July 2011 to arrange for arms deals that ultimately were not carried out.³⁷ What if China's weapons had managed to sustain Gaddafi? In 2012 the West might have been even more tied down responding to the horror of two Middle East dictators slaughtering their own people in Libya and Syria.

Another potential Pivot for China may be in Latin America, where it is seeking to add military influence to its already expanding economic and political influence. During the May 2011 SITDEF arms show in Lima, Peru, Chinese arms export companies marketed an expansive array of lethal short-range ballistic missile and armed unmanned combat aerial vehicles (UCAVs), which if sold, might spark a regional arms race in missile systems. During the recent July 2012 visit to China by Argentina's Defense Minister, there were suggestions in the Chinese media that Argentina might purchase the Chengdu J-10 fighter,³⁸ on top of previous suggestions of interest in Chengdu's less expensive FC-1, both of which would pose a threat to the British held Falklands Islands, and complicate U.S. interests. The PLA Navy hospital ship *Peace Ark* visited Cuba in late October 2011 and was used to highlight a high profile visit by senior PLA Central Military Commission (CMC) Vice Chairman Guo Boxiong, marking a major affirmation of relations between these two remaining Communist Party dictatorships. Is it reasonable to expect that large PLA Navy combat ships, to include an aircraft carrier, will also be visiting Cuba this decade?

By the late 2020s the PLA could be building its first nuclear powered aircraft carrier, having built two non-nuclear carriers by 2020 and 2022, according to Taiwan's Ministry of National Defense.³⁹ China's first carriers will be equipped with modern 4th generation Shenyang J-15 fighters, improved copies of the Sukhoi Su-33, which in some respects is kinetically superior to the Boeing F/A-18, and will be armed with comparable air-to-air and ground attack weapons. Shenyang likely will succeed this fighter with a naval version of its twin-engine J-31 "Falcon" stealthy 5th generation fighter similar in size and performance to the F-35. By the 2020s the PLA Navy's carrier wing may also receive dedicated airborne early warning (AEW), anti-submarine warfare (ASW) aircraft and its first unmanned combat aerial vehicles (UCAVs). By the 2020s the PLA may have built most of an estimated 6 LPD and 6 LHD amphibious assault ships, which by the later 2020s could be equipped with a Chengdu designed short take-off and vertical landing

(STOVL) fighter like the F-35B. By the 2020s the PLAN could have 10 or more “AEGIS” radar equipped destroyers, eight other Chinese-build and Russian Sovremenniy destroyers, plus 6-8 modern logistic support ships that would enable regular and constant long-range fleet operations.

In 2012 or 2013 the PLA is also expected to reveal a new large military transport from the X’ian Aircraft Co., called the Y-20, that can lift 50-60 tons, putting in the same class as the Boeing C-17 transport. It is not known how many the PLA will acquire, but they will be supported by a new large tanker based on a four-engine wide-body airliner also under development at X’ian, but that may soon get a major assist from Russia, which wants to offer its Ilyushin Il-96 as the basis for a new China-Russia widebody transport.⁴⁰ The Y-20 will be ideal for transporting new PLA Army medium-weight armor forces, which today are being developed around the 20-25 ton ZBD-09/ZSL09 family of 8-wheel combat and support vehicles. These or lighter-weight airborne forces built around the 8-12 ton ZBD-03 infantry fighting vehicles could give Chinese leaders the ability to very rapidly insert forces globally for coercive or combat missions. An April 2012 PLA mobility exercises in which the ZBD-03 was transported on a China Southern airline Boeing 747-400F cargoliner, which may be able to carry 6-to-8 of these infantry fighting vehicles, demonstrates that projection of PLA airborne mechanized forces could today extend well beyond Taiwan.

Nuclear Anxieties and the Pivot

An additional potential challenge to recent U.S. Pivot that does not receive sufficient attention in Washington is the potential for China to rapidly build up its nuclear arsenal, or that it may already have a larger arsenal than previously acknowledged publically, usually in the 200-400 range. The Obama Administration’s intentions to reduce U.S. deployed nuclear warhead levels below 1,550, perhaps to below 1,000, further increases the importance of China’s potential nuclear warhead and missile numbers. How quickly could China match or exceed U.S. numbers, or what if China and Russia were to combine their nuclear forces to “compel” the U.S. to abandon a strategic interest in Asia, such as the preservation of a free Taiwan? A loss of U.S. nuclear superiority would not only embolden China to push or move on a number of fronts threatening to U.S. interests, it would very quickly cause Asian states like Japan, South Korea and Australia to reconsider their non-nuclear weapon status.

If one were simply to believe the Pentagon China report’s numbers, from 2011 to 2012 there has been no change in the number of China’s nuclear and non-nuclear ballistic missiles. However, a statement of no-growth in PLA missile numbers over a calendar year is unbelievable given the fact that the PLA is producing two to three types of intercontinental ballistic missiles (ICBMs: DF-5B (?); DF-31A; DF-41, two types medium range ballistic missiles (MRBM: DF-16, DF-21C/D), developing a new intermediate range ballistic missile (IRBM: DF-25/26 (?)),⁴¹ producing two families of long-range cruise missiles (CJ-10, CJ-10K, YJ-63), two families of short range ballistic missiles (SRBM: DF-15A/B/C, DF-11Mod2), and a new submarine launched ballistic missile (SLBM: JL-2).

From late July 2012 through September 2012 the PLA Second Artillery conducted a series of exercises, demonstrations and tests of perhaps all of its missile types. This included a 24 July test of the new large mobile DF-41, expected to soon be tested with a multiple warhead bus, a

16 August test of a new JL-2 submarine launched ballistic missile, a 21 August test of a silo-based DF-5 ICBM, a 30 August test of a road-mobile DF-31A ICBM and then the testing of multiple short-range ballistic missiles on the eve of Secretary of State Hillary Clinton's 4 September 2012 visit to Beijing.⁴² Unfortunately the U.S. did not issue any public comments on these PLA missile tests, but simply leaked information about them to veteran reporter Bill Gertz.

Perhaps one of the most important indicators of rapid warhead growth would be deployment of multiple nuclear warheads on their newer missiles. The 2008 China report offered clear language warning of this interest:

“The addition of nuclear-capable forces with greater mobility and survivability, combined with ballistic missile defense countermeasures which China is researching—including maneuvering re-entry vehicles (MaRV), multiple independently targeted re-entry vehicles (MIRV), decoys, chaff, jamming, thermal shielding, and ASAT weapons – will strengthen China's deterrent and enhance its capabilities for strategic strike.” (2008 China Report, p. 25)

Despite the fact that imagery of what may be the DF-41 large mobile ICBM has been available from Chinese sources since 2007, it was not until the 2011 China Report possibly alluded to this missile, “China may also be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targetable re-entry vehicle (MIRV).”⁴³ Asian military sources have estimated the DF-41 missile may be capable of carrying 8 to 10 warheads. So for a single brigade unit of 12 missiles this could mean an addition of 96 to 120 warheads for the PLA.

The 2012 China Report does does mention an “enhanced silo-based DF-5,” that could be a reference to the “DF-5B,” which in 2010 an Asian military source told the author was a new MIRV version of the DF-5. This missile may also be capable of lofting 8 to 10 warheads. A large, detailed order of battle for the PLA that was posted on Chinese web pages in early 2012 indicates that there may already be two brigades, or up to 24 deployed DF-5B missiles.⁴⁴ While many parts of this document cannot be confirmed, it is at least indicative of the speed at which China could increase its nuclear warhead numbers at a time when the Administration may be considering U.S. warhead reductions to below 1,000.

An additional disappointment of 2012 China Report is that it fails to follow up its mention of 2011 of the vast “Underground Great Wall” of potentially thousands of kilometers of tunnels that could be concealing a far larger number of nuclear weapons and missiles. The 2011 China Report made special mention of this tunnel network:

“China's strategic missile force, the Second Artillery Corps (SAC), has developed and utilized UGFs [underground facilities] since deploying its oldest liquid-fueled missile systems and continues to utilize them to protect and conceal their newest and most modern solid-fueled mobile missiles...which reportedly stretches for over 5,000km.”⁴⁵

Apparently, this addition to the 2011 China Report was prompted by the research led by Dr. Phillip Karber and his students at Georgetown University, who produced a large open-source based examination of China's network of missile tunnels initially started in support of the

Science & Technology Panel of the U.S. Defense Threat Reduction Agency.⁴⁶ One of the reports reported conclusions, that China may have up to 3,000 nuclear weapons, almost twice the 1,550 deployed warheads allowed by the latest U.S.-Russian nuclear reduction agreement, prompted intense criticism from nuclear weapons reductions advocates who seek further U.S. warhead reductions. However, a full critique of this report is not possible because it has not been released in its entirety by the Department of Defense.

The arms reductions community was also angered by Dr. Karber's surfacing of a recent assessment of China's nuclear arsenal by retired Russian General Victor Yesin, who may be close to Russian leader Vladimir Putin and in receipt of other knowledge from the many Russian scientists who are working in a wide range of Chinese scientific and technical programs.⁴⁷ Yesin also challenges conventional wisdom with his estimate that the PLA may have 1,600 to 1,800 nuclear warheads and that it is conceivable that based on his estimate of Chinese plutonium and highly enriched uranium production, that China could have a stockpile of up to 3,600 warheads.⁴⁸ Though Yesin admits he cannot know for sure, his estimate raises doubts, and adds to the call by U.S. Congressman Michael Turner, Chairman of the Strategic Forces Subcommittee of the House Armed Services Committee, of a thorough review of what the U.S. government knows about China's nuclear forces.⁴⁹

For its part, China refuses to enter into discussions with the United States that might lead to clarification regarding its current nuclear arsenal and future plans. China's usual justifications for this, that its "small" and "retaliatory" nuclear force depends on secrecy, falls apart when it has the potential to store in tunnels a large number of mobile missiles that could be rolled out quickly for a first strike. The existence of a vast tunnel network to protect and conceal China's missiles is a fact. The 2012 China Report's silence on the tunnel network and its implications for a much larger Chinese nuclear arsenal than the "50-75" ICBMs listed in the 2012 China Report should be unacceptable to U.S. policy makers.

An unknown large number of PLA missiles concealed in an extensive tunnel network that was also defended by an expansive missile defense network would pose an even greater strategic challenge to the United States. As a defended strategic missile network would require many more offensive missiles to deter with credibility, the prospect of a near-term Chinese introduction of effective missile defenses could quickly call into question the wisdom of the 2011 agreement to reduce U.S. warheads to 1,550. China's second program to build missile defenses (following the earlier 640 Program of 1964-1980) reportedly saw an early Kinetic Kill Vehicle (KKV) tested in 1999, with a satellite destroyed on 11 January 2007 and a full missile interception on 11 January 2010.⁵⁰ In early 2008 an Asian military source disclosed to the author that the PLA could deploy missile defenses by 2025.⁵¹ However, it is logical for policy makers to be concerned that China could deploy such missiles defenses by an earlier date.

Suggested Capabilities for the United States and its Asian allies to deter China into the 2020s.

New and far reaching capabilities are going to be required by the U.S. and its allies to continue to deter China, but these are unlikely to be realized absent the political will to overcome harsh fiscal challenges, especially in Washington. Leadership will also be required to by U.S. leaders

to consider removing obsolete rules and impediments. For example, in his July 2012 *Proceedings* article Admiral Greenert does suggest a useful emphasis on developing new “payloads” and exploiting the increasing “modularity” inherent in Vertical Launch System on most U.S. surface warships and increasingly built into U.S. submarines and aircraft. With acceptable expense the U.S. could develop a family of medium to short range anti-ship ballistic missiles (ASBMs), and sell them to its allies, provided there can be agreement with Russia to retire the 1988 Intermediate Nuclear Forces missile control agreement and to revise U.S. arms control policies against selling long range missiles. Large numbers of U.S. and allied ASBMs could “neutralize” China’s Navy much as the PLA intends for its ASBMs to “neutralize” the navies of the United States and its allies. China may or may not approve of mutual assured naval destruction (MAND); without a global navy a “rising” superpower will rise more slowly, which may present a powerful incentive to pursue “rules” or even “control” of military behavior.

In the face of China’s buildup and continued proliferation, it may also become necessary to reconsider U.S. policies about proliferation. For example, Dr. Ross Babbage sparked a debate in Australia in 2011 when he suggested that China’s gathering challenge might require Australia to consider the purchase or lease of up to 10 U.S. *Virginia*-class SSNs.⁵² As this present study should indicate, such a choice would be a rational response by Australia to China’s accelerating military challenge. Apparently there may be some requisite flexibility in the Administration, as in late February 2012 the U.S. Ambassador to Australia was quoted being favorably disposed to assisting a potential Australian decision to purchase U.S. SSNs.⁵³ If Washington is willing to sell SSNs to Australia, would it also consider their sale to Japan and South Korea? Their ability to utilize potential decisive missile or energy weapons would also allow Seoul and Tokyo to deter threats from both China and North Korea. New flexibility will also be required regarding arms sales and cooperation with Taiwan. Potential near-term capabilities could substantially increase Taiwan’s ability to deter PLA attack and provide a higher level of confidence for many years to come to pursue a better political relationship with Beijing that removes its threat of war. What follows is a list of military capability options that will strengthen deterrence of China through this decade and into the 2020s.

1. Regional network of long-range ground, sea, air and space-based sensors.

A high priority goal for U.S. strategic leadership in Asia should be the creation of an Asian regional long-range sensor network that would provide network members a near real-time warning of broad Chinese military activity, not just missile strikes, from coastal regions to deep into Chinese territory, in order to allow regional governments to pursue individual or coalition defensive responses. The assurance that initial PLA attacks against sensors would be compensated even partially by other sensor network members, plus the greater intimate warning of early PLA moves, would help reduce the chances for PLA success and thus deter possible further aggressive action. Having access to a near real-time total picture of Chinese military actions could allow network members to reduce the risk of PLA deceptions that would exploit its increasing capacity for large-scale trans-regional military movements. Furthermore, the potential for such reactions to be near immediate and coordinated among states extending from Northeast Asia to the South Pacific would weigh more heavily on Chinese leaders and serve to counter Beijing’s oft-employed “divide and conquer” tactics. Over time, the imposition of such a level of “transparency” on the range of Chinese military activities could lead to greater Chinese

interest in regional confidence building measures that in turn may lead to interest in verifiable arms control regimes.

Perhaps the first line of “defensive warning” for the U.S. and its allies would be an eventual Asian regional network of “four-level,” ground, sea, air and space-based long-range surveillance platforms that would provide near real-time notification of all PLA activities in its Eastern Military Regions to all members of the network. While the U.S. for its part has maintained its own network of sensors, and has in many cases has for decades been providing or cooperating in sensor development with key allies, the major change would be to enable far greater cross-allied data exchanges while giving states with less resources the option to gain network benefits by contributing their geographic position. The successful maintenance of such a sensor network, however, would rest on U.S. and network member investments in redundant satellite, UAV and undersea cable linkages, plus sophisticated software and cyber defense measures.

While the U.S. by itself has today or is developing new elements of its four-level surveillance network, most or some of these elements are either in place or are in the future plans of Japan, South Korea, Taiwan, Singapore and Australia. Since about 2006 the U.S. has operated one about 1,000-2,000km range AN/TPY-2 or Forward Based X-Band Transportable (FBX-T) radar in Shariki, Japan, allowing possible coverage of North Korea and well into China.⁵⁴ A second radar, possibly of the same type, is now be considered for an island in Southern Japan,⁵⁵ that would reach into Central China. It is not clear what radar type the U.S. would like to station in the Philippines, but from Mindanao, a version of the reported 6,000km range⁵⁶ Sea Base X-Band (SBX) radar would allow for continuous missile and aircraft coverage all of Japan out to Russia’s Kamchatka Peninsula, all of North Korea and China out to Southern Siberia, all of India into Western Pakistan and to all of continental Australia. These radar alone, if networked and made available to U.S. allies, would provide overlapping coverage for Japan, South Korea and Taiwan.

Japan has built perhaps the second most powerful radar network of long range warning and medium range targeting radar. There are four J/FPS-5 radar with an estimated range of over 1,000km.⁵⁷ One J/FPS-5 was slated to be built in Okinawa by 2011, which could handily cover Taiwan and cover many short-range ballistic missile launch areas in China that face Okinawa. In late 2012 Taiwan is expected to begin operations of its Surveillance Radar Program (SRP), which is a version of the Raytheon AN/FPA-115 large stationary phased array radar. As such, it may have a 1,000 to 3,000km range and reportedly can track 1,000 targets.⁵⁸ India has developed its Long Range Tracking Radar (LRTR) called *Swordfish* with the help of Israel’s Elta Electronics, developer of Israel’s *Green Pine* radar used with the Arrow missile defense system. The LRTR has a reported range of 600km but was in the process of being upgraded to a range of 1,500km by 2011.⁵⁹ In addition, Australia has developed its Jindalee Operational Radar Network (JORN) of Over-the-Horizon radar that has an official range of 3,000km, but which reportedly may be capable of ranges in excess of 4,000km.

While the U.S. has long shared intelligence gathered from space-based platforms with treaty allies and key friends, Japan, South Korea, India and Taiwan operate imaging satellites that could also benefit network members. The U.S., Japan, South Korea, Australia and Taiwan have the option to network U.S.-made or U.S. technology AWACS aircraft, while all save Singapore

can also network Lockheed-Martin P-3C anti-submarine patrol aircraft. The U.S. and India will be introducing new more capable Boeing P-8 ASW aircraft at about the same time. Japan, South Korea and Australia could become customers for the Northrop-Grumman Global Hawk long-range surveillance UAV, while the U.S. Air Force and Navy will soon station versions in the Asian theater.

For the U.S., encouraging Taiwanese participation in such a network would allow unique data gains from the coverage provided by Taiwan's SRP long-range radar, give other network members a greater interest in deterring conflict on the Taiwan Strait, while also strengthening deterrence by giving Taiwan access to immediate complimentary sensor coverage in the event of a PLA attack. For its part, the PLA is quickly developing and fielding its own integrated network of long-range sensor platforms that include: long-range phased array radar; sky-wave and surface-wave OTH radar; a network of 14+ dedicated surveillance satellites; long-range surveillance UAVs; likely development of stratospheric airship platforms; plus multiple families of AWACS aircraft and its first dedicated ASW patrol aircraft.

2. Highly accurate short and medium range ballistic missiles for land-attack, anti-invasion and anti-ship missions, plus appropriate air, ship and submarines platforms to carry them.

Few weapons could offer the U.S. and its allies an excess deterrent payoff against the PLA relative to their cost than would a family of highly accurate and very-fast short-to-intermediate-range ballistic missiles equipped with mission-specific payloads for land attack, countering invasion forces and for attacking PLA Navy ships. Inasmuch as China's range of anti-access forces, to include anti-ship ballistic missiles (ASBMs), are posing a greater threat to U.S. naval forces and those of her allies, putting ASBMs on U.S. ships, submarines and large bombers offers a near-term and relatively inexpensive option for posing an unacceptable risk to China's growing surface navy.

In doing so, there will likely follow a competition in both ASBMs and their countermeasures, but it is just as likely that a new U.S. and regional capability to quickly eliminate much of China's naval forces in response to their aggression will prompt new interest in Beijing in seeking to "control" such weapons. In addition, while China is sure to respond with fury to any U.S. sale of such weapons the point should be conveyed: such missiles are intended to provide a non-nuclear deterrent in the face of China's proliferation which has enabled Pakistan, and soon, North Korea and Iran to obtain nuclear missiles. The Chinese Communist Party leadership will be presented with a stark choice; if it cannot develop military defenses against an Asian-wide deployment of ASBMs, then it will have to pursue non-military initiatives if it is going to sustain a growing justification for its political dictatorship: that the Party alone can produce the "comprehensive power" needed to attain global leadership.

Developing such a line of conventionally armed ballistic missiles is not a new idea but it is one whose time has come.⁶⁰ In 2001 the Bush Administration advanced the concept of non-nuclear warhead armed ICBMs that by 2003 became called "Prompt Global Strike" (PGS) or the ability to attack targets globally from U.S. territory in about one hour.⁶¹ The US Air Force, Navy and Army have pursued programs and research, that with uneven funding have yet to yield deployed

systems. The Navy initiated studies for a Submarine Launched Intermediate Range Ballistic Missile (SLIRBM) in 2003 with the intention to begin testing in 2005, and though cancelled, it apparently had a design goal to loft a 2,000lb warhead up to 3,000 nm (5,550km).⁶² Such a missile might have been deployed before the PLA reported 2015 deployment of a 4,000km range IRBM. However, the Obama Administration is reportedly interested in a new long-range strike missile to equip SSNs, which could be accommodated by up to four modular missile tubes (that could each carry 6-7 LACMs) planned for future Blocks of the *Virginia*-class SSN, so that it can succeed the current *Ohio*-class nuclear cruise missile submarines (SSGNs).⁶³ Such new missiles should also be deployed on U.S. destroyers and cruisers, and be sold to U.S. allies with ships and submarines that can accommodate them, for example, if Australia does opt to purchase U.S. SSNs.

Reports note the U.S. Navy is developing two significant anti-ship missiles: an anti-ship version of the 900 nm (1,650km) range Tomahawk Block 4; 2) and perhaps one of two other missiles, either a stealthy long-range subsonic cruise missile based on the AGM-158 Joint Air-to-Surface Stand-Off Missile (JASSM) or fast supersonic, perhaps air-breathing cruise missile.⁶⁴ While these are long-overdue for U.S. naval forces, they would not have the range and speed potential of ballistic missiles. Subsonic missiles are easier to target and shoot down, whereas it is much more difficult to target and intercept faster ballistic missiles. Current missiles that could form the basis for an ASBM include the Raytheon SM-3 anti-missile interceptor, that could offer ballistic ranges close to 3,000km and the Lockheed-Martin AGM-140 Block 1A ATACMs offers a 300+km range. To compound the risk to China's naval forces, medium-to-intermediate range ASBMs should be considered for sale to Japan, South Korea and Australia, while short-range ASBMs should be offered to Taiwan, the Philippines, Singapore and Malaysia.

To counter China's growing formal and informal invasion forces, the U.S. should deploy and offer to allies and friends short-range land and sea-based ASBMs as well as land-attack short-range ballistic missiles (SRBMs) and artillery rockets armed with submunitions that could attack multiple landing ship or vehicle targets. For a potential invasion against Taiwan, the PLA can be expected to mobilize hundreds of large and small civilian ferries and dry cargo vessels already organized into "naval militia" units. Artillery rockets armed with "Skeet" sensor-fused munitions would allow the targeting of multiple invasion vehicles from stand-off ranges of 60-90km. Early in the last decade Lockheed-Martin tried to market its ATACMS missile to Japan as an anti-invasion weapon and more recent suggestions have been made that the Philippines adopt a long-range missile based defense strategy.⁶⁵

Ballistic missiles may be more expensive than subsonic cruise missiles but their higher speed complicates interception and countermeasures while increasing destructive capability and are much less expensive than subsonic combat aircraft that are ever vulnerable to increasingly sophisticated air defense systems. At an estimated price of \$3.4 million each,⁶⁶ South Korea could assemble a force of 500 ballistic and cruise missiles for the price of about 18 recently acquired Boeing F-15K fighter bombers with an average cost of about \$96.7 million. At a price of about \$1.8 million each,⁶⁷ Taiwan could acquire up to 1,000 ATACMS short-range ballistic missiles for the cost of about 14 new F-16C fighters it has sought to purchase, costing about \$131 million each. This cost advantage in the face of respective "mass" threats is why South Korea and Taiwan have developed new land-attack missiles over the last decade. For most of

this period Washington has quietly opposed new long-range missile acquisition by Seoul and Taipei, but this policy should be reversed to include sale and co-development assistance for new missiles.

3. Energy weapons.

If the U.S. decided to increase funding for energy weapons with the goal of realizing deployment within this decade or soon after, this one development would revolutionize the ability to deter with “defensive” weapons on the Taiwan Strait and de-fang much of the PLA’s gathering theater missile threat. Key to advancing effective missile defense is the ability to reverse the cost ratio that currently favors offense over defense. Writing in the *Taipei Times* in late 2009, journalist J. Michael Cole offered the following cost-ratio assessment of Taiwan’s recent purchase of 330 U.S. Raytheon Patriot PAC-3 anti-tactical ballistic missile (ATBM), assuming the tactical requirement of firing two interceptor missiles at an incoming salvo of 200 PLA missiles:

“The price tag for 330 PAC-3 missiles and related equipment is estimated at US\$3.1 billion, while each DF-15 missile deployed by China costs about US\$450,000, excluding launchers and related equipment. To draw a comparison, 330 DF-15s would cost China US\$148 million. By taking the two-to-one ratio into consideration, it would cost China US\$74 million to deplete US\$3.1 billion worth of PAC-3s...”⁶⁸

Even if the cost of the DF-15 was twice that cited, the cost ratio still would greatly favor the PLA’s 1,500+ offensive missiles aimed at Taiwan. But this cost ratio could increase further in the PLA’s favor as it deploys more less-costly CJ-10 subsonic long-range land-attack cruise missiles, which could also soon be deployed in air and sea-launched versions and contemplates whether to deploy a new class of SRBMs based on much larger artillery rockets, which likely cost even less than cruise missiles.

PLA missiles also present an unfavorable offense-defense cost ratio to U.S. forces in Asia. It is this analyst’s rough estimate that the PLA can produce its reported 2,700km to 1,500km range DF-21D ASBM or its new 4,000km range DF-XX IRBM, which likely will be armed with multiple warheads, at \$2 to \$3 million per missile. Current production U.S. missile interceptors are reported to have the following per unit cost: Raytheon MIM-104F *Patriot PAC-3*, \$3.43 million; Lockheed-Martin Theater High Altitude Air Defense (THAAD), \$11.75 million; and the Raytheon RIM-161C SM-3 Block 1B, \$12.29 million. U.S. Navy Undersecretary Robert Work is reported to have stated, “We have \$15 million missiles that can shoot down \$5 million ICBMs. We are on the wrong side of that equation.”⁶⁹

Hypersonic Shot Gun. Would the PLA even contemplate launching a salvo of 200 DF-15 or DF-11 SRBMs if it knew Taiwan could loft 40,000 steel “shot gun” pellets flying at Mach 4-5, into its incoming missiles also flying at about the same speed? What if the density of the pellet count could be even greater to respond to multiple PLA missiles fired at the same target area? Such a “steel cloud” would shred most missiles, artillery rockets, cruise missiles and aircraft flying through it. This is an estimate of the potential offered by the General Atomics *Blitzer* electro-magnetic railgun (EMRG) or railgun, which in early testing has fired an artillery size projectile up to speeds of Mach 5 (1,700 m/s), with a potential range of 100km.⁷⁰ A railgun uses

electricity to accelerate a projectile and as long as it has access to a power source it can continue to fire “artillery rounds” until maintenance is required. On a destroyer-size ship the Blitzer could have a magazine of 1,000 rounds⁷¹ and a Boeing- designed round could contain up to 100 “pellets.”⁷²

A key variable for the railgun would be rate of fire, which the U.S. Navy has mentioned an early goal of 10 rounds per minute.⁷³ So it is conceivable that a force of 20 land-based *Blitzers* on Taiwan could loft up to 40,000 potentially hypersonic (Mach 5 and above) speed pellets at 10 rounds per minute. Unlike an ATBM, the speed of the railgun-fired pellets matters less than their being put precisely in the path of the attacking missile. But what reverses the cost-ratio in favor of the defender is the likelihood that an “artillery round” for the *Blitzer* may cost tens of thousands of dollars compared to the estimated \$.5 to \$1 million cost of PLA SRBMs. Furthermore, if each railgun could carry a magazine of 1,000 rounds, a force of 20 could potentially account for 20,000 interceptors, more than the potential combined PLA force of attacking SRBMs, MRBMs, cruise missiles and attacking aircraft. As an anti-invasion defense, a force of 10 *Blitzers* could pose an unacceptable threat to a potential PLA force of hundreds of formal and informal invasion craft. In early 2011 an industry source told the author that assuming full funding, this railgun might be ready for production by 2015, though current plans may result in production by 2019.

For the U.S. Navy, *Blitzer* also offers the option of configuring a railgun to be carried by SSGNs, with missile tubes being configured to carry the gun, a varied number of rounds and a radar and/or infrared targeting system. Both the *Ohio* and future *Virginia*-class SSGNs have internally accessible missile tubes, meaning rounds could be stored in multiple tubes that would feed into the gun-carriage tube. The SSGN’s nuclear powerplant could provide constant power for operations. A force of four SSGN carried railguns operating at both ends of the Taiwan Strait could provide decisive “flanking” fire to help stop attacking missiles, cruise missiles, aircraft and invasion craft.

At this point accelerated development and deployment of the shorter-range *Blitzer* is not a U.S. funding priority, though it should be. Instead the U.S. Navy’s priority is on achieving the science break-throughs needed to build a more capable railgun that could accelerate its round up to Mach 7 (2,380 m/s) out to a range of 200nm (370km), though early versions may achieve ranges of 50 to 100nm (92-185km) and a firing rate of 10 rounds per minute.⁷⁴ While also a necessary effort, this more advanced railgun may not be ready for production until the mid-2020s. Early development and deployment of railguns could also be useful in deterring or defeating missile threats posed by North Korea, which reportedly has about 600 SCUD missiles with 300km to 500km ranges,⁷⁵ plus that posed by Hezbollah in Lebanon, which thanks to Iran has amassed an estimated 40,000 rockets and missiles to use against Israel, with “thousands” that have ranges of 200km to 800km.⁷⁶

4. About 200 more improved F-22 5th generation fighters plus commitment to 6th gen fighters.

If the United States is going to sustain the ability to secure air superiority where its interests dictate, then there will be no substitute for having an adequate number of the best combat aircraft

possible. This imperative and an emerging multiplicity of Chinese 5th generation fighter programs, plus plans to delay development of a 6th generation air superiority system until 2030 or beyond, points to the necessity for the U.S. to return an improved version of the Lockheed-Martin F-22 to production. By the end of this decade the PLA could have two 5th gen fighters in production, the Chengdu “J-20” and Shenyang J-31 *Falcon* with perhaps another two in advanced development by the early 2020s.⁷⁷ Chinese sources suggest “J-20” production could reach 300, the potential this could be increased by other 5th gen types, while Russian industry sources believe they can sell up to 600 of the PAK-FA Sukhoi T-50 5th gen fighter,⁷⁸ all of which makes clear the insufficiency of having ended F-22 production at 187.

Although 2,443 Lockheed-Martin F-35 5th gen fighters are planned for the USAF, Navy and Marines, this fighter was meant to compliment the F-22, whose ability to supercruise, or fly at supersonic speeds for extended periods at very high altitude confers tactical combat advantages the F-35 was not designed to achieve. Furthermore, fears of a diminishing value of stealth in the face of growing PLA advances in counter-stealth technology is raising fears that the US Navy especially, which may be looking to reduce its purchase of F-35C fighters in favor of relying on less expensive F/A-18E/F fighters with ever better “payloads.” There are some suggestions that current plans for two F-35C squadrons per carrier air wing may be reduced to one squadron.⁷⁹ For the Navy, such a choice would increase risk; the F-35C is already at a disadvantage compared to the emerging Chengdu J-20, and the prospect of there being fewer F-35Cs means the Navy will have a greater requirement for assistance from the USAF. The prospect of multiple PLA 5th gen fighters also reduces the attractiveness of current U.S. intentions to rely on upgrading more legacy 4th gen Boeing F-15C and Lockheed-Martin F-16C fighters.

Thus, to better secure air superiority when required and to allow the Air Force to have the ability to better support the Navy in the air battle, it is suggested that the U.S. requires a force of 350-450 F-22s, which should be able to sustain a force of 10-12 squadrons of 24 fighters each with a reserve for training and attrition. It is likely that the U.S. Air Force would jump at the prospect of acquiring more and better F-22s and even sacrifice some number of F-35s in trade.

A revival of F-22 production should also be an opportunity for improvement, such some of the advanced systems developed for the F-35, to include appropriate elements the infrared targeting and warning systems and where possible and its less maintenance-demanding stealth materials. In addition there should be consideration of slight modifications to the fuselage to enable internal carriage of larger weapons or more air-to-air missiles. There is also a need for improved “payloads,” such as reviving new air-to-air missile programs like the Next Generation Missile (NGM) cut due to budget reductions in early 2012, and the Net Centric Air Defense Element (NCADE), a two-stage development of Raytheon’s AIM-120 AMRAAM developed for anti-ballistic missile missions, but which also could perform long-range anti-aircraft or possible anti-satellite missions.

5. Adequate numbers of F-35B short take-off and vertical landing (STOVL) fighters for U.S. and allied forces and a new low-cost fighter.

Beset by program delays and now the largest U.S. weapons program at \$395.7 billion for a planned purchase of 2,443, the F-35 Joint Strike Fighter is a key target for budget cutters.

Compared to legacy 4th generation fighters in its class, like the F-16 and F/A-18, it does offer a clear advance in terms of bringing useful levels of stealth and a major increase in sensor capability to the battle. Its infrared warning sensors alone reportedly can detect missile launches up to 200 miles away, meaning it could assist missile defense missions.⁸⁰ But the F-35's kinetic performance is comparable to the F/A-18⁸¹ as it was intended to be the “low cost” compliment to the F-22 and not have a “supercruise” capability. Also, having been in development since the mid-1980s with initial deployment not scheduled until later this decade, it will soon be challenged by new 5th generation fighters from China and Russia and be pressured by 4+ gen versions of Chinese and Russian fighters. As already noted, growing skepticism in the U.S. Navy about the utility and affordability of stealth may be prompting consideration of a more affordable mix of a smaller number of F-35C conventional take-off or landing (CTOL) variants combined with larger numbers of F/A-18E/F fighters with every more powerful “payloads.”

But with the end of F-22 production, it is also the only remaining U.S. 5th gen tactical fighter option for the US Air Force, Navy and Marines, albeit one that has risen to an average \$130-160 million in price, approaching that of the formerly “unaffordable” F-22.⁸² While the U.S. may not buy all the F-35s the Pentagon wants, with some viewing this program as “too big to fail,” price increases have already forced some to reduce purchases (from 730 to 697) while new customers like Japan (42) warn that new cost increases could reverse their decision to purchase this fighter.

However, the version that could make the greatest contribution to deterring the PLA is the one that until recently was the most vulnerable: the F-35B short take-off or vertical landing (STOVL) version. But due to high political support from the U.S. Marines, who hope to acquire up to 340, in the last two years sufficient progress has been made overcoming technical challenges in reducing weight and to its unique lift-fan/engine system, to remove it from “probation” consideration for cancellation. Britain's recent decision to once again purchase the F-35B after having briefly favored the F-35C provided another political “boost.”

The key advantage offered by the F-35B is that it offers the prospect of nearly doubling the number of “combat capable” aircraft carriers for the U.S. Navy. Though it will have slightly less range and payload than its sisters, the F-35B does have the 5th generation electronics and sensors of its sisters, meaning that it provides the greatest performance improvement over its predecessor, the Boeing AV-8B *Super Harrier*, and offers clear advantages over China's growing numbers of 4th generation fighters. Furthermore, the F-35B's unique STOVL performance means that 12-18 could be based on the U.S. Navy's 10 amphibious assault “flattops” or Landing Helicopter Dock (LHD) ships. This number of F-35Bs could help secure an additional maritime “flank” for the larger carrier battle group and even provide a secondary source of carrier air power in the event the PLA is able to dispatch or disable larger U.S. carriers. To make this concept work, it would be useful for the Navy to develop airborne early warning (AEW) and anti-submarine warfare (ASW) modular payloads for the Bell/Boeing V-22 *Osprey* tilt-rotor aircraft, also employed mainly by the Marines.⁸³

The F-35B also offers key allies like Japan, South Korea and Australia the quickest path to acquiring their own naval air power. All have or are building large LDH type ships that could, some with modification, possibly accommodate a small number of F-35Bs, and using this fighter

also offer the least expensive route toward building dedicated aircraft carriers. As the PLA Navy could have up to five conventional and nuclear powered carriers in operation by the early 2030s, it may become necessary for Washington to consider encouraging its key allies to build their own carrier battle groups. For Singapore, widely expected to buy the F-35⁸⁴ and Taiwan, which has also signaled its interest,⁸⁵ the F-35B offers 5th generation performance plus tactical concealment advantages, as it could also be employed from the protective cover of U.S. naval formations with carriers or LHD size ships.

Finding the “Holy Grail” of the Cheap/Hot Fighter. Since the early 1970s factions in the U.S. defense community have lobbied for “cheap-hot” lightweight fighters that could be affordably produced in large numbers vice the traditional U.S. military preference for all-around capable combat aircraft that grow progressively larger and more expensive. This lobby’s main victory was the early 14-ton⁸⁶ General Dynamics F-16A that was intended to compliment the more capable/expensive 30-ton McDonnell-Douglas F-15. Lack of official interest and politics conspired to kill the promising 12-ton Northrop-Grumman F-20 lightweight fighter in the early 1980s. But the need for a “cheap” compliment for the F-22 was one of the main reasons for the development of the F-35 *Lightning II*. But now the F-35’s cost growth makes it unavailable to many states friendly to Washington, and perhaps increasingly to the U.S. military as well.

The market for a respectable 12-14 ton fighter is now being addressed by China’s \$20-25 million 13.3-ton Chengdu FC-1⁸⁷ and soon, by the Korean Air Industries (KAI) 13.5 ton \$30 million F/A-50 lightweight fighters that both feature 4th gen electronics and weapons. Manila reportedly has decided to purchase KAI T/A-50 or F/A-50 fighters instead of opting for used U.S. F-16 fighters while China is marketing the FC-1 to Malaysia and Indonesia, as well as distant states like Venezuela and perhaps Argentina. Taiwan’s 13-ton AIDC F-CK-1 Indigenous Defense Fighter (IDF), India’s 13-ton *Tejas* Light Combat Aircraft and the Swedish 13-ton SAAB JAS-39 *Gripen* also belong in this category.

As such, it is necessary for the U.S. to develop a new highly effective but lightweight and relatively inexpensive fighter.⁸⁸ In stark contrast to the 1970s, the U.S. has an amazing advantage in developing such a “grail:” the General Electric’s 26,600 lb (12 ton) thrust F414EPE (enhanced performance engine) turbofan, which offers a blistering 11 to 1 thrust-to-weight ratio at almost 50 percent less weight than the Pratt Whitney F100-PW-200 that powered the F-16A, that only offers a 7.8 to 1 thrust-to-weight ratio. The F414 EPE could give the F/A-50, a revived version of the Northrop F-20 or a new design Boeing is developing for the USAF “T-X” trainer competition, a greater than 1 to 1 thrust-to weight ratio at combat flying weights, or enable the twin engine F-CK-1 to be developed into a supercruising virtual rocket. Use of some stealth shaping, composite materials plus the incorporation of small AESA radar and compatibility with the range of developing AAMs, PGMs and long-range attack missiles could result in some highly effective \$40 to \$50 million 4+ gen fighters. For the U.S. such a fighter could also serve as a less expensive to operate “Lead-In” trainer that would be part of formal fighter units, in the same manner that Russian and Chinese fighter regiments traditionally include twin-seat trainers, which could extend the service lives of U.S. single-seat 5th gen fighters.

6. Reinvestment in new strategic and tactical nuclear weapons.

The uncertainties regarding China's nuclear capabilities requires not only a thorough review of what the U.S. government knows, but also requires a new policies that halt further U.S. nuclear arms reductions, and that prepare for nuclear force modernization and increases if deemed necessary. It is furthermore necessary for Washington to try to assemble an international coalition to that offers China a choice: halt your proliferation of nuclear and missile weapon technology, come clean about past proliferation, enforce existing laws and regulations and begin a process that leads to far greater transparency and assurance, or the coalition is going to take defensive measures.

The existence of a 5,000 km network of tunnels and the clear construction of extensive new tunneling to support existing and new PLA Second Artillery bases is enough to cast doubt on assumed public estimates of the number of PLA missiles and nuclear weapons. Even without considering General Yesin's estimates, and he should be invited to explain his methods and evidence, absent a full understanding of China's nuclear basing tunnels it is necessary to suspend nuclear reductions underway with Russia. In addition, the U.S. should prepare to replace reduced warheads on Minuteman ICBMs and Trident SLBMs and due consideration should be given to increasing the survivability of U.S. land-based ICBMs, as there should be full funding for the successor to the Trident SSBN.

It is also necessary to reverse one of the Administration's acts of unilateral disarmament, its retirement of U.S. Navy Tomahawk TLAM-N tactical nuclear warhead armed cruise missiles. Apparently the U.S. had an inventory of over 300 warheads for over 150 TLAM-Ns. This warhead should be re-fitted modified new Tomahawk cruise missiles in order to rapidly revive a secure tactical nuclear deterrent for the U.S. Navy. The Administration's plan to rely on F-35 delivered tactical nuclear weapons is not as secure as their use from hard-to-find SSNs. Such a capability is needed more in the face of North Korea's ability to soon produce nuclear armed missiles. In addition, this capability is required in order to better deter potential PLA use of tactical or theater nuclear weapons.

Conclusion

Though a hard turn to take given the Obama Administration's priorities with China in 2009, the Pivot of 2011 was welcome in many quarters in Washington and among U.S. friends in Asia, as an overdue adjustment made necessary by China's increasing truculence, opacity plus its continued military buildup and proliferation of dangerous weapons to its rogue allies. This Pivot, however, is not secure. It is vulnerable to possible severe U.S. military spending reductions, as it also does not fully respond to the breadth and depth of the looming Chinese challenge. These include China's preparations for potential wars as it also increases the A2/AD capabilities of most concern for the Pivot, its continues proliferation of nuclear and missile technologies designed to strengthening of proxy allies, made more acute as China gathers power projection forces, could generate new Chinese Pivots to counter that of the United States, and finally, an apparent delinking of consideration of how China's potential for unclear breakout could severely undermine the Pivot. However, it is possible for Washington to rise to this challenge by considering new ways of coordinating existing military capabilities with allies and

friends, considering new military capabilities and sharing them with friends and allies, while reconsidering old diplomatic and policy constraints that would prevent U.S. forces and those of its friends and allies from realizing these new capabilities.

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⁸⁴ Greg Waldron, “In Focus: Singapore steps up deterrent capabilities,” *Flight International*, February 1, 2012, <http://www.flightglobal.com/news/articles/in-focus-singapore-steps-up-deterrent-capabilities-367582/>

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⁸⁶ Fighter weight figures given in this section are “maximum” weights, meaning in the course of a mission their weight would decline.

⁸⁷ Weight figure from AVIC marketing brochure obtained at the November 2011 Dubai Airshow. For an examination of the FC-1 potential see the author, “A Strategic Challenge In China’s New Tactical Fighter Exports,” *International Assessment and Strategy Center Web Page*, February 7, 2012, http://www.strategycenter.net/research/pubID.272/pub_detail.asp

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