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Air and Sea Power Shaped for the Asia–Pacific Rebalance

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Crisis stability and the means for maintaining it—crisis management—are again becoming more relevant as nuclear proliferation, ballistic and cruise missile proliferation, and the reemergence of great-power competitors make state confrontations more likely and more precarious, especially in the Asia–Pacific theater.¹ This article is a rejoinder to “Shaping Air and Sea Power for the ‘Asia-Pivot’ ” by Michael Kraig and Lt Col Leon Perkowski published in the Summer 2013 edition of *Strategic Studies Quarterly* (SSQ). Kraig and Perkowski initially make some reasonable arguments to establish their case. For example, they properly highlight the importance of crisis stability,² which has seemingly been lost by a number of strategists over the last several decades. They take us on a tour of Asia by delineating a host of geopolitical issues, while spending a few paragraphs summarizing the Chinese military and the threats it poses but postulating that these threats are regional in nature and hardly have a “global reach” as defined by the United States. They also provide some good discussion of the aggressive nationalism China displays. Their analysis of the Air-Sea Battle (ASB) concept early on raises concerns that it may be overly focused on “deep strikes on the adversary’s homeland.” They introduce their recurring theme of *strategic denial* without a clear definition, and use of, the military instrument of

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national power to support the diplomatic (or political) instrument of national power.

Next Kraig and Perkowski explore “The Impact of New Asian Geopolitics on Military Planning” by returning to a discussion of ASB, military theory, and additional threat analysis. The authors go beyond *strategic denial* to an operational (or battle-level) concept of *persistent denial*, which they define as “sustainable pressure at a given escalation threshold to raise the perceived cost of anti–status quo action both prior to and during a militarized crisis.”³ They make a linkage to new conventional missile and bomber forces (read: long-range strike bomber, or LRS-B) under the banner of conventional prompt global strike (CPGS) and ASB, joining them to the strategic offensive. Their argument is that these types of systems will fail to equip US presidents with viable options that provide limiting and de-escalating off ramps. They postulate and propose the need for intermediate-range/smaller-payload systems as solutions.

Our critique of this article focuses on the authors’ China analysis, threat analysis and implications, use of political and military theory, specific recommendations against the LRS-B and ASB, and their recommendation to pursue an F/B-22-like capability.

China Analysis Differences

It is axiomatic that a critical element in intelligence depends on an accurate understanding of the beliefs and perceptions of an adversary. Clearly, this is an area for different analyses leading to a wide debate. In several places throughout the article, we believe the authors get it right: “China’s rise has imbued the public with self-confidence, which interacts with China’s sense of inferiority and is expressed in the form of aggressive nationalism.”⁴ What is missing is a more thorough delineation and analysis of Chinese thinking. Ironically, there is no mention of the major changes ushered in by the new Chinese leadership over the past year. President Xi Jinping has taken a completely different track from previous Chinese leaders. His focus is mostly internationalist, whereas past leaders have focused primarily on domestic issues. President Xi put forth two new concepts, “China Dream” and a “New Type of Major Power Relationship,” designed to shape the trajectory of US-China relations that have critical military components. Xi’s visit with President Obama at Sunnylands Center in Rancho Mirage, California, in June

2013 highlighted the importance of “new patterns of military relations” compatible with great-power relations and his outward focus. A short description of China’s grand strategy would also have been useful: What are China’s core/national interests? What are China’s perceptions of the external forces that threaten its interests? How can China’s national leaders safeguard their core/national interests?⁵

The authors seemingly assert *de facto* that ASB and US plans against the PRC would follow *offensive strategic interdiction* (per Douhet, Warden, et al.), but they show little evidence of how extensive that would be. It is true that if the PRC feels its existence is at risk, it will be difficult to control escalation, but Kraig and Perkowski do not delineate what actions would likely cause the PRC to fear this, saying instead:

Although the historical and intellectual pedigree of such ideas is undeniable, what is often missed in the debates is that this traditional approach to strategic airpower would have the simultaneous effect of destroying or seriously degrading PRC sovereign defense capacities overall, meaning that it would confront Beijing with not just a degraded power projection but even a severely degraded ability to defend its homeland. And given the historical focus on the sanctity of its [PRC] current borders—as shown in both its intervention in the Korean War and later in bruising battles with the Soviet Union and Vietnam in the 1970s, costing tens of thousands of casualties—degrading Beijing’s ability to ensure its own sovereign defense is likely to escalate any hostilities rather than lead to a stable crisis resolution.”⁶

There are a variety of interpretations associated with current PLA thinking. One interpretation is that the Chinese homeland is not considered sacred ground as is the case with the United States; Chinese strategic thinkers have expected in the past, and expect in future wars as well, that they will be attacked. For example, *The Science of Campaigns* alludes to this,⁷ and “Chinese analysts acknowledge that a consequence of this deficiency is that China will likely absorb a great deal of damage and must be willing to ‘pay a heavy price’ in any conflict with a technologically superior adversary such as the United States.”⁸ In addition, one need only look at the specifics of PLA defense priorities and spending which emphasize active and passive defenses—especially its world-renowned and extensive hardening programs.⁹ Ian Easton, from Project 2049, succinctly describes it:

In sharp contrast, China continues to engage in a long-term, high tempo effort to prepare for all-out war, constructing vast underground bunkers capable of housing thousands of fighter aircraft, unmanned aerial vehicles and ballistic mis-

siles—and dozens of submarines. This unparalleled military engineering program is backed up by redundant networks of deeply buried command posts that are protected by the world's thickest screen of air defense radars and interceptors, the world's largest cyber warfare force, and the world's most active space warfare program.¹⁰

Whether the Chinese are more accepting of attacks or whether attacks on China risk rapid escalation, the debate may create a circular argument rather than a way forward toward solutions. At the very least, we believe “denial” must include “the improvement of active and passive defenses and the protection from hardening surveillance and reconnaissance capabilities to maintain early warning and avoid suffering a disarming first strike would contribute to the mitigation of China’s missile threat.”¹¹ We will elaborate on this topic later through a concept called “operational resiliency,” officially acknowledged in the *Quadrennial Defense Review (QDR) 2014* as critically important.¹²

Although Kraig and Perkowski state the importance of Chinese thinking, they miss some critical insights. For example, it is absolutely critical we understand that the Chinese see the United States as a declining power (a topic of much debate in the United States) unwilling to accept its decline. Additionally, we believe it is imperative to understand the Chinese mind-set regarding nuclear deterrence, nuclear weapons use, and strategic stability and how these strategies intersect with Chinese thought on conventional conflict. One area of clear concern is the PLA Second Artillery Corps’ dual role in both conventional and nuclear missile forces—this has the potential to impact vulnerability thresholds and redlines. In 2013, a working group on US-China nuclear dynamics determined that there are major problems (more than just a language issue) in understanding of terms¹³—especially the meaning of *strategic stability*—that have not been definitely settled.¹⁴ But even more fundamental may be the current Nuclear Posture Review implications and the march to “global zero” with the rise of China and the reemergence of Russia.

Threat Analysis and Implications

The 2013 congressionally mandated China modernization annual report addressed PLA threats in greater length and detail compared with earlier reports.¹⁵ Kraig and Perkowski state accurately the relative difference between the Cold War and now (generally): “the United States does not face in the foreseeable future a near-peer power that threatens it exist-

tentially as during much of the Cold War.”¹⁶ Nevertheless, their analysis appears to be a snapshot of today without looking at trends and projected future capabilities (conventional and nuclear). Even today, PLA modernization has reduced US foreign policy options and makes some of our preferred options prohibitively costly. China may not be able to operate far from its shores, but it can impact operations at a distance. For example, Chinese cruise and ballistic missiles have potent capabilities against both the first island chain and emerging capabilities against the second island chain. David Kern, in a Winter 2013 *SSQ* article, summarizes it well: “China’s missiles now threaten key forward US bases and hold US naval forces in the region at risk, creating a vulnerability that could hinder the capacity of the United States to effectively defend Taiwan. These developments in turn undermine US deterrence against China taking military action in the event of a crisis, making a conflict more likely.”¹⁷ A 2013 National Air and Space Intelligence Center (NASIC) pamphlet focuses mostly on Chinese ballistic missiles, and a forthcoming book, *A Low-Visibility Force Multiplier: Assessing China’s Cruise Missile Ambitions*, goes into great depth and detail on Chinese cruise missiles (CM).¹⁸ The authors’ treatment of the PLA’s Second Artillery Corps and its capabilities, with the associate implications, is not as thorough as needed—especially in light of their recommendations.

The *QDR 2014* report hardly minces words regarding the threat but brings out additional concerns that should help our partners and allies pause with some trepidation:

In the coming years, countries such as China will continue seeking to counter U.S. strengths using anti-access and area-denial (A2/AD) approaches and by employing other new cyber and space control technologies. Additionally, these and other states continue to develop sophisticated integrated air defenses that can restrict access and freedom of maneuver in waters and airspace beyond territorial limits. Growing numbers of accurate conventional ballistic and cruise missile threats represent an additional, cost-imposing challenge to U.S. and partner naval forces and land installations.¹⁹

Even though China is not currently a global peer competitor, it can pose significant problems for the United States. Additionally, the PRC does not have the global responsibilities of the US military. Therefore, analysts should not compare the total force of the United States to China and extrapolate from that analysis how the countries would fare in a contingency. The United States is not going to dedicate its full military force to a conflict in Asia because it has other, worldwide com-

mitments. So China has the luxury of tailoring its military investment to its primary threats, the US Air Force and US Navy. This is a critically important observation that should not be lost on Airmen studying the Asia–Pacific region.

What confounds us is the asymmetry of strategic focus—the compelling contradiction in US policy/actions. China politics/actions indicate that the Chinese are very, very focused on the United States as a rival; whereas, the United States is focused on its myriad of global responsibilities or crisis du jour and, despite the Asia–Pacific rebalance, appears distracted and annoyed when it comes to the systemic challenge posed by China’s rise. A key part of the rebalance is to garner more focus as we manage the latest myriad of crises. That requires some key strategic decisions in Afghanistan and elsewhere—what the follow-on plans and commitments actually entail. This in no way suggests we should have the depth and breadth of focus of the Cold War, but the rebalance ought to command more US attention than global warming.

Keep in mind, having a capability does not necessarily imply the intent to use it to the fullest extent. There are historical precedents for this in the Cold War and throughout military history. In 1972, Dr. Andrew Marshall authored, *Long Term Competition with the Soviets: A Framework for Strategic Analysis*, proposing that the United States was in a protracted contest with the Soviet Union for military strength, economic growth, and international influence.²⁰ This realization prompted the DoD to more deliberately cultivate military capabilities where the United States possessed distinct and discrete advantages over the Soviets through the method of competitive strategies (e.g., cost imposition).²¹ Should this not be considered in the “rebalance” as well?

Use of Political and Military Theory

For the most part, Kraig and Perkowski’s use of political and military theory was strong. Their knowledge and treatment of Clausewitz was commendable. An analysis of what the Chinese believe about Clausewitz and how the PLA is applying those principles would have been helpful and clarifying. Also lacking was a deeper treatment of Sun Tzu and how his ideas remain relevant to the United States and the Chinese. An assessment of PLA doctrine (in light of political and military theory) from

the PLA's most definitive work, *The Science of Campaigns*, would have provided greater insights.²²

A clear argument the authors use is the concept of “strategic denial,” in some cases as an alternative to conventional deterrence. In other cases strategic denial is postulated in conjunction with conventional deterrence. What is disconcerting is the lack of detailed analysis of strategic denial, theoretically and practically, with the associated nuances. Although Herb Linn's focus in the Fall 2012 *SSQ* is on cyberspace, he breaks some new ground on escalation dynamics and crisis stability—with a number of threads that could have enhanced theoretical support.²³

Whereas, it is clear China has studied the United States (e.g., PRC strategic reevaluation after the 1991 Gulf War), it is not quite so clear that the United States has studied the PRC as closely. For example, one might look at the importance Sun Tzu places on “attack the enemy's strategy or plans before the outbreak of war or use of force” (Sun Tzu's highest-order center of gravity).²⁴ So instead of only focusing on competing lists of targets in Phase 3 operations, we could look at a number of things in Phase 0 and Phase 1 operations that would impede or disrupt PLA plans. It may be incumbent upon us to understand more about the specifics of PLA modernization, its war plan development, the nature and dynamics of the PRC political decision-making process, the personalities, ideologies, and internal divisions within its elites, and related information to help increase the stability of the relationship.

The authors' argument on managing escalation missed the point that a future US force may have a tough time “managing escalation” if its enemy fields the only force that is capable of escalating conventionally.²⁵ In other words, what would be the PLA's motivation for avoiding actions which we might perceive to be escalatory if (1) they have a very large conventional missile force that is capable of striking our warships and theater bases (including bases at Guam) and (2) the DoD has failed to invest in capabilities that would permit future joint force commanders to hold at risk, over long ranges, the PLA's Second Artillery Corps?

The authors include the term *persistent denial* but do not adequately describe examples to enhance it. We do not see an adequate examination of how persistent denial would be implemented with the current and projected threat. One step to make persistent denial viable would require a serious discussion of operational resiliency.²⁶ This would entail forward dispersal options, indications and warnings, selective harden-

ing (and other passive defense options) beyond just our main operating bases, and defenses against ballistic and cruise missiles and other weapons. Without credible capabilities in this area (prior to execution of a time-phased force deployment—TPFD), the United States locks itself into deployment options which could lead to miscalculation and increased instability. This invites potential preemptive strikes from which the United States and its allies are ill-prepared to survive, while decreasing stability and limiting US crisis-management tools.

The issue is not only between the United States and China—that may be too myopic. Instead, our strategy should focus on allies and partners (third parties) rather than just our relationship with China. Nevertheless, our actions help determine what partners and allies may do. While US actions may shape China and spur action by our partners that could be either synergistic or disruptive, so far our allies and partners have had mixed reactions to our Asia–Pacific rebalance.

As the twenty-first century advances, the question these nations must ask themselves is just how far the United States will go to defend them, especially if they clash with China over the rightful ownership of tiny islands . . . which essentially asserts Chinese ownership of the South China Sea. The point is that China is not likely to attack these countries but that, if current trends continue, it could prevail on contentious issues and cast doubt on America's reliability without firing a shot. That is the way of Sun Tzu.²⁷

The authors contend that “conquest is increasingly irrational.” We believe that may be an overreaching statement. Their argument seemingly does not apply to taking territory that is not heavily populated—which is the majority of China's territorial disputes (Taiwan is a major exception). In the case of China's territorial disputes, the value of conquest is absolutely not nil, especially given the natural resources to be found in the South and East China Seas. More importantly, we believe the authors' assessment of our partners misses the strategic nature of these tactical skirmishes and how we might counter “the risks faced by the United States in defending friends and allies.”²⁸

Long-Range Strike Bomber and Air-Sea Battle

The article argues that the success of escalation control, deterrence, and coercion are critically important concepts, to which we would agree. Where we depart from the authors is their analysis of the Gunzinger LRS

report claiming its arguments for a new, penetrating bomber “strongly resembles the traditional US Air Force focus on ‘strategic offensive interdiction,’” which they define as “the capability to deliver a strategic form of paralysis that literally disarms the enemy without having to repeatedly fight its frontline forces.”²⁹ But, the Gunzinger LRS paper was focused on emerging capability gaps in our future force—it did *not* propose or support any particular air campaign targeting theory.³⁰ Later, they make a case for persistent denial campaigns but fail to grasp how difficult it would be to operate or overcome a “highly contested environment” or limit the vulnerability of those “strategic denial capability forces” to surprise attack and preemption.³¹

The LRS-B offers important structural stability: “Penetrating bombers are the aircraft most richly endowed with the attributes needed to maintain structural stability. No other conventional strike assets offer comparable potency for deterring an adversary attack without being exposed to preemption.”³² LRS-B assets are potentially more survivable due to their projected capabilities (e.g., long range, significant payload, stealth) and the ability to base them outside the densest threat rings; this also allows the movement of tanker orbits and bases farther from the threat while adding reasonable and cost-effective operational resilience options there as well. The payload and range advantages of the LRS-B make it more capable of exploiting the inherent advantages of airpower (i.e., responsiveness and flexibility) since one can range a greater breadth and depth of the battlespace with more per-sortie firepower than can be brought to bear with either short-range strike (SRS) or intermediate-range strike (IRS) assets. The LRS-B will both modernize and recapitalize an aging bomber fleet (one of the oldest fleets in the USAF inventory) to also bolster the nuclear deterrent posture. Similarly, the LRS-B when married with much less tanker support than SRS or IRS options, will bolster the US conventional deterrence posture, which is challenged by the current and increasing threat environment. The LRS-B offers additional flexibility since it is large enough to carry long-range stand-off munitions (e.g., cruise missiles) in addition to munitions that would be used for defense penetration or close-in stand-off operations.³³

Kraig and Perkowski attempt to make the case that the USAF should invest in an F/B-22A-like capability.³⁴ With the service in a modernization death spiral, a procurement holiday, and a readiness crisis (based on the President’s Budget Request for FY13 plus sequester), what is the

trade space for this new capability?³⁵ In this time of austerity and budget uncertainty, one truly needs to know what strategic tradeoffs (e.g., fewer F-35As) should be offered for this niche capability. This is not a trivial or academic question but critical to the future of the USAF and national security. On this issue, the authors' ideas appear ill-conceived.

The F/B-22 is a relatively old concept that emerged circa 2003–04. It may have been a good concept then, but even at that time it carried a research, development, test, and evaluation (RDT&E) estimate of \$15–25 billion (FY04 dollars) for eight aircraft and a total program cost for 150 aircraft between \$35 and 65 billion (FY04 dollars).³⁶ Based on the actual record of the F-22A (selected acquisition report, plus operations and sustainment costs, plus modifications)—a more valid F/B-22 RDT&E estimate would most likely be in the high range. For example, the F-15E, which was a derivative of the F-15C, had an RDT&E bill that was approximately 20 percent of the overall F-15A–D RDT&Es. Unfortunately, the military aircraft industry base trends have gotten worse—not better—in this regard (e.g., F-18E/F and F-35).

Importantly, the authors do not describe how the F/B-22 would operate in an A2/AD environment. Considering the geography of the Asia-Pacific region with current and projected threats, there does not appear to be much difference in utility between this niche capability and short-range fighters. The other factor to consider is the need for tankers (numbers and basing considerations). The F/B-22 is only marginally better than short-range fighters; that means you need significant numbers of F/B-22s and their associated tankers and other enabling aircraft. There is no detailed discussion on whether this capability would have stand-off or ISR capabilities in addition to penetration capabilities or whether it would be dual-capable (nuclear and conventional). At first blush, this could leave the overall bomber fleet in jeopardy (e.g., no resources to recapitalize and modernize bombers), which impacts the bomber portion of the nuclear triad (e.g., service life/sustainability issues for the B-52H and B-1B circa 2030 and beyond).

The authors could have made a credible case against conventional prompt global strike (CPGS), especially in the area of “crisis stability.” The CPGS has the potential to be responsive and minimizes US vulnerability to a surprise attack—but suffers as a “crisis management tool . . . in their limited flexibility and ability to signal. . . . Where conventional

ballistic missiles raise the most concern, however, is in their potential [negative] effects on structural stability.”³⁷

Instead of making a credible argument against CPGS and ASB separately, the authors attempted to link CPGS to ASB, which could not be more different. ASB has never endorsed CPGS. Once again ASB seems to be the “lightning rod” for those who would like to wish away highly contested environments.³⁸ Most importantly, the facts associated with ASB are not just what the authors purport them to be.

Kraig and Perkowski seemingly equate ASB mostly to deep strikes on the Chinese mainland. Nothing could be further from the truth. The central features of the “destroy” line of effort (LOE) are the fights for air and maritime control in the commons. Our joint force structure against their force structure in a future security environment and the nature of the future threat make this extremely difficult. The authors appear concerned about only one LOE—ASB has several LOEs—and seemingly dismiss other LOEs (e.g., “Defeat adversary employed weapons”). Having this US capability not only improves deterrence—it enhances crisis stability. ASB seeks freedom of action in the global commons—for everyone—and seeks to “pace” the threat and balance the strategic situation through the development of US and allied forces that can challenge A2/AD in the global commons.

The authors provide some credible arguments for mid-range options to deal with lower-level provocations and to give the US president a range of potential courses of action. Nevertheless, that should not preclude nor has there been a compelling argument(s) to dissuade the USAF from developing the LRS-B and pursuing Air-Sea Battle. These two initiatives were developed after extensive classified DoD and USAF analysis of the concepts, systems, and most importantly, the current and emerging threats worldwide (not just China). Ironically, there has been much press coverage in China on ASB, and what may be the most disconcerting to the PLA is USAF–USN collaboration, cooperation, and resource investment. Joint and combined operations are areas where the PLA still lags behind the United States, with PLA service rivalry possibly more stark than our own.³⁹

We must posture forces in ways that deter aggression without implying an attack is imminent while limiting vulnerability to surprise attack and preemption. The conundrum of contradictory requirements puts peculiar demands on force structure. Certain types of force structure

play an important role in crisis management, but some systems are more conducive to crisis stability. In this case it is not a question of which system, but other factors, like operational base resiliency, are critical to crisis dynamics. In short, the current US military posture toward China may fuel crisis instability. The lack of a credible and capable forward presence means that any crisis drives an immediate deployment which offers few, if any, off ramps to de-escalate. As such, Kraig and Perkowski argue for a framework that will likely yield the very effect they seek to avoid.

We applaud the efforts of the authors to dive into a very difficult topic, wrestle with it, and attempt to find credible answers for the nation and the Air Force. This type of debate in an open forum is critically important to national security and major USAF initiatives (e.g., LRS-B, ASB).⁴⁰ In this unprecedented time of strategic turbulence and austerity, critical thinking is imperative, requiring an intellectual and educational (I&E) rebalance (i.e., a focus on people, ideas, and education). One example of this I&E rebalance is the Blue Horizons classified research center created in fall 2013 within Air University (AU). We applaud this effort and think more initiatives like this are urgently needed and require a refocused Air Force investment in our educational institutions. We need to expand the number of research programs within AU and elsewhere with a focus on the Asia–Pacific region. One step in that direction would be to create a China Aerospace Studies Institute (CASI) similar to the China Maritime Studies Institute (CMSI). The Department of the Navy created the CMSI in 2006. They literally have a PLA/PLAN (People’s Liberation Army Navy) library of Chinese publications—both hard copy and electronic—with a cadre of Mandarin analysts to conduct PLAN research, publish, advise, and teach. This allows the CMSI to accomplish some intellectual emulation of the PRC/PLA by analyzing primary Mandarin sources or secondary sources that analyze Mandarin sources.

The importance of people, ideas, and things has stood the test of time and is a testament to the Air Force culture of innovation espoused by Gen Mark Welsh—“Powered by Airmen, Fueled by Innovation.” Since the inception of airpower, Airmen have overcome strategic, operational, and tactical challenges by going “over, not through” obstacles and challenges. The cumulative efforts of generations of Airmen have built upon the unique characteristics of airpower. When applied by innovative Air-

men, the capabilities that manifest these characteristics provide unparalleled security options and demonstrate a commitment to sustaining and enhancing the vital role of airpower in supporting security and stability in the Asia–Pacific region. **SSQ**

Notes

1. See Forrest E. Morgan, *Crisis Stability and Long-Range Strike: A Comparative Analysis of Fighters, Bombers, and Missiles* (Santa Monica, CA: RAND Corp., 2013). Note: the Westphalian Era is hardly dead.

2. Michael Kraig and Leon Perkowski, “Shaping Air and Sea Power for the ‘Asia Pivot,’” *Strategic Studies Quarterly* 7, no. 2 (Summer 2013): 114.

3. *Ibid.*, 121.

4. *Ibid.*, 119.

5. Sources that address China’s grand strategy include David Shambaugh, *China Goes Global: The Partial Power* (New York: Oxford University Press, 2013); Michael D. Swaine and Ashley J. Tellis, *Interpreting China’s Grand Strategy: Past Present and Future* (Santa Monica: RAND, 2000); and Ye Zhicheng, *Inside China’s Grand Strategy: The Perspective from the People’s Republic* (Lexington: University Press of Kentucky, 2011).

6. Kraig and Perkowski, “Shaping Air and Sea Power,” 122–23. Additionally, the point is not that the Chinese population will not care if the United States strikes mainland China—only that it is not as escalatory as it is for the United States. Also, strikes against the PLA Second Artillery Corps do not degrade PRC sovereign defense. The PLA continues to enhance a host of other capabilities.

7. See Wang Houqing and Zhang Xingye, eds., *The Science of Military Campaigns* (Beijing: National Defense University Press, 2000). For the latest, see Zhang Yuliang et al., eds., *Science of Campaigns* (Beijing: National Defense University Press, 2006).

8. See Forrest E. Morgan et al., *Dangerous Threshold: Managing Escalation in the 21st Century* (Santa Monica: RAND, 2006), 184.

9. *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2013* (Washington: Office of the Secretary of Defense, 2013), http://www.defense.gov/pubs/2013_china_report_final.pdf.

10. Ian Easton, “China’s Military Power and America’s Poor Pacific Hedge,” *Asia Eye*, <http://blog.project2049.net/2013/05/chinas-military-power-and-americas-poor.html>.

11. David W. Kern Jr., “The Future of US Deterrence in East Asia,” *Strategic Studies Quarterly* 7, no. 2 (Summer 2013): 110.

12. *Quadrennial Defense Review 2014* (Washington: DoD, 2014).

13. Eldridge A. Colby and Abraham M. Denmark, *Nuclear Weapons and U.S.–China Relations* (Washington: Center for Strategic & International Studies, March 2013), 14.

14. See Elbridge A. Colby and Michael Gerson, eds., *Strategic Stability: Contending Interpretations* (Carlisle, PA: Strategic Studies Institute, 2013).

15. *Annual Report to Congress* (2013). The 2014 version will not be released until after the publication deadline for this article.

16. Kraig and Perkowski, “Shaping Air and Sea Power,” 120.

17. Kern, “Future of US Deterrence in East Asia,” 93.

18. See *Ballistic & Cruise Missile Threat* (Washington: NASIC, 2013); and Dennis M. Gormley, Andrew S. Erickson, and Jing-Dong Yuan, *A Low-Visibility Force Multiplier: Assessing*

China's Cruise Missile Ambitions (Washington: National Defense University Press, 2014). See Rehberg's review of the latter in this *SSQ* issue.

19. *Quadrennial Defense Review 2014*, 6–7.
20. Andrew W. Marshall, *Long-Term Competition with the Soviets: A Framework for Strategic Analysis* (Santa Monica: RAND, April 1972), iii.
21. Kenneth P. Ekman, "Winning the Peace: Imposing Costs on America's Security Competitors," Maxwell AFB, AL, March 2014.
22. Zhang et al., *Science of Campaigns*.
23. Herbert Lin, "Escalation Dynamics and Conflict Termination in Cyberspace," *Strategic Studies Quarterly* 6, no. 3 (Fall 2012): 46–70.
24. See Michael I. Handel, *Masters of War: Classical Strategic Thought* (London: Frank Cass, 2001).
25. Kraig and Perkowski, "Shaping Air and Sea Power," 121–22.
26. Resiliency refers to "the capacity of a force to withstand attack, adapt, and generate sufficient combat power to achieve campaign objectives in the face of continued enemy action." PACAF-accepted definition from forthcoming RAND study, *Foundations of Operational Resiliency*.
27. Rajon Menon, "Asia's Looming Power Shift," *National Interest* 127 (September/October 2013): 25, <http://nationalinterest.org/issue/september-october-2013>.
28. Ibid.
29. Kraig and Perkowski, "Shaping Air and Sea Power," 122–23.
30. Mark Gunzinger, e-mail and telephone interview with the authors.
31. Kraig and Perkowski, "Shaping Air and Sea Power," 131.
32. Morgan, *Crisis Stability and Long-Range Strike*, 49–50.
33. See Thomas Hamilton, *Expandable Missiles vs. Reusable Platform Costs and Historical Data* (Santa Monica: RAND, 2012); and Hamilton, *Comparing the Cost of Penetrating Bombers to Expendable Missiles over Thirty Years* (Santa Monica: RAND, August 2010).
34. Kraig and Perkowski, "Shaping Air and Sea Power," 132.
35. See Jacques S. Gansler, "USD (A&T) Sets Goals for Total Ownership Cost: DSAC Challenges DoD Research, Development, Acquisition, and Support Community to Reduce TOC," *Acquisition Reform Update* 6, no. 1 (January 1999), <http://www.dau.mil/pubscats/PubsCats/PM/articles99/press1ma.pdf>. Gansler concluded that unless mission requirements and the operational tempo are reduced or the budget significantly increases, the operational maintenance cost portions of the budget will equal the total current (net present value) budgets by the year 2024. This chain of events has been characterized as the DoD [Modernization] Death Spiral.
36. Unclassified estimates and analysis by HAF/A8X in 2004 using a range of options and assumptions. Just restarting the F-22A line now would require additional billions. In addition, funding this program would exacerbate a number of negative aircraft industrial base issues.
37. Morgan, *Crisis Stability and Long-Range Strike*, 48.
38. *Highly contested environment* is a new term that de facto replaces *A2/AD*.
39. Kenneth Allen, *The Ten Pillars of the People's Liberation Army Air Force: An Assessment* (Washington: Jamestown Foundation, April 2011). See also Richard P. Hallion, Roger Cliff, and Phillip C. Saunders, eds., *The Chinese Air Force: Evolving Concepts, Roles and Capabilities* (Washington: NDU, 2012).
40. We also believe there is a rich and robust community of US China/PLA experts (many using Chinese-language sources) that provide tremendous information and research at the unclassified level—largely hidden from standard research techniques and literature reviews. The intelligence community must also rebalance to the Asia–Pacific region.