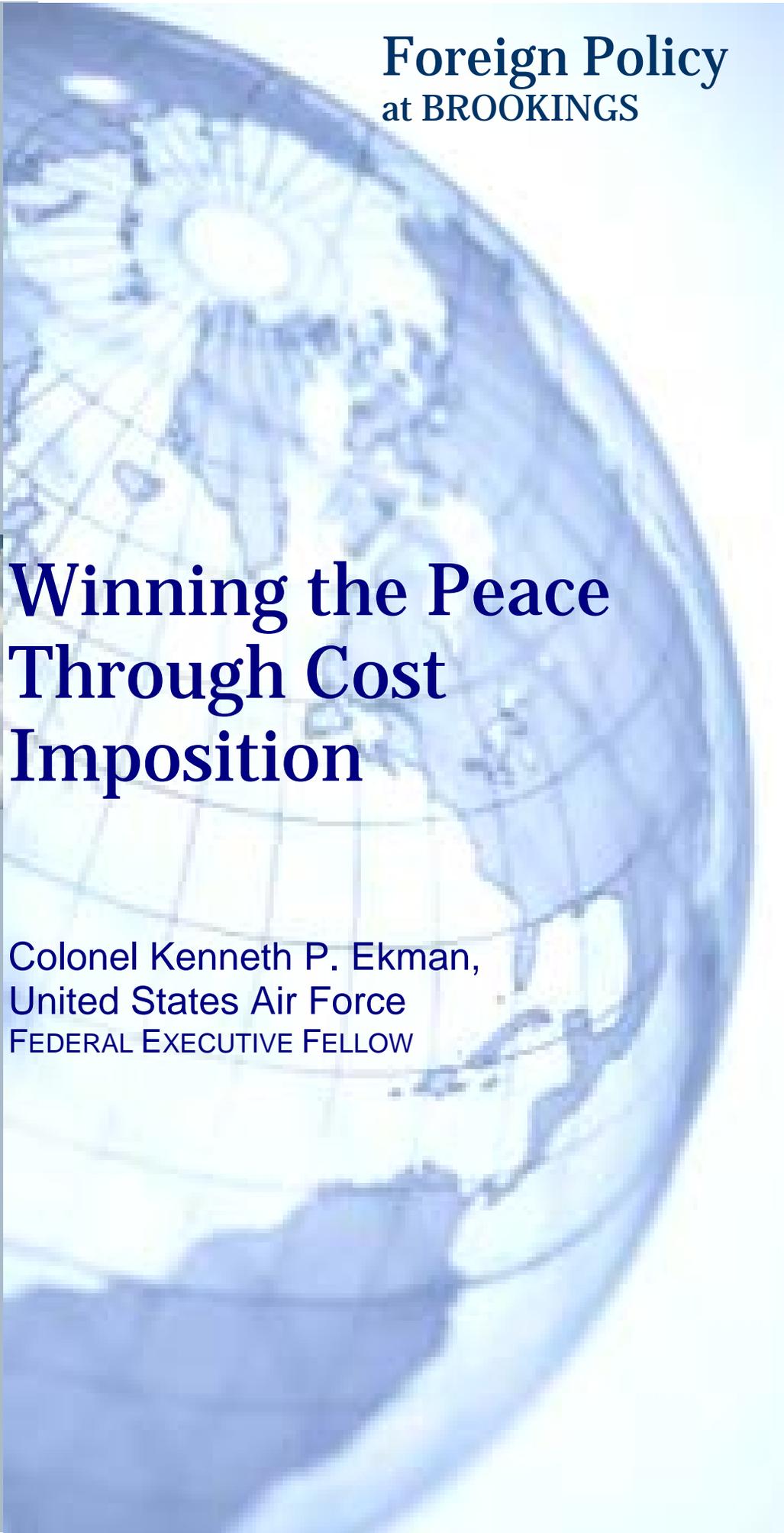


Foreign Policy
at BROOKINGS



**Winning the Peace
Through Cost
Imposition**

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CENTURY SECURITY
AND INTELLIGENCE

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PREFACE

It was a typical day spent serving as a tactical aircraft analyst in the Cost Assessment and Program Evaluation branch of the Office of the Secretary of Defense. I was discussing the relative merits of different fighter aircraft types, numbers, and locations with a colleague who served in the Undersecretary of Defense for Policy branch. It was program review time, and enhancements, offsets, and outright program kills were all on the table as we attempted to maximize the President’s budget within the nation’s fiscal means. As we compared two fighter programs, one had obvious capability and cost effectiveness advantages over the other. The programmatic choice among two alternatives seemed obvious. But then, my colleague countered that supporting the otherwise disadvantaged program would “impose costs” on a select adversary. I had no logical counter and, frankly, did not understand what he was saying. I relented.

After a year hiatus away from the Pentagon, I returned to the edge of the policy sphere to find antebellum cost imposing strategies recommended with greater frequency as tailor-made for an era of diminishing defense resources. As I explored the theory with Air Force decision-makers, Department of Defense (DOD) strategists, think tank scholars, innovators, and Major Command (MAJCOM) staff members, I realized cost imposition meant different things to different people. Furthermore, while some rich history establishes the utility of competitive strategies, neither these accounts nor future force planning prescriptions squarely address the what, how, and why of cost imposition. I saw a need for clarifying the strategy within a larger military competition framework.

My fellowship at the Brookings Institution provided me the perfect setting for taking on this project. I am grateful for my immersion in the circle of think tanks fueling the competition of ideas affecting America’s defense. Within this circle, there’s no better place than Brookings, where scholars truly exemplify Quality, Independence, and Impact. In particular, I’m indebted to Michael O’Hanlon and Peter W. Singer for their guidance and insights. Other Brookings scholars and staff including Ian Wallace, Brendan Orino, Emerson Brooking, and Ian Livingston significantly impacted this work. I’m also grateful for the inspiration provided by my Federal Executive Fellow colleagues - Col Johnnie Johnson, Col Ryoji Shirai, Lt Col Aaron Marx, CDR Rob DeBuse, CDR Tom King, CDR Greg Knepper, and Krista Couture. Outside of Brookings, Dr. Carl Rehberg and Dr. Andrew May provided invaluable advice and reviews of my work.

I thoroughly enjoyed talking about this work with my dad, Col Lucky Ekman, USAF (ret). We had fun exploring an area of shared interest while he patiently focused

my thoughts and fixed my grammar. Finally, I'm thankful to the U.S. Air Force for providing my family and me an opportunity to step away from operations for a year and contemplate other things. While I received a lot of help on this project, omissions and errors of logic and evidence contained herein are all mine.

Delving into strategy requires ambiguity tolerance and modesty. I'm mindful that many of the sources cited for this project were authored by the giants in the field. Hopefully I've represented their works adequately and haven't been too guilty of sharp elbows as I've tried to assimilate and synthesize their works to address this important subject coherently.

EXECUTIVE SUMMARY

This paper seeks to clarify cost imposing strategies for defense decision-makers. America's financial challenges and China's rise have prompted new interest in the approach. Focused on eliciting an adversary response creating a hardship differential favoring the initiating nation, cost imposition falls at the most beneficial end of a cost-based competitive spectrum as an element of competitive strategy. Last employed against the Soviet Union, the approach holds many similarities and some key differences when leveraged against China.

To institutionalize the practice, the DOD should revive the competitive strategies structure and methods developed in the 1980s. Implementation will require overcoming institutional resistance, short time horizons, and significant fiscal constraints. America should focus its cost imposing efforts on China first, and specifically on those capability contests offering the most lucrative advantage. Far East security partner participation and impacts should be considered.

Cost imposing strategies can succeed when based on correct predictions of Chinese responses and accurate accounting for the monetary and other security costs involved. Part of the challenge involves bounding each contest. In the air domain, competition involving China's ballistic and cruise missiles, surface-to-air missiles, and fighters offer the U.S. different degrees of advantage and hardship. Decision-makers will find that cost imposition is not a panacea. However, they should understand the concept beyond its current level of misuse both for the disproportionate advantage it offers and for the liability it poses when used against America.

CHAPTER ONE

Introduction

“At present, there is no indication that the United States is pursuing cost-imposing strategies either in the January 2012 planning guidance or otherwise.”

— Andrew Krepinevich, Simon Chin, and Todd Harrison
Strategy in Austerity

“Cost imposition” is rapidly becoming today’s defense buzz word of choice, following in the tradition of such overused and misunderstood terms as “transformational,” “net-centric,” and “anti-access.” Over the last year, the potential to foist disproportionate peacetime military investment burdens on rival countries has sparked the interest of policy-makers and defense practitioners alike. Think tanks like Center for Strategic and Budgetary Assessments and American Enterprise Institute have included cost imposition in their prescriptions for future U.S. security strategy. Long-range planning efforts like the DOD Quadrennial Defense Review (QDR) have considered the approach.¹ Research and development agencies like Defense Advanced Research Projects Agency (DARPA) have included the principle when considering new ways of achieving air superiority.² Four-star generals have used the term to characterize advantage and disadvantage relative to America’s competitors.³ Managers seem to employ the term to motivate fiscal responsibility within their organizations as a synonym for “better buying power,” “efficiency,” or “cost consciousness.”

When taken on the whole, none of these actors appear to conceive cost imposition as the main impetus for defense choices. Rather, they cast the principle as an enhancement to the overall efficacy of strategic choices. During a defense funding reduction, cost imposition offers particular appeal. At its root, the principle seems to suggest the possibility of more efficient attainment of strategic advantage relative to America’s rivals.

Word choice confuses the discussion, primarily through conflation of the terms “competition,” “competitive strategy,” and “cost imposition.” The concepts behind the terms are different. In a military sense, competition consists of a contest to create an advantageous differential in military capabilities, capacities, and perhaps options between rivals. Competitive strategy, as implemented by the DOD in the 1980s, involved “aligning enduring American strengths against enduring Soviet weaknesses...to force the Soviets to perform less efficiently or effectively.”⁴ For the purposes of this paper, cost imposition is a more finely tailored competitive strategy whereby program, posture, and operational concept choices lead an adversary to incur

greater hardship – fiscal or otherwise – through disadvantageous competition. These costs are borne antebellum, though the relationship between pre-war choices and the ability to inflict or avoid damages in war bears considering as the former sets conditions for the latter. In today’s strategic discourse, words still matter. This paper pursues a better narrative by differentiating these terms lest misuse of “cost imposition” undermine the concept’s utility.

When defense decision-makers look for more detail on cost imposition mechanics and opportunities, they may find some treatments superficial. Many of the histories are helpful, though they tend to capture only imposition successes, are incomplete in their quantitative accounting, and sometimes cast doubts as to whether these successes were achieved deliberately rather than identified retrospectively. As they address the future security environment, cost imposing strategies thinly specify weapons systems, numbers, locations, and operating concepts. The recommendations are even more muted on expected and alternative competitor responses, how to gauge advantage or disadvantage, and how the resulting mismatch of ways and means changes the power balance between nations. The amorphous nature of the discussions leaves decision-makers wanting to “win the cost imposition game” bereft of the game pieces, the rules, and a scorekeeper.

Historically, successful cost imposing strategies are the stuff of legend. For example, some historians credit Great Britain with a cost imposition victory over Germany in the period of 1900-1914.⁵ As the story goes, Britain overcame a century of naval capability stagnation by developing the HMS Dreadnaught in secret, then fielding vessels while developing a battlefleet warfare initiative.⁶ It is clear that Britain’s introduction of Dreadnaught-class vessels and battlefleet warfare provided the nation additional competitive advantage in naval power for at least 20 years.⁷ It is also true that other European powers reacted to Britain’s choices by altering their own maritime programs and operating concepts from positions of disadvantage.⁸ They halted their ongoing shipbuilding programs and redesigned key maritime infrastructure projects, like Germany’s Kiel Canal, to accommodate the new class of ships.⁹

What remains less clear is the accounting used to deduce an advantageous hardship differential for Britain vis-à-vis its competitors, particularly Germany. Britain’s naval modernization certainly elicited hardship from competitor nations. However, as the dominant pre-Dreadnaught navy in the world, the Royal Navy retired 150 ships made obsolete by Britain’s own reforms while recapitalizing her fleet with ships costing as much as 30 percent more than the King Edward VII class of ships preceding them.¹⁰ In fact, at least one assessment concluded that Britain and Germany devoted equivalent resources and industrial capacities to naval modernization during the period.¹¹

Looking forward, several recent cost imposition prescriptions are offered as antidotes within Sino-U.S. competition. Certainly, U.S. strategy relative to China continues to evolve. The nations share significant economic interdependence. While

Americans have strong concerns about China's stances on human rights, environmental conservation, and cyber espionage, the countries are philosophically closer than they have been in decades. Yet, China's growing influence and aggressiveness in the Far East appear threatening to America's allies in the region. Militarily, China has improved its capabilities in a manner challenging U.S. access and security guarantees, to include general assurances made in the Taiwan Relations Act. The military dimension of Sino-U.S. relations is undeniably competitive. Opportunities for imposing antebellum costs against China may exist as this competition continues to unfold.

This paper is born out of an aspiration to clarify cost imposition methods for defense decision-makers while applying them to antebellum competition with China in the air domain. The discussion begins by introducing the concept of a cost-based competitive spectrum. Treatment of cost imposition then narrows by casting it within a competitive strategies context and history. It continues by considering the range of cost factors in play between security competitors and then delves into the theories that could link an initiating competitor's actions to a reacting opponent's response. The study then suggests approaches and limitations for DOD's embrace of the strategy. First principles and *sine qua non* for employing cost imposition are offered. Throughout, the discussion considers cost imposition prospects inherent to key contests between U.S. and Chinese air forces and suggests program, posture, and operating concept changes that could benefit America within each exchange.

Notes

¹ Maj Gen Steven L. Kwast (Director, U.S. Air Force Quadrennial Review, Washington, DC), in discussion with the author, 21 November 2013.

² Stephen Waller, Col Case Cunningham, and CAPT Keith Wheeler (Defense Advanced Research Projects Agency), interview by the author, 6 February 2014.

³ Gen Herbert J. Carlisle, "Viewing the Asia-Pacific Rebalance Through the Lens of PACAF's Strategy" (address, Air Force Association Convention, Washington, DC, 18 September 2013).

⁴ Caspar W. Weinberger, *Annual Report to the Congress: Fiscal Year 1988* (Washington, DC: U.S. Government Printing Office, 12 January, 1987), 88.

⁵ Andrew Krepinevich, Simon Chin, and Todd Harrison, *Strategy in Austerity* (Washington, DC: Center for Strategic and Budgetary Assessments, 2012), 132.

⁶ Michael C. Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton, NJ: Princeton University Press, 2010), 135.

⁷ *Ibid*, 164-165.

⁸ *Ibid*, 152-164.

⁹ *Ibid*, 149-164.

¹⁰ Krepinevich, Chin, and Harrison, *Strategy in Austerity*, xiv, quantified the number of British warships retired as a result of the Fischer reforms. Horowitz, *Diffusion of Military Power*, 143, provided the cost comparison between the King Edward VII class ships and the Dreadnaught.

¹¹ Randall A. Greenwalt, et al, *Historical Examples of Competitive Strategies* (Greenwood Village, CO: SAIC Report SAIC-91/6004&FSRC-E, March 23, 1991), 2.45.

CHAPTER TWO

Defining the Competitive Spectrum

“Competition, as the trade of life, surely is a tremendous spur to progress. Is it not the pursued man or business that advances through persistent effort to keep ahead?”

– W.D. Toland

In his proposed amendment to House Resolution 4310, the National Defense Authorization Act for Fiscal Year 2013, Congressman Randy Forbes tasked the DOD “to conduct a study to identify cost imposing/competitive strategies focused on countering potential challenges posed by foreign nations.”¹ In his speech to the Air Force Association, Commander of Pacific Air Forces General Herbert J. Carlisle stated that his command was “losing the cost imposition fight” with China in the areas of integrated air and missile defense, and agile, flexible command and control.² Especially in the case of China, America’s defense establishment clearly recognizes the potential value of cost imposing strategies in countering security rivals, and the potential penalties of succumbing to the approach when employed by competitors against the U.S.

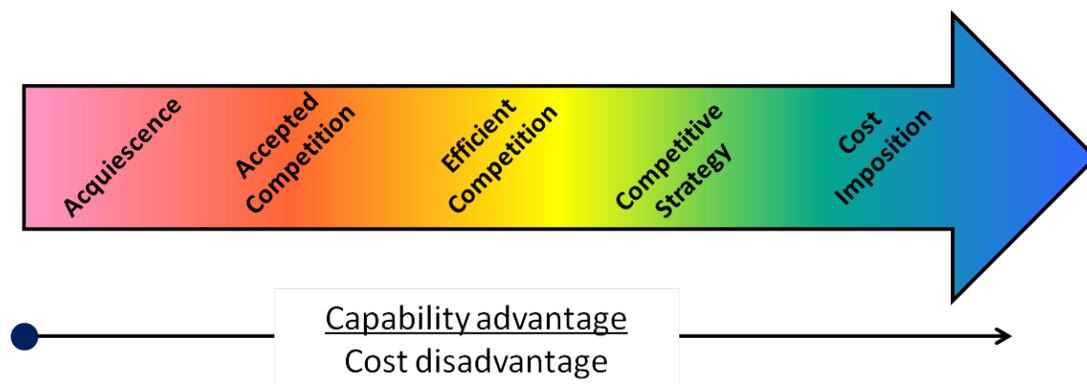


Figure 1: Cost-Based Competitive Spectrum

Yet, not every military competition is conducive to, or appropriate for, a cost imposing approach. Identifying candidate areas for cost imposition involves less an either-or choice and more a correct assessment of where a capability standoff falls along the larger spectrum of future military competition. In this case, the measure of effectiveness consists of the capability advantage created by the choice divided by the commensurate cost or hardship disadvantage. Contests where the competitor realizes less capability advantage, or suffers more disproportionate costs, fall further left on the spectrum. Figure 1 depicts the resulting cost-based competitive spectrum showing a

trajectory leading to the best case though infrequent option whereby a nation can elicit an advantageous hardship differential from an adversary. Notably, other trajectories exist. In some military strength comparisons, a competitor could *want* a rival to have greater strength.³ These capability areas could include humanitarian assistance and disaster relief, nuclear weapons command and control, or internal security.

From a direct investment perspective, *acquiescence* represents the cheapest and least capable null on the cost-based competitive spectrum. Here, the competitor chooses to allow an adversary's strength or increase in strength to go uncontested and saves resources in the process. Collective security agreements may permit the competitor to make this choice, as in the case of 28 nations that forego an indigenous nuclear capability while bandwagoning under the American nuclear umbrella.⁴ In other cases, adherence to weapons control regimes leads a nation to refrain from adopting certain capabilities like nerve agents, cluster munitions, and space weapons. Finally, the cost or adaptation required to field a competing or countering capability may simply be too much. The Soviets appear to have acquiesced when facing the prospect of America's Strategic Defense Initiative. Unlike some of its extremist adversaries, the U.S. has chosen not to field a weapon system comprised of suicide bombers, though the DOD has taken other steps to mitigate this weapon system's effects. While acquiescence may appear to offer antebellum savings, the collateral costs required to compensate in other areas, the autonomy ceded to join collective security agreements, and the potential vulnerability of a competitor's vital interests in the event of conflict hardly make acquiescence a free option or an enduring choice.

In a more active though costly approach, a nation could *accept competition* with a rival in a certain capability. The choice to compete creates further choices dealing with sufficiency. In reconciling an element of their military means with their security ends, competitors can compete to win, compete to achieve parity, or compete to create a lesser disadvantage. In setting this balance, a nation can elect to develop either a competing or a countering capability, or a combination of both. Examples of military competition abound.

Tradeoffs between quality and quantity and the Soviet conception of "correlation of forces" speak to the pursuit of *efficient competition*. The competitor could develop and operate a weapon system less expensively, as China's People's Liberation Army Air Force (PLAAF) was able to do by purchasing discounted fighter aircraft from the former Soviet Union in the mid-1990s.⁵ Or, a nation could enhance the system's effectiveness by employing superior operating concepts, such as the "initiative, innovation, and self-reliance" practiced by Western aircrews providing them an advantage over their more numerous Soviet rivals.⁶ The competitor could also develop and integrate new technologies, potentially delivering more capability for every dollar spent, as occurred in American air forces' transition to precision-guided munitions. By partnering with other countries possessing complementary weapons systems, the nation can leverage additional capability and capacity. Furthermore, the competitor can shoulder reduced

deterrent clout and additional risk should conflict occur by accepting disadvantage in the capability contest. Within the cost-based competitive spectrum, the majority of military capability rivalries appear to involve either accepting competition or competing efficiently.

The *competitive strategy* approach imparts a new level of effectiveness and efficiency to select contests between comparative or opposing capabilities where a nation possesses an advantage while its rival is disadvantaged. The principles behind this approach will be further addressed in Chapter Three. As a champion of the concept, Secretary Weinberger claimed several American competitive strategy successes vis-à-vis the Soviets.⁷ For example, he identified competitive success in antisubmarine warfare capabilities made possible by U.S. technological advantages in manufacturing, signals processing, and acoustics, forward basing of these capabilities on the Soviet periphery, and submarine employment doctrine.⁸ By choosing further investment in these advantages, the DOD elicited from the Soviets “disproportionate expenditures” to reduce the U.S. threat to their submarine force.⁹ As part of this response, Soviet conventional fleet design focused on defending areas close to the Soviet mainland, rather than projecting these forces long distances to threaten American assets in the U.S. littoral.¹⁰

Within our spectrum, *cost imposition* represents the Holy Grail of military competition. Successful cost imposing strategies yield the benefits offered by the range of competition types further left on the spectrum while allowing the initiating competitor to endure less hardship than an adversary. In January 1966, Secretary of Defense Robert McNamara cited cost imposition against the Soviet Union as partial justification for acquiring bombers.¹¹ America leveraged its superior manufacturing, exterior lines offered by bomber bases both at home and abroad, higher quality aircrews, and a lead in technologies including radar, navigation aids, communications, and most recently stealth.¹² Over the next 25 years, the resulting penetrating bomber force included the B-47, B-52, FB-111, B-1A and B, KC-135 and KC-10 tankers, with the B-2 and advanced cruise missiles fielding shortly thereafter.¹³

The offensive, and particularly the low-altitude and low-observable offensive, threat that these capabilities posed exploited Soviet paranoia. In response, the Soviet Union fielded over 10,000 surface-to-air missile systems, numerous early warning and fire-control radar systems, tens of thousands of air-defense artillery systems, and at least 15 different major aircraft systems, many of which were single purpose interceptors.¹⁴ One appraisal listed Soviet expenditures on surface-to-air missiles alone at \$120 billion to protect the nation’s 12,000-mile border.¹⁵ The same group of authors asserted, “American investments in stealth and bomber aircraft in the 1970s compelled the Soviet Union to pay a substantially higher price to continue guarding its airspace from any intruder.”¹⁶

However, cost advantages attributed to the United States in this case may be overstated. The intensity of U.S. investment required to develop, field, and sustain its bomber fleet does not draw much mention. To establish a true hardship differential in this area, more rigorous accounting is necessary. For example, initial procurement costs for the B-47, B-52, FB-111, B-1A and B, KC-135, KC-10, and B-2 were approximately \$128 billion in 1987 dollars.¹⁷ This sum excluded modernization investments plus substantial costs associated with personnel, installations, and operations. Another author noted, “there has been no detailed case study of this interaction, particularly one incorporating Russian resources.”¹⁸ Pending further substantiation, it may be correct to say that American cost imposition against the Soviets in the contest between penetrating bombers and air defenses was a qualified success.

While this section has provided successful examples of competitive strategies and cost imposition attempts, failed attempts surely exist. Unsurprisingly, Secretaries of Defense do not tout failures in their Annual Reports to Congress. Furthermore, given the challenges that versed authors like Krepinevich and Mahnken have faced in assembling successful examples often identified retrospectively, negative examples become exercises in counterfactuals. Absent understanding a nation’s intentions behind a competitive choice, judgments regarding which choices were failed strategies, and which choices were further left on the cost-based competitive spectrum, are difficult to make.

While not every military competition bears assessment through the lens of cost imposition, understanding the principles that define the approach may allow defense decision-makers to develop better reactions when a rival attempts to impose costs on the U.S. In some of the contests that fall towards the far left of the spectrum, American acceptance of lower capability advantage or higher cost disadvantage is deliberate, necessary, and appropriate. For example, while as a global power the U.S. competes with great advantage in the area of military airlift, the high costs of this capability relative to related spending by more regionally oriented adversaries place this contest further left on the spectrum. In other contests, competitors have been successful in eliciting a hardship differential disadvantageous to America where the nation may have had other less burdensome choices.

Competition #1: Chinese Ballistic and Cruise Missiles vs. U.S. Air Defenses

One capability contest that bears examining for its current location on the cost-based competitive spectrum and its poor potential for offering cost imposing opportunities to America involves Chinese ballistic and cruise missiles and U.S. defensive measures. From an American perspective, the contest currently amounts to accepted competition in pursuit of reduced disadvantage.

As of December 2012, China had deployed more than 1,100 short-range ballistic missiles opposite Taiwan.¹⁹ While Taiwan possesses 22 SAM sites with a mix of long- and medium-range systems, only three Patriot PAC-2 batteries have any counter-ballistic missile capability.²⁰ One RAND study estimated that about 60 to 200 Chinese short-range ballistic missiles could neutralize most of Taiwan's fighter bases, and additional missiles could effectively suppress Taiwanese air defense operations allowing employment of PLAAF strike aircraft.²¹ Land attack cruise missiles launched by H-6 bombers, and longer-range ballistic missiles like the DF-21/CSS-5 can extend the reach of PLAAF missile attacks far beyond Taiwan to Okinawa, other bases in southern Japan, aircraft carriers at suitable employment distances from the Strait, and even Guam.²² The range, numbers, destructive effectiveness characterizing China's relatively inexpensive missile force denies the U.S. and its allies the ability to stage fighter operations from sanctuary in support of a Taiwan crisis.

Successful active defense against Chinese missiles is difficult and costly. While relatively effective against individual missile attacks, Terminal High Altitude Air Defense (THAAD) and Aegis Ballistic Missile Defense units protect small areas and could be overwhelmed by mass attacks. These systems are expensive. For example, each THAAD battery costs approximately \$800 million.²³ Each Aegis Ballistic Missile Defense Ashore battery also costs approximately \$800 million, though these costs are based on the few early batteries fielded in Romania and Hawaii.²⁴ Fielding sufficient systems to protect key military and strategic locations vulnerable to Chinese attack is simply cost prohibitive.

Measures improving resilience provide protection and enable continued operations despite even large-scale, coordinated attacks.²⁵ They also can invoke a spiraling competition involving adversary missile numbers, accuracy and munitions effects. Dispersal complicates Chinese missile targeting and may reduce attack densities per location, but limited sites support dispersed U.S. fighter operations due to the runway length and composition, munitions and fuel access. Increasing U.S. air forces' standoff distances can render obsolete many Chinese missile types, but the locations of Taiwan and other U.S. allies remain interminably fixed and close. Camouflage, concealment, and deception, along with hardening aircraft and personnel shelters and key infrastructure can improve survivability. Furthermore, programs and operating concepts allowing better indications and warning, and enabling faster and more robust military installation recovery, mitigate ballistic and cruise missile attacks.²⁶ Nevertheless, the U.S. and its allies cannot defend everywhere against everything, cannot fully recover from every attack, and cannot endure the financial intensity of trying to do so.

While America's prospects of fully protecting its air forces and its allies against Chinese missile capabilities are poor, competitive improvements remain possible and may reduce U.S. capability disadvantage and hardship. This competition may amount to foiling a Chinese competitive strategy that threatens to impose excessive costs on the

U.S. An appropriate American counter should consist of efficiently competing from disadvantage while searching for alternative approaches to undermine China's capabilities, postures, and operating concepts. The following choices support these ends:

Programs – Harden threatened U.S. installations sufficiently to make some conventional missile munitions and submunitions obsolete, thus creating a spiral of U.S. hardening and Chinese obsolescence. Develop dispersed operating locations. At main operating bases, construct redundant runways and taxiways. Field robust airfield repair equipment and backup systems delivering essentials like fuel and electricity.

Postures – Field ballistic missile defense systems at key U.S. bases. Balance forces postured inside and outside PLAAF intermediate missile ranges. Encourage allies to acquire more BMD systems, preferably by buying or coproducing U.S. models.

Operating concepts – Reduce Chinese missile targeting effectiveness. Improve ability to counter air-launched cruise missiles, both before and after launch. Assess U.S. capability to destroy or suppress ballistic missiles prior to launch. Improve attack recovery practices.

Notes

¹ Congressman Randy Forbes' official Web site, "Amendment Offered by Mr. Forbes of Virginia: H.R. 4310 – National Defense Authorization Act for Fiscal Year 2013. Competitive Strategies Study," http://forbes.house.gov/uploadedfiles/forbes_competitivestrategies.pdf.

² Carlisle, "Viewing Asia-Pacific Rebalance."

³ Thomas C. Schelling, "The Strategy of Inflicting Costs," in *Issues in Defense Economics*, ed. Roland N. McKean (Cambridge, MA: National Bureau of Economic Research, 1967), 118-120.

⁴ International Law and Policy Institute Nuclear Weapons Project, *The Nuclear Umbrella States*, Nutshell Paper No 5 (Oslo, Norway: ILPI, 2012), 1-2.

⁵ Phillip C. Saunders and Joshua K. Wiseman, "China's Quest for Advanced Aviation Technologies," in *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, eds. Richard P. Hallion, Roger Cliff, and Phillip C. Saunders (Washington, DC: National Defense University Press, 2012), 300-302.

⁶ Weinberger, *Annual Report to Congress 1988*, 66.

⁷ *Ibid.*, 66-69.

⁸ *Ibid.*, 66.

⁹ *Ibid.*

¹⁰ *Ibid.*

¹¹ Greenwalt, *Historical Examples of Competitive Strategies*, 2.24.

¹² Weinberger, *Annual Report to Congress 1988*, 66.

¹³ Greenwalt, *Historical Examples of Competitive Strategies*, 2.28. Advanced cruise missiles are mentioned more explicitly in Weinberger's 1988 report to Congress.

¹⁴ *Ibid.*

¹⁵ Weinberger, *Annual Report to Congress 1988*, 66. The 12,000-mile figure comes from Krepinevich, Chin, and Harrison, *Strategy in Austerity*, xx.

¹⁶ Krepinevich, Chin, and Harrison, *Strategy in Austerity*, xix.

¹⁷ The \$128 billion figure was derived by the author from initial procurement costs listed in Selected Acquisition Reports, or best available unit cost data for each aircraft applied to the inventory, inflated or deflated using consumer price index values to achieve 1987 values for comparison with Weinberger's Soviet cost data.

¹⁸ Thomas G. Mahnken, ed., *Competitive Strategies for the 21st Century: Theory, History, and Practice* (Stanford, CA: Stanford Security Studies, 2012), 302.

¹⁹ Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013* (Washington, DC, 2013), 5.

²⁰ Hsi-hua Cheng, "The Employment of Airpower in the Taiwan Strait," in *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, eds. Richard P. Hallion, Roger Cliff, and Phillip C. Saunders (Washington, DC: National Defense University Press, 2012), 330.

²¹ *Ibid.*, 339.

²² Office of the Secretary of Defense, *Annual Report to Congress: China*, 5-6.

²³ Barr Group Aerospace AEROWEB, "THAAD BMDS," <http://www.bga-aeroweb.com/Defense/THAAD.html>.

²⁴ United States Government Accountability Office, *Missile Defense: Opportunity to Refocus on Strengthening Acquisition Management*, GAO 13-432 (Washington, DC: Government Printing Office, April 2013), 33.

²⁵ United States Department of Defense, *Quadrennial Defense Review*, (Washington, DC: Department of Defense, March 2014), 38.

²⁶ Christopher J. Bowie, "The Lessons of Salty Demo," *Air Force Magazine*, March 2009, 55-57.

CHAPTER THREE

History Repeated?

“...we needed to be efficient in the sense of achieving our goals at less costs than the Soviets would incur in achieving theirs.”

—David J. Andre

Review of the DOD Competitive Strategies Initiative, 1986-1990

“To wage a long-term peacetime competition with China and to be prepared for war, the United States must develop a forward-leaning strategy to protect its interests in Asia. Key elements of that strategy [include]...adopting a ‘cost-imposition’ strategy on China.”

—Thomas G. Mahnken

Asia in the Balance: Transforming US Military Strategy in Asia, 2012

America has been in this situation previously – confronted by an increasingly powerful nation possessing mostly opposing national security objectives, while recovering in the aftermath of long-term, costly foreign intervention. In the 1970s as the nation extricated itself from Vietnam, the DOD recognized that America’s margins of conventional military strength and technological superiority over the Soviet Union were narrowing. In 1972, Andrew W. Marshall penned *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.¹ This realization prompted the national security establishment to focus on cultivating areas of military capability where America already possessed a distinct advantage over the Soviets through the method of competitive strategies.

Where possible, the U.S. cultivated these strengths such that the Soviet response involved increased expenditures. Cost imposition represented but one of several aims of competitive strategies. One study of the competitive strategies effort equated imposing costs with obsolescing existing enemy military capabilities.² Annual Reports to Congress in 1987 and 1988 by Secretary of Defense Caspar W. Weinberger emphasized competitive strategies’ potential to render the Soviet Union less efficient or effective, but made no explicit mention of imposing costs.³ With the benefit of at least three years of application within the DOD, Secretary of Defense Frank C. Carlucci went so far as to say in his 1990 Annual Report, “the objective of CS is not to bankrupt the Soviet Union or undermine its economy. Instead, we are striving to get the most from

our own defense resources, and to influence the way the Soviets allocate theirs, to minimize the threat they pose to our interests.”⁴

Competitive strategy was the “hallmark” of the Reagan administration’s defense program during its second term.⁵ The administration institutionalized the U.S.-Soviet competition by creating the Competitive Strategies Office as an element of the Office of the Secretary of Defense with direct reporting responsibility to the Secretary.⁶ The Secretary charged the organization with devising competitive initiatives vis-à-vis the Soviet Union executed over 15 to 20-year time periods.⁷ This charter necessitated that members of the organization collectively develop and maintain a deep understanding of Soviet security priorities, decision processes, weapons system acquisition methods, and operational concepts. The Competitive Strategies Office also reviewed DOD programs, postures, and operational concepts, and recommended modifications to the Secretary to better capitalize on areas of Soviet competitive disadvantage or, as the reciprocal, U.S. advantage.⁸

In execution, the competitive strategies initiative was complicated, fraught with the compromise associated with satisfying the broader array of U.S. security objectives, individual service priorities, and budgetary and technological possibilities.⁹ Within the Department, the Competitive Strategies Office experienced mixed success in seeing its efforts to fruition.¹⁰ The term was notably dropped from the Annual Report to the President and Congress in 1991 wherein Secretary of Defense Dick Cheney concluded, “...the Warsaw Pact is dead as a military organization...the Soviet ability to project conventional power beyond its borders will continue to decline...”¹¹

American competition with the Soviet Union may or may not have validated the competitive strategy theory. The long-term nature of the strategy, combined with a closed-loop methodology involving action, reaction, and counter-reaction, was unexpectedly abbreviated by the internal collapse of the Soviet Union in 1990. Daniel Goure touted the Department’s acceptance and implementation of the approach, but conceded that major capability contest successes like SDI bore no explicit connection with competitive strategies.¹² Gordon Barrass credited the U.S. with a competitive strategy victory “in the large” through overall defeat of the Soviet Union, but criticized the DOD’s institutionalization of the methodology “in the small” to counter America’s rivals post-Cold War.¹³ Of the competitive strategies initiative, John Battilega stated, “It seems that the program, for as long as the Soviet Union lived, was probably effective.”¹⁴ Yet, assessing management of the DOD initiative, David Andre observed, “Notwithstanding the considerable time and effort devoted to competitive strategies planning and analysis by so many people, beginning with the Secretary of Defense, the Competitive Strategies Council never advised, and the Secretary never took, what could be construed as a decision, that related directly to the long-term competition with the Soviet Union.”¹⁵

Still, some cost imposition successes may be attributed to the competitive strategies initiative. The large Soviet investment in air defenses covered in Chapter Two stands as a qualified success, though this investment could have occurred regardless of U.S. actions based on the bureaucratic interests and power of the Soviet air defense command.¹⁶ President Reagan's insistence on fielding a widespread, counter-ballistic missile network in the form of the Strategic Defense Initiative appears to have prompted Gorbachev's admission that the Soviet Union could no longer afford to compete militarily with the U.S. for economic and technological reasons.¹⁷ While the root causes of the Soviet Union's demise may remain subject to debate, it's likely that costs imposed by American competitive strategies added hardships contributing in some way to the Soviets' economic collapse, political disbandment, and foreign policy retrenchment.

Limits of the Soviet Analogy

The Soviet case has its limits when applied to today's strategic context. In the decade prior to the formal advent of the competitive strategies initiative, the Soviet Union's military expenditures exceeded those of the U.S. by 50 percent.¹⁸ Through these investments, the Soviets attained substantial numerical superiority in a wide array of capabilities, and were reducing their qualitative disadvantages as well. Successful competitive strategies, then, amounted to closing the military gap from a position of U.S. disadvantage in effective and efficient ways that avoided "matching the Soviets tank for tank, ship for ship, or aircraft for aircraft."¹⁹

When the competitive goal consists of narrower cost imposition, preponderant U.S. defense spending compared to investments by even the most challenging rivals suggests that truly favorable hardship differentials may be more difficult to create than they were in the Soviet case. Today, America operates from a different position, spending 38.9 percent of the world's defense investment relative to 16.8 percent by the rest of NATO, 7.4 percent by key Asia-Pacific allies, and 10.8 percent by China.²⁰ The U.S. possesses both qualitative and numerical advantages relative to individual competitors across most weapons system types. Going forward, U.S. competitive strategy development amounts to preserving these margins or increasing them in select areas.

In China's case, the nation's rapid economic and military rise, investments in capabilities that thwart U.S. regional security guarantees, and aggressive sovereignty claims signify ongoing competition with America. Since the 1990 Gulf War, and particularly after a successful U.S. deterrent response in support of Taiwan in 1995-1996, China has aggressively sought to nullify U.S. military advantages in the Far East.²¹ But the U.S. is late even to acknowledge that the competition exists, partially due to preoccupation with campaigns in Iraq and Afghanistan.²² It was not until 2012 that President Barack Obama's administration identified the need to rebalance towards the Asia-Pacific.²³ In her November 20, 2013, speech at Georgetown University, National

Security Advisor Susan E. Rice described “managing inevitable competition” with China.²⁴

The Soviet analogy may better apply if China’s defense spending growth continues at its current rate. Over the last two decades, the nation’s defense spending has increased by an annual average of 11 percent in real terms and at a rate slightly more than China’s GDP growth.²⁵ By 2020, China’s defense spending will likely approach \$300 billion, while U.S. defense spending will probably stay close to \$550 billion.²⁶ By 2030, China’s budget could reach \$500 billion based on GDP projections.²⁷ Within the timeframes employed by the competitive strategies approach, the U.S. and China will come much closer to military spending parity than the current balance suggests.

Competing with China for the Air: A Framework

Limitations of applying the Soviet analogy to China involve far more than just defense spending differences or varying ideologies. Whereas the security contest between the Soviets and the U.S. played out across the globe, Sino-U.S. military competition can be framed using a variety of geographic scopes. In their article, “*U.S.-China Balance in a Three Game Framework*,” David Frelinger and Jessica Hart suggest that the military balance between the two nations, and particularly the implications of the PLAAF’s modernization, can be assessed within three different game frameworks.²⁸

Each of these frameworks involves a different scope, which in turn invokes different strategic ends along with different competitive ways and means to achieve them. The first, the Game of Influence, involves largely political competition – with military in a supporting role – for influence and primacy in a variety of regions. For the U.S. this region may be global, while for China the focus may be narrow and consist of the Taiwan Strait and the South and East China Seas.²⁹ Meanwhile, the Battle over a Third Party game largely emphasizes military power balance as it would affect conflict over a third nation or over that nation’s key interests. Stakes in this game can be highly asymmetric, with one competitor ascribing greater importance to control of the third party. This asymmetry of stakes and interests also makes armed conflict over disputes unrelated to the third party highly unlikely.³⁰ Thirdly, the Great Power Game has the broadest scope, highest stakes, and leads to valuing every interaction between two competitors within a zero-sum calculus.³¹ Regardless of which game ultimately best typifies Sino-U.S. relations, cost imposition offers potential benefits if well played.

A measured competitive framework in the military domain against China could be one that emphasizes Frelinger and Hart’s Battle Over a Third Party. This approach acknowledges the asymmetries of national interest, and constrains the military balance to proximate forces and those likely brought to bear in the event of conflict. This framework would localize the contest in the areas bounded by South and East China Seas, Taiwan and the Taiwan Strait, plus eastern portions of mainland China. This

approach will keep the competition largely beyond reach of U.S. territories and compel China to make further investments in primarily defensive programs, postures, and operating concepts. The conditions are largely set for an air component arms race specifically focused on fighter aircraft and armaments, where the U.S. need only preserve its advantage while emphasizing quality over quantity.

A lesser Game of Influence can be played in other regions of the world, where U.S. capabilities and experience can eclipse China's peacekeeping, humanitarian assistance, and disaster response initiatives. Other activities, such as dealing with piracy off the Horn of Africa, will offer opportunity for Sino-U.S. cooperation, decreasing the likelihood that the Battle Over a Third Party will come to blows.

While opacity characterizes many aspects of Chinese foreign policy decision-making, several insights clearly offer competitive strategy leverage to the U.S. China's evoked set of concerns, explained in Chapter Four, deals with defense of the homeland, a constant in the country's expansion of comprehensive national power within its 21st century "strategic window of opportunity."³² China's leaders "view a modern military as a critical deterrent to prevent actions by outside powers that could damage Chinese interests, or to allow China to defend itself against such actions should deterrence fail."³³ The ability to prevail in a conflict over Taiwan – largely a conflict wherein China defends its territorial and governance claims – has dominated the PLA's force modernization agenda for the last 15 years.³⁴ While the 2008 Defense White Paper commends a shift towards active defense and a better balance of offensive and defensive capabilities, these efforts largely amount to holding would-be aggressors at greater distances.³⁵

The "New Historic Missions" articulated by former President Hu Jintao in 2004 adjusted the leadership's assessment of the national security environment within an expanded definition of national security.³⁶ They included: guaranteeing the strength of the Chinese Communist Party (CCP); strengthening safeguards allowing national development; providing strategic support to safeguard national interests; and, playing an important role in world peace and development. The "New Historic Missions" provided some out-of-region focus in the areas of international peacekeeping and disaster relief operations. However, despite the expanded spheres of influence and capability increases they might prompt, these missions "are not expected to replace the defense of China's sovereignty in importance."³⁷

Multiple factors suggest that first and foremost, the U.S. could leverage competitive strategies against China in the air domain. Air capabilities have increasingly become the military foreign policy tool of choice. In fact, in the last six years China has even developed a "ladder of intensity levels" for deterrence using conventional air and space forces.³⁸ Foreseeable conflicts with China would largely occur in the air and sea domains encompassing the Taiwan Strait, the South China Sea, and the East China Sea.³⁹ The U.S. and its close allies have no contiguous borders with

China supporting large-scale employment of land forces. Furthermore, the limited U.S. aims supporting peace and stability for people on Taiwan, and America's expressed unwillingness to conduct large-scale land operations, make land force investments a less lucrative choice.

Certainly, both U.S. and Chinese components are capable of creating effects in other than their primary domains. However, for the sake of bounding the discussion, the analysis over the rest of this paper will focus primarily on PLAAF competition with the U.S. Air Force.

Notes

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²⁵ Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 89.

²⁶ *Ibid*, 93.

²⁷ *Ibid*, 91.

²⁸ David Frelinger and Jessica Hart, "The U.S.-China Military Balance Seen in a Three-Game Framework," in *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, eds. Richard P. Hallion, Roger Cliff, and Phillip C. Saunders (Washington, DC: National Defense University Press, 2012), 347.

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³⁵ Xiaoming Zhang, "The PLAAF's Evolving Influence within the PLA and upon National Policy," in *Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, eds. Richard P. Hallion, Roger Cliff, and Phillip C. Saunders (Washington, DC: National Defense University Press, 2012), 78-79.

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CHAPTER FOUR

Competitive Interactions

“Can we in fact come to know, or to infer, what the Soviet decision processes are really like? Can we substantially improve our ability to forecast how the complex Soviet political-military bureaucracy is likely to respond to particular U.S. program choices? The answer to these questions is a qualified ‘yes.’”

– Andrew W. Marshall

Long-Term Competition with the Soviets

“Beyond official doctrine, and recent behavior, therefore, we must look deeper to understand the texture and complexity of Chinese national security thinking.”

– James Steinberg & Michael O’Hanlon

Strategic Reassurance and Resolve

Prospects for competitive strategies, and in particular those involving cost imposition, depend on defense decision-makers’ success in anticipating an adversary’s response to a DOD program, posture, or operating concept choice. A review of the history of cost imposition could prompt the conclusion that the very existence of such strategies can only be established retrospectively, creating a concern as to whether the DOD has the wherewithal to impose costs deliberately.¹ The Department stands its best chance through correct characterization of the interplay between America and its competitors. In fact, the Competitive Strategies Office sought to predict not only the Soviets’ reaction to a U.S. action, but anticipated U.S. counter-reactions to push the strategic time horizon to the 15 to 20-year range.²

A variety of cause and effect relationships inform international security relations. The following chapter surveys some of these theories as they could enable cost imposition attempts. The discussion then turns to potential points of leverage within China and the PLAAF. It concludes with an assessment of the exchange between Chinese surface-to-air missiles and U.S. strategic attack.

Theories of Interaction and American Strategy

At the most basic level, the rational decision theory approach treats a complex competitor as a homogenous, unitary actor with a discernible decision calculus.³ The competitor behaves as the result of conscious choice, not as a result of haphazard interactions with the environment, and thus adheres to established objectives,

alternatives, and prioritized consequences.⁴ The calculus these factors produce guides the competitor towards “consistent, value-maximizing choice within specified constraints.”⁵ Applied to a cost imposition interaction, rational decision theory simplifies a complex competitor, provides a cost, benefit, and risk basis for the competitor’s decision process, and forms a simplified calculus for its reactions. For example, by fielding more capable or numerous weapon systems in closer proximity to an adversary, an initiating competitor can encourage a rival’s restraint by increasing risks associated with conducting an initial attack.⁶

A natural extension of rational actor theory, deterrence expands the logic of security interactions. The theory holds a competitor becomes more prone to attack and subsequent defeat by a stronger nation through displayed weakness in either capability or commitment.⁷ Adherents to a deterrence model will favor greater military advantage, as it provides the owning competitor freedom of action. Deterrence provides a leading explanation for nations’ choices regarding the acquisition, fielding, and use of nuclear weapons. Furthermore, the theory influences America’s conventional programs and posture. The DOD’s December 2006 Deterrence Operations Joint Operating Concept affirmed the deterrent value of the full range of U.S. conventional and nuclear means.⁸ Deterrence theory would influence a cost imposition strategy by commending large capability gains for the competitive advantage they impart with confidence that they will prompt a competitor to respond.

As an alternative, spiral theory warns that security competitions tend to grow more acute with each successive capability increase adopted by rivals as each competitor regards the international environment itself as inherently menacing regardless of the observed behaviors of others.⁹ Adherents to a spiral model favor smaller, more incremental gains in military advantage, as greater gains constitute increased threats to a competitor and will elicit even greater countering responses.¹⁰ Applied to cost imposition, spiral theory would predict that each competitive choice will elicit a corresponding response, and that the magnitude of the response will correlate to the degree of competitive advantage gained. In some situations, the spiral approach would suggest moderating the tempo of competitive strategies.

Arms race theory provides logic unique to military capabilities and capacity. Huntington defines an arms race as, “a progressive, competitive peacetime increase in armaments by two states or coalition of states resulting from conflicting purposes or mutual fears.”¹¹ A series of persistent dilemmas influence arms races.¹² The security dilemma describes how arms accumulation can simultaneously improve security and destabilize world politics. The dilemma of causation raises the question whether arms make death and conflict more or less likely than the human natures guiding their use. The dilemma of access captures the uncertainty involved in trying to eliminate arms, as competitors will not uniformly follow the rules. The dilemma of alternatives points to the difficulty of promoting security through other means. Finally, the adequacy dilemma alludes to the perennial defense question, “How much is enough?”¹³

These dilemmas animate arms races along common contours. Conditions likely to foster an arms race include: an international system facilitating a balance of power by internal means rather than by an outside guarantor; prioritizing military force over other factors as an element of national power; the ability of each competitor to improve its military capability and capacity; and, the recognition by each competitor that defines arms policy goals relative to a rival. Arms races tend to result from bilateral antagonisms, and tend to focus on the balance of one component or even one type of weapon system.¹⁴ Finally, Huntington asserts that the likelihood of an arms race concluding in war varied inversely with its duration, and directly with the degree to which the race involved quantitative rather than qualitative improvements.¹⁵

While deterrence, spiral, and arms control theories cast each competitor as monolithic and perfectly perceptive of the external environment, Robert Jervis disaggregates competitors and injects more potential for fallibility. He posits that decisions are made by inherently flawed people, that competitors should be disaggregated to allow multi-level analysis, and that decisions occur in the “fog of foreign policy-making” due to varying degrees of perception and misperception.¹⁶ Competitor choices become products of complementing or competing interests at decision-maker, bureaucratic, domestic politics, and international environment levels.¹⁷ Furthermore, competitors make choices not just based on their perceptions of the security environment, but also on the “evoked set” of concerns and information dominating one or more of these factions’ cognizance at the time of the decision.¹⁸ Theories like Jervis’ would spur defense decision-makers to better understand a security competitor’s intentions, predispositions, and decision-making processes before selecting cost imposing strategies. Furthermore, inherent to this degree of insight is recognition that even the deepest of understandings can still yield suboptimum choices.

Each theory acknowledges to a varying degree uncertainty in eliciting a desired reaction from a competitor. Specifically on the subject of cost imposition, Thomas Schelling argued that small differences in a reacting opponent’s demand for a capability can create large differences in the opponent’s response.¹⁹ Presence of “demand elasticity” creates the situation where a competitor’s action cannot reliably elicit the intended reaction, which in turn decreases the likelihood of creating a favorable hardship differential over a competitor.²⁰

Unpredictability makes the assessment, feedback, and adjustment loop a critical element of successful cost imposing strategies. The Competitive Strategies Office developed primary and alternative anticipated Soviet responses to U.S. actions. Analysts closely studied Soviet behavior, while recognizing that it might take years for a response to materialize. Choices can have far from the intended effect. As an example, in the mid-1960s Secretary of Defense McNamara chose to field multiple independently-targetable re-entry vehicles (MIRV) on U.S. submarine and land-based missiles as a competitive counter to predicted Soviet anti-ballistic missile (ABM)

capabilities.²¹ This choice produced a first-strike incentive and reduced crisis stability between the two nations, an unintended effect that took over 30 years to remedy.²²

Alternatively, some capability challenges go unanswered. One riddle of Sino-American competition queries why, despite America's significant submarine capability advantage and the impact this force would have in any conflict between the two nations, China has refrained from developing a significant anti-submarine warfare (ASW) capability vis-à-vis the United States.²³ China employs its diesel attack submarines (SS) for coastal defense, offensive mine warfare, and as local sources of intelligence.²⁴ Chinese SS capabilities are appropriate to counter diesel submarines operated by potential regional adversaries, but have limited to no capability against American nuclear attack (SSN) and ballistic missile (SSBN) submarines, the most difficult ASW targets in the world.²⁵ Furthermore, the littoral focus of very limited Chinese ASW capabilities involves operating in poor acoustic conditions present in the Yellow, East China, and northern South China Seas.²⁶ "U.S. submarines can currently operate freely in Chinese coastal waters."²⁷ What's more, China does not appear to be making any major investments to improve its ASW force.²⁸

Following the advent of a significant military innovation, competitors may or may not choose to exploit it. Michael Horowitz characterized competitors' ability to respond as adoption-capacity theory, which argued, "once states have the necessary exposure to an innovation, the diffusion of military power is mostly governed by...level of financial intensity required to adopt...and the amount of organizational capital required to adopt..."²⁹ Adoption-capacity theory explained otherwise anomalous responses to military innovations and provided insights supporting better imposition choices. For example, the theory explained why only 13 states adopted nuclear weapons despite the 70-year existence of the technology, highlighting the financial intensity involved in developing and sustaining a nuclear weapons program.³⁰ Alternatively, despite the aircraft carrier's first appearance in 1918, only the U.S., Brazil, and France possess catapult and arrested landing carriers. Six more countries possess vertical/short takeoff and landing carriers.³¹ Remaining countries have chosen not to adopt, or in some cases have chosen to divest, aircraft carriers for both financial intensity and organizational capacity reasons. Even the Soviet Union, America's most recent peer competitor, took 13 years to build and field a single catapult and arrested landing carrier, despite its success in fielding four Kiev-class vertical takeoff carriers just a decade earlier.³²

Rather than compete or counter, competitors may elect instead to harness the capabilities of a third-party nation and in doing so defer substantial costs. Horowitz identified bandwagoning as an alternative response to emergence of a military innovation when financial intensity or organizational capital preclude adoption.³³ For example, by bandwagoning under the American nuclear umbrella, 28 nations have foregone the financial intensity of developing indigenous atomic weapon capabilities. The same recourse occurs in the case of mature, conventional capabilities. Collective

security agreements like the NATO alliance allow member nations to forego or share significant financial burdens, benefiting the cost imposition balance relative to the Alliance's security competitors. Foreseeable competitor responses to U.S. cost imposition attempts should include the bandwagoning option and address the counter-reactions the U.S. would apply in response.

As a corollary, the U.S. has opportunities to leverage the investments and capabilities of its allies in a way that tilts the cost imposition balance to a competitor's disadvantage. America can capitalize on collective security agreements. Direct military aid to allied nations provides a net capability increase while reducing U.S. expenditures on costs such as manpower, installations, and enabling capabilities. Relatively inexpensive theater security cooperation bolsters both the capability and interoperability of allied militaries, thus imparting a new slope to the balance of forces. Foreign military sales improve interoperability. They also provide an economic boost to U.S. companies, while denying sales, economies of scale, and associated interoperability benefits to a competitor.

Yet, third party consideration can also constrain otherwise advantageous cost imposing strategies. Fielding an improved weapon system, or posturing a capability in a particular location, may prompt a competitor's response placing allies at further disadvantage. This predicament would effectively constitute cost imposition collateral damage as, because of a competitor's choice, allies bear increased hardship in their attempts to reset the balance.

For example, East Asia has become a more dangerous place for America's allies because of competition between China and the U.S. The Chinese military buildup began in earnest after the country was unable to successfully deter the U.S. from involvement in the Taiwan crisis of 1995 and 1996.³⁴ China embarked on a series of military reforms designed to modernize its forces, exchange quantity for quality, shift from a defensive orientation to simultaneous offensive and defensive operations, and deter or counter third-party intervention, particularly by the U.S.³⁵ Other Asian countries reacted to the Chinese military buildup by commencing their own.³⁶

Thus, the primary and alternate responses of allied nations, particularly those proximate to a competitor, become essential considerations when developing cost imposing strategies. At best, complimentary allied responses can further tip the cost imposition balance against the competitor. At worst, allies could abdicate for financial intensity or organizational capital reasons and either adopt a neutral stance or bandwagon with a U.S. rival.

An additional consideration driving cost imposition deals with the degree to which program, posture, or operational concepts affect crisis stability between competitors. The history of nuclear arms competition includes several cases where a new capability introduction, change in force posture, or a revised operating concept

bolstered deterrence but made the likely path to conflict faster and more difficult to arrest.³⁷ In a conventional sense, long-range, highly destructive, one-time use systems lack the ability to perform proximate, graduated, tit-for-tat escalating operations. While America tends to favor the offensive as a power-projecting nation, defensive systems can stall an opponent's initial attack and provide pause before offensive forces are mustered. America and its adversaries need intermediate options between peace and full-scale conventional conflict.³⁸ Ultimately, cost imposing choices yielding antebellum opportunities must be considered in light of the degree to which they help or hurt America's flexibility to respond in an advantaged but graduated manner should hostilities commence.³⁹

Therefore, a cost imposing strategy has greater probability for success when focused by clear understanding of how the interaction between the competitors may unfold. A variety of security and international relations theories provide frameworks whereby a competitor's responses may be better predicted. For some decisions, simpler theories bounding the exchange dialectically and characterizing the actors as monolithic and omniscient will suffice. In other decisions, the time, expense, and organizational burdens associated with more complicated conceptions of each actor and the exchange will be well worth the increased efficacy they deliver. In its efforts to compete as a world power, America should consider third-party nations, both for the potential efficiencies they offer, and for the liabilities they pose in the form of collateral damage and revised or fractured allegiances. Sun Tzu famously counseled strategists to know their enemies and to know themselves.⁴⁰ By understanding the complexities of cost imposition interactions, decision-makers may refine the discussion and make more successful choices.

Interacting with China and the PLAAF

Sino-U.S. competition for the air domain gains greater definition when viewed through lenses provided by select theories of interaction. While the more monolithic and rational explanations can explain some of the larger strategic tendencies, disaggregating approaches giving greater provision for bureaucratic interactions and ingrained cultural attitudes can refine predictions. Competition for the air with China involves a contest with the PLAAF. The better strategies will be those that account for the PLAAF's stature as a component of the PLA, its history and perceptions, and the people the PLAAF employs.

Several attributes distinguish the PLAAF as a particularly attractive target for competitive and cost imposing strategies within the larger Sino-U.S. competition. As with greater China, the PLAAF nurtures an evoked set of sovereignty concerns borne out of its long-standing defensive orientation. PLAAF leaders and initiatives have limited influence within the larger PLA, making them less able to react effectively due to bureaucratic constraints.⁴¹ Furthermore, Kenneth Allen contends that the enduring pattern of army domination within the PLA will continue through the next decade.⁴²

Several cultural and force structure factors further exacerbate the PLAAF's disadvantage relative to the U.S. Air Force. The PLAAF has had no significant combat experience since the 1958 Taiwan Strait crisis, placing the service over half a century behind U.S. air forces.⁴³ Subsequent limited engagements of U.S. forces during the Vietnam War provided grounds for a flawed service tradition wherein the PLAAF esteems itself as the only air force ever to have defeated the USAF.⁴⁴ By its own admission, the PLAAF needs to improve considerably its capabilities, doctrine, and training to challenge U.S. power projection capabilities.⁴⁵

The PLAAF also needs to further professionalize both its officer corps and enlisted force to function as effectively as its force structure and manning would predict. The officer corps requires consistent access to technical training regardless of commissioning source and more uniform professional military education opportunities.⁴⁶ The enlisted force requires a transition from a predominately conscript force to a larger, more skilled and professional NCO corps.⁴⁷ While initiatives prompting these needed changes are ongoing, the PLAAF will continue to compete from a position of disadvantage relative to the U.S. Air Force in the interim.

Competition #2: Chinese SAMs vs. U.S. Strategic Attack

An improved understanding of the PLAAF illuminates both the opportunities and limitations associated with the competition between Chinese surface-to-air missile systems and American strategic attack capabilities. The PLAAF's commitment to defensive systems suggests that it will respond aggressively to future U.S. offensive capability enhancements. The nature of this particular military competition makes pursuit of U.S. advantage both expensive and tenuous. Where this competition falls along the competitive spectrum in the future is not predetermined, and will be heavily influenced by future U.S. choices.

True to its defensive heritage, the PLAAF has invested heavily in advanced surface-to-air missiles, rendering its perimeter much less passable to U.S. aircraft and munitions. As with many military technologies, China received its first SAMs from Russia and has since acquired and reverse engineered increasingly advanced Russian, French, and U.S. systems.⁴⁸ Since the mid-1990s, the PLAAF has operated the S-300, "widely regarded as one of the world's most effective all-altitude regional air defense systems."⁴⁹ At significant expense, China now fields approximately 50 batteries of S-300 type systems, along with an additional 60 batteries of less capable medium range systems.⁵⁰ China has also taken steps to acquire the S-400 from Russia which further builds on the S-300's range and lethality.⁵¹ Primarily deployed along the Chinese periphery, these systems constitute formidable protection against third- and fourth-generation aircraft to include most U.S. fighters, manned bombers, and munitions.⁵²

These defenses hold American air assets at greater distances, placing U.S. strategic attack assets at a competitive disadvantage in any conflict in the Chinese

littoral. “U.S. bombers carrying cruise missiles might be compelled to launch farther from the Chinese coast,” limiting their missiles’ reach.⁵³ Chinese SAMs would also constrain non-stealthy U.S. fighters which “would be greatly at risk if called upon to fly within the S-300/400’s envelope.”⁵⁴ The range and capabilities of these systems would further constrain efforts to suppress or destroy them using munitions delivered from the air.

While the current balance of forces may amount to an American competitive disadvantage, it may retrospectively constitute a competitive and even cost imposition victory. These defensive systems pose no direct threat to the U.S., though they significantly affect the Battle Over a Third Party. SAM systems are expensive, with one source citing the cost of an unspecified S-300 variant battery at \$115 million, plus \$1 million per missile.⁵⁵ Meanwhile, the U.S. has made few investments directly serving this competitive facet vis-à-vis China. America’s small bomber fleet consisting of 74 B-52s, 62 B-1s, and 20 B-2s has multiple nuclear and conventional purposes.⁵⁶ Within its foreseeable uses, a Sino-U.S. conflict is but a subset. The stealthy B-2 has inherently greater capability in the face of Chinese defenses, as do stealthy fighters like the F-22 and F-35, though their range limitations necessitate closer proximity and air refueling. Fighters are also less able to penetrate deep into China’s interior. On the whole, China has spent heavily over the last two decades to counter U.S. strategic attack systems that were primarily focused elsewhere.

Looking forward, the DOD may not have the opportunity to impose a similar degree of costs within this contest. Accepted competition for parity or advantage will require the U.S. to make additional investments to modernize its strategic attack capabilities. A USAF response involving a long-range strike bomber capable of performing some or all of these functions may improve America’s competitive edge. The PLAAF’s lesser stature within the PLA may be counterbalanced by China’s preference for defenses. Yet, with a program cost exceeding \$100 billion to achieve a planned force structure of 80 to 100 aircraft, the Long Range Strike-Bomber may not enable the U.S. to impose an advantageous hardship differential regardless of the response the program elicits from the Chinese.⁵⁷

Opportunities may exist to compete more efficiently. Some tradespace may exist between F-35, LRS-B, and standoff munitions programs to achieve a more competitive and efficient balance tailored to the Battle Over a Third Party against China. Alternative conventional strike approaches, such as improved air launched munitions, or sea-launched munitions like those from the U.S. Navy’s Virginia-class Payload Module, can also improve efficiency but will have to be traded against the flexibility, range, and persistence that may be inherent to LRS-B. Furthermore, spiral and arms race theories commend measured rates and degrees of achieving American capability advantages. Where practicable, the U.S. should encourage third parties to field and sustain organic strategic attack capabilities.

Optimistically, the DOD might be able to leverage competitive strategy in this contest while improving its forces' abilities to defeat Chinese SAMs, operate in areas protected by these systems, and conduct conventional attacks deep in China's interior. PLAAF SAM investments show China's penchant for the defense. In fact, one long-time China observer noted, "the Chinese armed forces are obsessed with defending China from long-range precision air strikes."⁵⁸ China has also invested heavily in passive defense capabilities provided by hardened and deeply-buried facilities.⁵⁹ Chinese writers have expressed concerns about space planes' "global reach, information sharing, and precision strike capabilities."⁶⁰ Like stealth technology, the speed of such craft also effectively reduces the engagement envelope of Chinese SAMs. Furthermore, while ostensibly Chinese SAMs could operate in defensive concert with PLAAF fighters, a dearth of information currently exists as to how the PLAAF operates these defensive forces together.⁶¹ With some technological and financial intensity preconditions, opportunities may still exist for the DOD to elicit disadvantageous, defensive Chinese responses to future competition in the realm of U.S. strategic attack.

These considerations lead to the following choices as potential ways to shift the contest further right on the competitive spectrum:

Programs – Balance F-35, LRS-B, and standoff munitions resources to more efficiently serve conflict scenarios with China. Develop and field survivable, long-range munitions capable of striking Chinese target sets at less cost. Encourage partners and allies to field their own capabilities. Improve U.S. ability to suppress and defeat Chinese SAMs.

Postures – Pursue a frontier basing strategy making a portion of available Asia-Pacific airfields suitable for supporting bomber operations close enough to China to enhance deterrence and responsiveness but outside the range of most Chinese conventional offensive capabilities.⁶²

Operating concepts – Assess and exploit PLAAF weaknesses in conducting integrated SAM and fighter engagement zones. Train with allied air forces to improve their capabilities and interoperability with the U.S. in defeating Chinese SAMs.

Notes

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- ⁵ Ibid.
- ⁶ Carl D. Rehberg (strategist, Headquarters US Air Force), interview by the author, 11 Mar 2014.
- ⁷ Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976), 58.
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- ¹⁸ Ibid, 203-216.
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- ²⁵ Ibid, 185-187.
- ²⁶ Ibid, 186.
- ²⁷ Ibid, 185.
- ²⁸ Ibid.
- ²⁹ Horowitz, *Diffusion of Military Power*, 9.
- ³⁰ Ibid, 98-133.
- ³¹ Ibid, 80.
- ³² Ibid, 90-91.
- ³³ Ibid, 26-27.
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- ⁴⁶ Ibid 6-7.
- ⁴⁷ Ibid, 6.
- ⁴⁸ Cheng, "Employment of Airpower in Taiwan Strait," 328.
- ⁴⁹ Ibid, 329.
- ⁵⁰ Ibid.
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CHAPTER FIVE

Accounting for Costs

“Future competitive strategies initiatives should think very carefully about targets and think very broadly about the classes of costs that it may be possible to impose.”

—John A. Battilega

Soviet Military Thought and the U.S. Competitive Strategies Initiative

Cost imposition denotes a balance or calculus for gauging a differential in hardship between an initiating competitor and a reacting opponent. These costs can be monetary or less tangible, vary temporally from obsolescence to forward-looking, and create a range of consequences based on the economic strength and composition of each competitor. A blurry distinction exists between monetary costs associated with military capabilities and softer currencies funding diplomatic, economic, and informational power. Clear accounting of costs becomes more important when predicting or assessing the relative advantage represented by hardship differentials. The following discussion will survey those cost factors which could be considered.

The most obvious category includes direct investment costs associated with competing weapon systems. Such expenses would include development, procurement, operating, and modernization costs, as well as costs of associated armament. Using a fighter aircraft example, the imposition calculus would weigh direct investments in each competitor’s fighter aircraft arsenal and associated weapons. A more apt comparison would include only the portion of those fighter inventories that would likely be brought to bear in direct confrontation between the competitors, such as just those fighters planned for employment against Iran were that country the competitor of focus.

Immediate program costs only capture a portion of the fiscal burden associated with specific weapons systems. A more comprehensive balance would include personnel costs, leading to consideration of individual service member productivity, unit manpower compositions and associated pay scales, and the broader array of military member entitlements and benefits.¹ Furthermore, a weapon system only makes up one ingredient of an operational capability. Better accounting would include program costs for enabling weapons systems. Going back to the fighter aircraft example, comparisons would include the personnel costs associated with operations and maintenance. They would also include costs of base support structures and maintenance depots, along with the expenses associated with the mobility, air refueling,

and command and control platforms and networks necessary to organize, train, and equip the fighter force and employ it in the security competitor's theater.

When facing a military capability threat, a rival nation can choose to field countering or asymmetric rather than directly competing technologies.² Oftentimes, this isn't an either-or choice but rather a mix of competing and countering capabilities. Using the fighter force example, a rival nation could choose to compete via a modest investment in its fighter force, while favoring instead greater investment in surface-to-air missiles and anti-aircraft artillery. From a cost imposition perspective, countering capabilities can induce steep gradients in investment playing fields.

The inherent offensive or defensive nature of a rival's response can work to a competitor's advantage. Within a nation's hierarchy of security needs, protection of its own sovereignty tends to reign supreme. As a competitive strategy, a competitor can make offensively oriented choices eliciting defensive program, posture, or operating concept reactions from an opponent.³ These defensive responses may be monetarily cheaper and frustrate a competitor's ability to project power against the rival or within the rival's region. But they neither threaten the initiating competitor's sovereignty nor impose reciprocal defensive capability costs. Independent of the monetary investment balance, inducing defensive responses by a rival could diminish the rival's offensive capacity, and cede the offensive/defensive balance and operational flexibility advantages to the initiating competitor. In some circumstances, this can result in effective cost imposition and overall security gain.

By committing to and investing in a particular response, a competitor bears the opportunity costs inherent to foregone choices. Such unexercised options create areas of potential, heightened advantage for the initiating nation. Opportunity costs can manifest themselves as reduced investment in more relevant capabilities. For example, in approximately 1900, Germany chose to invest in a "risk fleet" which left Germany still inferior to Britain in the maritime domain. Per German rationale, this fleet reduced the likelihood of outright war between Britain and Germany because, following the losses that would result, the Royal Navy would be unacceptably vulnerable to the combined fleets of France and Russia.⁴ However, by investing a portion of its finite funds in the risk fleet, Germany ended up fielding two fewer army corps.⁵ In World War I, Germany's risk fleet was of little consequence, while the opportunity costs related to additional land forces might have made a difference in trench warfare on the continent.⁶ Likewise, opportunity costs can manifest themselves as posture choices rendering some geographic areas less protected or some emplaced forces more obsolete.

Be they better competing capabilities, counters, or mission enablers, some weapon systems elude accounting by virtue of their classification. Special access programs vary in their degrees of acknowledgement and disclosure. "Black program" expenditures require separate accounting, making them more difficult to include in any cost imposition calculus, despite the sizeable monetary investments some of these

programs represent. It is reasonable to assume that America's security competitors have weapon system programs shrouded in similar levels of secrecy. It is no wonder that the Competitive Strategies Office struggled to include special access programs in managing advantages over the Soviets.⁷ Yet no accurate cost balance, much less capability comparison, can occur without factoring in classified programs for both sides.

Temporal boundaries also affect the calculus. The obvious approach involves comparing investments in competing or countering systems and their associated enablers from the same point in time. However, nations don't necessarily field competing weapons systems concurrently. In the capability improvement spiral associated with an arms race, one nation's investment in a system in time begets a rival's investment in a system of equal or greater capability. Using a fighter aircraft example, the greater capabilities and numbers of the Soviet MiG-23 and MiG-27 fielded in 1970 and 1975 prompted the U.S. to field the F-15 and F-16 in 1976 and 1978 respectively, which in turn led the Soviets to field the MiG-29 and Su-27 in 1983 and 1985 respectively.⁸ To determine the victor in this cost imposition contest, which dates or weapon system introductions should be used in bounding the comparison?

While the aforementioned example deals with defining a date to allow comparisons of costs going forward, a better balance might include costs of previously fielded systems made obsolete by new capabilities. Loss of utility for sunk costs may constitute both economic and security disadvantage to a competitor. England's introduction of the vastly more capable and more expensive HMS Dreadnaught class of ship converted the direct naval investments by her rivals – and by England herself – in lesser ships to prodigious sums of obsolescence costs.⁹ When considering these costs, an imposition calculus will have to include some criteria to discern between modicums of capability advantage associated with a typical arms competition spiral and fundamentally game-changing capabilities that truly marginalize the preceding capabilities they counter.

Ultimately, monetary costs only become relevant in a strategic sense when placed in context of the national economies bearing them. Here, the scale and composition of each nation's economy becomes central. At one extreme, the U.S. can operate at a cost imposition disadvantage indefinitely against countries with small economies simply because of America's capacity to outspend them. Per the competitive spectrum introduced earlier in this paper, these situations simply involve advantaged competition where, at most, the U.S. could aspire to greater efficiency. Returning to the fighter aircraft example, America can and should continue to invest more resources than North Korea due to the gross mismatch of the two nations' economies and because prospective conflict with North Korea is neither the primary capacity or capability driver for America's fighter aircraft forces.

Even with near-peer competitors like China, absolute investment costs must be placed in context and may be less relevant than percentages of gross domestic product (GDP) spent. With an open market economy and a high level of government funding for public services and social entitlements, the U.S. spent \$646 billion on defense equating to 4.2 percent of GDP in 2012.¹⁰ Alternatively, with a state-controlled economy and a low level of government spending on public service and social entitlements, China spent approximately \$180 billion on defense equating to approximately 2 percent of GDP in 2012.¹¹ Differences in total sums and percentages of GDP spent only approximate the hardship differential created by cost imposition.

In the case of a global power like the U.S., only a portion of the nation's spending involves competition with a particular opponent. One estimate attributes 35 percent of the DOD budget, or \$226 billion and 1.5 percent GDP, to Far East force structure which could be used in a conflict with China, placing the U.S. and China much closer to spending parity in East Asia.¹² Nevertheless, cost comparisons don't tell the full story as "biases are simply a reflection that each side makes its own economic optimization."¹³ Yet, where a security standoff ultimately leverages the wills of each competitor's respective population, fiscal burdens at the national level comprise useful quantitative insights.

Monetary costs only tell part of the story as they account for relative advantage. Cost imposing strategies rely on fundamentally sound competition, waged efficiently, in a competitive strategies channel where the competitor enjoys an advantage. In the Soviet competitive calculus, quality and quantity of a particular force element were factored into a "correlation of forces" appraisal.¹⁴ Capability and capacity have inherent value as they constitute "hard power" strength both antebellum and during conflict. Better capabilities only loosely translate to military advantage, affected as they are by a nation's ability to adopt and wield them effectively.¹⁵ The manner by which each competitor employs groups of weapon systems via operational concepts imparts relative advantage and inherent flexibility that can't be valued in strictly monetary terms, nor can they be accurately assessed antebellum. Likewise, the countering or competing operational concepts an adversary develops in response bestow some degree of value to the other side of the balance.

Location also matters. Geography and topography impart security strengths or vulnerabilities that can be marginalized or magnified by the manner in which nations posture their forces. In turn, the initiator's posture compels competing programmatic, posture, and operational concept choices in any security competition. Returning to a fighter aircraft example, in the Cold War U.S. bomber and fighter aircraft posture in both the Far East and Europe prompted significant Soviet air defense investment to protect its 12,000-mile perimeter over at least two fronts of potential engagement. Contemporary examples include both Chinese and Iranian responses to perceived encirclement by U.S. forces in an attempt to deny these forces immediate access and essentially push them further to the edges of their respective regions.

Schelling acknowledged the challenge of bounding a cost imposition calculus, observing that relative advantage is more easily determined when focusing on the narrow set of costs directly related to a specific capability contest.¹⁶ He noted that while accounting within a “suboptimization” was easy, the main thrust of cost imposition involves impacting investment choices occurring outside the area of competition.¹⁷ Yet, when one expands the scope of consideration, the more indeterminate the advantage becomes. Taken to the extreme, when the cost imposition balance grows to consider the entirety of international competition involved, “the best overall strategy, worked out in all its detail, is just the best strategy, all things considered; and any relevant costs have already been implicitly taken into account.”¹⁸ In the end, if the calculus is too narrow, it misses accounting for the hardships sought by the strategy. If the calculus is too wide, the accounting becomes indeterminate and of secondary importance to an overall appraisal of the competitors’ relative security advantage.

The preceding discussion’s focus on monetary and other costs has a decidedly military bias. Broadly, security competitions and, more narrowly, cost imposition efforts necessarily employ all the instruments of national power. Diplomatic, economic, and information domains each provide their own opportunities for exacting hardships from a security competitor. Each domain possesses its own currencies which lend themselves to accounting and advantage determination to varying degrees. As with any security confrontation, the more likely cost imposition victor will be the one that effectively harmonizes all these instruments, in part through understanding the real exchange ratios of the various types of currencies involved. Command economies and artificially set exchange rates make this appreciation even more difficult.

A more thorough examination reveals the complexities of the cost dimension of an imposition strategy. The challenge for defense decision-makers involves determining which costs will and will not be considered in an imposition calculus. These choices will be influenced by collective understanding of a competitor’s national economy, defense spending, and methods of employing military capabilities. Choices made to create cost imposition advantage should include clear identification of the expected costs associated with the primary and alternative responses elicited. Boundaries drawn for considered costs will be driven by practical limitations of insight and time and will involve some artificiality.

Strategists, planners, and commentators should elevate the discussion beyond comparisons of the cost of one anti-ship cruise missile to the cost of an aircraft carrier, at least to a comparison of the systemic costs of those opposing capabilities. Logic and evidence in cost imposition claims and prescriptions to date have been meager at best. At worst, these discussions have hijacked the “cost” term in a manner that preys on Americans’ sensitivity to their nation’s financial challenges.

Competition #3: Fighter Aircraft

The ongoing Sino-U.S. competition in fighter aircraft bears examining for several reasons. First, depending on the timeframe considered, America can claim or achieve varying degrees of hardship advantage or disadvantage. Next, fighter aircraft capabilities are expensive and complicated. America's F-35 is the DOD's most costly and ambitious acquisition program with total acquisition costs approaching \$400 billion.¹⁹ Finally, this competition can be susceptible to countering capabilities both within and outside fighter technologies that may induce large shifts in relative competitive and hardship advantage.

In retrospect, perhaps no component of the Chinese military has undergone greater, more rapid change than the PLAAF. From 1995 to 2010, PLAAF modernization efforts yielded an effective 40-year forward leap in capability. The PLAAF made this leap by successfully following goals established by its planners in the 1990s, which included: phasing out antiquated equipment; emphasizing aircraft quality over quantity; modernizing older airframes where able; and, striving for self-reliance while resorting to foreign equipment and knowledge to fill existing technology gaps.²⁰

Modernization occurred against a backdrop of a heightened emphasis on the PLAAF as a strategic service. The PLAAF had its origins in defensively purposed fighters, employed in 1949 to achieve air superiority over Nationalist Chinese on Taiwan and to aid any potential amphibious assault.²¹ By the Korean War, the primary mission of the PLAAF was to support ground forces.²² American airpower effectiveness in the first Gulf War and successful U.S. intervention in the 1995 Taiwan crisis caused the PLAAF to confront China's growing disadvantage in airpower technology and employment doctrine. Commensurately, China's new military strategy, developed in 1993, focused on fighting and winning a regional war in China's periphery under high-technology conditions.²³ In early March 1999, Jiang Zemin proposed transforming the PLAAF from a homeland defense force to a service capable of both defensive and offensive operations. He further charged the PLAAF to, "bear the brunt of, and be employed throughout the entire course" of conflict and "to complete certain strategic missions independently."²⁴

China's fighter aircraft modernization effort from 1995 to 2010 may represent a competitive and cost imposition success for the U.S. that will be more difficult to continue in the upcoming period of U.S. Air Force modernization. In this period, the PLAAF divested 3,500 aircraft while procuring 399 fourth-generation fighters and at least 250 modernized third-generation fighters.²⁵ Meanwhile, the U.S. Air Force divested approximately 970 – most with capabilities rivaling newer Chinese aircraft – and procured only 266 fighters during a period colloquially called a "procurement holiday."²⁶ While the USAF's divestiture was not influenced by competition with China, and procurement only partially so, the Chinese bore tremendous direct procurement and obsolescence costs in the PLAAF's attempts to modernize primarily

vis-à-vis the USAF. From a cost imposition perspective, China's introduction of the J-20 and J-31 prototypes bodes well, as they represent early milestones in a long, costly road to developing and fielding fifth-generation fighters. Meanwhile, the U.S. Air Force F-22 fleet has matured since IOC in 2005, and the hundredth F-35 has rolled off the assembly line, though at no small cost.²⁷

China has attempted to mitigate America's qualitative advantage by countering with "informationization" or electronic countermeasures.²⁸ "China has gained immense benefit from its extensive access to Russia's EW designers and manufacturers, whose business was sustained by Chinese orders over the long period when funding from Moscow dried up."²⁹ China acquired Russian Sukhoi Su-27SK and Su-30MKK fighters with their associated state-of-the-art jammers and countermeasures pods.³⁰ Their domestically produced J-11B carries an ECM pod resembling Russian designs, and the J-10B will probably feature advanced radar capable of functioning as a more powerful jammer.³¹ These countermeasures could reduce the capability of and even neutralize current U.S. fighter radars and radar-guided missiles.

Several factors make Sino-U.S. fighter aircraft competition ripe for American competitive strategy. Few weapons systems require successful integration of as many diverse high-end technologies as do fighters, and the Chinese are currently 15 to 20 years behind the U.S.³² Though the PLAAF long acquired its aircraft by either purchasing or coproducing them, China's violation of the terms of its indigenous production agreements with Russia involving the SU-27 led to a 2006 Russian refusal of further military aviation sales, leaving China short of aircraft suppliers.³³ China now has to produce its own airplanes and, in doing so, is likely to incur more costs associated with development and manufacturing than China bore when purchasing Russian hardware in the mid-1990s. Chinese military-industrial strength rates third tier with first tier being best per the Stockholm International Peace Research Institute and U.S. Department of State.³⁴ China particularly lags in jet engine technology.³⁵ Since its inception, the PLAAF has been a fighter-centric force and shows no signs of willingness to accept a balance of forces deficit relative to the U.S. in East Asia. Thus, for the PLAAF, the apparent imperative will be to spend heavily to match the U.S.

Though China has willingly borne the financial intensity associated with adopting modern fighter technologies, whether the PLAAF can expend the organizational capital remains to be seen. Operationally, the PLAAF has yet to make the transition to a centralized control and decentralized execution method of employment that has garnered such success for Western air forces.³⁶ The ongoing transition from purely defensive to the full spectrum of offensive to defensive tactics, and from a purely air-to-air to multi-role mission, will heavily tax the PLAAF's organizational capital.³⁷ Autonomy exploited in U.S. fourth generation tactics has not been infused in PLAAF employment. Furthermore, stealth aircraft diffusion via the J-20 and J-31 will require significant PLAAF employment and sustainment adaptations.

The U.S. is winning the fighter aircraft competition with China. Retrospectively, the DOD elicited a Chinese response likely representing a hardship differential advantageous to the U.S. over the period of 1995 to 2010. Looking forward, the U.S. has the opportunity to wage a successful competitive strategy, though the financial intensity associated with Air Force fighter recapitalization may inhibit favorable cost imposition. At the same time, the predominately fifth generation U.S. fighter force represented by the F-35 may make Chinese fighter investments to date merely obsolescence costs. The U.S. may preserve much of its advantage through the following choices:

Programs – Field the F-35 in sufficient numbers and sustain the F-22 to prompt continued Chinese fifth generation fighter development and fielding. Looking forward, the U.S. should continue developing a follow-on to these aircraft to make obsolete an even greater portion of the Chinese fleet. The DOD should procure efficiently. Inadvertent technology hemorrhage to China should be minimized. The size of the DOD fighter force should support bringing to bear a stressing number of U.S. fighters in any crisis with China. Explore disruptive technologies in air-to-air missiles.

Postures – Maintain adequate fighter presence in the Far East to provide immediate support to a broad range of response options during any Sino-U.S. crisis. Prioritize Far East bases for F-35 or F-22 bed down as the U.S. fifth generation fleet grows. Encourage allies to acquire competitive fighters, preferably by buying or coproducing U.S. models capable of networking with U.S. fighters and systems.

Operating concepts – Improve U.S. effectiveness in countering Chinese fighters, particularly in an “informationized” environment. Research and test alternative ways to neutralize Chinese fighters both when airborne and prior to launch. Train with allied fighter forces to improve their capabilities and interoperability with the U.S.

Notes

¹ Dr. Thomas P. Ehrhard (Office of the Undersecretary of Defense for Policy), in discussion with the author, 26 September 2013.

² Horowitz, *Diffusion of Military Power*, 28.

³ Gordon S. Barrass, “U.S. Competitive Strategy” in *Competitive Strategies for 21st Century*, 78.

⁴ Horowitz, *Diffusion of Military Power*, 153.

⁵ Greenwalt, et al, *Historical Examples of Competitive Strategies*, 2.43.

⁶ Ibid.

⁷ Andre, *Review of Competitive Strategies Initiative*, 36-37.

⁸ Dates listed are “Introduction” from <http://en.wikipedia.org> referenced by aircraft type.

⁹ Horowitz, *Diffusion of Military Power*, 134-141, 147-164.

¹⁰ The World Bank, "Military Expenditure (% of GDP)" from Stockholm International Peace Research Institute, <http://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS>. The total expenditure of \$646 billion includes wartime costs, and is cited in a variety of source to include, for consistency, Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 85.

¹¹ Ibid. Steinberg and O'Hanlon address the wide variation of Chinese military expenditure estimates. I have used theirs for consistency. Both they (page 92) and the World Bank estimate Chinese defense spending at approximately 2 percent of GDP.

¹² Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 98.

¹³ United Nations Association United States of America National Policy Panel on Conventional Arms Control, *Controlling the Conventional Arms Race* (New York, NY: Sanders Printing, November 1976), 13.

¹⁴ Goure, "Overview of Competitive Strategies Initiative," in *Competitive Strategies for 21st Century*, 93.

¹⁵ Horowitz, *Diffusion of Military Power*, 1-5.

¹⁶ Schelling, "Strategy of Inflicting Costs," 109.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ United States Government Accountability Office, *F-35 Joint Strike Fighter: Restructuring Has Improved the Program, But Affordability Challenges and Other Risks Remain*, GAO 13-690T, (Washington, D.C.: Government Printing Office, June 2013), 1.

²⁰ Saunders and Wiseman, "China's Quest for Advanced Technologies," 301.

²¹ Zhang, "PLAAF's Evolving Influence," 73.

²² Ibid.

²³ Ibid, 78.

²⁴ Ibid.

²⁵ Shlapak, "Equipping the PLAAF," 192.

²⁶ Col Ralph J. Waite (analyst, Office of the Secretary of Defense, Cost Assessment and Program Evaluation), in discussion with the author, 18-20 February 2014. Based on Selected Acquisition Reports, 266 US Air Force fighter aircraft procured during this period consisted of 30 F-16s, 27 F-15Es, 184 F-22s, and 25 F-35As.

²⁷ Lockheed Martin, "Lockheed Martin Celebrates 100th F-35 Lightning," 13 December 2013, http://www.lockheedmartin.com/us/news/press-releases/2013/december/131213ae_lockheed-martin-celebrates-100th-f-35.html.

²⁸ James R. Fitzsimonds, "Cultural Barriers to Implementing a Competitive Strategy," in *Competitive Strategies for the 21st Century: Theory, History, and Practice*, ed. Thomas G. Mahnken (Stanford, CA: Stanford Security Studies, 2012), 290, and Allen, *Ten Pillars of PLAAF*, 5.

²⁹ Robert Hewson, "Electric Dragons - Airborne Electronic Warfare Capabilities in China," *RUSI Defense Systems*, Spring 2012, 80.

³⁰ Ibid.

³¹ Ibid, 81.

³² Saunders and Wiseman, "China's Quest for Advanced Technologies," 312.

³³ Ibid, 302-303.

³⁴ Shen Pin-Luen, "China's Aviation Industry: Past, Present, and Future," in *Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, eds. Richard P. Hallion, Roger Cliff, and Phillip C. Saunders (Washington, D.C.: National Defense University Press, 2012), 266.

³⁵ OSD, *Annual Report to Congress: China*, 48.

³⁶ Allen, *Ten Pillars of PLAAF*, 37.

³⁷ NASIC, *PLAAF 2010*, 15.

CHAPTER SIX

Institutionalizing Cost Imposition

“Adopting a new way of thinking is never easy for an individual. For organizations, it is even more difficult.”

—Caspar W. Weinberger
Annual Report to the Congress Fiscal Year 1988

Cost imposition strategy offers America additional leverage as a facet of competition with enduring rivals. At one extreme, the U.S. could create a large, advantageous hardship differential by inducing a rival to invest disproportionately in competing, defensive, disadvantaged systems employed via inferior operating concepts and postured with inconsequential numbers at marginalized locations. In doing so, America could induce a competitor to frustrate and reduce the rival’s influence across multiple domains. As a middle ground, the U.S. could better understand the mix of wins and losses characterizing the current cost imposition balance and take steps to rectify its losses in a manner capitalizing on competitors’ weaknesses. This approach might better cope with American fiscal realities, anticipating and leveraging advantageous allied reactions while minimizing collateral cost imposition damage. At worst, America could be a cost imposition victim, exacerbating unfavorable balances, marginalizing its international security influence, and bearing greater hardship unnecessarily.

Implementation

The DOD should embark on cost imposing initiatives fully cognizant of the expected and alternative outcomes, as informed by their underlying interaction theories and net assessment insights. Up front choice of the objective cause and effect relationships will provide greater transparency and repeatability, as well as clarify alternative approaches should adjustment become necessary. By sharing the insights and assumptions informing a choice, defense decision-makers can improve the likelihood that the services’ supporting actions are coherent. Debate will be inherent to this process. Furthermore, planned U.S. counter-reactions to the range of primary and alternative competitor reactions may exercise the flexibility and patience of the DOD and its many constituents.

When assessing potential for cost imposition, accounting should be as inclusive as possible. Direct investment comparisons should include program acquisition unit costs for competing and countering weapon systems and their associated enabling

systems and support structures, to include black programs. The calculus should also include opportunity costs, clearly define the start and end times when bounding a competitive spiral, and incorporate obviation costs for large capability increases. Monetary costs should be understood within the contexts of the economies supporting them and in light of the hardships they represent for the leaders, bureaucracies, and citizens that bear them. The calculus should include the resultant correlation of forces, characterize relative advantages inherent to posture options elected and foregone, and qualify imbalances imparted by harmonizing diplomatic, informational, and commercial economic investments. Certainly, in defense circles no straightforward answer attends the question, “How much does it cost?” Valuation of cost imposition balances will be no easier.

The aforementioned facets of the cost imposition lens can yield new clarity when examining security alternatives for the services, the Department, and the nation. Many service program, posture, and operating concept choices require discerning among shades of gray. The concept of cost imposition provides another attribute which, when considered in evaluating alternatives, can lead to better decisions that maximize competitive advantage. DOD-wide, cost imposition principles can recast investment trade space, refocus regional presence and posture goals in a manner that rebalances near-term conflict preparedness with long-term competitive shaping, and provide new impetus for component interactions and the operating concepts they become. For the nation, cost imposition can provide a new framework for evaluating America’s security challenges, which may suggest new options and priorities over current approaches.

Recognizing areas where the U.S. is a target of an adversary’s cost imposition efforts may provide new ways of thinking about how to reduce hardships through more efficient competition. Changes in how America develops, procures, and sustains weapons systems can improve the balance. Personnel and installation costs offer significant potential, as does divestiture of weapons systems having little impact on already disadvantaged competitor choices. Sustaining long-standing postures benefitting previous competitions entails foregone present and future opportunities. Operational concepts that proved advantageous when confronting lesser competitors may elicit no beneficial response from a peer competitor and thus merit revision. As an example, projecting land-based fighters from invulnerable bases and enabling them with tankers, command and control platforms, and intelligence, surveillance, and reconnaissance assets operating close to contested areas, spurs few responses from China benefiting the U.S. Indeed, insights provided by a cost imposition framework can be as beneficial in the losing exchanges they illuminate as in the opportunities they identify.

As before, the DOD will have to organize and function differently to focus long-term plans like competitive and cost imposing strategies. The new lens will either require new organizations or prompt significant adaptation by existing ones. Aligning program and posture choices in a way that benefits long-term cost imposing strategies

will require review and final determination by an organization with OSD-level authority and purview. Program review of service budgets should include the cost imposition facet. The deep and holistic understanding of prospective competitors along with an inclusive appreciation of U.S. attributes will have to be conducted by the Office of Net Assessment, or a similar group, if this is not being done already.

For devising and implementing strategies, an organization like the Competitive Strategies Office of the 1980s would be a good start. The myriad strategy-making bodies in each service staff should bear the onus for planning long-term supporting actions and for ensuring these strategies are carried out in nearer-term service budget proposals. Combatant commands will need to provide near-term theater and competitor insight, gauge adversary responses, synchronize third parties, and ensure that cost imposing strategies yield sufficient ability to prevail in the full range of military options should conflict become imminent.

Barriers to Implementation

The entire concept of competitive strategy inverts the more traditional approach to building military power. The strategy focuses more on the competitor than on the U.S. Rather than countering competitor strengths, the strategy exacerbates competitor weaknesses. In the three-move process, the goal is to elicit a specific adversary reaction. The action taken by the U.S. is secondary and may require adjustment. Increased investment in previous choices when the adversary displays an unexpected reaction would further entrench an obsolete action while foregoing a more appropriate counter-reaction. This inverted approach will require explaining to many security stakeholders and will draw its share of skeptics.

No matter how well conceived, any new competitive initiative may find few supporters in the current fiscal environment. Constrained by sequestration budget cuts, executing a military rebalance to the Pacific, and fully supporting its uncertain role in Afghanistan's future security, the DOD may lack the wherewithal to develop and execute cost imposing strategies. 20 percent cuts to OSD manpower do not lend themselves to forming a new organization like the Competitive Strategies Office. Little room exists for competitive enhancements as prospective offsets have already been defended as essential in previous program cuts. Some programs are too big or too far along to fail or even modify, and some have become synonymous with services' identities, prestige, or budget shares. Furthermore, new postures and operational concepts all come with price tags, training and equipment demands, and new interdependencies while services are focusing inwardly as they adapt and shrink. Explanations of the disproportionate advantage offered by competitive and cost imposing strategies may be muffled by the din of other concerns.

The shrewdest competitive strategies may be diluted and redirected by the DOD decision process. Many of the obstacles faced by the Competitive Strategies Office

remain inherent to DOD bureaucracy.¹ Each service may adapt its own interpretation of strategic competition consciously or subconsciously and morph future force programs into apparent alignment with the strategy's essence. Thus, cost imposing initiatives will compete alongside other service signature programs and priorities. Were OSD's program review process to include a cost imposition facet, potential changes might be minor adjustments rather than major course corrections. Furthermore, the continuity and commitment required to implement, sustain, and adjust cost imposing strategies will frustrate the collective attention span of the DOD establishment. Finally, even the most coherent of cost imposing strategies may not survive a Congressional review process possessed of diverse, shorter term, more self-interested, and sometimes less spendthrift designs.

Among many, George Kennan lamented the difficulty of making and executing coherent foreign policy in America's representative democracy.² Two-, four-, and six-year election cycles bring frequent revisions to people, priorities, and policies. Democracies also tend to languish in relative complacency and disinterest until provoked, then tend to respond more out of piqued emotions than cold calculus.³ The DOD may or may not be able to conduct cost imposition within a competitive strategy agenda below the greater public cognizance threshold. Or, the more costly and visible initiatives may have to wait until the policy window occurs at the confluence of competitive balance recognition, development of an imposition strategy, and mitigation of internal and external constraints.⁴ In the end, necessary U.S. responses to unforeseen calamities will tend to divert the DOD's strategic aim and distract carefully conceived and managed competitive interactions.

The very existence of a cost imposition calculus or its public acknowledgement may frustrate DOD's efforts to maximize strategic prerogative across the full spectrum of competitive options. Few American competitive efforts may exact greater hardship or prompt fruitless diplomatic and informational investments by competitors fielding defensive, disadvantaged forces at inopportune locations. In other competitive balances, well-developed strategy will just impart some efficiency to greater U.S. expenditures. Furthermore, in some exchanges the DOD will choose to outspend prospective adversaries by a wide margin because costs relative to the overall defense budget are so low or because the stakes are so high. Just because the DOD invests large sums in programs, postures, and operating concepts, does not mean America is losing a competition. Some cost imposition "losses" yield tremendous competitive advantage, and denote great strategy.

The challenge, then, will involve achieving collective agreement on where to pursue favorable balances and where to accept or even induce losses. Here, making the case both inside and outside the DOD will be difficult. The Department will have to determine how overt or public cost imposition initiatives will be. Quantifying imbalances will be difficult and will prompt counting rule decisions when dealing with monetary sums. Other currencies associated with balances of forces and other

instruments of national power will be harder to quantify, subject as they are to the judgments of various beholders and stakeholders. Superficial assessments of losing exchanges and politico-emotive reactions thereto may undermine sound strategy-making.

Cultural barriers will also frustrate the cool logic prompted by cost imposition. Some advantageous programs, postures, and operating concepts will simply be untenable.⁵ As an extreme case, suicide bombers require very small monetary investment and tend to elicit disproportionately expensive countering responses. In lesser cases, free-floating amphibious mines, cluster munitions, and anti-satellite weapons could impose costs on American competitors but run counter to the morals Americans profess or the regimes they promote.⁶ Defensive capabilities like coastal-defense cruise missiles or hardened, survivable operating locations challenge the American military's offensive preferences or service doctrines reinforced by a long history of projecting power from sanctuary.⁷ Furthermore, America's armed forces tend to favor massed, technologically advanced, kinetic systems borne out of an industrial era, despite the ongoing transition to the information age.⁸ The DOD will be compelled to eschew some cost imposition opportunities because of their incompatibility with the American way of war, our culture, our allies, or our morality.

America's global focus in a multi-polar world will also tend to dilute or deny some cost imposition opportunities.⁹ Whereas the strategy primarily involves interaction between two rivals, the U.S. conducts security competition against a host of current and foreseeable adversaries with a wide variety of strengths, weaknesses, and decision processes. Though America can orient or posture certain capabilities and operating concepts more towards one rival or region, the DOD only has one military. From a geographic perspective, 35 percent of total U.S. defense expenditures are attributable to the Asia Pacific, 30 percent to the Middle East, 10 percent to Europe, 5 percent to the Americas, a small percentage to Africa, and 20 percent to supporting central activities.¹⁰ Defense resources and the capabilities they create have limited fungibility among these regions for the purposes of military competition.

Notes

¹ Andre, *History of Competitive Strategies Initiative*, 52, 116-123.

² George F. Kennan, *American Diplomacy*, Expanded Ed. (Chicago, IL: Chicago University Press, 1984), 176-178.

³ Ibid.

⁴ John W. Kingdon, *Agendas, Alternatives, and Public Policies*, 2nd ed. (New York, NY: Addison-Wesley Educational Publishers, Inc., 2003), 165.

⁵ FitzSimonds, "Cultural Barriers to Implementing," in *Competitive Strategies for 21st Century*, 289-299.

⁶ Ibid, 295-297. International Committee of the Red Cross, "San Remo Manual on International Law Applicable to Armed Conflicts at Sea, 12 June 1994," <http://www.icrc.org/ihl/WebART/560-16?Open>.

Document prohibits free-floating mine use unless directed against military objectives, and they become harmless within an hour after loss of control over them. The law is not binding on states.

⁷ FitzSimonds, "Cultural Barriers to Implementing," in *Competitive Strategies for 21st Century*, 293-295.

⁸ Kwast, in discussion, 21 November 2013.

⁹ Peter W. Singer, (Brookings Institution, Washington, DC), in discussion with the author, 20 February 2014.

¹⁰ Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 98.

CHAPTER SEVEN

When to Impose Costs

“One who knows when he can fight, and when he cannot fight, will be victorious.”

—Sun Tzu
Art of War

If the DOD can surmount the institutionalization challenges, the next step involves implementing cost imposing strategies. The following discussion proposes some of the key assumptions and necessary conditions whereby the DOD may be able to reap the disproportionate advantages offered by the approach.

First Principles of Cost Imposition

For the DOD, cost imposition should be waged within a larger framework of military competition as an extension of competitive strategies. While appealing, cost imposition represents too narrow a standalone goal. In the 1980s initiative, imposing costs existed among six goals including diversion of forces to less threatening resources, preservation of more easily defeated forces, and introduction of unanticipated “breakout” capabilities that shifted the focus of the competition. Satisfaction of any of these goals would create leverage for the U.S.¹ A tremendous amount of capability advantage can be created via initiatives that do not by themselves create a favorable hardship differential. The requirement and will to compete, the impetus to do so efficiently, and the potential to do so from a position of capability advantage with ability to elicit a disadvantageous response from an adversary become the necessary preconditions before considering cost imposition.

The DOD should focus cost imposing strategies on peer or aspiring peer competitors first. China, then, becomes the primary target of this initiative. Obviously, the stakes involved with lesser competitors are lower, though not necessarily less urgent. Choices that impose hardship on China may impose collateral costs on lesser competitors. Other advantageous choices vis-à-vis China may create foregone options and disadvantageous balances relative to other rivals. Cost imposing investments can take decades to come to fruition. Only when the primary, peer competitor initiatives are in place should the DOD seek out opportunities with lesser competitors like North Korea, Iran, and select non-state actors.

When opportunities exist to impose costs, the DOD should impose them via program, posture, and operational concept choices offering the most lucrative hardship

differentials. Only when these initiatives are set in motion should imposition opportunities offering less return be examined. As a result, some imminent but less lucrative opportunities will be missed. Ultimately, due to the approach's fallibility and the practicalities of time, people, resources allocated to defense, and compromise, the DOD can expect to create only a portion of the hardship differential possible.

Cost imposition can occur within widely varying domains depending on the nature of the competitor. In the Soviet case, the competition was fundamentally ideological. In effect, the U.S.-Soviet competition became a debate over which nation's system was best for the world.² The U.S. leveraged all instruments of national power to win the argument. In the modern case of China, the conflict is less ideological, and more a military competition for regional access and influence, waged against a backdrop of closely intertwined economies and converging views about proper relationships between governing and governed. The Sino-U.S. competition appears more focused on which nation's military is stronger in the competitive arenas of northeast and southeast Asia. This is not the case with Iran, where fundamental ideological differences manifest themselves across a variety of domains.³ Certainly, each competition possesses a military component to be synchronized within a whole-of-government approach, yet the relative importance of each instrument of power will vary from case to case. And, as in the case of the Truman administration's debate over whether to adopt George Kennan's more diplomatic and economic containment tact or Paul Nitze's military build-up as a means of countering the Soviets, multiple approaches exist for engaging each competitor.⁴

Necessary Conditions for Cost Imposition

Even when the opportunity exists, going forward with cost imposition strategy may not yield benefits, and may actually do more harm than good. Chapter Four described several theories of interaction which, when applied, could commend alternative methods of competing. Cost imposition attempts could be restrained by certain arms race tendencies or by crisis stability concerns. Unfavorable differences in adoption capacity between the initiating competitor and the reacting opponent could also prompt inaction. In situations where the competitive choice is less likely to elicit the desired reaction and alternative reactions carry greater disadvantage, the choice should go unmade. Furthermore, several contextual variables should be considered if a cost imposition strategy is to sharpen rather than diminish a nation's competitive edge either antebellum or in the event of armed conflict.

The initiating competitor should have reasonable confidence that the reacting opponent perceives itself in competition in the selected capability area. In absence of an opponent's commitment to compete, initiating nation choices are unlikely to elicit the desired reaction. This situation leaves the initiating nation incurring all the additional costs, and likely results in a hardship differential that favors the reacting opponent.

While this precondition was born out of the competitive strategies initiative, it applies equally to cost imposition.

Particularly at the outset of a cost imposing strategy, the initiating nation should gauge the likelihood that the increased competition will prompt the opponent to react in overt conflict. A new, surprising, or highly disadvantageous hardship differential could fan the embers of a latent *casus belli* between the two competitors. Arms race theory warns that conflict is most likely at the outset of the race.⁵ In their book, *Strategic Reassurance and Resolve*, authors James Steinberg and Michael O'Hanlon repeatedly caution against the destabilizing effects an arms between the U.S. and China race could have.⁶ While carefully managed arms races may actually contribute to crisis stability and conflict avoidance, they likely derive their stability from clear mutual understanding between competitors reinforced by control regimes. When the relationship between two competitors appears precarious, cost imposing strategies are better left unwaged, regardless of the hardship differential returns they offer, because of the conflict risks they pose.

Another dangerous opponent reaction would witness an unforeseen technological breakthrough coupled with the financial intensity and organizational capital to adopt it. This breakout alternative reaction could change the competition in a manner placing the initiating nation at a disadvantage. A sound assessment of the opponent's research and development enterprise can help mitigate this outcome, as would pursuit of similar innovation by the initiating competitor. Opaque societies make this appraisal more difficult. As an example, a then-commander of U.S. Pacific Command stated in October, 2009, "In the past decade or so, China has exceeded most of our intelligence estimates of their military capability and capacity, every year."⁷

Existence of and mutual adherence to arms control agreements can increase cost imposition efficacy. Schelling lamented the utility of cost imposing strategies due to what he perceived to be their inherent reliance on a zero-sum defense spending hypothesis.⁸ He countered that defense resources were fungible with other national expenditures and that, "zero-sum adversary relationships are hard to find in any important area of human affairs."⁹ While this paper favors a broader accounting of costs than Schelling may intend, his premise contains significant opportunities for insight. When an arms control agreement limits each competitor's maximum defense investment, or fixes their respective investments by prescribing a ratio, the monetary context becomes zero-sum. When an adversary reacts by spending to shore up a weakness, other capability areas must suffer because the adversary cannot increase the quantity of resources available for defense. For example, Steinberg and O'Hanlon propose instituting a two to one military spending ratio for the U.S. and China, respectively.¹⁰ While their main intent is to limit an overall arms race between the countries, such an agreement could increase the likelihood that cost imposing strategies would exact greater hardship differentials and yield more competitive advantage.

The tradeoffs performed within the DOD planning, programming, budgeting, and execution process, combined with the time horizons associated with cost imposing strategies, suggest that the DOD should only endorse those initiatives bearing a high likelihood of enduring support. In programmer terms, worthwhile initiatives are those that fall well above the cutline and that don't frequently reside in proposed offset lists or war chests. Over a 15 to 20 year period, these strategies will have to survive competition with wartime expenditures, periods of significant fiscal constraints, and major geopolitical turmoil. While the three-move approach imparts some adaptability to cost imposing strategies, if the initiative risks falling below the cutline the DOD should manage that capability contest through a different competitive approach.

Finally, the DOD should carefully consider both the reliability and vulnerability of the collective security partners affected by a cost imposing strategy.¹¹ When a strategy relies on the capability contributions of one or more allies, the U.S. should proceed only with the reasonable assurance that partners will make good on their future contributions lest the desired hardship differential be diminished. When designing a cost imposing strategy excluding partner contributions, the DOD should still gauge the potential for collateral damage resulting from the ensuing bilateral capability contest. While collective security arrangements can significantly exacerbate the hardship differential in America's favor, the intricacies of each partner's decision calculus should be understood to prevent costs being placed back on the alliance leader and to preclude fracturing the alliance itself.

Imposition and Restraint with China

Sino-U.S. competition involves high stakes for both nations, the Far East, and the world. Furthermore, existence of this competition does not predetermine how it will unfold nor how a strategy like cost imposition will affect its course. "It is entirely plausible that the competition can be limited in ways to avoid the worst outcomes, particularly armed conflict, and to provide space for an important degree of cooperation on issues of common concern."¹² Broadly, military competition could be waged in a measured way more pursuant of dynamic equilibrium than lopsided dominance.¹³ Within such an approach, even the most lucrative of cost imposition opportunities would have to be weighed against their potential negative impacts on the pace and magnitude of an arms race and their implications for conflict stability.

One manifestation of such restraint would involve making competitive choices where the intended Chinese reaction involved trades within a fixed defense budget percentage of GDP.¹⁴ Cost imposing strategies focused on preserving defense GDP percentages could elicit an adverse Chinese hardship differential by compelling trades of strengths to bolster weaknesses but at a stable pace and scale for both nations. Lacking such restraint, Chinese defense GDP growth could impose costs on areas of the Chinese economy outside defense, leading to popular dissatisfaction and pressure on the Chinese Communist Party. If the Chinese government chose to ignore the

dissatisfaction, or harnessed it in a way that made conflict with the U.S. or American partners more likely, unrestrained cost imposition success could amount to larger strategic failure.

Bounding Challenges in Sino-U.S. Competitions

With the related cost imposition pillars of interaction theories and strategy, cost accounting, and implementation principles developed to this point in the paper, the three specific Sino-U.S. competitions for the air domain bear revisiting. In each case, drawing boundaries to clarify competing or countering capabilities and weapon system-specific contests involves some artificiality. When a larger boundary is drawn to encompass all three Sino-U.S. air-centric contests addressed in this study, different competitive standings may emerge.

For instance, Chinese ballistic and cruise missiles counter far more than just the U.S. air defenses opposing them. Rather, they thwart American and allied attempts to stage air operations from locations near China.¹⁵ Therefore Chinese missiles represent part of the nation's competitive reaction to U.S. fighters. As a corresponding counteraction, the DOD can choose to improve active and passive defenses of close fighter bases, to stage fighters from more distant locations enabled by greater numbers of tankers, or some combination thereof. Even more indirectly than "informatization," Chinese missiles may mitigate the U.S. advantage in the fighter contest.

From a cost imposition perspective, redrawing the cost boundary changes the accounting from just Chinese and U.S. fighter costs to include Chinese ballistic and cruise missiles, American fighter base air defenses, and U.S. tanker and command and control costs required to project and coordinate fighters from sanctuary. Within this larger balance, the U.S. may have even less ability to create an advantageous hardship differential. When the contest considers these disparate but related capabilities, the DOD may find itself pushed further left on the competitive spectrum. In the end, this effect was part of Schelling's point. The more a cost imposition calculus expands beyond suboptimization of a specific contest, the more hardship differential becomes less relevant than which nation has the best overall strategy.¹⁶

Notes

¹ Andre, *Review of Competitive Strategies Initiative*, 5.

² Kennan, *American Diplomacy*, 114-128.

³ Matthew McInnis (American Enterprise Institute, Washington, D.C.), interview by the author, 13 December 2013.

⁴ Kennan, *American Diplomacy*, 107-128. Also, United States National Security Council, "NSC 68: United States Objectives and Programs for National Security," April 14, 1950,

<http://www.fas.org/irp/offdocs/nsc-hst/nsc-68.htm>, Section IX. Both suggested by McInnis during our interview.

⁵ Huntington, "Arms Races: Prerequisites and Results," 654-655.

⁶ Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 4, 168, 173, 176, and more.

⁷ Thomas G. Mahnken et al, *Asia in the Balance: Transforming U.S. Military Strategy in Asia* (Washington, D.C.: American Enterprise Institute, June 2012), 9.

⁸ Schelling, "Strategy of Inflicting Costs," 109-111.

⁹ Ibid, 113.

¹⁰ Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 100-101.

¹¹ Ian Wallace (Brookings Institution, Washington, D.C.), interview by the author, 2 October 2013.

While these were not his primary concerns, he was the first person to highlight to me third-party considerations in a competitive interaction.

¹² Steinberg and O'Hanlon, *Strategic Reassurance and Resolve*, 4.

¹³ Ibid, 78.

¹⁴ O'Hanlon, interview by author, 12 February 2014.

¹⁵ OSD, *Annual Report to Congress*, 32-33.

¹⁶ Schelling, "Strategy of Inflicting Costs," 109.

CHAPTER EIGHT

Conclusion

“Greater work needs to be done to explore the contours of past peacetime competitions, understand the dynamics of Sino-American strategic interaction, and apply the competitive strategies approach to other contemporary challenges.”

– Thomas G. Mahnken
Competitive Strategies for the 21st Century

“Even in an era of constrained resources, China’s comprehensive expansion of its airpower capability should be a matter of concern to U.S. civilian and military leaders and to U.S. friends and allies in Asia, particularly Japan, South Korea, and Taiwan.”

– David A. Deptula, Lt Gen, USAF (Ret)
The Chinese Air Force: Evolving Concepts, Roles, and Capabilities

While cost imposition retains its appeal, successful application of the strategy starts with recognizing what the approach is and what it is not. Cost imposition occupies one extreme of the cost-based competitive spectrum and offers advantageous hardship differential between an initiating competitor and a reacting opponent in a limited number of instances. Currently, these instances may be even more limited given disproportionately high American defense investment relative to all competitors, to include China. Cost imposition is not a standalone remedy for the DOD’s fiscal constraints, but it has potential as a multiplier effect on the balances attained by expenditures within those constraints. The strategy will probably not bankrupt China. Furthermore, the term loses utility when used to lament or justify the expense of defending America’s security interests.

The DOD should develop some new organizational structures, or adapt existing ones, to implement long-term competition with America’s main rivals. The Competitive Strategies Office approach of the 1980s was sufficient to the task then, and it probably would be now.¹ The Joint Staff, service staffs, and COCOM staffs should accommodate the change, as each will play its part in conceiving, tailoring, executing, and adjusting each approach.

Successful cost imposing strategies will require net assessments of the U.S. and each prospective rival, starting with China. This analysis will place specific demands

on America's intelligence resources. Theories of interaction only gain predictive utility when based on sufficient insights defining the adversary's decision calculus leading to primary and alternative reactions. To realize an advantageous hardship differential, the DOD will need an in-depth understanding of the Chinese economy including all facets of the nation's military spending. Even then, the cost imposition calculus will be somewhat artificial, bounded to be as inclusive as possible while still meaningful, and reliant on some type of exchange rate to better compare very different economies. Before making program, posture, and operating concept choices promising cost imposing advantage, defense decision-makers should ask hard questions about theories of interaction, reactions and counter-reactions, and quantitative accounting.

Managed competition between the U.S. and China in the military domain will require a mix of restraint and aggressiveness. The interdependencies of the two nations and potential collateral effects on third parties commend thoughtful, deliberate action. China's large competitive steps begun in the mid-1990s to counter U.S. capabilities suggest that competitive and cost imposing strategies have a high likelihood of eliciting significant reactions. A framework focusing the competition on Taiwan can limit the scale and intensity of the overall contest. However, the U.S. will have to make significant program, posture, and operating concept investments to make good its security guarantees to Taiwan, Japan, South Korea, and other Asian partners.

The competition is particularly intense in the air overlying the Chinese littoral near Taiwan. While Chinese focus on investments in defensive systems allows the majority of America's territorial sovereignty to go unchallenged, several capabilities hold U.S. air forces in East Asia somewhere between parity and disadvantage. The DOD should take a very long-term, calculated, and adaptive approach to the threats posed by Chinese ballistic and cruise missiles, surface-to-air missile systems, and fighter aircraft. The American ability to contest each of these Chinese capabilities falls at a different place on the competitive spectrum. For the security of America, its allies, and to meet its responsibilities in other regions of the world, defense decision-makers must do much better to optimize U.S. performance within and among these competitions.

Notes

¹ Andre, *Review of Competitive Strategies*, 117-120.

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