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Stranglehold: The Context, Conduct and Consequences of an American Naval Blockade of China

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Stranglehold: The Context, Conduct and Consequences of an American Naval Blockade of China

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ABSTRACT The mounting challenge posed by China's military modernization has highlighted the need for the United States to analyze its ability to execute a naval blockade. A blockade strategy is viable, but it would be limited to a narrow context: the United States would have to be engaged in a protracted conflict over vital interests, and it would need the support of key regional powers. The United States would also need to implement a mix between a close and distant blockade in order to avoid imperiling the conflict's strategic context. If enacted, a blockade could exact a ruinous cost on the Chinese economy and state.

KEY WORDS: China, Naval Blockade, Military Modernization, Anti-Access/Area-Denial, Asian Security

Since World War II, the United States has aimed to preserve military primacy in the Asia-Pacific region. Rather than using this ascendancy for expansionist purposes, the United States sought to maintain regional stability through deterrence. For over five decades, its forces largely preserved command over the global commons in the pursuit of this mission. Even to this day, the United States remains the region's most powerful military actor. But American military dominance is steadily eroding thanks to the breakneck pace of China's military modernization, and, as a result, the military balance in the region is shifting.¹ Since the mid-1990s, the People's Liberation Army (PLA) has been in the process of creating a formidable anti-access and area denial

¹See *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012* (Washington DC: Department of Defense 2012) and previous annual reports, as well as Ashley J. Tellis and Travis Tanner (eds), *Strategic Asia 2012–2013: China's Military Challenge* (Washington DC: The National Bureau of Asian Research 2012).

(A2/AD) complex in China's near seas.² As China continues to upgrade its A2/AD system, it presents a serious and sustained challenge to the United States' operational access to the region. In wartime, some American forces may initially be prevented from operating in China's near seas. Even in peacetime, China's A2/AD complex arguably attenuates the United States' ability to defend its interests and its allies from potential Chinese coercion, and with it, the American-organized system of deterrence and regional stability.

The mounting challenge presented by China's military modernization has led the United States to review existing military strategies and to conceptualize new ones. In the universe of possible strategies, the idea of a naval blockade deserves greater scrutiny. By prosecuting a naval blockade, the United States would leverage China's intense dependence on foreign trade – particularly oil – to debilitate the Chinese state. A carefully-organized blockade could thus serve as a powerful instrument of American military power that contributes to overcoming the pressing challenge of China's A2/AD system. A blockade could also provide the United States with several gradations of escalation control and be easily paired with alternate military strategies.³

Even if a blockade is never executed, its viability would still impact American and Chinese policies for deterrence reasons. The United States' regional strategy is predicated on the belief that a favorable military balance deters attempts to change the status quo by force, thus reassuring allies and upholding strategic stability. The viability of a blockade influences this calculus, and can accordingly affect American and Chinese actions – both military and non-military – that are based on perceptions of it. If a naval blockade is a feasible strategy, it strengthens the American system of deterrence and dilutes any potential attempts by China to coerce the United States or its allies. Moreover, if a blockade's viability can be clearly enunciated, it would also enhance crisis stability and dampen the prospects of escalation due to misunderstandings – on either side – about the regional balance of power.

²Referred to as 'active defense' by the PLA, China's A2/AD strategy is intended both to prevent and delay American forces from entering the theater of operations (anti-access) and to disrupt their ability to operate once they get there (area denial). See Roger Cliff *et al.*, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States* (Santa Monica, CA: RAND Corporation 2007) and Thomas G. Mahnken, 'China's Anti-Access Strategy in Historical and Theoretical Perspective', *Journal of Strategic Studies* 34/3 (June 2011), 299–323.

³For the latter point, see Jan van Tol *et al.*, *Air Sea Battle: A Point of Departure Concept* (Washington, DC: Center for Strategic and Budgetary Assessments 2010), 76–8. For the former point, see T.X. Hammes, 'Offshore Control: A Proposed Strategy for an Unlikely Conflict', *Strategic Forum*, No. 278 (June 2012), <www.ndu.edu/press/lib/pdf/StrForum/SF-278.pdf>.

Yet despite the importance of understanding the viability of a blockade, the existing literature on the subject is remarkably sparse, circumscribed and inconclusive.⁴ While scholars of regional security affairs often reference their disparate beliefs about the possibility of a blockade, no consensus exists around either its strategic or operational viability. The few studies that have been undertaken are perspicacious and refreshingly creative, but they are limited in either their scope or detail. To date, no one has yet carried out a comprehensive public examination of a blockade's prospects despite the striking implications of such a study for the Asia-Pacific military balance, regional deterrence and stability, and American military strategy.

In part, a blockade strategy has been overlooked because economic warfare strategies seem inherently misguided given the close commercial ties between China and the United States. But if a serious conflict between the two nations erupted, then their immediate security interests would quickly override their trade interdependence and wreak enormous economic damage on both sides, regardless of whether a blockade were employed.

This article seeks to remedy the gap in the literature by beginning a much-needed discussion on the viability of an American naval blockade of China and its context, conduct and consequences.⁵ While a blockade is not a priori impossible or irrelevant in any situation, it is also not a

⁴The authoritative argument is Gabriel B. Collins and William S. Murray, 'No Oil for the Lamps of China?', *Naval War College Review* 61/2 (Spring 2008), 79–95, which argues that a blockade is unfeasible. Their article limits itself, however, to a 'limited-war scenario' (92) and has an incomplete analysis of the operational difficulties of a blockade. Douglas C. Peifer, 'China, the German Analogy, and the New AirSea Operational Concept', *Orbis* 55/1 (Winter 2011), 114–31, tackles many of the operational difficulties that Collins and Murray pose, but neglects the most important – how the United States could prevent China from using the character of international shipping to bypass a distant blockade. Bruce Blair, Chen Yali and Eric Hagt, 'The Oil Weapon: Myth of China's Vulnerability', *China Security* (Summer 2006) 32–63, also examines the viability of a blockade, but operates under the same 'fundamental assumption of a limited conflict' (42) and focuses on the economic consequences of a blockade. Hammes, 'Offshore Control' lays out the benefits of a blockade strategy (as well as a rough sketch of its operational conduct), but does not discuss the importance of the regional context. Finally, Craig Koerner, 'Would the Navy be Home by Christmas? Thoughts on Blockading China', unpublished manuscript, 2012, emphasizes the importance of Russia to an American naval blockade and lays out some of the general difficulties of a blockade strategy.

⁵This examination is not based out of the author's belief in the inevitability or desirability of a Sino-American war – in fact, the complete opposite – but rather because understanding the viability of a blockade matters, even in times of peace.

ready tool in the American arsenal and would be feasible mainly within certain boundaries. First, a blockade could achieve its objectives primarily in the context of a protracted Sino-American conflict over vital interests. Second, a blockade's success would depend in large part on the support of Russia, ideally along with India and Japan. Particularly in Moscow's case, such support is unlikely to be forthcoming unless China begins to misbehave in a way that unnerves its neighbors and leads them to align with the United States in order to protect their security interests. Third, in order to avoid imperiling the larger strategic context of the war, the United States would need to implement a two-ring blockade that geographically separated its two primary operational functions: differentiation and neutralization. Fourth, while a blockade would not be able to directly degrade the PLA's operational capability, it could still benefit American forces by enervating the Chinese state in the context of a larger war of exhaustion and forcing Beijing to make tough decisions over the allocation of its limited resources.

In the first section, this article analyzes a blockade strategy's prerequisite strategic context, as well as the role a blockade would play within an overall American military campaign. In the second section, the article lays out the likely operational conduct of a two-ring blockade, including a rough sketch of its force structure and potential Chinese countermeasures. In the third section, some of the primary consequences of a blockade strategy are anticipated, particularly with regards to China's military, economy and society. The article concludes by briefly discussing implications for regional stability.

The Strategic Context of a Blockade

China's economy relies intensely on maritime trade, especially with regards to oil imports. In keeping with its reputation as the 'world's workshop', China depends on imported raw materials to export finished goods. Trade dominates China's export-oriented economy, comprising 52.1 per cent of China's GDP (of which 90 per cent is seaborne).⁶ The People's Republic is known for being the world's largest exporter of merchandise goods (\$1.6 trillion in 2010), but it is also the world's second largest importer of merchandise goods (\$1.4 trillion in 2010) and the world's third largest importer of natural

⁶Central Intelligence Agency (CIA), 'China', *The World Factbook 2012*, <<https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html>>; *The People's Liberation Army Navy: A Modern Navy with Chinese Characteristics* (Suitland, MD: Office of Naval Intelligence 2009), 10.

resources (\$330 billion in 2008).⁷ Most strikingly, China's energy security is closely tied to its reliance on imported oil. In 2011, China purchased almost 60 per cent of its oil abroad – an astounding 5.7 million barrels per day – and it then depended on maritime transport to bring 90 per cent of that oil home.⁸ The country is intensely and irreplaceably reliant on oil in the industrial and transportation sectors, and will become even more so in the foreseeable future.⁹ China's Achilles' heel may well be imported oil.¹⁰

In the context of a Sino-American war, the United States could try to take China's greatest national strength – its export-oriented, booming economic growth model – and transform it into a major military weakness. To do so, the United States would implement a naval blockade of China that attempted to choke off most of China's maritime trade. Under the right conditions, the United States might be able to secure victory by debilitating China's economy severely enough to bring it to the negotiating table.¹¹

However, while a blockade could apply debilitating pressure on China, its efficacy would be limited to certain strategic contexts. A blockade would work best in a protracted conflict over vital interests. Moreover, its success would be inextricably linked to the allegiances of China's neighbors and the broader regional political context.

The Character of the Conflict

The United States could find itself embroiled with China in an unlimited war, a limited war, or an 'extensive' war that falls between

⁷*World Trade Report 2011* (Geneva: World Trade Organization (WTO) 2011), 31, and *World Trade Report 2010* (Geneva: WTO 2010), 208.

⁸*BP Statistical Review of World Energy June 2012* (London: British Petroleum (BP) June 2012), 8–9 and Du Juan, 'Nation weighs shipping system for oil imports', *China Daily*, 22 March 2012, <www.chinadaily.com.cn/cndy/2012-03/22/content_14885310.htm>.

⁹Daniel H. Rosen and Trevor Houser, 'China Energy: A Guide for the Perplexed', Center for Strategic and International Studies and the Peterson Institute for International Economics, May 2007, 6–16, <www.iie.com/publications/papers/rosen0507.pdf>.

¹⁰Although oil only makes up a relatively small per centage of China's total energy mix (roughly 20 per cent), it is functionally irreplaceable as a transportation fuel and is closely tied to political stability, in part because it is becoming increasingly central to the identities of China's combustible middle-class. See Sean Mirski, 'Predator or Participant? China's Oil Security Strategy and the Sources of Its Behavior in the International Oil Market', unpublished manuscript, 2012.

¹¹For a useful introduction to blockades, see Bruce Elleman and S.C.M. Paine (eds), *Naval Blockades and Seapower: Strategies and Counter-Strategies, 1805–2005* (London: Routledge 2006).

the other two poles, and out of these, it would only consider implementing a blockade in the third, 'extensive' conflict scenario. The United States will probably never have to consider implementing a blockade in the context of an unlimited war because such a conflict – waged by any and all means at the belligerents' disposal – could only arise subsequent to a total breakdown in nuclear deterrence. Fortunately, both China and the United States would be bounded in their wartime conduct by the prospect of horrific nuclear escalation, which would establish an upper limit on both the means employed and the ends pursued by either side. At the opposite extreme, the United States would also not implement a blockade in the context of a limited conflict. In such a war, American forces would be fighting over interests that the United States perceived to be important, but not vital. As a result, the United States would be reluctant to utilize a blockade strategy due to its high costs, except perhaps as a latent strategy that deters against Chinese escalation or signals American resolve and escalation dominance.

However, if the United States perceived that its vital interests were at stake in a conflict, then it would be willing to shoulder greater burdens and expend greater effort in order to win it.¹² In such an 'extensive' conflict, Washington may be willing to bear higher costs – including the cost of resisting international pressure to immediately terminate the conflict – to the point where a blockade would become an appropriate strategy. Equally importantly, the significance of the interests at stake would reinforce the United States' political will and give American leaders the domestic political space necessary for prosecuting a longer-term conflict.

While the division between a limited and an 'extensive' conflict is an arbitrary one that is heavily conditioned by the conflict's context, it nevertheless usefully highlights the circumstances under which a blockade would be a practical option. Rather than following clear pre-determined guidelines, American policymakers would ultimately have to judge in any given conflict scenario whether the interests at stake were sufficiently valuable to the United States such that a blockade should be seriously considered.

Before a blockade was implemented, the United States would need to anticipate that it could not necessarily defeat China quickly and decisively. Otherwise, China could rely on its domestic resource

¹²The exact cause of a potential conflict is extraordinarily difficult to predict, in part because the United States would perceive interests as 'vital' not only based on their intrinsic importance but also due to their probative value. See Michael D. Swaine and Ashley J. Tellis, *Interpreting China's Grand Strategy: Past, Present, and Future* (Santa Monica, CA: RAND Corp. 2000), 226–8.

reserves and stockpiles to wait out the blockade's effects until the conflict drew to a close.¹³ But if the United States foresaw the possibility of a protracted war, then a blockade strategy would become more relevant because it could actually begin to have a material impact as the conflict wore on.

An American War of Exhaustion

Given the presumed context of the conflict – especially the improbability of decisive military victory – the United States would be forced to pursue an overall 'Fabian' strategy as part of a war of exhaustion.¹⁴ The ultimate source of a country's military strength lies in its national power, which is rooted in its national resources and performance.¹⁵ Thus, even if the United States completely routed China's forces on the battlefield, China could still indefinitely generate and project new forces from the safety of its heartland. Hence, the United States would need to broaden its focus beyond just the battlefield: it would have to realize that a war of exhaustion is not won on the battlefield per se; instead, it ends only when one side's overall national power can no longer sustain its war effort.

A blockade could be a powerful way of conducting a war of exhaustion because it could directly strike at the sources of China's national power. A blockade strategy would also allow American forces to overcome the singular challenge posed by a Sino-American conflict: the United States would have to win a great power war without the threat of invading Chinese territory, a sharp departure from past conflicts when states would accelerate the collapse of their opponents' ability and willingness to fight by directly attacking their territory. Of course, a blockade strategy alone would be unlikely to provide either the material or psychological clout necessary to induce Chinese capitulation, so the United States would only use a blockade as part of a larger military strategy. But in conjunction with victories on the battlefield, a blockade could wear China down more quickly and efficiently than a battlefield strategy alone, which could only indirectly enervate the Chinese state.

¹³See Koerner, 'Would the Navy be Home by Christmas?'

¹⁴A strategy of exhaustion 'seeks the gradual erosion of the enemy nation's will or means to resist'. Brian M. Linn and Russell F. Weigley, "'The American Way of War' Revisited', *Journal of Military History* 66/2 (April 2002), 504.

¹⁵Ashley J. Tellis, Janice Bially, Christopher Layne, Melissa McPherson and Jerry M. Sollinger, *Measuring National Power in the Postindustrial Age: Analyst's Handbook* (Santa Monica, CA: RAND Corp. 2000).

As part of a war of exhaustion, a blockade strategy would help drive Beijing to the peace table through two potential paths.¹⁶ First, it would weaken China's ultimate ability to prevail in the military conflict to the point where eventual defeat becomes certain and an extension of the Chinese war effort is a needless waste of resources. Second, by diluting the cohesion of the Chinese state, a blockade strategy would also attempt to raise the specter of other threats graver to Beijing than a direct military loss, which could then compel China's leaders to sue for peace. For instance, as Beijing was forced to direct resources away from its internal security apparatus, it may be confronted by the looming threat of a revolution or civil war, either of which threatens the Chinese state more than does a declaration of military defeat.

The Importance of Third Parties

In light of these strategic benefits, a blockade is a potentially decisive way of applying pressure on Beijing. But while a blockade strategy has much to endorse it as a military strategy, it also suffers from one significant strategic shortcoming: it requires the cooperation of several third parties.

China's trade is borne on the seas largely as a result of economic considerations rather than physical limitations. If Beijing were blockaded by sea, it would turn to overland imports and the transshipment of oil and other resources by third parties. For this reason, the success of an American blockade would hinge on China's ability to substitute for its lost imports with overland shipments either bought directly from its neighbors or transited through them from elsewhere.

Among China's neighbors, Russia and Kazakhstan are the only states that produce enough petroleum to dull the pain of an American blockade. Russia is the world's largest oil producer, and it produces enough petroleum – over ten million barrels per day – that it could singlehandedly supply China with enough oil for all its needs.¹⁷ Kazakhstan produces slightly less than two million barrels per day, and could also go a long way towards relieving a blockade.¹⁸ Admittedly, China currently only has the potential to import roughly 500,000 barrels of oil per day via the Russian and Kazakh pipelines. But if

¹⁶Notably, an American blockade would not be intended as a 'punishment' strategy oriented at Chinese civilians. See Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell UP 1996), 21–7, for why such an approach would fail.

¹⁷*BP Statistical Review*, 8.

¹⁸*Ibid.*

China's demand for oil became sufficiently robust – as it would in the context of a blockade – then Beijing would undoubtedly be willing to pay the higher cost of shipping Russian and Kazakh oil via railway systems and in trucks. While China would likely discover that infrastructural constraints would limit the aggregate total that could be shipped, it would still be able to recoup a large portion of its blockaded imports.

Several other Chinese neighbors might act as transit points for goods and resources produced outside of their borders, albeit to a limited degree. Broadly speaking, China could import through three potential sub-regional transit routes: a Central Asian route (via either Tajikistan or Kyrgyzstan), a Southwest Asian route (via either Afghanistan or Pakistan) and a Southeast Asian route (via either Burma or Laos).¹⁹ In theory, Beijing could use any country along these routes with access to the international markets as a stepping stone for imports. However, the infrastructure associated with the three routes was not designed to support the transportation of large quantities of goods to China and might become overloaded by a significant increase in imports. In particular, the Central Asia and Southwest Asian routes would be severely hampered by the extensive mountain ranges that act as an alpine fence dividing China from its western neighbors. Hence, these states could only relieve China's blockade to a limited degree.

The Regional Political Context

Given the overriding importance of third parties to the conflict, the United States would need to create a favorable regional political context in order to succeed. To do so, the United States would mix political-military coercion with economic incentives to bully and cajole China's neighbors into imposing embargoes on China. In some cases, the United States might be able to do so with relative ease. Countries like India and Vietnam have a checkered military history with China, and they both fear China's rise as a regional hegemon. In other cases, the United States might be willing to use military force to interdict lines of supply into China. For instance, if Burma refused to cooperate, the United States might strike the Sino-Burmese oil and natural gas pipeline or even extend the blockade to Burmese ports.

More broadly, the United States would try to alter the political calculus of China's neighbors in an effort to convince them that tacitly supporting the United States would align with their strategic interests. In this regard, how states in the region apportioned blame would

¹⁹This excludes Russia and Kazakhstan, as well as states that would be unlikely to aid China for political reasons.

matter: the blockade's success would be critically determined by whether China or the United States were judged as at fault for the war.²⁰ If the war were seen as rooted in American aggression and initiative, then the region's states would quickly rally to China's defense out of fear and stymie the United States' efforts. If, instead, the conflict were perceived as the result of Chinese actions, then China's neighbors – several of which would be absolutely central to the success of a blockade – might surge to the United States' side. Accordingly, alongside the active conflict, China and the United States would simultaneously struggle over regional public opinion, and whichever of the two established the dominant narrative would reap significant benefits. In this regional battle of perceptions, the United States would profit from its distance from East Asia, which would make it seem less threatening, especially when juxtaposed to a rising China next door.

The United States would especially concentrate on winning the battle of perceptions with respect to three of China's neighbors – Russia, India and Japan – who could then help close China's potential alternate trading routes. In particular, Russia would be the *sine qua non* of a successful blockade of China, and could tip the balance of a blockade in favor of either China or the United States.²¹ On the one hand, Russia is remarkably well-positioned to alleviate the blockade's effects on China. Russian trade would be immune to American interdiction, since Russia's nuclear arsenal and significant conventional assets preclude any serious American attempts at military coercion. If the United States were unwise enough to try, the Kremlin would be incensed and might enter the fray on the Chinese side. But on the other hand, China's northern neighbor could also sound the death knell for China's ability to resist a blockade. On the political level, Moscow continues to exert sway over the decisions made in the capitals of China's Central Asian neighbors. With Russian cooperation, the United States would likely prevail in its attempts to exhort Tajikistan, Kyrgyzstan, and potentially Kazakhstan and Afghanistan to refuse Chinese entreaties to act as transit states.

In short, Russia would not only be China's best hope of overcoming an American blockade, but it would also be the United States' key to closing China's transit route through Central Asia and preventing China's two neighboring oil producers from supplying it with petroleum. In an American blockade of China, Russia's importance

²⁰Of course, China's neighbors would also be sensitive to their perceptions of the likely victor in a Sino-American conflict, which further underscores the importance of evaluating the viability of a blockade strategy.

²¹For an elaboration of this point, see Koerner, 'Would the Navy be Home by Christmas?'

as a swing state cannot be overstated, as is borne out by the observation that 'no blockade of China in history has succeeded without Russian acquiescence.'²²

Second, the United States would similarly benefit from using the great power in China's south, India, to institute a second arc stretching from the subcontinent through Southeast Asia. Neither Russia nor India would have to participate in American military operations, but they would have to tacitly endorse American objectives by implementing national embargoes on China and pressuring their smaller neighbors to do the same. Third, the United States might use Japan's top-of-the-line navy to complement its own blockading forces, particularly by reinforcing the Pacific portion of the blockade.

Accordingly, for the United States to implement a strategically effective blockade of China, it would strive to build a 'minimum coalition' with Russia, India and Japan. If all three states made common cause with the American blockade, then China would be placed in both an economic and a political stranglehold. If not, however, a blockade strategy would regionalize a Sino-American war in a way that would be fundamentally unfavorable to American interests.

With Russo-American relations in a rut and Sino-Russian relations reaching new heights (at least rhetorically), the possibility of Russia aligning with the United States may seem particularly ephemeral.²³ However, Russian military officials often express concerns about China's unbounded rise as a regional power and its creeping encroachment in the Russian Far East.²⁴ The pressure of a rising China may provide the impetus for Russo-American reconciliation sometime in the near future, since Russian leaders may decide that for structural reasons rooted in geography, a growing China on their borders presents a greater danger than a troublesome but distant United States.

Russia's calculus hints at the larger strategic context necessary for such a minimum coalition to form: the United States could only conceivably assemble a minimum coalition on the heels of an assertive Chinese push for regional hegemony that precipitates local support for a drastic American response. Short of anything but an aggressive China, collective embargo action will be deterred by the potential consequences of a blockade, not least of which is the possibility of a larger regional conflict with China. The four states are unlikely to coalesce

²²Collins and Murray, 'No Oil for the Lamps of China?', 88.

²³Bobo Lo, *Axis of Convenience: Moscow, Beijing, and the New Geopolitics* (London: Royal Institute of International Affairs 2008).

²⁴*Ibid.*, 56–89.

together around an implicit containment policy until each feels that its national interests may be threatened by China in the future.²⁵

While such a possibility may appear distant at present, the United States, Japan, India and Russia all fear that Beijing might someday conclude that it must use force in order to protect its interests and to resolve its security dilemma on favorable terms.²⁶ All four powers have increasingly hedged their bets against this possibility by setting up a framework for cooperation among themselves. With the notable exception of the tense Russo-American tie, they have consciously maintained stable (if not friendly) relations with each other despite their sundry backgrounds. If China's power and influence in Asia continues to increase, then the bonds between all four states will strengthen, not out of any conviction about China's belligerent intentions, but rather because of a profound uncertainty as to their future disposition.

The Operational Conduct of a Blockade

If the conflict took place within the prerequisite strategic context, then the United States could decide to conduct its blockade of China in a number of ways. In what follows, the article assumes that the United States is embroiled in a protracted and 'extensive' conflict with China over vital interests, a conflict that has engendered the tacit support of several of China's neighbors, including Russia, India and Japan. On these assumptions, the analysis that follows describes the optimal strategy for American policymakers. If a conflict actually occurred, however, the United States would likely tailor the approach laid out below to fit the demands of the particular context.

The Central Operational Challenge

Operationally, blockades are characterized by their distance from the coast of the blockaded state, and they come in two forms: close and distant. A close blockade is typically enforced by stationing a cordon of warships off an enemy's shores to search all incoming or outgoing merchant ships and to impound those carrying contraband. Over the last century and a half, though, close blockades have become increasingly dangerous as belligerents developed the technology to

²⁵Japan may be the partial exception, given its treaty alliance with the United States and its ongoing spats with China over the East China Sea.

²⁶Swaine and Tellis, *Interpreting China's Grand Strategy*. See also John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: Norton 2001), particularly 360–402.

project power from their coasts. In response, blockading powers have turned to distant blockades. A distant blockade avoids the military hazards of being located near the enemy's shores by stationing itself at a distance, albeit still astride the enemy's sea lanes, and it then chokes off the enemy's trade in a similar manner to the close blockade.

Regardless of the type, blockades have been most successful when they have accomplished two key objectives: *differentiation* between neutral and enemy shipping, and *neutralization* of enemy shipping. Strictly speaking, differentiation is not an operational prerequisite for blockades, since a blockading power can successfully interdict enemy commerce by simply preying on all trade in the region. In practice, however, indiscriminate blockades infuriate neutrals, oftentimes with ruinous strategic consequences for the blockading power.

Neither a close nor a distant blockade of China alone would be able to accomplish the two functions of successful blockades thanks to the constraints imposed by military requirements and the nature of maritime commerce. On the one hand, a conventional close blockade would be severely complicated by the United States' desire to minimize the military risk to American warships. As American forces came closer to China, they would increasingly place themselves within range of China's A2/AD complex, possibly limiting their operational freedom and resulting in heavy losses. American forces could avoid the perils of China's A2/AD system by implementing a close blockade enforced by submarines, long-range air power and mines; but by so doing, the blockade would also lose much of its ability to differentiate.

On the other hand, the logic behind conventional distant blockades has similarly been undermined by the exigencies of modern commerce. Today's cargoes of raw materials and merchandise can be sold and re-sold many times in the course of a voyage, so the ultimate ownership and destination of a ship's cargo is often unknowable until the moment it docks. In other words, the idea of 'enemy commerce' on the high seas no longer holds. Although the United States might be able to set up a conventional distant blockade that quarantined all Chinese-owned or -flagged vessels, China could still simply buy neutral vessels' cargoes after they had passed through the blockade, defeating its entire purpose. While a distant blockade could differentiate and neutralize to some degree, it would not be able to match up the two functions enough to create anything but an extremely porous blockade.

To remedy the infirmities of the two blockades, the United States would take the best of both worlds and geographically distill the two functions by implementing a 'two-ring' blockade made up of two concentric rings around China's shores. The heart of the two-ring blockade would be its 'inner ring,' which would be an unconventional close blockade primarily aimed at neutralizing vessels bound for China

without having to board them first. However, an inner ring blockade would likely spawn considerable political problems by virtue of its inability to either peacefully neutralize blockade runners or differentiate between different shipping with any degree of sophistication. Therefore, the United States would also need to implement a second, ‘outer ring’ of blockading forces in order to resolve the inner ring’s political challenges. In contrast to the inner ring, the outer ring would be comprised largely of warships focused on both differentiating between different regional commerce with greater precision and adding a non-lethal component to the inner ring’s neutralization efforts. In so doing, the outer ring would help accomplish the two key functions, thereby improving the overall efficacy of the blockade. The outer ring would not be a prerequisite for the blockade’s operational success – although it would greatly help – but it would be vital in guaranteeing its strategic viability.

The Inner Ring Blockade – Lethal Neutralization

The organization of the inner ring blockade. In light of the constraints posed by China’s A2/AD complex, the United States would organize the inner ring blockade as an impassable exclusion zone off China’s coast.²⁷ Unlike a conventional blockade, an exclusion zone is not semi-permeable, nor does it attempt to confiscate or disable ships. Instead, an exclusion zone is an area that is declared off-limits to commercial shipping, and the ban is then backed by non-negotiable firepower. In the context of an American blockade, the United States would implement the exclusion zone as close to China’s shores as operationally possible in order to avoid damaging neutral vessels. But the United States would target without additional warning those vessels unwise enough to stray into the zone – in effect, the United States would implement a ‘sink-on-sight’ policy.²⁸

The United States would enforce the exclusion zone principally through attack submarines, long-distance airpower and mines, because unlike other military assets, these three capabilities could operate with relative impunity within the range of China’s A2/AD complex. Submarines are well suited to anti-ship operations in China’s near seas

²⁷Christopher Michaelsen, ‘Maritime Exclusion Zones in Times of Armed Conflict at Sea: Legal Controversies Still Unresolved’, *Journal of Conflict and Security Law* 8/2 (Oct. 2003), 363–90.

²⁸Such a policy would hark back to American operations in the Vietnam War and World War II. Spencer C. Tucker, ‘Naval Blockades During the Vietnam War,’ in Elleman and Paine, *Naval Blockades and Seapower*, 173–9 and Clay Blair, *Silent Victory: The US Submarine War Against Japan* (New York: Lippincott 1975).

because China remains relatively weak in its anti-submarine warfare (ASW) capabilities.²⁹ China traditionally has not invested substantially in multidimensional ASW capabilities, and its ASW impotence would be further exacerbated by the operating environment of an inner ring blockade: the shallow waters of China's coastal areas curb the ability of sonars – the primary sensors used for ASW – to detect submarines. The upshot is that 'Chinese abilities to deny access to US SSNs and SSGNs [nuclear-propelled submarines] are very limited and US submarines can currently operate freely in Chinese coastal waters.'³⁰ While the air above China's near seas is likely to be more contested than the undersea environment, American forces could nevertheless project airpower from outside the region. The United States could use a combination of stealth, stand-off and cyber capabilities to penetrate into the near seas' airspace, strike targets, and then vacate the area before Chinese air defenses were able to respond.

To impose the exclusion zone, the submarines would be stationed around China's coast and key harbors, and would work in conjunction with airpower projected from the periphery of China's near seas. In total, the United States and Japan currently have 71 attack submarines between them; if one-third of their submarine force were on station as part of the inner ring's blockading force – and if the two countries did not dramatically scale up the construction of submarines, as powers have previously done in anticipation of and during major wars – then each submarine would be in charge of a roughly 100 mile perimeter of ocean at most.³¹ If a merchant vessel violated the exclusion zone, the United States could either cue long-range strikes by American warplanes or inform the nearest patrolling submarines.

In ideal conditions, the submarines and airpower would have little trouble handling their area of operations, since they would be supported by targeting information from the United States' extensive intelligence, reconnaissance and surveillance (ISR) assets. In the context of a

²⁹Owen R. Coté, 'Assessing the Undersea Balance Between the US and China', *SSP Working Paper* WP11-1, Feb. 2011, <http://web.mit.edu/ssp/publications/working_papers/Undersea%20Balance%20WP11-1.pdf>.

³⁰*Ibid.*, 3.

³¹This assumes that the submarines were stationed in a picket line as opposed to being concentrated in key waterways. A rough calculation on Google Maps suggests that the total blockade perimeter would be 2,500 miles long. For the size of the two countries' submarine forces, see Ronald O'Rourke, 'Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress', *Congressional Research Service* RL32418, 2 April 2012, <www.fas.org/sgp/crs/weapons/RL32418.pdf> and International Institute for Strategic Studies, *The Military Balance, 2012* (London: Routledge for IISS 2012), 252–3.

regional war, however, China would seek to degrade American ISR assets and blind American forces. As a result, both long-distance airpower and submarines would be handicapped by imperfect targeting information, and the latter would have to rely more on their own sonar as they hunted for targets. Although American forces could still implement a predominantly effective exclusion zone, its enforcement would probably remain somewhat incomplete.

Even with imperfect enforcement, though, the exclusion zone could still achieve the blockade's aims because the fulcrum of the United States' campaign would be grounded in deterrence rather than in force. If the United States expected to halt Chinese shipping by forcibly neutralizing every vessel that normally docks in Chinese ports, then it would be sorely disappointed; after all, over 200 vessels enter and leave Chinese ports every day, and the United States would rapidly exhaust its stock of munitions if it strove to sink them all.³² While daunting in theory, the United States would never need to meet this high standard in reality. As soon as American forces conspicuously sank several large merchant vessels, the majority of other shipping would be deterred from trying to run the blockade and much of the regular flow of China's maritime commerce would quickly dry up. The more effectively that the United States prevented blockade runners, then the less likely it would be that American forces would encounter any vessels struggling to sneak past in the future, allowing the submarine and air forces to conserve their armaments. American forces would also enforce the inner ring's exclusion zone through naval mines, which would be positioned at the approaches to China's harbors. China's harbors are indispensable to its waterborne trade – China's ten largest mainland ports accounted for more than 80 per cent of the country's container throughput in 2010.³³ This heavy concentration results from the virtual necessity of port facilities for the conduct of large-scale maritime trade. The United States would exploit this structural weakness by seeding China's major ports with smart mines that are designed to attack all passing merchant vessels. In deciding how to lay the minefields, American forces would choose between two delivery options: they might use either submarines to dispense the mines, albeit at a slow rate, or aerial minelaying, which could disburse many more mines at a given time but might also be operationally more difficult and

³²Office of Policy and Plans, 'Vessel Calls Snapshot, 2010', US Department of Transportation Maritime Administration, May 2011, <www.marad.dot.gov/documents/Vessel_Calls_at_US_Ports_Snapshot.pdf>.

³³The Ministry of Transport, 2010 *The Report on China's Shipping Development* (Beijing: China Communications Press Aug. 2011), 44.

dangerous if non-stealthy aircraft were employed for the mission.³⁴ Of course, China would try to clear the minefields through various measures, so the United States would need to obstruct these efforts as much as possible while also periodically re-seeding the ports.³⁵

Despite mines' conceptual efficacy, though, it is unclear whether the United States has either the mines or the delivery capabilities to successfully and continually seed Chinese ports in the fashion described. This issue will be treated at greater length below.

But while submarines, long-distance airpower and mines could effectively enforce an exclusion zone as part of the inner ring blockade, they are all blunt instruments that are poorly equipped for either fine-grained differentiation or non-lethal neutralization. Unlike surface warships, the inner ring forces would not be particularly conducive to telling the difference between a ship carrying Chinese cargo and one carrying Japanese cargo. They are also not designed to stop, board and search suspicious vessels. Moreover, these forces' greatest asset – their ability to ladle out highly lethal doses of firepower without detection – also limits their ability to peacefully enforce a blockade: they are much better at sinking blockade runners than disabling them.

In large part, the inner ring forces' capabilities – along with those they lack – would thus tacitly constrain what American forces could realistically hope to achieve in the inner ring blockade, thereby necessitating an exclusion zone as opposed to a more discriminatory blockade. While the United States would ideally prefer to implement a more conventional close blockade, with a heightened sensitivity to issues of differentiation and peaceful neutralization, China's A2/AD complex would prevent it from deploying the forces necessary to do so, and instead limit it to imposing mostly indiscriminate, 'sink-on-sight' policies.

The potential political repercussions. While past 'sink-on-sight' policies frequently scored undeniable martial victories, their interference with neutral shipping made them politically dangerous and often led to disastrous strategic effects. If the inner ring blockade were not supplemented by an outer ring, then it would likely result in severe political repercussions for the American war effort, particularly when

³⁴See *Jane's Underwater Warfare Systems*, 'Los Angeles class (United States)', 28 Sept. 2011, <<http://articles.janes.com/articles/Janes-Underwater-Warfare-Systems/Los-Ang-les-class-United-States.html>> and Scott C. Truver, 'Taking Mines Seriously: Mine Warfare in China's Near Seas', *Naval War College Review* 65/2 (Spring 2012), 66, n.44.

³⁵China is generally viewed as deficient in its counter-mine capabilities. Truver, 'Taking Mines Seriously', 59–61.

the United States interfered with neutral commerce by mistake. Because American forces would be unable to differentiate between different types of shipping, they would inevitably launch unintentional attacks on neutral vessels. Beyond their political implications, accidental attacks would have a spill-over effect on all regional commerce by raising shipping costs (particularly insurance rates), thereby impinging on the trade of neutral Asian states and American allies.³⁶ Of course, the United States would be exceedingly cautious in its targeting practices, but war is not immaculate: as history admonishes, accidents do happen, and no other field of human activity is as prone to them. It is worth remembering that the United States' own entrance into World War I was partly spurred by Berlin's indiscriminate and unrestricted 'sink-on-sight' policies, which ultimately backfired and scuttled the German war effort.

The political challenges of the inner ring blockade would be further compounded by the international character of Chinese shipping. As previously noted, China's maritime trade is conducted within the bounds of the international shipping market, which is composed of a medley of vessels flagged in many different nations and owned and crewed by citizens of many more. Many of these neutral states would likely be unwilling to accede to an American blockade, and they would be furious if their vessels were sunk without first having been given the chance to surrender. Moreover, many of these states would be vital to the success of the United States' blockade strategy, and China would surely attempt to re-flag its ships under the colors of nations that the United States would rather not confront. For example, China might try to shift all of its international trade into Russian-owned hulls; even if Moscow were inclined to support the United States, it might not be able to when faced with considerable pressure from its business community. The United States could face further political consequences from the exclusion zone's inability to allow medical care and basic necessities through to China. While this humanitarian aid may not be directly relevant to the success of the United States' military campaign, its wanton destruction might nevertheless have political implications both domestically and abroad. For instance, if the United States were to regularly destroy hospital ships – the likely and unfortunate outcome of an indiscriminate 'sink-on-sight' policy – the opinion of the international community might shift against the United States, undermining the strategic context necessary for the blockade to succeed.

The degree of geopolitical trouble for the United States would depend on how American forces balanced between the use of mines and

³⁶Collins and Murray, 'No Oil for the Lamps of China?', 85–6, 95 n.27.

the use of submarines or long-distance airpower. On the one hand, mines might be less hazardous for neutral vessels than either of the two other capabilities, since they would generally be positioned in Chinese harbors and other areas that are far from the paths of international shipping. Mines also have the added advantage of distancing Washington away from the ultimate responsibility for sinking a suspect vessel; while American forces would choose to lay the minefield, the final decision to risk going into it would still be in the hands of the merchant vessel's captain. But on the other hand, mines are also a less flexible and more escalatory means of warfare, and their lack of discrimination ability makes their use in civilian ports particularly suspect under both American and international law.³⁷

Taken together, these potential repercussions suggest that regardless of the balance struck between the three capabilities, an exclusion zone around China would be fraught with tremendous political danger. While an inner ring blockade strategy would be militarily effective on its own, it might nevertheless trigger a cascade of intolerable diplomatic crises, and the United States might appear to be establishing unilateral and Melian policies backed only by American military muscle. To combat this impression, the United States would implement a second blockade ring that would allow greater selectivity in applying force while also acting as a winnowing device.

The Outer Ring Blockade – Differentiation and Non-Lethal Neutralization

The organization of the outer ring blockade. In considering where to position the outer ring, the United States would look for a confluence of two factors: opportune geography and the diminution of China's A2/AD-related strike capabilities. These two elements coincide at the periphery of China's near seas, and there the United States would establish a selectively-permeable perimeter of check-points.³⁸

³⁷US Navy Department, *Commander's Handbook on the Law of Naval Operations*, NWP 1-14M (Washington DC: US GPO July 2007), 9-2, 9-3, and the San Remo Manual on International Law Applicable to Armed Conflicts at Sea, 12 June 1994, <www.icrc.org/ihl.nsf/full/560?opendocument>.

³⁸In establishing the outer ring, the United States should face no more than token opposition from the PLA because the latter lacks the requisite long-range capabilities, access to bases, and operational experience. Collins and Murray, 'No Oil for the Lamps of China?', 81-2, 93-4 n.10.

To guarantee that its perimeter would cover all shipping traffic, the United States would have to account for a variety of key passageways in Southeast and East Asia that would either have to be blockaded or closed entirely.³⁹ The most important passageway would be the Straits of Malacca, the maritime corridor through which much of the region's commerce travels – and China's in particular. Washington would face deep and enduring condemnation if it closed the Straits, so it would instead choose to set up its primary checkpoint there. In addition to the Straits, the United States would have to take into account several alternative sea routes that Chinese vessels could take, including the Strait of Sunda, the Lombok Strait, around the coast of Australia and through the Pacific Ocean. These passageways would either be blockaded in a similar fashion to the checkpoints at the Straits of Malacca, or they would be closed off to international shipping completely.

At the outer ring's checkpoints, the United States would need to set up and streamline a rigorous inspection regime. In order to help determine passing merchant vessels' ultimate destinations, the United States would board ships and manually examine their bills of lading, documents that typically specify the destination of a ship's cargo. Unsurprisingly, the US Navy might find that such a process is highly laborious, given the daily volume of shipping in the region.⁴⁰ To overcome this challenge, the United States would impose a new inspection regime; for instance, one set of authors proposes implementing a mandatory system of remotely-verifiable bills of lading.⁴¹ Additionally, the United States would streamline the inspection process by dividing vessels into different tiers – vessels that are unlikely to contravene the blockade (for instance, American- and allied-owned ships) could sail through with minimal inspection.

The United States would reap considerable benefit from the checkpoints at the outer ring in the initial stages of the blockade effort. If the United States discovered that a vessel was destined for, owned by, or registered in China, then it could impound it. The United States would escort the vessel and crew to a quarantine anchorage; if the crew refused to go voluntarily, then the United States would

³⁹If the United States decided to close any international passageways, it may contravene international law. See Navy Department, *Commander's Handbook*, 9–3, and the San Remo Manual, especially Articles 27, 32, and 33.

⁴⁰On average, roughly 205 vessels travel through the Straits of Malacca each day. Centre for the Straits of Malacca (CSOM), 'FAQs,' Maritime Institute of Malaysia, 2011, <http://www.mima.gov.my/index.php?option=com_content&view=article&id=253&Itemid=92>.

⁴¹Collins and Murray, 'No Oil for the Lamps of China?', 87.

provide a prize crew to direct the vessel there. Then, the United States could either auction off impounded vessels and cargo to the highest bidder or send them back to their original non-Chinese owners. In the initial stages of the conflict, the United States would 'capture' much Chinese commerce this way; but as the blockade was normalized, China would instruct its ships to stay out of the Asia-Pacific altogether even as shipping companies increasingly refused to sell their cargo to China for fear of confiscation.

Besides inspecting vessels, the United States would use the outer ring blockade to establish a new regional maritime traffic system. To do so, it would draw inspiration from the British Navigational Certification (navicert) system of World Wars I and II, which was able to successfully streamline the United Kingdom's blockade operations.⁴² The United Kingdom investigated merchant vessels' cargo before it was shipped. Once her cargo passed inspection, the vessel was given a navigational certificate that stated her destination and granted her safe passage through the blockade. The Royal Navy considered any vessel operating in a fixed area without a navicert or other authorizing document to be running the blockade and thus liable to seizure. In effect, the United Kingdom used navicerts to set up a compulsory regulatory system whereby it successfully controlled the flow of all maritime commerce in Northern Europe.

Similarly, the United States would dramatically magnify the success of its own efforts by instituting a modern-day navicert system in East Asia.⁴³ The United States would grant a digital navicert to each incoming merchant vessel after she had successfully been inspected at either the outer ring's passageways or a port outside the region. In essence, the navicert would be a commercial passport, carrying records of both the ship's past voyages and her future ones. The United States would also insist that each ship in the region regularly report her location, along with any deviations in course or any cargo re-sales, which would all then be updated in the navicert. When a merchant vessel docked in a regional port, her navicert would be corroborated against the cargo on board to make sure that the vessel had not secretly ferried any contraband to the Chinese mainland. In addition to its digital elements, the navicert system would also have a physical component: the United States would put tracking beacons on board

⁴²Hugh Ritchie, *The 'Navicert' System During the World War* (Washington DC: Carnegie Endowment for International Peace 1938).

⁴³American law has already set the legal foundation for such a system. See Navy Department, *Commander's Handbook*, 7-7.

each ship to automatically keep American forces updated as to the ship's location.⁴⁴

When combined with American ISR assets in the region, the East Asian navicert system would give the United States a fairly accurate spatial map of the positions and trajectories of all commercial vessels in the region.⁴⁵ The United States would then integrate the navicert spatial map with American firepower to exert deadly force against blockade runners. Vessels might try to disable or spoof the tracking beacons, but the United States could still use other ISR assets to hunt down wayward vessels. While an imperfect process, the navicert system would nevertheless substantially raise the risks of deviation for vessels to the point where running the blockade was so sufficiently perilous that it was no longer attempted except by the most risk-loving vessels.

In order to make its East Asian navicert system compulsory, the United States would peacefully turn away any ships at the outer ring that were attempting to sail into China's near seas but were unwilling to accede to the navicert system. Shippers would complain, but the potential riches of trade in East Asia – even excluding China – would be difficult to resist, especially when juxtaposed with so token an inconvenience as complying with the navicert system.

The political benefits. At first glance, a compulsory East Asian navicert system might seem diplomatically untenable. In effect, though, it would be intended as a bargain: the United States would gain a greater awareness of regional maritime traffic patterns, and in exchange, it would be better able to avoid damaging neutral shipping. The navicert system would not only transmit the ship's location, but it would also broadcast the ship's identity as a neutral vessel that was not to be harmed. When the United States attacked blockade runners, it would use navicert information to avoid accidentally targeting neutral shipping in the region. The United States would also use the navicert system to code between different types of vessels and to safely allow humanitarian aid vessels through the exclusion zone via the use of a 'humanitarian navicert.'

⁴⁴Such a global tracking system already exists in the form of the Automatic Identification System (AIS), which mandates that all heavy vessels carry an automatic tracking device that allows other ships and coastal authorities to identify and locate them. See International Maritime Organization, 'AIS Transponders', 2011, <www.imo.org/ourwork/safety/navigation/pages/ais.aspx>.

⁴⁵For an example of how such a spatial map may look, see MarineTraffic.com, 'Live Ships Map', 2012, <www.marinetraffic.com>.

Given the cumulative effect of the navicert spatial map, merchant vessels would find it difficult to trade with China unless they received concerted state aid to fool the navicert system, a reality that would diminish the negative political repercussions of the United States' inner ring blockade in two respects. First, there would be fewer merchant vessels which would be willing to expend the resources to try to run the blockade in the first place, thereby decreasing the number of times that the United States would be forced to sink a vessel and possibly cause a diplomatic row. Second, any remaining blockade runners would only stand a chance of success if they accepted state aid and succor, either from China or from their home country. If the former, then their active cooperation with the Chinese regime would politically isolate them from their home state and smooth the way for American intervention. If, on the other hand, the ship's home state was the one providing it with the means to bypass the navicert system, then the United States would simply have to accept that this state's adamant opposition to the blockade was immutable and that no amount of reforms – short of ending the blockade – would be enough to appease it.

In sum, while the outer ring blockade would not be an operational prerequisite for the military success of the overall blockade, it could nevertheless be strategically crucial, in large part because it would help mollify the political repercussions that would flow from the inner ring blockade's non-discriminatory and lethal neutralizations. The outer ring blockade would decrease the rate of accidental sinkings – especially of humanitarian vessels – by giving American forces more accurate targeting information via the navicert system. It would also diminish the absolute number of blockade runners, as well as the political consequences of using lethal force against those still willing to sail the gantlet. Finally, of course, the outer ring blockade would also be able to confiscate a large quantity of Chinese shipping in the early stages of the conflict, and thereafter contribute to general blockade enforcement. The outer ring's navicert system could even be used to regulate the flow of commerce into neutral nations in China's vicinity in order to prevent transshipment of contraband.⁴⁶ Cumulatively, these benefits would also allow regional shipping rates to revert back to the status quo ante bellum, benefiting both neutrals and allies.⁴⁷

⁴⁶See Ritchie, *The 'Navicert' System* for an explanation of a parallel British policy in World War I.

⁴⁷The United States would also probably implement a 'third blockade ring' aimed at preventing states and companies from trying to trade with China in the first place. Space constraints prevent a fuller discussion, but the United States would essentially use its economic might as leverage within the international legal, trading and insurance systems to encourage third parties to stop trading with China and to blacklist those

A Blockade's Force Structure

When considered in isolation, a two-ring blockade requires a relatively modest force structure. The United States would have to commit a hefty proportion of its submarine force to the inner ring blockade, backed by air forces located at the edges of China's near seas to provide additional firepower as well as ISR capabilities. It would also need a more sizable investment of surface combatants, ASW escorts and anti-air assets for the outer ring blockade, although the exact force structure would depend greatly on the circumstances of the blockade, including the size of the United States' coalition, the number and location of outer ring checkpoints and the degree to which the blockade distorts regional shipping.⁴⁸ Over time, though, the United States would be able to decrease many of its forces as the navicert system was normalized and checkpoint activity became progressively more streamlined. Cumulatively, these force requirements would not particularly tax the resources of the US Navy.

In preparing for a blockade, the United States should take comfort from the fact that whatever the outcome of the ongoing budget battles, the US Navy's force structure will be sufficiently flexible to implement a blockade. The US Navy's recent acquisitions, however troubled their developmental histories, would be ideal for the purposes of a blockade.⁴⁹ In particular, the United States could use the much-maligned Littoral Combat Ship (LCS) as the mainstay of outer ring forces, and its recent decision to locate at least two LCSs near the Straits of Malacca in Singapore reaffirms that potentiality.

who refuse. For an account of similar efforts in World War II and their connection to the navicert system, see David L. Gordon and Royden Dangerfield, *The Hidden Weapon: The Story of Economic Warfare* (New York: Harper & Row 1947; repr. New York: Da Capo 1976).

⁴⁸See Collins and Murray, 'No Oil for the Lamps of China?', 87, for a discussion. Specifically, Collins and Murray calculate that a blockade would require a 'minimum total of sixteen surface warships and four replenishment vessels, counting neither the supporting forces that would be necessary to interdict and defeat any attacking PRC counterblockade forces or the units necessary to relieve the initial group' (87). This estimate is also based around a blockade only interdicting oil tankers, and not China's total trade. However, it does not account for the mitigating effects of the inner ring blockade and the navicert system.

⁴⁹For more on the US Navy's future force structure, see Ronald O'Rourke, 'Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress', *Congressional Research Service* RL32665, 24 April 2012, <www.fas.org/sgp/crs/weapons/RL32665.pdf>.

In a sense, the United States should primarily concern itself not with whether it has the forces to implement a blockade – it does – but rather with the opportunity costs of not using the naval assets involved in the blockade for alternate military operations. As part of its broader military campaign, the United States would have to allocate its limited resources between the blockade and other ongoing operations. In navigating this dilemma, the United States would take advantage of the fact that many of the naval assets that are too vulnerable to be used in an alternate military campaign would be ideal for blockade duty.⁵⁰ The United States' most sought-after resource would be its submarines, but it would efficiently maximize their use by making an initial investment in blockade firepower that catalyzes an effective system of deterrence in the exclusion zone and thereby minimizes the blockade's future need for submarines.

There is one exception to the readiness of the United States' current and programmed force structure – American forces do not currently possess the mine capabilities necessary for a high-volume minelaying campaign.⁵¹ Since the end of the Cold War, the United States has allowed its offensive minelaying capabilities to atrophy: its extant inventory of mines is both meager and antiquated, and by the beginning of Fiscal Year 2013, the United States will lack any submarine-deployed mines whatsoever.⁵² Delivery options are similarly deficient. While the United States could count on submarines to lay minefields, they would be in high demand for other operations and also handicapped by their limited payload capacity. Conceptually, the United States' best option would be aerial minelaying, but it lacks a long-range stealth bomber capable of and trained for minelaying operations.⁵³

Accordingly, if Washington seeks to bolster its blockade option, then it should 'develop and field in significant numbers smart mobile mines capable of autonomous movement to programmed locations over extended distances,' as some commentators have recently called for.⁵⁴ To the degree that the United States exhumes its offensive minelaying capabilities, it may lower the threshold costs associated with the implementation of a blockade, since mines would interfere with international shipping far less than either submarines or long-distance airpower, and their use would thereby partially decrease some of the political repercussions that would otherwise result from a blockade.

⁵⁰See van Tol *et al.*, *AirSea Battle*, 77.

⁵¹Truver, 'Taking Mines Seriously', 53–9.

⁵²*Ibid.*, 55.

⁵³*Ibid.*

⁵⁴Van Tol *et al.*, *AirSea Battle*, 90.

Chinese Countermeasures

Other than the indirect methods of subverting a blockade, China may also choose to challenge a blockade directly through a variety of countermeasures. Two of the most likely are an offensive strategy of economic warfare and a defensive convoy system. However, neither option is likely to provide China with a decisive edge over an American blockade.

Economic warfare. China boasts an A2/AD system that is well-suited to attacking regional trade: its submarine fleet could threaten all vessels within China's near seas, its land-based aircraft and missile-armed surface ships could harass maritime traffic near the coast and it could mine key waterways and harbors.⁵⁵ Given the relatively short reach of China's A2/AD system, though, the PLA would be limited to commercial targets in the country's near seas.

Moreover, China would face serious strategic repercussions if it pursued a campaign of commerce raiding. Admittedly, if the PLA could distinguish between the trade of American allies and neutrals, then it would be able to undermine the American war effort without antagonizing third parties unnecessarily. But this scenario is unlikely: if the PLA attempted to engage in economic warfare, the Chinese Navy would face the same central operational challenge that bedevils an American blockade strategy – China would be prevented from selectively targeting American and allied ships while sparing the trade of neutrals by the international and undifferentiated nature of maritime commerce. To overcome this problem, an American blockade strategy would rely on two rings that geographically separate the functions of differentiation and neutralization; China, however, would not have the option of implementing an 'outer ring' to differentiate between neutral and enemy shipping. As a result, a Chinese strategy of economic warfare would likely devolve into an indiscriminate attack on all regional trade passing through China's near seas, fomenting the same sort of troubles that vexed Germany's sink-on-sight policies in World War I.

Thus, while China may be able to score some limited victories, its *guerre de course* strategy would unify the entire region against it. If anything, Chinese commerce raiding might benefit the United States on the whole, since it would help alleviate one of the primary weaknesses of an American blockade strategy – its heavy reliance on regional political support.

⁵⁵I thank an anonymous reviewer for this point.

Convoy system. China could also adopt a more defensive strategy by organizing convoys. Historically, convoy systems have been an effective means of mitigating damage from enemy commerce raiding both because they minimize exposure to the enemy and because they economize merchant defense. In China's case, a convoy system would be a particularly attractive option because it would allow Beijing to use its limited naval resources more efficiently.

But while a convoy system would help reduce losses to Chinese commerce, it is unlikely to offer a decisive defense against a blockade for three reasons. First, the PLA only has limited means to actually protect its trade from attack. China does not have anywhere near the ASW or minesweeping capacity to protect the entire volume of its commerce. At best, a convoy system could secure only a small fraction of Chinese trade. Moreover, although China can effectively exclude most American surface vessels from its near seas with its A2/AD system, it cannot thereby protect its own vessels. As Corbett noted, it is an error to think 'that if one belligerent loses command of the sea that command passes at once to the other belligerent...the most common situation in naval war is that neither side has command.'⁵⁶ In line with this logic, China's convoy system will face constant attrition from the United States' own A2/AD-like capabilities, preventing it from making full use of the region's waters.

Second, a convoy system would be logistically difficult for China to implement effectively. Typically, a convoy system will group ships together as they pass through a danger zone. But in this case, Chinese merchant vessels would be in danger as soon as they approached the outer blockade ring and a Chinese convoy would only be able to protect them on the last leg of their journey. After managing to dissemble its way through the outer ring, a merchant vessel on its way to China would have to surreptitiously meet up with the rest of the convoy, all before being noticed by the American blockading forces. But the United States would specifically be looking for large clusters of military and merchant vessels that would signal a proto-convoy, so a merchant vessel's ability to join a convoy would be inversely related to that convoy's size and defensive capacity.

Finally, a convoy system would at best be able to buy each merchant vessel a one-way ticket to China. If a ship successfully ran the American blockade, she would be placed on an American-administered blacklist. Thereafter, if that vessel tried to re-enter the stream of commerce, she would be stopped at the outer blockade ring and confiscated. Accordingly, China could receive supplies from the outside world,

⁵⁶Julian S. Corbett, *Some Principles of Maritime Strategy* (London: Longmans, Green 1918), 77.

but only if it was willing to pay the exorbitant cost of buying a new vessel for each shipment of goods.

The Anticipated Consequences of a Blockade

Although a blockade could be feasibly implemented, it remains an open question as to whether it would be a worthwhile military strategy for the United States and its allies. How a blockade impacts China's military, economy and society will determine its value as a military strategy. Although the consequences of a blockade would be exceedingly complex, manifold and interdependent, a blockade would likely prove to be a cogent instrument of exhaustion as part of the United States' overall campaign.

Even the most effective blockade would not directly debilitate the Chinese military, as demonstrated by an examination of what is perhaps the PLA's greatest dependency: its thirst for oil. In response to a blockade, Beijing would strictly ration oil supplies and prioritize military needs. As a result, although civilian economic production would be curtailed sharply, China could still use existing domestic oil production, undamaged reserves and overland imports to fuel its war machine.⁵⁷ The more pressing threat to the PLA might be that transportation bottlenecks in the country would prevent Beijing from efficiently distributing the oil. But given enough time, the central government would be able to unclog these bottlenecks and build a resilient oil distribution network. Accordingly, a blockade would not directly affect the PLA's access to petroleum for any significant length of time over the course of the conflict.

A blockade would also not be able to completely interdict Chinese trade, because even under ideal conditions, China would still be able to acquire the most vital goods and resources it needed, courtesy of the inescapable laws of supply and demand. The more effectively the United States established a regional embargo, the more it would become a victim of its own success: as the United States increasingly restricted the flow of imports into China, the profit margins on selling those imports to China would skyrocket proportionately. If every nation save one decided to place an embargo on China, then the one loner would monopolize sales to an incredibly inelastic and desperate

⁵⁷As a comparison, the US military used a little more than 350,000 barrels of oil per day in 2011 (Defense Logistics Agency, 'Defense Logistics Agency Energy Fact Book – Fiscal Year 2011', US Department of Defense, <www.desc.dla.mil/dcm/files/Fact%20Book%20FY2011%20web%20email.pdf>), so the PLA should be able to function using only oil from China's domestic onshore production, which exceeds 3 million barrels per day.

Chinese market. The inevitable outcome would be stunningly profitable price gouging, so as a result, many of China's neighbors would be strongly incentivized to either continue trading with China or to cast a blind eye to any sub rosa commerce. Even if all of China's neighbors agreed to embargo, the United States would still have to resign itself to rampant smuggling at the sub-state level. American forces would be powerless to stem the flow of a high degree of illicit smuggling, since the opportunities for arbitrage would be directly proportional to the efficacy of Washington's blockade and Beijing's desperation. Therefore, the real value of a blockade would be its ability to exact an incredibly high financial toll on Beijing. First, consider the staggering economic impact of crippling oil shortages alone. A rough estimate suggests that a maritime oil cut-off would contract China's annual GDP by roughly \$883 billion (12.6 per cent of China's 2011 GDP), under the starting assumption that the oil blockade was fully successful, all of China's neighbors comprehensively embargoed it and American forces prevented Chinese access to its offshore oil production (but that domestic production continued at the same rate).⁵⁸

Of course, in reality, China would manage to recoup at least some of its lost oil imports, but only at an exorbitant cost. If China managed to sneak ships past the blockading forces, it would have to insure every vessel at extortionate rates, possibly totaling over \$10 million per ship per day.⁵⁹ If China instead substituted for seaborne imports by turning to its neighbors, it would have to reckon with the orders-of-magnitude more expensive costs of overland pathways.⁶⁰ Since the United States would likely render much of China's fixed oil transportation infrastructure unusable, Beijing would have to supplement any remaining pipelines and railways with imports from a fleet of trucks. If China sought to import five million barrels of oil each day through fuel tank trucks, then it would need to assemble a fleet of at least 110,000–155,000 tank trucks. Assuming such a fleet could even be

⁵⁸This rough approximation uses the method outlined in Appendix B of Blair, Chen and Hagt, 'The Oil Weapon,' 58–9, and data obtained from the National Bureau of Statistics of China, 'The People's Republic of China's 2011 National Economic and Social Development Statistics Bulletin', 22 Feb. 2012, <www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20120222_402786440.htm>; CIA, 'China'; and EIA, 'China'. The estimate has major methodological limitations, however, and likely underestimates the short-term impact of an oil shortage while overstating its long-term economic effects.

⁵⁹Collins and Murray, 'No Oil for the Lamps of China?', 85–6, 95 n.27.

⁶⁰For an estimate of costs, see Andrew S. Erickson and Gabriel B. Collins, 'China's Oil Security Pipe Dream: The Reality, and Strategic Consequences, of Seaborne Imports', *Naval War College Review* 63/2 (Spring 2010), 92.

mobilized, China would need to pay an overwhelming price just to keep it running – a tank truck would consume at least 8–16 per cent of the oil it delivered in the course of a round-trip journey, meaning that just to operate its truck fleet, China would need to import an additional 395,000–885,000 barrels of oil per day over and above the five million barrels otherwise demanded.⁶¹ Moreover, Beijing would also have to account for the higher price of oil itself, since a blockade would cause oil prices for China to spike as the result of fewer suppliers, a higher risk premium and higher transportation costs for suppliers.

When the consequences of an oil cut-off are married to the effects of the loss of other trade, it becomes clear that a blockade would send the Chinese economy into a tailspin by hitting three distinct pressure points: China's dual dependency on both intermediate and raw material imports, and its low levels of domestic innovation.

While China's economy is export-oriented, this dependency does not automatically equate to fragility as the conventional wisdom would suggest. After all, in the event of an embargo, a typical export-oriented economy could simply re-direct its production process towards making goods for domestic consumption (including its war effort). However, China lacks this option because much of its export production process is dependent upon access to imports. Historically, China has shipped mostly processing exports, or goods that it had assembled and processed after the importation of various intermediate inputs.⁶² In other words, the Chinese economy 'recycles,' taking in mostly-finished products and adding marginal value before subsequently re-exporting them. As a result, China has structured much of its export-oriented economy around the importation of intermediate goods, a phenomenon particularly evident in its high-technology sectors where well over 90 per cent of its exports are processing exports.⁶³ So if a blockade interrupted Chinese imports as well as exports, China could not simply switch its factories over to domestic production because those factories would require imported inputs that would no longer be arriving.

China's vulnerability is further compounded by its incredible dependence on raw materials and foreign innovation as the basis of its production processes. Raw materials compose a full 27 per cent of China's imports, and if China lost access to them, then its economy

⁶¹Source for estimates available upon request.

⁶²Robert Koopman, Zhi Wang and Shang-Jin Wei, 'How Much of Chinese Exports is Really Made in China? Assessing Domestic Value-Added When Processing Trade is Pervasive', Working Paper, No. 14109 (Washington DC: NBER June 2008), 2.

⁶³Michael J. Ferrantino, Robert B. Koopman, Zhi Wang and Falan Yinug, 'The Nature of U.S.-China Trade in Advanced Technology Products', *Comparative Economic Studies* 52/2 (June 2010), 207–24.

would stall even further.⁶⁴ China also lacks a strong domestic innovation ability – especially in high-technology sectors – which means that the sources of its national power are particularly vulnerable to the pernicious effects of a blockade.⁶⁵

Thus, China cannot simply ‘bounce back’ from a blockade by re-orienting its economy towards domestic production – its entire economy is structurally dependent on trade, and a blockade would eviscerate China’s high-technology domestic production capacities as surely as it would collapse China’s trade. As time passed, China might discover ways to substitute for its inability to trade and it might rebuild its economy from the ground-up, but an ongoing conflict could nevertheless impose a devastating rate of economic attrition that exceeds Beijing’s compensating abilities.

Initially, a conflict with the United States, regardless of how American forces decided to prosecute it, would likely rally the Chinese populace behind their leaders and extend the regime’s grip on power. But in the long run, as China’s nationalist ardor faded under the burdens of war, the costs of overcoming a blockade may simply be more than China’s leaders would be willing to bear. In conjunction with a battlefield strategy, a blockade’s debilitating effect on the Chinese economy would limit the resources available to China’s leaders and seek to impale them on a ‘Morton’s Fork’: to continue an increasingly unwinnable conflict, or to instead end the war and focus on brewing domestic crises that endanger the Chinese state to a greater degree.

Conclusion

The context, conduct and consequences of an American blockade of China would be deeply embedded in the mire of global politics. To overcome the blockade’s various challenges successfully, the United States and its allies would have to carefully balance the strategic repercussions of their actions with their contribution to the efficacy of the overall blockade. In almost any context, this trade-off would be extremely difficult politically, and would require a high degree of flexibility and innovation on the United States’ part. Policymakers would do well to carefully examine the precedents and lessons from past blockades, particularly those of World War I and World War II. The exact trade-offs would be made with a variety of considerations in

⁶⁴Jonathan Holslag, ‘Can China Find Balance?’, *The Diplomat*, 18 Feb. 2012, <<http://the-diplomat.com/china-power/2012/02/18/can-china-find-balance>>.

⁶⁵See Michael Beckley, ‘China’s Century? Why America’s Edge Will Endure’, *International Security* 36/3 (Winter 2011/12), 63–73.

mind, above all the value of the American interests implicated in the conflict.

Nevertheless, despite considerable challenges, a naval blockade is both operationally and strategically possible, albeit only within the limits of extremely narrow contexts and consequences. Even against a maximally effective blockade, China would be able to meet its military needs indefinitely, and it could survive on its strategic petroleum reserves, stockpiles and massive foreign exchange reserves for an extended period of time. As a result, the effectiveness of a blockade would turn on its ability to impose debilitating *economic* costs on China. While these economic costs mounted, China's likely response would be to organize a political coalition to resist the American blockade. Who would win this contest would likely be determined by whether or not the United States were able to assemble its minimum coalition.

If the United States attempted to implement a blockade without the tacit acquiescence of Russia, India and Japan, the blockade would be much less effective and its political consequences for the United States would be far worse. A waiting game of exhaustion would begin. On the one hand, China's economy would attenuate continuously, but on the other hand, China would work with its neighbors to increase regional and international political pressure on the United States until Washington could no longer sustain the blockade. In the game of economic against political attrition, the People's Republic would probably triumph in the long run if the minimum coalition were not assembled by the United States, since China's counter-coalition would likely prove to be collectively stronger than the United States and its allies. If, however, the United States were able to assemble its minimum coalition – a task that would hinge on China's aggressive behavior – then China's rate of economic exhaustion would sharply accelerate even as the United States gained the political support it would need to continue a blockading strategy indefinitely. In this context, while the United States would not be able to use Beijing's dependence on maritime trade to defeat China decisively in one short blow, it would still be able to help sap Chinese strength until Beijing eventually submitted.

These conclusions suggest several avenues for further research. In particular, scholars have recently been debating the merits of 'Air-Sea Battle', a US military concept that centers on 'networked, integrated, attack-in-depth to disrupt, destroy and defeat A2/AD threats'.⁶⁶ Some analysts fear that Air-Sea Battle may be strategically dangerous because

⁶⁶Air-Sea Battle Office, 'The Air-Sea Battle Concept Summary', US Navy, 9 Nov. 2011, <www.navy.mil/submit/display.asp?story_id=63730>.

its putative focus on an ‘extended conventional blinding and suppression campaign’ could lead to rapid escalation, possibly to the nuclear level.⁶⁷ To these analysts, a blockade strategy may offer a compelling military alternative because it is a deliberately slow strategy that allows for a wider range of diplomatic options. Yet more work is needed – to what extent can the threat of a blockade be used as a tool of coercion prior to the outbreak of hostilities? If the United States and China are plunged into a crisis short of extensive war, how does a blockade fit into the escalation ladder? If the United States re-orientes towards a blockade strategy, will that dampen or intensify the prospects of escalation during a crisis?

Alternatively, a blockade strategy could be used to complement other strategies that countenance strikes against targets on the Chinese mainland. By striking Chinese territory, the United States could maximize the strategic implications of the blockade in three ways: first, strikes could significantly tighten the blockade; second, they could increase the impact of the blockade; and third, over time, strikes could grant the United States the strategic option of moving from a two-ring blockade to a conventional close blockade. However, the relationship between a blockade strategy and strikes on the Chinese mainland, as well as how the two relate to Air-Sea Battle, remains largely unexplored. How would Air-Sea Battle and a blockade strategy reinforce each other, and to what extent might they work at cross-purposes? How would precision strikes fit into this joint strategy? And if a blockade strategy were employed, how would it relate to the larger American conception of victory?

One striking implication that emerges from this analysis is the consequence for regional stability. In the short term, the United States may breathe a little easier knowing that despite China’s ongoing military modernization, the military balance in the region still favors the United States in a worst case scenario. So long as China also understands a blockade’s potential, then it is additionally deterred from regional aggression, and both great powers benefit from the higher improbability of conflict.

In the longer term, the ultimate consequences for regional stability are murkier, and depend largely on how China continues to respond to its perceived vulnerability. On the one hand, China may correctly assess that the crux of a blockade revolves around its strategic context, and it may move accordingly to strengthen its relations with its neighbors in order to buttress its security. Insofar as a blockade’s viability compels China to avoid seeking regional hegemony – an aim tirelessly

⁶⁷Peifer, ‘China, the German Analogy, and the New AirSea Operational Concept’, 116.

disavowed by Beijing – then it is a welcome force for regional stability. After all, the United States would be able to spur China to behave in a manner favorable to American and regional interests without having to ever threaten the implementation of a blockade, and both Chinese and American security would be enhanced as a result.

On the other hand, China may decide that it should unilaterally labor to render a blockade impossible. Some of these policies may not be particularly worrisome, such as a decision to re-balance China's economy in favor of domestic consumption and away from a reliance on foreign imports. Other policies may be more destabilizing. If China misperceives its commercial security as something that can be solved by 'locking up' foreign resources, it may push international markets onto a more mercantilist trajectory. China may also decide to continue modernizing its navy with the specific contingency of a blockade in mind. To this end, it may build up its nascent ASW capabilities, continue growing its long-range submarine force, and move further in the direction of a blue-water navy.⁶⁸

While such long-term policies may complicate the planned operations of a blockade, they would ultimately miss the larger picture: the key to a successful blockade of China lies not in its operational conduct – the United States can always try to match Chinese military improvements step-by-step – but rather in its strategic context. If China seeks to boost its security by aggressively and opaquely expanding its military, then its strategy may backfire in the long run by triggering a security dilemma that has increasingly perilous implications for both Chinese security and wider regional stability. Ironically, if China misapprehends the root of its vulnerability, then it may react in a way that unfortunately sends it – and the region – down a path where a blockade becomes an increasingly realistic possibility.

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⁶⁸For suggestions that China is moving in this direction, see the Department of Defense's *Annual Reports to Congress*.

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