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**Troubled Waters:
China's and Russia's Naval Modernizations Programs
and the Causes of Offensive Naval Arms Race**

Heng "Amber" Qin

Submitted in Partial Fulfillment
of the
Prerequisite for Honors
in Political Science
under the advisement of Stacie Goddard

April 2018

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This thesis project is borne out of a long-time, nagging feeling that something is not quite right in the current mainstream Western perception about China and Russia. This nagging feeling stems largely from the tension and inconsistencies that I see between the Chinese and Russian narratives of victimization and the U.S. narrative of the two states' aggressive intentions. Having lived in all three countries, I felt a personal duty and obligation to set the record right.

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Abstract

Scholars, policymakers and the public alike have debated the revisionist or status quo intentions of China and Russia using metrics such as territorial and economic expansionism. However, few have tried to explain why the two states' arms policies may or may not signal intentions. This thesis project makes the point that structural factors, not intentions, drive offensive arms races. Using open-source databases and congressional hearing transcripts, I focus on Russia's and China's maritime push outwards through naval technological investments, as well as the structural factors, including offense-defense balance and near-peer competition, that surround these buildups. By showcasing the inherent military and strategic values of the contested maritime space, I argue that technological and geographical factors favor conquest and strategic offensives in territorial competition. This offense dominance compels states to pursue offensive naval buildups, regardless of intentions. Therefore, in an effort to avoid the rational offensive arms race, state leaders should seek to alter the offense-dominant environment at play, as opposed to feeding into the downward spiral that is otherwise known as security dilemma.

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Acronym

A2/AD: Anti-Area Access Denial
AEW: Airborne Early Warning
AIP: Air Independent Propulsion
ASW: Anti-Submarine Warfare
BUR: Bottom Up Review
COGAG: Combined Gas and Gas Turbine Propulsion
CSBA: Center for Strategic and Budgetary Assessment
C/R: China and Russia
DDG: Destroyer
DoD: Department of Defense
DoS: Department of State
ECM: Electronic Countermeasure Jamming
EEZ: Exclusive Economic Zone
EPI: European Reassurance Initiative
FON: Freedom of Navigation
GPV: State Armament Programs
kT: Kiloton
LCS: Littoral Combat Ships
LMA: Light Multipurpose Aircraft Carrier
LRASM: Long-Range Anti-Ship Missiles
MIRV: Multiple Independent Re-entry Vehicle
MOD: Ministry of Defense
NATO: North Atlantic Treaty Organization
ODB: Offense-Defense Balance
PLA: People's Liberation Army
PLAN AF: People's Liberation Army Naval Force
RIMPAC: Rim of the Pacific Multilateral Naval Exercise
RCT: Rational Choice Theory
SCS: South China Sea
SIGINT: Signal Intelligence
SSK: Diesel-Electric Attack Submarines
SSN: Nuclear-Powered Submarines
SSBN: Nuclear-Powered Ballistic Missile Submarines
SSGN: Nuclear-Powered Guided (Cruise) Missile Submarines
SLBM: Submarine-Launched Ballistic Missiles
USN: U.S. Navy
VLS: Vertical Launching Systems

CHAPTER I. THE DEMONIZATION OF CHINA AND RUSSIA:

AN INTRODUCTION

Background Context

China and Russia (C/R) are modernizing their navies, and the West is paying attention. Think tank reports, congressional hearings and media coverage have increasingly pointed to the two states' naval buildups as alarming signals of power projections to the regional level and beyond. Many have referred to such naval buildups as “disruptive,” “aggressive” or “revisionist,” implying that one can and should read a state's intentions based on its arms policies. But what if these assumptions of intentions, which lie at the root of U.S. paranoia vis-à-vis C/R, are not true? Even if C/R are indeed pursuing offensive naval buildups, are offensive strategies necessarily signals of intentions? What are the causes of offensive strategies at the systemic, international level, and could there be other independent variables at play that may be mistaken for intentions? In this thesis, I argue that if structural factors reveal the international environment to be offense-dominant, even highly offensive arms races are not indicative of offensive intentions.

Naval buildups have disproportionately contributed to the narrative of offensive intentions for Russia and especially for China. A powerful navy has historically been a sign of great power ambition – think the U.S. and the Great Britain, the last two global hegemon that also happened to patrol and control oceans around the world. C/R's navies previously experienced a long stage of stagnation, but ever since the early 2000s the two states have increasingly built on naval firepower vis-à-vis their potential adversaries. This is seen in both states' strategic documents and increasing military investments. For example, in their defense planning documents, China

and Russia have called upon their armed forces to abandon “the traditional mentality that land outweighs sea,”¹ to “safeguard the security of overseas interests,”² and to deter increased military exercises and mobilization of forces by other state actors in maritime territories of vital importance to the two states.³ Reflective of these languages in defense planning, C/R have heavily invested in capabilities that neutralize enemy forces on subsurface, surface and air levels of combat – capabilities that western analysts often term as “anti-access area-denial” (A2/AD) in the near sea areas. Geographically, the Chinese naval forces concentrate in the South and East China Seas, where China has ongoing territorial disputes, and the Russian naval forces concentrate in Black and Baltic Seas, where Russia comes face-to-face with member states of the North Atlantic Treaty Organization (NATO).

Many assume that expansionist intentions drive such arms racing behaviors. After all, if not due to offensive intentions, why else would states engage in such expensive and destabilizing policies? The answer here, I argue, is more nuanced than simply intentions. It has been a common observation among scholars and analysts that fear, vulnerability and the need for security drive both China’s and Russia’s foreign policies.⁴ This is not to even mention the defensive narrative that both states seem to be putting forth.

Assigning types and fixed intentions to the two states is deeply problematic and tautological. It states that revisionist states will build up because they are revisionist, and that

¹ “China’s Military Strategy,” *The Information Office of the State Council*, May 26, 2015, http://www.china.org.cn/china/2015-05/26/content_35661433.htm

² *Ibid.*

³ “Decree of the President of the Russian Federation of July 20, 2017 № 327 on approval of the fundamentals of the state policy of the Russian Federation in the field of naval activities for the period until 2030,” *Official Website of Law Ministry*, July 20, 2017, <http://publication.pravo.gov.ru/Document/View/0001201707200015?index=1&rangeSize=1>

⁴ Taylor Fravel, “International Relations Theory and China’s Rise: Assessing China’s Potential for Territorial Expansion,” *International Studies Review* 12 (2010): 505-532. Thomas Graham discussed at length the driver behind Russia’s foreign policy is geographical security. See Thomas Graham, “Fear and Opportunity: Russia’s Foreign Policy,” interview by Michael Moran, *Diffusion*, Carnegie Corporation.

states are revisionist because they build up. The inference of state intentions through actions requires intentions be the only reason that states may want to build up militarily. This, I argue, is not true. Under offense dominance and relative power balance, all parties are likely to pursue offensive buildups, and revisionist intentions are not a necessary condition for offensive policies. Therefore, while intentions may in fact lead to buildup, buildup does not signal intentions. In order to determine whether C/R's buildups are signals of offensive intentions, we must first build a more nuanced understanding on why the two states pursue arms race and offensive strategies in the first place.

The stakes are high. Perceptions of malign intentions have been prevalent in both public discourse and policymaking circles. It is only in due course that such perceptions will drive U.S. responses to the behaviors, if this has not already happened. Misreading another state's intentions may put U.S. security interests in harm's way. On the one hand, arms buildup is economically expensive. Pursuant to the law of diminishing marginal utility, an offensive arms policy necessitates state-of-the-art technology that is increasingly expensive to build. On the other hand, arms buildup also has its security costs. Opposing states may react to one side's buildup with buildup of its own. Consequently, by building up its own offensive capabilities, the U.S. may paradoxically lower existing advantages in U.S. military capabilities. In the worst possible scenario, an offensive arms policy can lead to uncalled-for tensions in bilateral relations. This may include potential miscommunications and minimized cooperation in non-security domains, thereby essentially fulfilling the tragic downward spiral otherwise known as the security dilemma. Assessing the causes of offensive arms race will, therefore, critically inform future understandings of U.S.-China and U.S.-Russia security relations.

*Aggressive Intentions as a Socially Constructed Narrative*⁵

U.S. analysts, policymakers and naval officers have demonstrated a level of alarm that approximates paranoia towards China and Russia. An *Atlantic* article published in 2015 demonstrates the rapid rise of the “assertive narrative” in U.S. media.⁶ Replicating the method used in the article, I ran a search in eight major U.S. newspaper publications for “China” or “Russia” and “aggressive” or “aggression” within five words of each other,⁷ and the following graph is the trend line that I traced. Undoubtedly, U.S. media has exponentially increased the usage of phrases such as “aggressive” to describe Chinese and Russian foreign policy behaviors, military or diplomatic.



Figure 1. Keyword Search on Chinese and Russian Aggressiveness in Eight Major U.S. Newspapers.

For Russia, the major bump in the narrative of “aggressive intentions” resulted from the Ukrainian Crisis in late 2013, but the narrative itself has stuck with the American audience ever since. Observers of Russia often tie the concern for Russian aggression with a fear of Putin as an

⁵ The idea for this subheading borrows Stacie Goddard’s argument in her forthcoming book, that the narrative of assertiveness stems from Chinese rhetoric, but is constructed and reinforced by a receptive U.S. domestic audience due to its own perceived vulnerabilities. Stacie Goddard, *When Right Makes Might: Rising Powers and World Order* (Ithaca, NY: Cornell University Press), forthcoming.

⁶ Kathy Gilsinan, “Is China Really That Assertive?” *Atlantic*, October 2, 2015, <https://www.theatlantic.com/notes/2015/10/chinas-increasing-assertiveness/408661/>

⁷ I searched for Wall Street Journal, the New York Post, the New York Times, the Washington Post, Los Angeles Times, and the Mercury News.

incomprehensible political leader. One former Russian world chess champion, Garry Kasparov testified in front of Congress: “[Putin’s] goal is . . . to destroy the system of international security that has been created in Europe since 1945 and 1991 at the end of the cold war . . . If the free world vacates a space, Putin grabs it.”⁸ Others consider U.S. policy a failure bordering the scale of appeasement, when the U.S. should have boldly stood up to Russia as the villain. As the Chair of the Subcommittee on the Middle East and North Africa states: “For far too long, the United States has acted timidly in the face of increased Russian aggression. . . even though Putin, like other tyrants, only responds to a position of strength.”⁹ And congressional hearings now frequently have titles like “Russian Aggression in Eastern Europe,” or “Russian Violations of Borders, Treaties and Human Rights.” The narrative of Russian aggression is now so dominant that U.S. domestic actors now attach it to almost every Russian behavior in the international arena like a scarlet letter.

For China, the narrative has slowly risen since 2009 and reached new heights in 2017, although no tangible evidence demonstrates that China’s policy vis-à-vis disputed maritime territories have changed significantly.¹⁰ Congressman Brad Sherman of California once heroically declared: “Our entire military is looking at this as a chance to face a noble foe [China], a chance to be in the kind of conflict that is far less frustrating than fighting insurgencies and fighting asymmetrical warfare, all for some islands where our interests may be just as vital as

⁸ U.S. Congress, Senate, *Russian Aggression in Eastern Europe, Where Does Putin Go Next After Ukraine, Georgia, and Moldova?: Hearing before the Subcommittee on Europe and Regional Security Cooperation*, 114th Cong., 2015, 23.

⁹ U.S. Congress, House, *Russia’s Strategic Objectives in the Middle East and North Africa: Hearing before the Subcommittee on the Middle East and North Africa*, 115th Cong., 2017, 1 (Testimony of Ileana Ros-Lehtinen).

¹⁰ Alastair Iain Johnston, “How New and Assertive is China’s New Assertiveness?” *International Security* 37, no. 4 (Spring 2013): 7-48.

they are in every other square inch of this planet. And there is no shortage of interests.”¹¹ The extent to which such rhetoric glorifies militarized confrontation against another great power is rather unprecedented in recent history, and suggests that U.S. reactionary policy does not just stem from security and strategic concerns. Such narrative assumes a certain contempt for China’s unethical behaviors, and a certain level of righteousness for U.S. own position.

In both cases, the trend lines of demonization are so similar that, I argue, there is now a convergence in the perceptions of Chinese and Russian aggressiveness. Every now then, policymakers anxiously ask the question: What can they do, “as [they] watch China reprise its ancient role of dominance in the East and Russia exhibit its modern version of its historic geographic paranoia?”¹² And some are pushing back against this narrative. Observing this troubling trend line, a long-time expert on China and East Asian Security, Michael Swaine comments: “In 45 years of studying and researching China, I have never seen such a determined effort to depict China as an unmitigated threat. It spans agencies, news organs, and ‘belief’ tanks. It is inaccurate, pernicious, and contrary to US interests.”¹³ But such pushbacks are the minority voice, and the majority narrative continues to force its way into U.S. public consciousness. As a direct result of such narrative, the U.S. continues to increase and adjust its military investments, in fear of being “behind” and “losing edge” in the military technological competition vis-à-vis China and Russia.

At the root of this paranoia, I argue, is an assumption of malign state intentions.

Proponents of the “Russian and Chinese revisionism” hypothesis argue that the two illiberal

¹¹ U.S. Congress, House, *Maritime Sovereignty in the East and South China Sea: Joint Hearing before the Subcommittee on Seapower and Projection Forces and Subcommittee on Asia and the Pacific*, House, 113th Cong., 2014, 29.

¹² U.S. Congress. House. *Game Changing Innovations and the Future of Surface Warfare: Hearing before the Subcommittee on Seapower and Projection Forces*, 114th Cong., 2015, 2 (Testimony of Bryan McGrath).

¹³ Michael Swaine. Twitter Post. April 15, 2018, 7:22 PM.
<https://twitter.com/Dalzell60/status/985704966047363073>

regimes pursue offensive buildups because they intend to undo the rule-based global governance and achieve great power status through coercion.¹⁴ For proponents of this argument, the investments in military and naval power signal a deliberate attempt to take over the current international order.¹⁵ For sure, the two states' behaviors – the deployment of Russian troops in Georgia and the declaration of Chinese Air Defense Identification Zone (ADIZ) in East China Sea – only reinforce such narrative. But this does not invalidate the question of whether U.S. perception is justified and proportional to Chinese and Russian actions. And in order to answer this question, I find it necessary to investigate other potential causal mechanisms at play that might drive offensive buildups.

The thesis is divided into four chapters. This is the first chapter, covering background context, literature review on theory, hypothesis and research methodology. The second chapter focuses on specific technological developments within China's and Russia's naval modernization programs, and makes the argument that these programs are highly offensive. The third chapter evaluates U.S. perception of offense-defense balance and relative parity in naval capabilities, two conditions that allow for signaling of intentions. This chapter makes the argument because there are offense dominance and relative parity, the U.S. in fact cannot read intentions through arms policies. Furthermore, offense dominance makes offensive buildup the only cost-effective way for states to gain security regardless of intentions. The fourth and final chapter examines how the naval buildups impact U.S. understanding of other ongoing issues in its bilateral relations with

¹⁴ G. John Ikenberry, "The Plot Against American Foreign Policy: Can the Liberal Order Survive?" *Foreign Affairs*, April 21, 2018, <https://www.foreignaffairs.com/articles/united-states/2017-04-17/plot-against-american-foreign-policy>.

¹⁵ Ikenberry, "the Plot Against American Foreign Policy"; G. John Ikenberry, "The end of liberal international order?" *International Affairs* 94, no. 1 (January 2018): 7–23.

C/R. The fourth chapter concludes with ways that may help alleviate the ongoing three-way offensive naval arms.

Literature Review

The popular narrative of aggressive intentions is what political scientists and international relations scholars have long referred to as typologies of state as “revisionist” or “status quo.” In this thesis, I attempt to explain why states pursue offensive strategies through the case studies of China’s and Russia’s naval modernization programs. I intend to ground the case studies in a broader literature on states intentions, power transition theory, rational choice theory (RCT) and offense-defense theory. Offensive and defensive realists have long debated whether state intentions are knowable. Power transition theorists generally separate revisionist from status quo states. They define the former as those who seek to change the status quo distribution of power, the hierarchy of prestige, and the “rights and rules that government or at least influence the interactions among states.”¹⁶ The rational choice theorists argue that states are able signal their type – be it revisionist or status quo – through offensive or defensive arms policies, but only when there are offense-defense distinction, neutral offense-defense balance (ODB) and some balance of power between the two states. I then use the literature on offense-defense theory to determine what distinguishes offensive from defensive capabilities, what constitutes ODB, as well as what causes offense dominance. This thesis argues that even if states are dissatisfied with the current international system, they may not be able to credibly convey offensive or revisionist intentions because offense dominance makes military buildup and arms race the preferable

¹⁶Alastair Iain Johnston, “Is China a Status Quo Power?” *International Security* 27, no. 4 (2003): 5-56; Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), p. 34.

course of action regardless of type. Taken together, I hope to explain why intentions may not be the only cause of China's and Russia's naval modernization programs.

State intentions are critical to determine the severity and the danger of an arms race. Offensive realists argue that states can never be certain about each other intentions. In this anarchic international environment, signaling intentions is impossible, and security dilemma is inevitable.¹⁷ Defensive realists are less pessimistic and stipulate that assessments of a state's intentions should and have always played a key role in determining the appropriate approach towards that state. Defensive realists such as Robert Jervis have examined how a state's decision to deploy offensive or defensive weapon systems can credibly convey offensive or defensive intentions, respectively.¹⁸ I find the offensive realist argument theoretically sound but of little use empirically. Like Thomas Schelling stipulated: "a zero-sum game is dealing with only a single center of conscious, a single source of decision," with "no spark of recognition . . . [and] no social perception."¹⁹ But the very premise of this project is based on the observation that U.S. policymakers and analysts *regularly* base policies on their interpretations of other states' prior actions and choices. Reality does not happen in a vacuum, and in Schelling's words, "something has to be communicated."²⁰ In this sense, offensive realism offers limited explanatory power for the puzzle presented in this thesis. For this reason, I adopt the defensive realist argument to the extent that actions can be credible signals of intentions but only under key assumptions, which I shall elaborate on later.

International relations scholars have often categorized states into two types of intentions, status quo or revisionist, based on behaviors. Despite the centrality of intention to international

¹⁷ John Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton and Company, 2001).

¹⁸ Robert Jervis, "Cooperation under the Security Dilemma," *World Politics* 30, no. 2 (1978): 167-214.

¹⁹ Thomas Schelling, *The Strategy of Conflicts* (Oxford: Oxford University Press, 1960), 163.

²⁰ *Ibid.*

politics, there is surprisingly little theoretical work done on the definitional difference between status quo and revisionist states. According to scholars such as Hans Morgenthau, Robert Gilpin, Randall Schweller and the like, state leaders' satisfaction or dissatisfaction with the existing international order critically determines whether the state is "status quo" or "revisionist."²¹ Even when states are revisionist, the extent to which they may hope to change the underlying rules of the game may vary.²² Furthermore, as military capabilities are a critical factor in the international balance of power,²³ an offensive military buildup is often associated with the more radical type of revisionist state intentions.²⁴ Scholars have applied the various typologies to the rise of China, and arrived at different conclusions on how "revisionist" China really is. These conclusions depend on the likelihood or the scope of potential territorial expansion, whether one takes into consideration economic expansionism, and a host of other metrics.²⁵ Regardless of specific definitions of revisionism, the core concept of "state type" is that fixed intentions determine behaviors, and behaviors demonstrate intentions.

Rational choice theorists argue that a state can signal its type or intentions through costly actions, but only under certain conditions. On the role of signals to create similar social expectations, Schelling wrote: "Moves can reveal information about a player's value system or about the choices of action available to him; moves can commit him to certain actions when

²¹ Hans J. Morgenthau, *Politics among Nations: The Struggle for Power and Peace*, 5th ed. (New York: Alfred A. Knopf, 1978), 46, 74; Robert Gilpin, *War and Change in World Politics*; Randall L. Schweller, "Bandwagoning for Profit: Bringing the Revisionist State Back In," *International Security* 19, No. 1 (Summer 1994), 105.

²² For a more extensive discussion on various typologies of status quo and revisionist state intentions, please see Stacie Goddard, "Embedded Revisionism: Networks, Institutions, and Challenges to World Order," *International Organization* (2018), forthcoming.

²³ For a discussion on how and why military power essential to inter-state relations, See John Mearsheimer, *the Trategy of Great Power Politics* (New York: W. W. Norton, 2001).

²⁴ "Is China a Status Quo Power?" 11; Randall L. Schweller, "Managing the Rise of Great Powers: History and Theory," in *Engaging China: Managing a Rising Power*, eds. Alistair Ian Johnston and Robert S. Ross (New York: Routledge, 1999).

²⁵ M. Taylor Fravel, "China's Search for military power," *Washington Quarterly* 31, no. 3 (Summer 2008): 125-141. Realist scholars sometimes also argue that as states become stronger and wealthier, they naturally want more influence and are more willing to fight for their interests; see Schweller, "Managing the Rise of Great Powers," 2-4.

speech often cannot; and moves can often progress at a speed that is determined unilaterally.”²⁶ Scholars commonly agree that only costly actions are credible signals of intentions. If an action is not costly, then actors of all types can undertake such an action. But when an action is costly, committing to the cost reveals a piece of information about the actor itself, its preferences, intentions and type. An action not in line with the state’s type will incur too great of a cost for the actor to undertake.²⁷

Furthering the logic of signaling, scholars such as Andrew Kydd and Charles Glaser argue that states can send signals of intentions by pursuing offensive or defensive strategies and technologies. Rational choice theorists argue that a state, either aggressive or status-quo in their type, is unwilling to adopt arms policies opposite of its type. For one, an aggressive state is unwilling to pursue status-quo behaviors because the state knows that military forces will shortly determine the outcomes of armed conflicts. For another, a status-quo state is unwilling to act aggressively because it leads to unnecessary conflicts and lowers its own security.²⁸ “Status-quo behaviors” in the context of arms policies may include arms control agreements and unilateral shifts toward a more defensive posture, and “aggressive behaviors” may include actively building offensive capabilities.²⁹

Rational choice theorists also argue that the ability of a state to signal its type is highly dependent on structural factors. In other words, there are scenarios in which intentions cannot be made known or credibly conveyed. In a “separating equilibrium,” players of different types prefer different strategies. But in a “pooling equilibrium,” structural factors make all choices

²⁶ *The Strategy of Conflict*, 102.

²⁷ For the purpose of RCT, “type” and “intentions” are the same and can be used interchangeably.

²⁸ Andrew Kydd, “Sheep in Sheep’s clothing: Why security seekers do not fight each other,” *Security Studie* 7, no. 1 (1997): 114-155.

²⁹ Kydd, “Sheep in Sheep’s Clothing,” 144.

equally preferable for actors of all types, which renders signaling impossible. In the first scenario, structural factors are set up as such that state A is able to show intentions by undertaking certain actions that will be too costly for actors of the other type. Players, of course, have to perceive the signal, and with such confidence that the signal is correct so they may act on the signal.³⁰

In order for policies and strategies to be credible signals of offensive or defensive intentions, three conditions must be met first: Offense-defense distinction, neutral offense-defense balance, and relative parity in capabilities. First, states must be able to distinguish offensive strategies and technologies from defensive ones. Differentiating between offensive and defensive forces allows one side to “increase its security without menacing the other” and “permits some inferences about intentions to be drawn from military posture.”³¹ In other words, in order to read intentions, both the observers and the actors must be aware of the offensive or defensive nature of military technologies and strategies.

Scholars have pointed to several characteristics of armaments as particularly helpful for offensive or defensive strategies including mobility, protection, firepower, logistics and communication.³² For example, Glaser and Kauffman argue that improvements in mobility are the most agreed-upon marker of offensive capabilities, as only offense requires the ability to move, attack, conquer and hold lands. A number of opponents of offense-defense theory have argued that offense and defense are not distinguishable even on the tactical level.³³ Contrary to

³⁰ *The Strategy of Conflict*, 100.

³¹ “Cooperation Under the Security Dilemma,” 188-189.

³² Charles Glaser and Chaim Kaufmann. “What Is the Offense-Defense Balance and Can We Measure It?” *International Security* 22, no. 4 (1998), 62.

³³ For a discussion on criticism of offense-defense theory, please see Scott Sagan, “1914 Revisited: Allies, Offense, and Instability,” *International Security* 11, no.2 (Fall 1986), 151-175; Jack Levy, “The Offensive/Defensive Balance of Military Technology: A Theoretical and Historical Analysis,” *International Studies Quarterly* 28, no.2 (June 1984), 219-238; James W. Davis, Bernard Finel, Stacie Goddard, Stephen Van Evera, Charles Glaser and Chaim Kaufmann, “Taking Offense at Offense-Defense Theory,” *International Security* 23, no. 3 (Winter 1998-1999), 179-

Glaser and Kauffman, Stephen van Evera argues that transportation systems such as the railroads that promote mobility in fact aid defense.³⁴ Bernard Finel also points out that cavalry forces, despite their greater mobility, in fact favor defense because they are “expensive and hence limited in number.”³⁵ Additionally, it has also been argued that mobility is even less helpful when it comes to the evaluation of naval forces’ offensive or defensive character, since ships are inherently built to be mobile and maritime territories cannot be fortified with trenches.³⁶ Third, scholars have argued that contrary to popular wisdom, firepower in fact favors passive defense because land cover provides protection,³⁷ and that protection can be an important characteristic for both offensive and defense weapons.³⁸ Similarly, scholars have argued that logistics and communications may favor offense or defense depending on how they interact with the general force posture; for example, fixed landline in general favor defense more than portal radios.³⁹ Lastly, tactical capabilities may help determine the way in which states conduct and win battles, but outcomes of individual campaigns do not equate to outcomes of war.⁴⁰ Instead, distinguishing between offensive and defensive tactical capabilities helps us recognize offensive and defensive strategies, which are potentially related to a state’s type as signals of intentions.

Second, neither offense nor defense can be so dominant that all states are compelled to pursue a particular type of strategy regardless of types. The general idea of ODB, as first introduced by Jervis and framed in a game of prisoner’s dilemma, is that when either dominates,

206; for a rebuttal to the criticism, please see Sean M. Lynn-Jones, “Offense-Defense Theory and Its Critics,” *Security Studies* 4, No. 4: 660-691.

³⁴ Stephen van Evera, “Offense, Defense, and the Causes of War,” *International Security* 22, no. 4 (Spring 1998), 17.

³⁵ Finel, “Taking Offense at Offense-Defense Theory,” 186.

³⁶ “The Offensive/Defensive Balance of Military Technology,” 225.

³⁷ “1914 Revisited,” 161; “What is offense-defense balance,” 64.

³⁸ “The Offensive/Defensive Balance of Military Technology,” 225.

³⁹ Glaser and Kaufmann, “What is offense-defense balance,” 62.

⁴⁰ Stephen D. Biddle, “The Determinants of Offensiveness and Defensiveness in Conventional Land Warfare,” PhD diss., Harvard University, 1992.

the imbalance decreases the security gains of building capabilities of the other type.⁴¹ When there is offense dominance, a state will have overwhelming incentives to pursue offensive capabilities regardless of its actual intentions. Similarly, when there is defense dominance, conquest is already difficult, and small reductions in a state's defensive forces are unlikely to make the state any more vulnerable.⁴² In either scenario, it would be in the rational and strategic interests of any state to invest in the dominant capability regardless of intentions. As a result, in order for states of both revisionist and status quo types to signal intentions, there has to be a neutral ODB.

Scholars have debated the extent to which ODB can be objectively measured in the aggregate characteristic of all weapons capabilities on a systemic level. Theoretically, offensive or defensive balance points to the tendency of the aggregate weapons capabilities in an international system to heavily support either the conquest or the protection of territories. First, scholars have argued that it is very difficult, if not virtually impossible to distinguish between the offensive or defensive character of "all weapons, functional roles, and theaters for . . . all states in the system."⁴³ Second, while some scholars define offense or defense dominance in terms of war outcomes,⁴⁴ others argue that this method conflates offense dominance with other variables such as balance of power.⁴⁵ Third, scholars have also argued that although an objective ODB may exist, states may not perceive it before the actual use of force.⁴⁶ In an attempt to address some of the concern raised here, I narrow down the scale of actors involved in this signaling

⁴¹ Jervis, "Cooperation Under the Security Dilemma."

⁴² Charles Glaser, "Realists as Optimists: Cooperation as Self-Help," *International Security* 19, no. 3 (Winter, 1994-1995): 50-90; Evan Braden Montgomery, "Breaking Out of the Security Dilemma: Realism, Reassurance, and the Problem of Uncertainty," *International Security* 31, no. 2 (Fall 2006), 151-185.

⁴³ Levy, "The Offensive/Defensive Balance," 227.

⁴⁴ Glaser and Kaufmann, "What is offense-defense balance," 54; Evera, "Offense, Defense, and the Causes of War," 37.

⁴⁵ Goddard, "Taking Offense," 189-195.

⁴⁶ *Ibid.*

game. In my two case studies, I am treating U.S.-Russia and U.S.-China as two dyadic balances. Therefore, I am not examining the aggregate capabilities of all militaries in the international system, nor am I interested in the entire Chinese or Russian navies. Instead, I adopt the “narrow approach to operationalizing the balance,”⁴⁷ and focus exclusively on the aggregate capabilities and functional roles of the Chinese and the Russian naval modernization programs.

To the extent that the offense-defense balance exists, various scholars have attempted to empirically measure the balance both quantitatively and qualitatively. Underlying the ODB is the idea of “attack/defense ratio,” which various scholars have defined as “the ratio of relative resources required for offense to overcome the defense and/or take the territory.”⁴⁸ In terms of how ODB pertains to military technology, scholars have used tactical capabilities, such as some of the technological characteristics mentioned above to identify advantage to the offensive. The quantitative approach builds on the qualitative one. Jack Levy proposes measuring the offense-defense ratio using troop numbers,⁴⁹ but troop numbers are obviously less useful for maritime warfare. Glaser and Kaufmann take quantitative measurement one step further and introduces “the compound offense-defense balance,” defined as the arithmetic product of two-directional balance ratios, with each one being the ratio of attacking firepower required to overcome the defense of the others side.⁵⁰ Critics have called this quantitative approach one of reductionism and naked empiricism.⁵¹ For reasons in line with the criticisms, this project adopts a qualitative approach to measuring offense-defense balance. It allows for a more nuanced reading of tactical capabilities and how they translate into strategic imbalances.

⁴⁷ Glaser and Kaufmann, “What is offense-defense balance,” 60

⁴⁸ Various scholars have adopted this territorial definition, including Jervis, “Cooperation under Security Dilemma,” 188; Gilpin, *War and Change*, 62-63; Levy, “Offense-Defense,” 227.

⁴⁹ Levy, “The Offensive/Defensive Balance,” 227.

⁵⁰ Glaser and Kaufmann, “What is offense-defense balance,” 58-59.

⁵¹ Finel, “Taking Offense,” 187.

Third, if and when one state is significantly stronger than the other state, both states will have a hard time signaling defensive intentions. Relative parity in capabilities is a necessary condition for a separating equilibrium for two reasons. For one, small reductions by the stronger state will not make it militarily vulnerable and cannot constitute as a costly signal of defensive intentions. Similarly, defensive arms policies will not make the weaker state any less likely to defeat the stronger state. Therefore, only when the states are relatively equal in their military powers and resources, small concessions can be costly enough to signal benign intentions.⁵² This suggests that if either China's or Russia's Navy is presently significantly weaker than an identified adversary, pursuing offensive capabilities is barely a sign of aggressive intentions.

Scholars have contended that even when all three structural factors present, signaling is hard to achieve because concessions large enough to signal intentions will likely also drastically increase the signaling state's vulnerability, and states will rarely pursue this course of action if they are even slightly unsure about the other side's intentions. Signals of benign intentions also necessarily endanger the signaling state's own security. A state will rarely be certain enough about an opponent's response to make a large cooperative gesture, and the opponent will rarely be trusting enough to respond to enthusiastically to a small gesture.⁵³ Scholars who have previously written about this dilemma have termed it "the basic paradox of tacit bargaining."⁵⁴

U.S. Policymakers and analysts should pay attention to the three conditions required for costly signals to exist in the first place. If any or all of the conditions for the separating equilibrium are not met, the implication is that Chinese and Russian arms policies cannot not be

⁵² Charles Glaser, "When Are Arms Race Dangerous? Rational versus Suboptimal Arming," *International Security* 28, no. 4 (Spring, 2004): 44-84

⁵³ Montgomery, "Breaking Out of the Security Dilemma," 163-167; Sebastian Rosato, "Inscrutable Intentions of Great Powers," *International Security* 39, no. 3 (winter 2014/2015), 74-78;

⁵⁴ George Downs and David Rocke originally wrote about this paradox in the context of arms control. George Downs and David Rocke, "Tacit Bargaining and Arms Control," *World Politics* 39, no. 3 (April 1987), 322.

taken as signals of intentions. In other words, as China and Russia modernize their navies' offensive capabilities, they will consider these efforts to be reactionary to structural factors and therefore defensive. If, however, the U.S. considers all three conditions to be present, or ignores to consider the conditions all the together, it would consider these programs to be indicative of aggressive intentions. In this scenario, the security environment might necessitate an offensive arms buildup for all states involved. In an offense-dominant environment, the security benefits generated by offensive capabilities diminish over time, and states will need to respond to other states' buildups through its own further buildups, leading to an offensive arms competition. Such an offensive arms race is rational, because both sides see the possibility and the costs of losing an armed conflict.⁵⁵ When there are offense distinction, offense dominance and relative power balance, offensive arms races are rational for both sides involved.

A review of RCT and its conditions finds it necessary to study the empirical evidence for the following three independent variables:

- (1) Does offense-defense distinguishability exist in China's and Russia's naval modernization programs?
- (2) Is there a neutral offense-defense balance with regard to the territorial waters in which the naval assets operate?
- (3) Is there approximate parity in naval capabilities between either state and its strategic rival(s)?

Based on existing literatures, I test whether RCT's three conditions hold in the two case studies. RCT states that states can convey intentions through arms policies because states without these intentions will find this particular set of policies too costly to pursue. RCT also proposes three necessary conditions that have to be fulfilled in order for the previous statement to be true. These conditions are: (1) offense-defense distinction in state A's arms policy, (2) neutral ODB, and (3) approximate parity in naval capabilities between state A and state B. I produce the

⁵⁵ Glaser, "When Are Arms Races Dangerous?" 53-54.

following two competing hypotheses, which are summarized in two two-by-two graphs below.

The circled outcomes indicate separating equilibria.

H_0 : China’s and Russia’s offensive naval buildups are indicative of intentions because the arms policies are distinctly offensive, there is neutral offense-defense balance in contested territorial waters, and there is relative parity in naval capabilities between either state and its adversary.

H_1 : China’s and Russia’s naval buildups are not indicative of offensive intentions because either the modernization programs are not distinctly offensive, or there is offense dominance, or there are significant gaps in capabilities between either state and its adversary.

	Offense-defense Distinction	Offense-defense Ambiguity
Offense/ Defense Dominance	<ul style="list-style-type: none"> - Offensive actions signal intentions only in defense dominance - Defensive actions signal intentions only in offense dominance 	No Signal
Neutral Offense- Defense Balance	<div style="border: 1px solid blue; border-radius: 50%; padding: 5px; display: inline-block;"> Strong and distinct signals of status quo or revisionist intention </div>	Ambiguous signals of intentions

Table 1. *Offense-Defense Distinguishability, Offense-Defense Balance and Possibility for Signaling.*

	Offense/ Defense Dominance	Neutral Offense-Defense Balance
Parity in Capabilities	Signals not possible unless states pursue capabilities opposite of the dominant type	Possibility for signals of revisionist or status quo intentions
Large Gap in Capabilities	Signals not possible because arms buildup will not threaten the other side and is not costly	Signals not possible because arms buildup will not threaten the other side and is not costly

Table 2. *Offense-Defense Balance, Relative Parity and Possibility for Signaling.*⁵⁶

Research Methods

By surveying secondary analysis and various databases on navies around the world, I measure both the independent variable of offense-defense distinction in C/R’s naval modernization programs, as well as the dependent variable of the two states’ offensive arms racing behaviors. I first examine secondary analysis available through platforms such as *the National Interest* and *Jane’s 360*, as well as reports recently published through congressional and think tank research. These reports often provide a succinct and organized narrative on naval technologies, with emphasis on especially notable developments. They provide a grounding for

⁵⁶ Charles Glaser has previously summarized the outcomes of arms policy choices based on material conditions, although his table did not include offense-defense distinguishability. Glaser, “When Are Arms Races Dangerous?” 56.

more detailed and nuanced primary research. Then I cross-check the secondary literature with open-source databases such as *globalsecurity.org*, *naval-technology.com* as well as *military-today.com* for primary, more updated and detailed research. These websites provide independent analysis by categories of technologies and naval vessels. To the extent that content is available, I also use databases such as *Jane's Fighting Ships* and the U.S. Naval Institute's *Combat Fleets of the World*. By consulting and cross-referencing these databases, I develop a more comprehensive understanding of the levels of technological development in each category of capabilities and platforms. As the study is on modernization, I go back about 10 years for both countries' buildup programs.

To measure the other two independent variables – ODB and relative parity in naval capabilities —I use mainly congressional hearing records of several committees. I examine all records from Committee on Armed Services, especially from the Subcommittee on Seapower and Projection Forces in the 113th, 114th and 115th Congress between 2013 and 2017, excluding the annual defense budget hearings due to time constraints. Additionally, to understand potential misperception of intentions, I also access records from Committee on Foreign Relations. I then pull from the records all hearing transcripts that are on or related to Russia, China, Europe, Asia Pacific, as well as U.S. naval modernizations. I conduct keyword searches in all the texts, although the specific word searches are highly dependent on the topic of the hearing. For example, if the hearing is about U.S. naval modernization, I search for keywords like China and Russia. And if the hearing is about China or Russia, I use search such as nav*, A2/AD, and technology. If the hearing is about maintaining U.S. naval superiority, I focus on terms such as long-range or penetration. Another search term that proves critically useful in uncovering

structural factors is “require” or “requirement.” I surveyed 114 hearings in the House and Senate across between 2013 and 2018 in total.

If the null hypothesis is true, I expect all three conditions to be present. First, in order for naval buildups to be distinctly offensive, I expect the Chinese and Russian naval modernizations to focus on long-range anti-ship, anti-air, or anti-submarine cruise missiles that can neutralize military targets at sea. Long-range firepower is less useful for near-sea defense, but is especially helpful for checking an adversary’s maritime push outwards, as well as facilitating one’s own push to access more maritime territories. Consequently, such capabilities emphasize territorial conquest and facilitate an offensive strategy. Second, in order for there to be neutral offense-defense balance, I expect that the number of vessels required for China and Russia to fend off potential incoming attacks to be relatively equal to the number of vessels and firepower required for the other side. Third, I expect U.S. policymakers to consider the Chinese and/or Russian navies to be relatively on par with the USN both in capabilities and quantities.

If the alternative hypothesis is true, I expect at least one of the three conditions to be missing. First, in order for naval buildups to be neither offensive nor defensive in nature, I expect that the two states invest in near-sea, small surface combatants with relatively few long-range cruise missiles. Similar to the logic stated above, near-sea capabilities will constrain a state’s zone of dominance to at most coastal defense, although short- to medium-range missiles will also be able to exert some level of territorial control. Second, in order for there to be offense dominance, I expect that the amount of firepower required for China and Russia to deny the U.S. access to certain territorial waters to be significantly greater than the number of vessels and firepower required for the U.S. to penetrate the denied areas. In order for there to be defense dominance, the reverse should be true. Third, if relative parity is not present, I expect U.S.

policymakers to consider the Chinese and/or Russian navies as significantly inferior to the USN, either technologically or quantitatively.

I choose congressional hearing records for their availability and policy significance. First, such records are all publically accessible through the U.S. Government Publishing Office (gpo.gov). Second, top officers in the Navy reach the assessments based on reported naval combat needs of combatant commanders around the globe. The testimonies show the systematic prioritization or devaluation of certain capabilities vis-à-vis identified adversaries – C/R – as well as U.S. assessments of the relative balance of capabilities. For this reason, congressional testimonies are especially helpful for testing two of the three independent variables. Third, congressional hearings are treated as an important, if not the primary exchange of information between the military officers and the lawmakers who make budgetary decisions. U.S. civilian analysts and naval officers who testify in front of Congress do so in an effort to adjudicate funds on acquisition, modernization and deployment. Their rhetoric will likely carry policy significance.

To assess the dependent variable of relative parity in naval capabilities, I also supplement congressional records and policymakers' perception with an assessment framework on navy rankings. Jeffrey Issacson and Ashley Tellis of RAND built a system of naval combat proficiency levels based on the complexity and difficulty of missions that a navy can conduct (see table 4a in appendix).⁵⁷ In this system, a navy can conduct nine levels of missions ranging from the least to the most complicated; at level I there is coastal defense, and at level IX there is comprehensive sea control. Accordingly, different naval vessels are built and modified for

⁵⁷ Ashley J Tellis *et al.*, *Measuring National Power in the Postindustrial Age* (Santa Monica: RAND, 2000), 164-176, cited in Sarah Kirchberger, *Assessing China's Naval Power: Technological Innovation, Economic Constraints, and Strategic Implications* (Heidelberg: Springer), 66.

specific missions, and fleets with different compositions may have varying levels of capacity to conduct such missions. Based on fleet compositions, Todd and Lindberg subsequently developed a ranking of naval capacities.⁵⁸ I include this ranking in table 3 in chapter 3, in addition to congressional testimonies, to formally measure relative parity in naval capabilities.

Three major limitations exist in this thesis project. The first limitation concerns my research on the modernization programs. While conducting research on the naval modernization programs, I consciously focus on combatant platforms in which states invest a relatively large of resources or that embody some kind of “technological breakthrough.” I had to limit my research simply due to the scope of this research project. Additionally, most publically accessible primary and secondary sources concentrate on these capabilities and platforms. As a result, I have made a conscious decision to not focus on modernization programs in, for example, logistical ships or mine sweepers. One may argue that such decision tilts my assessment of naval programs to the side of the offensive. I argue, however, that bigger investments represent “costly signals” on a tactical level, and shifts in technology have the biggest impact on offense-defense balance. I also argue that less firepower does not necessarily signal defensive, as we have seen from literature review above.

Second, this thesis does not examine C/R’s investments in signal intelligence (SIGINT) and naval electronics. Scholars and policymakers have argued that investments in these capabilities to be rather significant and cost-imposing, which suggests that they make conquest harder and are mostly defensive.⁵⁹ I do not investigate this aspect of technological modernization because such investments are often not categorized as naval modernization.

⁵⁸ Daniel Todd and Michael Lindberg, *Navies and Shipbuilding Industries: The Strained Symbiosis* (Westport, CT: Praeger, 1996), 53-64, cited in Kirchberger, *Assessing China’s Naval Power*, 60.

⁵⁹ Biddle and Oelrich put forward a quite convincing argument on this topic, see Stephen Biddle and Ivan Oelrich, “Future Warfare in the Western Pacific: Chinese Antiaccess/ Area Denial, U.S. AirSea Battle, and Command of the

Third, one can argue that qualitative coding of the transcripts does not help demonstrate how prevalent certain ideas are, and may risk confirmation bias on the author's part. I believe that quotation analysis may not be sufficient to show the universality of certain opinions, but is substantial enough to showcase the existence of the key independent variables. Therefore, text analysis is sufficient to confirm or negate the null hypothesis. I do believe, however, that statistical analysis may better demonstrate the level of ubiquity for some rhetoric over others. Quantitative analysis is beyond the scope of this research project, but may be of interest to future research.

Commons in East Asia," *International Security* 41, no. 1 (Summer 2016): 7-48. I have seen similar evidence from congressional testimonies that call various technologies – ranging from attack submarines to seabed mine warfare – as cost-imposing, which translates into defense-oriented. More research needs to be done on this topic.

CHAPTER 2. “IF IT FLOATS, IT FIGHTS”:⁶⁰

AN OVERVIEW OF CHINA’S AND RUSSIA’S NAVAL MODERNIZATION PROGRAMS

Introduction

In this chapter, I examine the capabilities that C/R are pursuing through their naval modernization programs. I evaluate whether offensive weaponry can be distinguished from defensive ones, and whether offensive tactical capabilities translate into offensive characteristics at the strategic level. The answers to these questions are critical to understanding the independent variable of offense-defense distinguishability, as well as the dependent variable of arms racing behaviors. To distinguish between the offensive or defensive nature of these modernization programs, I take a bottom-up approach by focusing on the aggregate of tactical capabilities. I ask whether a given navy can be used primarily for the purpose of conquering maritime territories.

I argue that both states are engaged in an offensive arms race to deny adversaries access to certain maritime territories, although China does so with a much wider reach than Russia does. For one, the Russian surface fleet is heavily loaded with medium- to long-range cruise missiles. Russia has also indicated the ambition to pursue large surface vessels with impressive payload and tonnage, but failed due to limited funding and lack of the construction capability. In addition, while Russia’s subsurface fleet is much more capable, the prioritization of nuclear (SSN) over conventional attack submarines (SSK) suggests a focus on counter-value punishment and sea-based deterrence as opposed to A2/AD anti-submarine warfare. China, for another, is building a

⁶⁰ “If It Floats, It Fights” is a slogan on a publication by the naval surface force. See T. S. Rowden, “Surface Force Strategy: Return to Sea Control,” *Naval Surface Force Pacific Fleet*, January 2016, <http://www.dtic.mil/docs/citations/AD1024229>

network of offensive capabilities that target objects at sea. This network, as often termed by Western analysts as A2/AD is making significant qualitative as well as quantitative strides. Like Russia, China also has encountered significant mechanical issues – such as naval fighters’ faulty engines – that may impede its naval combat readiness. Moreover, both China and Russia often refit their large surface combatants based on initial prototypes, building few ships per class, which makes repair, training and maintenance much costlier. Overall, I argue that realistic constraints prevent C/R’s navies from becoming full-fledged blue-water navies in the next two decades. Nevertheless, C/R’s modernization programs are highly offensive in nature because they emphasize large surface combatants equipped with cruise missiles that enable high-level combat and maritime push in all domains of naval warfare.

Russia’s Naval Modernization Program: Why It is Highly Offensive Despite Limitations

Russia has great ambitions for its navy. Russia’s green-water navy exhibit impressive missile payloads. Its blue-water surface combatant, while highly limited by domestic shipbuilding and fiscal constraints, have extremely high firepower-to-displacement ratios compared to other ship of that particular naval ship classification. And while Russia’s investments in submarines disproportionally focus on counter-value punishment and not A2/AD capabilities, ship-borne helicopters fill the role of near-sea ASW.⁶¹ Overall, the Russian navy is able to expand its maritime zone of dominance and achieve territorial conquest through systematic prioritization of firepower over hull reinforcement and significant leap in its capability to target adversaries at sea.

⁶¹ I include table 5a in the appendix on Russia’s naval modernization as well as disruptions and non-deliveries in the projects.

Russia's surface fleet is limited in its power projection reach as a result of Kremlin's long-time neglect of Russia's domestic shipbuilding industry. Historically, the dissipation of the former Soviet Union dealt a huge blow to the military-industrial capability (MIC) of the newly formed state of Russian Federation. Not only did the post-Soviet states split up the Soviet military and its various assets, the failing economy and the breakup of the shipyards also precluded the Kremlin from making any significant naval investments in the 1990s and the early 2000s. After Russia's unsatisfactory military performance in the Russo-Georgian War, Moscow launched the State Armament Program (GPV) in late 2000s in an effort to revitalize Russia's military capabilities.⁶² As part of the GPV, the Russian Navy was slated to receive around 26% of the overall funding through 2020.⁶³ Despite steadily increasing investment in naval production and acquisition, the GPV has run into significant difficulties due to foreign sanctions, ruble inflation and lack of investment in shipyards since the fall of the Soviet Union.

Russia's surface combatant acquisition programs can be roughly divided into "green-water" and "blue-water" capabilities. The former typically includes smaller vessels such as corvettes and frigates – ships that the U.S. Navy generally refers to as littoral combat ships (LCS) – while the latter includes larger surface combatants such as destroyers, cruisers and aircraft carrier strike groups. Russia has been relatively successful in acquiring and modernizing the green-water portion of its naval fleet. The Russian Navy is acquiring two main classes of frigates and five new classes of corvettes, and improving its designs with every new class. Russian naval planning envisions *Steregushchiy* corvettes, *Gorshkov* frigates and *Grigorovich* frigates to replace Soviet-era vessels and become the backbone of the Russian fleet for the next

⁶² Mari Elisa Dugas, "Between Georgia And Crimea: The Social Dimensions Of War For The Russian Military" (2016). Honors Thesis Collection. 336. <http://repository.wellesley.edu/thesiscollection/336>

⁶³ Julian Cooper, "Russia's State Armament Programme to 2020: a quantitative assessment of implementation 2011-2015," *Swedish Defense Research* (March 2016), p.20.

two decades.⁶⁴ Some other classes have more specific designs. *Buyan* corvettes, for example, are designed for shallow waters and river mouths, where they can deliver troops to land.⁶⁵ Not only have these green-water projects acquired impressive firepower, the Russian Navy also often redesigns ship models to add more firepower and tonnage. This leads to the impression that the ships tend to have a significantly stronger firepower than other ships of that particular naval ship classification.

Despite common misconceptions about a green-water surface force's limited reach, Russia boasts an impressive upgrade for its green-water vessels' offensive capacity. Offensive firepower on the green-water surface vessels comes in two folds. For one, Russia's new frigates and corvettes carry a combination of anti-ship, anti-submarine and anti-air short-range missiles. These missiles can have ranges as low as 1km and as high as 150km. The anti-air missiles aboard many of these new vessels, such as *Steregushchiy*, have advanced technical characteristics such as active radar honing seekers that allow for mid-air tracking and higher maneuverability.⁶⁶ What's more, *Gorshkov* will also be the only new combat ship in Russian Navy compatible with Brahmos missile. Brahmos is a supersonic cruise missile with a maximum range of 290km. The missile is capable of hitting both ground and sea targets traveling at an altitude as low as 10m and at three times the maximum speed of the U.S.-made Tomahawk missiles.⁶⁷ In modernizing its near-sea fleet, Russia fills up the maritime areas along Russia's Baltic and Black Sea coastal zones with highly offensive capabilities aboard its corvettes and frigates.

⁶⁴ "Russia Military Power: Building a Military to Support Great Power Aspirations," *Defense Intelligence Agency* (2017), www.dia.mil/Military-Power-Publications, p.76.

⁶⁵ "Buyan Class Corvettes," *Naval Technology*, <https://www.naval-technology.com/projects/buyan-class-corvettes-project-21630-russia>

⁶⁶ "Project 20380 Steregushchy Class Corvettes," *Naval Technology*, <https://www.naval-technology.com/projects/steregushchy-class>; "Project 2038.0 multi-role frigate," *Global Security*, <https://www.globalsecurity.org/military/world/russia/2038.htm>

⁶⁷ "Admiral Gorshkov Class Frigates," *Naval Technology*, <https://www.naval-technology.com/projects/admiral-gorshkov>

Russia is also attempting to field more far-sea surface vessels, including larger surface combatants such as destroyers, cruisers and aircraft carriers. The Russian Navy currently has only one operational aircraft carrier, the 28-year-old *Kuznetsov*. *Kuznetsov* is scheduled to enter into a 3-year overhaul starting in 2018, because of what some may describe as “questionable” performance off the coast of Syria due to poor maintenance and a lack of trained staff.⁶⁸ For example, the ship had a visible trail of black smoke as it sailed due to problems in the boiler-pressure propulsion system.⁶⁹ There are two new designs of aircraft carriers in the pipelines as successors to *Kuznetsov*: One is a massive 100,000-ton, nuclear-powered aircraft carrier named *Shtorm*, and the other one light multipurpose aircraft carrier (LMA). Neither project has a realistic construction timeline at the moment. The contracted shipbuilder has also begun the construction for *Lider*, a guided-missile destroyer that can be up to 17,500 in tonnage and way past the displacement of what is normally categorized as destroyers.

New far-sea vessels like *Shtorm* and *Lider* are so ambitious in their designs that they mirror the Soviet tsar bomb – a weapon of almost excessive firepower and a symbol of the Cold War nuclear arms race. First, *Shtorm* is a massive, nuclear-powered aircraft carrier. The vessel is designed to have four lanes of various launching systems, including both ski ramps (springboard) and springboard-catapulting.⁷⁰ The area of the take-off deck is rumored to be as big as three football fields combined.⁷¹ With no weapons systems on board, the aircraft carrier would be able

⁶⁸ “Admiral Kuznetsov’s experience in Syria to help build new aircraft carrier,” *TASS*, December 14, 2016, <http://tass.com/defense/919209>; “Russia to start upgrading Admiral Kuznetsov aircraft carrier before July 2017 — source,” *TASS*, March 3, 2017, <http://tass.com/defense/933816>

⁶⁹ Michael Kofman and Norman Polmar. 2017. “NAVAL AVIATION TAKING FLIGHT AGAIN...SLOWLY.” U.S. Naval Institute Proceedings 143, no. 3: 78-79.

⁷⁰ “23000E Shtorm,” *Global Security*, <https://www.globalsecurity.org/military/world/russia/23000.htm>; Franz-Stefan Gady, “Senior Naval Official: Russia to Build Next-Generation Aircraft Carrier ‘For Sure,’” *The Diplomat*, July 06, 2017, <https://thediplomat.com/2017/07/senior-naval-official-russia-to-build-next-generation-aircraft-carrier-for-sure/>; “Russia’s future aircraft carrier will be nuclear-powered — shipbuilder,” *TASS*, August 10, 2015, <http://tass.com/russia/813442>

⁷¹ “23000E Shtorm,” *Global Security*.

to carry up to 90 aircrafts and helicopters. The estimated cost for this giant ranges between 5.6 and 17 billion dollars. Second, the *Lider* destroyer is so impressive on paper that “the project may reflect a desire to surpass the American DDG-1000 *Zumwalt*.”⁷² Analysts have looked at *Lider*’s projected capabilities and called it a cruiser under disguise. If built successfully, the destroyer would carry over 200 missiles, including long-range anti-air and anti-submarine cruise missiles, along with 2 helicopters and a 130-mm gun. One source speculates: “Project 23560 [*Lider* destroyer] could well be remembered in the future as the ‘Tsar Destroyer.’”⁷³ Both *Lider* and *Shtorm* have been indefinitely delayed for reasons that I will elaborate on later. By attempting projects of such outsized ambition, Russia is clearly engaging in a behavior of offensive arms race.

What’s more, Russia is building vessels with higher and higher firepower-to-displacement ratio. Russia’s domestic shipbuilding industry lacks the technical expertise for large ships, but Russia has figured out that it does not need much tonnage to build more firepower and missiles on a ship. In the past, naval classification of ships largely depends on the vessel’s overall tonnage because weight determined the amount of firepower that could be loaded. But this is no longer the case. Russian vessels often integrate families of pre-packaged weapons systems. Michael Kofman, an expert on Russian military, nicely summarizes the families of capabilities: “These [capabilities] include vertical launching system (VLS) cells with [cruise missiles], Pantsir-M for point defenses, Redut VLS cells for air defense, and Paket-NK anti-torpedo systems. Larger ships carry Poliment-Redut air defense, phased array radar and be

⁷² “Project 23450K Shkval destroyer, Lead/ *Lider* Class/ New Construction Destroyer/ Future Destroyer,” *Global Security*, <https://www.globalsecurity.org/military/world/russia/ddg-newcon.htm>

⁷³ “Project 23560E,” *Military Today*, http://www.military-today.com/navy/project_23560e_shkval.htm

more versatile in the roles they can perform.”⁷⁴ VLS, in particular, is a firepower technology that significantly improves the number of missiles ready to be fired at any given moment. In sum, these ships are built for firepower, not durability or survivability. In fact, the contractors and naval planners who put them in place probably consciously sacrificed the weight that would normally come with hardened hull in exchange for such a bargain on the firepower price.

The Russian Navy also has a tendency to build ships that are much larger and overweight compared to other ships in that class. The Navy tends to construct prototypes – which are already equipped with mid- to long-range cruise missiles – gradually modifies and adds more displacements to specific models, making them bigger and bigger. This was the case with *Steregushchiy* (project 20380) and *Buyan* (project 21630). *Steregushchiy*’s and *Buyan*’s prototypes already carry SS-N-25 and SS-N-27 cruise missiles and weigh 2,200 and 500 tons, respectively. Only one vessel for each initial model was built, and all subsequent designs were significantly modified. *Gremyashchiy* (project 20385) and *Derzky* (project 20386) derived from *Steregushchiy*, but have added weights of 2500 and 3400 tons instead. Similarly, project 21631—the missile-variant of *Buyan* –carries more advanced weaponry and electronic countermeasure systems than *Buyan*. The modified variant weighs 950 tons, almost double the weight of the prototype. Generally speaking, the constant upgrading and redesign give ships significantly more firepower. As a result, the ships are often superior to other ships in that particular classification, which makes arbitrary ship classification not only useless but also potentially misleading.

⁷⁴ Michael Kofman and Jeffrey Edmonds, “Why the Russian Navy Is a More Capable Adversary Than It Appears,” *the National Interest*, August 22, 2017, <http://nationalinterest.org/feature/why-the-russian-navy-more-capable-adversary-it-appears-22009?page=2>

On the submarine front, Russia is currently replacing some of the older models in its submarine fleet, as well as consolidating its existing fleet into a few new models. Russia enjoys a much stronger technical know-how in its undersea than its surface force. Russia is currently constructing two classes of diesel-electric attack submarines, *Lada* and *Varshavyanka*, as well as two new classes of nuclear-powered submarines, *Borei* SSBN and *Yasen* guided nuclear submarines (SSGN).⁷⁵ *Borei* and *Yasen* will replace retiring models such as the *Deltas*,⁷⁶ while maintenance and upgrading efforts occur on some other models. Moreover, Russia is also building a new platform, tentatively named *Husky*, that will have the three variants of basic attack submarines, ballistic missile and guided missile submarine. Because *Husky* is still under a conceptual phase, the public currently has very little information about the much-anticipated fifth-generation submarine's capabilities.

Russia's desperate need to replace its aging fleet drives the construction of the four models of conventional and nuclear submarines currently in production. As it stands, nearly 75% of Russia's 61-vessel submarine fleet are over 20 years old.⁷⁷ However, the costs associated with keeping many of these aging vessels in active service are extraordinarily high because Soviet submarines were not designed for upkeep or upgrading. As a result, *Borei* and *Yasen* have been long been in the production as an effort to slowly phase out the older vessels. These projects, particularly *Yasen*, have proven to be astronomically expensive. In their place, the SSK offers a cheaper alternative with decent firepower-to-ruble ratio.

⁷⁵ "Russian Navy's second Varshavyanka Class Submarine to be floated out in May," *Naval Technology*, January 30, 2014, <https://www.naval-technology.com/news/newsrussian-navys-second-varshavyanka-class-submarine-to-be-floated-out-in-may-4169505/>

⁷⁶ "Yasen/Graney Class Submarine," *Naval technology*, <https://www.naval-technology.com/projects/yasengraneysubmarine>

⁷⁷ "Russia Military Power," 82.

Russia is still heavily investing in its sea-based nuclear deterrent, although some analysts agree that SSKs seem to be a better buy for anti-ship and anti-submarine warfare. On the one hand, Russia is expected to build a total of 14-20 SSKs as part of the GVP-2020.⁷⁸ Russia is currently building 2 new classes of conventional submarines: *Lada* and *Varshavyanka*. While *Lada* significantly behind schedule and unlikely to be completed due to Ukraine-related sanctions,⁷⁹ the shipbuilding yard will hand over six *Varshavyanka* (improved *Kilo* submarines) to the Black Sea Fleet in 2019, with another six being built for the Pacific Fleet by 2022.⁸⁰ Russia's domestic shipbuilding industry can produce *Varshavyanka* in 18 months pretty comfortably, both materially and fiscally. Both *Lada* and *Varshavyanka* carry long-range land-attack cruise missiles; they can also launch variations of anti-ship and anti-submarine guided missiles. *Lada* is also fitted with air independent propulsion (AIP) systems, a design that makes SSKs as quiet as some SSNs.

On the other hand, Russia has also been spending a disproportionately large amount of resources on its sea-based deterrent, the nuclear-powered submarines. The Russian Navy expects around 8-10 ballistic-missile nuclear submarine (SSBN) as part of the GVP-2020.⁸¹ *Yasen* is a nuclear-powered multi-purpose submarine that packs 24 cruise missiles, including nuclear warheads, 8 torpedo tubes, as well as mines and anti-ship missiles. *Borei* is Russia's fourth-generation nuclear submarine, significantly smaller and costs only one fourth of what *Yasen* does.⁸² *Borei* can carry up to 16 *Bulava* SLBMs, capable of carrying 6-10 re-entry vehicles with

⁷⁸ Some contradictory numbers exist in the public arena. The general range after defense cuts on navy is around 15. See Cooper, "Russia's State Armament Programme," 110; "Rearming Russia," *Jane's Defense Weekly*, 5 August 2014.

⁷⁹ Cooper, "Russia's State Armament Programme," 50.

⁸⁰ "Russia lays keel of first two of six project 636 SSK submarines for Pacific Fleet," *Navy Recognition*, July 30, 2017, <http://www.navyrecognition.com/index.php/news/defence-news/2017>

⁸¹ Claire Mills, "Russia's rearmament programme," *U.K. Parliament briefing papers* (January 2017), 6, <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7877#fullreport>.

⁸² The total cost of the submarine is \$713 million, including research and development expenditure of \$280m.

a yield of 100-150kT each. On multiple occasions, Russia has suspended *Yasen* construction projects and prioritized funds for *Borei* as a cheaper alternative.

Consistent with the prioritization of nuclear submarines, Russia is also about to begin building the fifth-generation submarine that will consolidate Russia's disparate SSN, SSBN and SSGN into an open-module design.⁸³ Many have compared this "open-module" approach to the U.S. *Virginia*-class submarine, which has a SSBN and potentially also a SSGN variants derived from the initial SSN design.⁸⁴ Envisioned to be cheaper and smaller, *Husky* will likely incorporate the experiences and lessons from the two-and-half-decade struggle otherwise known as *Yasen*. Although construction of the project is not likely to begin any time before 2023-2024,⁸⁵ there is no obvious reason why the *Husky* program would be significantly delayed. Russian submarine construction has been doing relatively well – compared to aircraft carriers, for example – and technologically, *Husky* should not encounter too many difficulties.⁸⁶ That leaves funding to be the main potential cause of concern. Russia currently has 12 submarines planned or in construction. It is likely that the Russian Ministry of Defense (MOD) may cancel or further delay older programs like *Yasen* in order to prioritize the timely construction of the cheaper derivative.

I argue that Russia's focus on nuclear-powered submarines – as opposed to the cheaper diesel-electric ones – shows that Russia envisions long-range deterrence to be the primary function of its submarine fleet. For one, a nuclear submarine's biggest functionality is its

⁸³ Michael Kofman, "Russia's Fifth-Generation Sub Looms," *U.S. Naval Institute*, October 2017, <https://www.usni.org/magazines/proceedings/2017-10/russias-fifth-generation-sub-looms>

⁸⁴ Megan Eckstein, "Navy Considering Mid-Block Virginia-Class Upgrades, SSGN Construction in Late 2030s," *USNI News*, <https://news.usni.org/2017/11/02/navy-considering-mid-block-virginia-class-upgrades-ssgn-construction-late-2030s>

⁸⁵ "Russia's new submarine to combine qualities of multi-purpose and strategic subs," *TASS*, April 05, 2016, <http://tass.com/defense/867232>

⁸⁶ "Russia's fifth generation sub looms."

endurance and survivability: Nuclear-powered submarines are able to remain submerged for long periods of time, or patrol alongside another state's coast without being discovered.⁸⁷ In an order of battle, SSNs are likely the last ones to engage. Because of its stealth feature, submarines are highly survivable tools of nuclear deterrence, but are not the most cost-effective tools for coast defense and A2/AD. For another, if Russia had wanted to use its submarine fleet for ASW and A2/AD operations, conventional submarines would do the job at a much lower cost. As described above, a large portion of missiles aboard nuclear submarines is nuclear warhead delivery vehicles. Although sometimes such vehicles can also deliver anti-ship or anti-submarine missiles, this is usually less often the case. And because deterrence relies on counter-value punishment rather than neutralization of another's offensive capacity, I argue Russia's submarine fleet is not part of the offensive race engaged in its surface fleet.

On the naval aviation front, Russia is heavily investing in anti-submarine capabilities, although the progress is limited by its lack of aircraft-carrying, sea-going vessels. Most of Russia's naval aviation aircrafts are land based. Russia's only aircraft carrier, *Kuznetsov's* relatively short deck limits the weight of the aircrafts that could take off. The Russian Navy is gradually replacing SU-24 with SU-30SM, a multi-role attacker-fighter aircraft, capable of carrying payload of up to 8 tons. SU-30SM will likely be configured with the advanced SS-N-26 guided anti-ship missiles, offering a significant better payload. SU-30SMs also cover a bigger air range, providing broader coverage of air defense. Additionally, Russia has been modernizing its four-decade old Ka-27 family military helicopters to a recently improved version: The latest antisubmarine helicopters, Ka-27M, are compatible with *Gorshkov*, *Steregushchiy* and their

⁸⁷ For a sensational story on the stealth of nuclear submarines, see Julian Barnes, "A Russian Ghost Submarine, Its U.S. pursuers and a Deadly New Cold War," *Wall Street Journal*, October 20, 2017, <https://www.wsj.com/articles/a-russian-ghost-submarine-its-u-s-pursuers-and-a-deadly-new-cold-war-1508509841>

derivatives. As such, the helicopter is fitted with armaments and radar systems designed to track and attack submarines. To date, 20 of these helicopters have made it into service with the Baltic, Northern and Pacific fleets. Lastly, Russia is also modernizing TU-142 Bear-F anti-submarine aircrafts, and the Il-38 May maritime patrol and submarine-hunting aircrafts.⁸⁸ These investments signal that perhaps naval aviation is picking up part of the slack to help Russia's submarine fleet conduct ASW.

In spite of its stated ambition for highly offensive capabilities, Russia has encountered several major impediments in its modernization programs. Russia's modernization program has been significantly behind schedule. This delay in construction is due to a variety of reasons such as the lack of funding and technical expertise, as well as sanction-related disruption of key unit imports from abroad. While sometimes these issues caused projects to be canceled or indefinitely delayed, other times they would simply be transferred and added to the planning of the subsequent GPV 2018-2025. This is, for example, the case with *Gorshkov* and *Stereguschiy*. Both projects are new prototypes designed to make up the new modern surface fleet, but both have been significantly behind the delivery schedule for 2020. It was initially expected that 20 *Gorshkov* frigates will be built, with six delivered before 2020.⁸⁹ Based on the current speed, at most 2-3 will be delivered before the deadline.⁹⁰ As construction continues, projects will continue to carry over to GPV 2025, artificially inflating numbers down the road.⁹¹ When it

⁸⁸Michael Kofman and Norman Polmar. 2017. "Naval Aviation Taking Flight Again... Slowly," *U.S. Naval Institute Proceedings* 143, no. 3: 78-79. Military & Government Collection, EBSCOhost (accessed January 28, 2018).

⁸⁹ "Admiral Gorshkov Class Frigates," *Naval Technology*.

⁹⁰ For an extensive and comprehensive discussion just on the delays encountered in the construction of the first project 22350, see Paul Schwartz, "Admiral Gorshkov Frigate Reveals Serious shortcomings in Russia's Naval Modernization Program," *Center for Strategic and International Studies*, March 2016, https://csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/160310_Schwartz_AdmiralGorshkov_Web.pdf

⁹¹ Mathieu Boulegue, "Disentangling the Ups & Downs of Russia's Military-Industrial Complex," *the National Interest*, June 27, 2017, <http://nationalinterest.org/blog/the-buzz/entangling-the-ups-downs-russias-military-industrial-complex-21348>

comes to the modernization of the surface fleet, reality often falls way short of expectation, and projected numbers do not hold much of a significance.

Russia is gradually realizing the costs of its oversized ambitions. As unrealistic projects drag on and costs accumulate, the MOD often delay or entirely cancel projects in an environment of fiscal challenges and defense sequestration. For example, in order to improve the *Yasen* submarine's stealth, the designing bureau incorporated a variety of new features into the submarine, including new power supply and relocating the torpedo tubes, while maintaining the heavily missile payloads. The attempt to "have it all" may be the main reason why *Yasen*'s price tag stands at almost \$1.5 billion per vessel. *Yasen*'s construction project was frequently stopped due to a lack of funds, once in 1996, and then again in 2003. Similarly, the contractors of the *Lider*-class destroyer designed it to be an all-powering vessel, only to realize half way through the process that the price tag for each of these vessels is so high – easily exceeding about \$10 billion per ship – that Russia could hardly build even one of these ships without breaking its wallet. News have reported that the MOD has put both of these vessels permanently on hold.

For another, West-led sanctions further accentuate the limitations in Russia's domestic shipbuilding industry. The Russian Navy intended to build 20 *Gorshkov*, with six to be delivered by 2020. As of January 2018, none has yet made it into service following multiple delays in the construction program.⁹² The design of *Gorshkov* relied on gas turbine and diesel engines imported from Ukraine's Zrya-Mashproyekt State Gas-Turbine Manufacturing Enterprise.⁹³ Ukraine discontinued the supply of these engine units following the Crimea Crisis in 2014, and Russia's domestic shipyards lack the ability to produce them. Sanction-related difficulties also

⁹² Franz-Stefan Gady, "Russia's Latest Stealth Frigate to Commence Sea Trials in 2018," *the Diplomat*, November 15, 2017, <https://thediplomat.com/2017/11/russias-latest-stealth-frigate-to-commence-sea-trials-in-2018/>

⁹³ "Russia's Military Power Report," p. 82.

caused the non-delivery of critical components for *Steregushchiy*, *Gremyashchiy* and *Buyan* class corvettes. Once again, sanctions led to disruption in the delivery of diesel power units from Germany. The sanctions went so far as to force an ending on all construction projects of *Gremyashchiy* corvettes, and the contracts will be built to *Steregushchiy* instead.⁹⁴ Some may argue the non-delivery may simply be the beginning of a steep learning curve for Russia and may instead spur a growth in Russia's shipbuilding industry. I argue that even if this was true, such a scenario would still be contingent upon sufficient infrastructure investments into Russia's shipbuilding industry. In order for the Russian Navy to achieve its construction goals, the investments need to be twice as intensive and return will be twice as delayed. At a time of such fiscal hardships, even Russia may think twice before diving headlong into projects with such dubious return on investments.

In sum, Russia has the ambition to engage a campaign of offensive surface buildup, but is handicapped by the lack of funds and sophisticated MIC. Several features showcase this offensive buildup. For example, Russian littoral combat ships carry supersonic, highly maneuverable missiles that can aim targets at sea. Additionally, the Russian Navy has a tendency to sacrifice survivability for firepower by integrating families of weapons systems onto smaller vessels that do not have a high displacement. This offers a great firepower-to-price ratio and demonstrates the prioritization of territorial conquest. What's more, Russia's investments in the undersea fleet are largely focused on the nuclear submarine as a strategic deterrent, as opposed to cheaper conventional attack submarines that have a greater tactical offensive utility. This fiscal hierarchy indicates that Russia's subsurface force buttresses the Navy's survivability and endurance pillars, but not its offensive capability. Russia has also encountered numerous, and

⁹⁴ Cooper, "Russia's State Armament Programme to 2020," p. 107.

sometimes insurmountable challenges in its quest for a stronger navy. Most notably, Russia's stagnant economy, limited domestic shipbuilding capacity and recent Ukraine-related sanctions have impeded Russia's modernization programs. By separating the ambition from realistic restraints, I demonstrate that a stronger and more offensive surface fleet, coupled with a highly survivable nuclear sea deterrent is Russia's heart's desire.

China's Naval Modernization Program and the Maritime Push

Beginning in the late 2000s, the People's Liberation Army Navy (PLAN) has adopted a more intense focus on blue-water capabilities, which gift the PLAN the unique function of maritime territorial expansion. For the last decade or so, China has continuously poured money and resources into offensive capabilities targeting other military assets at sea, such as its first-ever anti-ship ballistic missile and more advanced carrier-based fighter jets to cover air-to-air combat. This surge became especially conspicuous in the period between 2005 and 2010, during which the PLAN more than doubled the total number of submarines, destroyers and frigates that it owned.⁹⁵ Like Russia's naval modernization programs, this strategy of A2/AD is definitionally offensive, as Chinese naval planning intends to retake many of the maritime territories previously dominated by the U.S.-led alliance network.

In an effort to expand its maritime zone of dominance, China has built up offensive capabilities in all dimensions of near-sea and far-sea naval warfare. In the near-sea domain, the PLAN used to have no corvettes and very few frigates prior to 2014.⁹⁶ Mirroring Russia's

⁹⁵ See tables 6a, 7a, 8a in appendix for the number of frigates, destroyers and nuclear submarines that China has fielded in the last 20 years. Statistics here are based on data provided by IHS Jane's Fighting Ships and compiled by Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities – Background and Issues for Congress," *Congressional Research Services*, December 31, 2017.

⁹⁶ *Ibid.*, 60.

buildup of guided-missile light surface combatants, the PLAN has undergone a similar development. Starting in 2014, around 40 *Jiangdao* corvettes and 30 *Jiangkai II* frigates have entered into service, with an emphasis on neutralizing offensive capabilities coming from all levels of a potential maritime conflict. Both *Jiangdao* and *Jiangkai II* are fitted with anti-ship cruise missiles, torpedoes as well as surface-to-air missile launchers.⁹⁷ Additionally, *Jiangdao* has a modified variant that emphasizes anti-submarine capabilities,⁹⁸ and *Jiangkai II* has specialized weapons systems designed for surface-to-air campaign.

In high concentration, these vessels give the PLAN the best firepower-to-price ratio. One, although each vessel may not so much be threatening across domains, with great numbers in a dense area they can generate impressive aggregate firepower that deny adversary access to all three domains. Additionally, it greatly benefits the fleet's overall maneuverability, as these vessels, either individually or in groups, can address multi-level threats and crises around islands and shallow water. By fielding its surrounding waters with these light offensive vessels, China is engaging in a game of both qualitative and quantitative offensive buildup.

In addition to maneuverability, the PLAN is achieving a much wider operational reach and the ability to project power farther away from its land mass by building up its blue-water capabilities. Large guided missile combatants such as conventional submarines, large destroyers and aircraft carrier battlegroups will theoretically give China the capability to operate beyond the first island chain, a privilege that China had never enjoyed. Like Russia, China experienced setbacks producing large destroyers early on. The lack of shipbuilding experiences necessitated a

⁹⁷ "Jiangdao class type 056 corvette," *Naval Technology*, <https://www.naval-technology.com/projects/jiangdao-class-type-056-corvette/>; "China's 36th & 37th Type 056 Corvettes (Jiangdao class) Commissioned in PLAN South Sea Fleet," *Navy Recognition*, November 28, 2017, <https://www.navyrecognition.com>; "Type 054A (Jiangkai II) Class Frigate," *Naval Technology*, <https://www.naval-technology.com/projects/type-054a-jiangkai-ii-class-frigate/>

⁹⁸ "China's 36th & 37th Type 056 Corvettes (Jiangdao class) Commissioned in PLAN South Sea Fleet," *Navy Recognition*, November 28, 2017, <https://www.navyrecognition.com>

long period of failed experimentation and production, which turned out to be very costly. Most recently, the PLAN has been producing two models of destroyers – although one of which probably edges on being a cruiser – as well as a new class of aircraft carriers.

The PLAN's blue-water offensive capabilities have reached an important marker of being by and large comparable to U.S. large surface combatants. Destroyers and cruisers are important indices against which we measure a navy's blue-navy offensive capacity because they can operate individually as powerful combatants and are also necessary components of an aircraft carrier strike group. Many observers have compared the newer Chinese destroyers to the U.S. guided missile destroyers and cruisers. For example, analysts have sometimes compared the *Luyang III* destroyer to U.S. *Arleigh Burke* destroyer because they share similar overall capabilities, and *Luyang III* also carries phased array radars that resemble U.S. Aegis combat systems.⁹⁹ Additionally, analysts have also compared the new Chinese Type 055 guided missile destroyers to U.S. *Ticonderoga* cruisers and *Zumwalt* destroyers,¹⁰⁰ as Type 055 features 128 VLS cells capable of carrying and launching missiles at all domains of naval warfare. The vessel is also around 10,000 – 12,000 tons in displacement, features combined gas and gas turbine propulsion (COGAG) and high-end sensor systems previously unseen on any other ship in the Chinese inventory.¹⁰¹ The Chinese shipbuilding industry also delivered Type 055 three years after the construction began, demonstrating a level of technical expertise that Russia can only dream of. China is gradually approaching the U.S. in large surface combatant capabilities, and

⁹⁹ "Type 052D class," *Military Today*, http://www.military-today.com/navy/type_052d_class.htm

¹⁰⁰ "Type 055 class destroyers," *Naval Technology*, <https://www.naval-technology.com/projects/type-055-class-destroyers/>

¹⁰¹ The COGAG technology is similar in concept to the one currently equipping USS Gerald Ford. Other propulsion systems include Combined Diesel and Gas (CODAG), Combined Diesel Electric and Gas (CODLAG) and Integrated Electric Propulsion (IEP). Tyler Rogoway, "China's Type 055 Super Destroyer is a Reality Check for the U.S. and its Allies," *the Drive*, June 28, 2017, <http://www.thedrive.com/the-war-zone/11941/chinas-type-055-super-destroyer-is-a-reality-check-for-the-us-and-its-allies>

this shrinking gap critically demonstrates the state of the ongoing offensive arms race between the two countries. Consciously or not, China is in a competition with the U.S. to build bigger, faster ships that carry more missiles, in the hopes that the presence of such vessels can force U.S. vessels farther away from China's mainland and as a result, push China's frontier maritime boundaries outwards.

Enabled by the development of large surface combatants, China is also fielding its first aircraft carrier strike groups, a marker of regional power projection. Aircraft carrier strike groups are highly expensive capabilities primarily for showcasing status, conducting high-end naval warfare, or both. China obtained its first aircraft carrier, *Liaoning* Type 001, from Russia.¹⁰² Since then China has indigenously produced and reverse-engineered another one based on the import and launched the design of a third one. Based on the speed at which China is currently fielding aircraft carriers, China is likely to have multiple aircraft carrier strike groups in the intermediate future. Significant technological gaps still exist between Chinese and U.S. aircraft carrier groups, and the Chinese MOD is well aware of the technological gap between its aircraft carriers and those of the U.S.¹⁰³ As I shall elaborate on later, it remains to be seen how long it will take for China to overcome the multiple technical barriers currently associated with its aircraft carrier programs. For example, aircraft carrier strike groups need to operate in a highly “informationized network” – a term frequently used by Chinese defense scholars – in order for multiple vessels to cooperate and fight as one entity. Nevertheless, that China even attempts to

¹⁰² The story of how *Liaoning* got back to China from Russia deserves a book of its own. When China hauled the empty hull of *Liaoning* out of Ukraine, the company that bought it on behalf of the Chinese MOD claimed to be building a waterpark with this vessel. The fleet passed through Black Sea and the Turkish Strait, at which point the Turkish government refused to let the vessel pass. After 3 years of negotiation, the Turkish government managed to secure \$360 million in economic aid and free tourist-visa exemption for Chinese tourists traveling to Turkey.

¹⁰³ “Analysis finds major weaknesses in China’s aircraft carrier battle groups,” *Sina News*, May 5, 2013, <http://mil.news.sina.com.cn/2013-05-05/1051723692.html>

build aircraft carriers is a sign of its desire to expand influence, promote China's status in the far sea, and chip away at U.S. global sea control.

In addition to over-the-horizon long-range cruise missile targeting, the large surface combatants also provide a platform for the development of PLA's Naval Aviation Force (PLAN AF). Ship-borne aircrafts are particularly useful for intelligence-gathering, ASW and air defense. The PLAN AF is acquiring significant ASW and early warning capabilities through ship-borne helicopters in addition to carrier-based fighter jets for air-to-air combat. China currently has multiple destroyer- and carrier-based helicopters, such as imported KA-27M as well as domestically developed Z-18 and Z-18J. Z-18 has an anti-ship variant, an anti-submarine variant, and an intelligence-gathering variant focused on airborne early warning (AEW) systems. Z-18J is also an AEW helicopter.¹⁰⁴

What's more, the PLAN is fielding carrier-based fighter jets with three older models, as well as designing and building a new fifth-generation fighter, J-31. These fighters boast great stealth, electronic countermeasure (ECM) jammers, as well as air-to-surface targeting capabilities. In particular, as a fifth-generation fighter – like the U.S. counterpart, F-35 – J-31 is supposed to feature “state-of-the-art avionics,” and will be compatible with aircraft carriers in the future. Launched by aircraft carriers' assistive catapult systems, J-31 can provide advanced warfighting capabilities in close-air combat for aircraft carrier battles and much wider air defense coverage than ever before. The problems with such ambitious designs are, once again, technical limitations in Chinese naval technology, such as the lack of catapult launchers on its aircraft carriers as well as outdated engine designs for the fighters. As such, China claims that J-31's

¹⁰⁴ “Helicopters III,” *Chinese Military Aviation*, <http://chinese-military-aviation.blogspot.com/p/helicopters-iii.html>

overall design is yet far from settled.¹⁰⁵ China's limited fighter engine designs together with its lack of functional, advanced aircraft carriers suggest that naval aviation will not be able to provide strong air defense beyond the immediate South and East China Seas.¹⁰⁶ But regardless of realistic constraints, such modernization programs demonstrate China's ambition to match, if not outpace U.S. acquisition of offensive capabilities in the air.

On the submarine front, China is unlike Russia in that they are dispensing an equal, if not slightly more amount of resources on conventional attack submarines than on nuclear submarines. Based on statistics offered by Jane's Fighting Ships, China has been fielding twice the amount of conventional attack submarines than they have nuclear submarines over the last decade.¹⁰⁷ Currently, China currently has ongoing construction projects for two classes of submarine: Type 039A *Yuan* SSK and Type 094 *Jin* SSBN.¹⁰⁸ Rumors speculated that China launched a SSK, Type 032 *Qing*, in 2012 as a platform for testing SLBM,¹⁰⁹ and will soon begin the production of next-generation Type 095 SSN and Type 096 SSBN.¹¹⁰

I argue that China is fielding more conventional than nuclear submarines because they have greater firepower-to-price ratio. Conventional submarines offer a great package of stealth and warfighting capabilities. For one, like the Russian *Lada* submarines, *Yuan* SSK is reportedly

¹⁰⁵ "J-31 improved version trial run, experts say it will still take a while to set on a model," *People*, December 27, 2016, <http://military.people.com.cn/n1/2016/1227/c1011-28978389.html>

¹⁰⁶ One analyst speculates that the Chinese naval aviation power projection capability in the Indian Ocean is at least two decades away. See Kamlesh Kumar Agnihotri, "China's Naval Aviation and its Prospective Role in Blue Water Capabilities of the PLA Navy," *Maritime Affairs* 6, no. 2 (2010): 23-48.

¹⁰⁷ See table 8a in appendix for the numbers of summaries that the PLAN has acquired since 2000.

¹⁰⁸ See "Assessing China's Naval Power," p. 219 on nuclear-powered submarines, and p. 223 on conventionally powered submarines.

¹⁰⁹ *Jane's Fighting Ships 2017-2018*, ed. Commodore Stephen Saunders, p. 140; Sebastien Roblin, "China Has Built the Biggest and Baddest Conventional Submarine in the World," *the National Interest*, December 5, 2016, <http://nationalinterest.org/blog/the-buzz/china-has-built-the-biggest-baddest-conventional-submarine-18629>

¹¹⁰ "Type 096 ballistic missile submarine," *Global Security*, <https://www.globalsecurity.org/wmd/world/china/type-096.htm>

equipped with AIP, based on Chinese sources.¹¹¹ AIP is a maritime propulsion technology that drastically reduces the acoustic signature of a conventionally powered submarines, so much so that these conventional submarines are potentially harder to detect than nuclear submarines. AIP also increases the submarines' endurance from days to weeks.¹¹² For another, *Yuan* is mainly equipped with YJ-82¹¹³ – a domestically produced submarine-launched anti-ship missile – but is also capable of launching several types of Russian anti-ship missiles and anti-submarine torpedoes, including the supersonic 3M-54E Club anti-ship missiles.¹¹⁴ In other words, the difference in the price tags of an SSK and an SSN –the former is in the millions of dollars, while the latter is in the billions of dollars – buys significantly longer endurance and the option of nuclear deterrence. The continuous investments in SSKs can only be because of the emphasis that China places on near-sea conventional combat, where SSNs would be of little value.

This is not to say that China has not heavily invested in its growing sea-based nuclear deterrence. In addition to the two classes of diesel-electric submarines, China finished the construction of its first ever sea-based nuclear deterrence, type 094 *Jin* SSBN and is likely secretly building the next-generation type 095 SSGN and type 096 SSBN.¹¹⁵ *Jin* mounts 12 JL-2

¹¹¹ This equipment of AIP has not been verified. Two separate sources state the rumor and say it cannot be confirmed. “Yuan conventionally powered submarines,” *China*, July 28, 2012, http://www.china.com.cn/military/2012-07/28/content_26045140.htm; “Yuan Type 039A/ Type 041,” *Global Security*, <https://www.globalsecurity.org/military/world/china/yuan.htm>

¹¹² Franz-Stefan Gady, “China Resumes Production of First Quietest Attack Submarine,” *the Diplomat*, January 06, 2017, <https://thediplomat.com/2017/01/china-resumes-production-of-its-quietest-attack-submarine/>

¹¹³ Most of the Type 039 submarines, including Type 039, 039A, 039G and 033, carry YJ-82 based on a Chinese naval database website. “YJ-82 Submarine Launched Anti-Ship Missiles,” *Navy 360*, <http://www.haijun360.com/news/FJDD/2010/819/1081920201KA1H08IJBHB149ECJH8.html>

¹¹⁴ “Yuan Type 039A/ Type 041.”

¹¹⁵ Chinese nuclear submarines come in pairs. Type 091 and Type 092 were the first generation of China's SSN, and in every subsequent pairing the odd-numbered submarine was the attack boat while the even-numbered was larger, ballistic missile submarine (SSBN). In the conventional realm, observers believe that the PLAN is expected to add another 5-7 *Yuan* by 2020. In the nuclear realm, various resources have also reported that China will proceed to produce the next generation SSBN of Type 095 and Type 096 after they produce about 5 Type 094 JINs. O'Rourke, “China Naval Modernization,” 17. See table 8a on submarine commissioning over the years.

missiles,¹¹⁶ a model of SLBM with approximately 8000 km in range and can carry 3 to 4 multiple independent re-entry vehicles (MIRV) of 90-kiloton (kT) nuclear warheads each or one warhead with a yield of 250-1000 kT.¹¹⁷ *Jin* is the first of China's sea-based nuclear deterrence that can actually hold the continental U.S. at target even when parked in China's home waters. Additionally, a DOD report to the Congress in 2010 states that China is likely to field type 095 *Sui* SSGN and type 096 *Tang* SSBN in the coming years,¹¹⁸ although no definitive sources confirm this. The highly secretive type 095 and type 096 nuclear submarines are likely to feature improved stealth features. When officially in service, *Sui* will likely fill the long-distance anti-ship and anti-submarine targeting role, while *Tang* will be bigger, heavier and carry more missiles but otherwise of a conventional design. As previously mentioned, China had constructed a conventional submarine for testing JL-2 SLBM, but the fact that it continues to develop new SSNs demonstrates strong interests in building a stronger sea-based nuclear deterrence. While this does not necessarily signal a departure from China's minimum deterrence posture, China is certainly showing interests in modernizing and upgrading its nuclear deterrence posture.

As in the case of Russia, China had previously ignored the development of surface, undersea and naval aviation technologies for a long time. This negligence led to many technical constraints on the pace at which China can modernize its navy. First, in the PLAN's surface fleet, China has yet to build a nuclear-powered aircraft carrier, which makes the Chinese aircraft carriers significantly slower than the U.S. ones. China's aircraft carriers also only have ski ramps and have yet to incorporate catapult launchers, which lowers the maximum take-off weight of the

¹¹⁶ "Type 094 Jin-class Ballistic Missile Submarine," *Global Security*, https://www.globalsecurity.org/wmd/world/china/type_94.htm

¹¹⁷ "JL-2," *Global Security*, <https://www.globalsecurity.org/wmd/world/china/jl-2.htm>

¹¹⁸ The names here are NATO-designated. No Chinese names exist in the public arena. "Type 095 Sui Class SSN," *Global Security*, <https://www.globalsecurity.org/military/world/china/type-95.htm>; "Type 096 ballistic missile submarine," *Global Security*, <https://www.globalsecurity.org/wmd/world/china/type-096.htm>

aircrafts aboard these aircraft carriers. Without catapult launchers, China's carrier-based fifth-generation fighter will mostly be a dream. Moreover, outdated engine designs significantly limit China's naval aviation program. Simply put, China has the technical expertise to build the skeleton and the skins of a "fifth-generation" fighter but not the heart. While Chinese fighters' software and stealth features may be on par with the other fifth-generation fighters out there, the aircraft's engine design is likely based on the Klimov RD-33 – a Russian engine design from the 1980s – and far behind the standard of what would be considered the engine of a "fifth-generation fighter."¹¹⁹ Lastly, China is still far behind in its nuclear submarine stealth technology. ONI suggested in a report that the two newest classes will have higher noise level than the Russian *Akula I* level.¹²⁰ *Akula I* is a Soviet-era submarine gradually being decommissioned.

Additionally, China is still working to overcome its reliance on imported military technology from Russia and elsewhere. Historically, China has relied on Russia to acquire high-end naval capabilities. For example, China purchased the prototype of its first aircraft carrier from Russia; its fighter's engines are based on imported Russian models; this is not to even mention the multitude of Russian missiles on Chinese vessels.¹²¹ Reliance on foreign imports poses a major challenge for the rise of Chinese military power, like when sanctions-related non-deliveries heavily delayed and impeded Russia's ship construction projects. Currently Sino-Russian relations is experiencing one of the warmest periods in history. However, short of a

¹¹⁹ Michael Kofman, "We asked a military analyst how the F-22, Su-57, and J-20 stealth planes match up," interview by Daniel Brown, *Business Insider*, March 7, 2018. <http://www.businessinsider.com/comparison-of-f-22-su-57-and-j-20-stealth-planes-2018-3>

¹²⁰ O'Rourke, "China Naval Modernization," 13. See table 9a in appendix on the acoustic quietness of Chinese and Russian submarines.

¹²¹ For a more extensive and comprehensive discussion on this topic, please see Paul Schwartz, "Russia's Contribution to China's Surface Warfare Capabilities: Feeding the Dragon," *Center for Strategic and International Studies*, August 2015.

military alliance, Russia will always be wary of significant imbalances of power. As China continues to harness its military power, Russia will likely remain cautious about further military exports to China. This will likely facilitate a slowdown in the growth of China's naval capabilities.

Lastly, a common problem with both the Chinese and the Russian larger surface combatants is the need to experiment and alter. Smart naval development strategy entails building a lot of vessels within a few concentrated class, like what China has been doing over the last few years with its corvette program. Having more ships of the same class helps keep research and development costs at bay. The first few vessels in a class are usually the most expensive, as major technical modifications usually follow the construction and trials runs of the first vessel. It also requires time and significant training for technical staff to learn both the operations and maintenance of a specific model. This is, simply put, "the economy of scale." However, because of the lack of expertise, experimentation is sometimes required to find the model that best suits the navy's need, whether in combat or otherwise. When it comes to their destroyers, for example, Russia and China both went through a period where they built no more than two or three vessels in a class before deciding against the project. This was the case with Chinese type 051B *Luhai*, type 052A *Luhu* and Type 052B *Luyang I*. And this is largely the cause of the abandoned Russian projects such as *Yasen*. As Chinese and Russian naval technologies mature, the "learning curve" will likely lessen and lead to less diversity in their large surface combatant classes.

Conclusion

In this chapter, I demonstrate that both China and Russia are heavily investing in offensive capabilities that allow for denying adversaries access to a particular maritime territory. For one, China has consistently and significantly improved its anti-air, anti-ship and anti-submarine combat

capabilities, so much so that some – but not all – of its larger surface combatants have become peer competitors of U.S. vessels. For another, lacking the resources to produce large vessels, Russia has made the conspicuous decision to trade protection such as thicker hulls for offensive firepower. Additionally, it is important to note that some, if not most of the technological challenges discussed here are part of the natural process in military modernization. They should help observers evaluate the realistic constraints placed on China's and Russia's ambitions. The Russian and the Chinese Navies have both undergone a period of neglect. Their capacity to modernize and acquire are limited, first and foremost, by the lack of a strong foundation. But one should not mistake capacity, or the lack thereof, for capabilities. After all, we may not achieve what we want at the present, but not achieving the goals does not make us want them any less.

Does this mean that the U.S. should be justifiably alarmed by the intentions behind signs of improvements in China's and Russia's naval modernization programs, and therefore accelerate its own naval modernization and acquisition? Not necessarily. In the next chapter, I will test the other two necessary conditions for rational signaling. In addition to the fact that China and Russia are engaging in regional naval arms race, U.S. strategy of global dominance, and as well as its perception of China and sometimes Russia as an overall peer competitor both serve as a basis of justification for an offensive arms race.

CHAPTER 3. “WE DO NOT NEED ANYBODY’S PERMISSION”:

***U.S. GLOBAL SEA CONTROL, OFFENSE DOMINANCE, AND
NEAR-PEER COMPETITION***

Introduction

In this chapter, I show that as a naval superpower, the U.S. Navy (USN) has an overarching strategic concept of global access and sea control. Sea control endows upon maritime areas political and military significance, in addition to the economic resources they already embody. Previous scholars have treated ODB as a variable that is different in maritime warfare than in land warfare. However, I argue that maritime warfare has many of the similar characteristics as land wars do today, except that they cannot be fortified and are more easily conquered than guarded. Since sea areas cannot be fortified, ensuring qualitative and quantitative offensive superiority in a match-up of naval capabilities is the structural requirement and one major way to impose costs on one’s adversaries. To protect its global presence and deter challengers, therefore, the U.S. must continuously invest in offensive capabilities at a higher rate than its potential adversaries do. As China and Russia push outwards for control over more of their surrounding maritime territories, the structural environment in these territorial waters becomes highly contested and offense-dominated.

In addition to the offense-dominant environment, I demonstrate that U.S. lawmakers and naval war planners have perceived Chinese and Russian navies as near-peer competitors in their surface and subsurface capabilities, respectively. The perception of near-peer competition, in turn, is a key cause of U.S. perceived vulnerability and offensive naval buildups for denial penetration capabilities. As the United States adjusts its naval force postures worldwide to

address these challenges, C/R's modernization programs raise the costs of conventional deterrence for the U.S. both locally and globally. Therefore, however regional they may be at the moment, the rise of C/R's navies directly threatens U.S. global sea control and upends the American maritime empire. Ultimately, I argue that offense dominance and the perception of "peer competition" jointly explain the onset of a rational offensive arms race because in an effort to gain security and military advantage, all states must pursue highly offensive capabilities to make the most cost-effective investments regardless of actual intentions.

Maritime Territoriality as the Foundation for Conquest and Offense Dominance

As I show in chapter 1, the logical link between territoriality and ODB is extremely controversial in academic debates, because it equates offense with the ability to move and conquer land.¹²² With regards to maritime warfare specifically, scholars have also advanced the view that discussions on land offensive/defense military technologies are generally not applicable to naval warfare. Scott Sagan, for example, argues that "it has been generally recognized since Clausewitz that defense is almost always 'easier' in land warfare because of advantages of cover and the capability to choose and prepare terrain and fortify positions."¹²³ In an excellent overview of how the concept applies to maritime warfare, Jack Levy points out that "movement toward enemy forces and territory is much less useful for naval warfare." He argues that navies cannot be distinctly offensive, as one cannot apply "the principles of mobility and tactical movement to naval warfare," and navies can always avoid battles by retreating and this would not sacrifice major territorial objectives. The lack of costs for retreat demonstrates "the absence of anything comparable to the territorial standard occurring in land warfare."¹²⁴

¹²² Chapter 1, 19-20

¹²³ Sagan, "1914 Revisited," P.161.

¹²⁴ Levy, "The Offensive/Defensive Balance," p. 226.

I would like to contest the argument that defeat of enemy forces and territorial conquest are not linked in naval warfare. In fact, I argue that in the present day, navies cannot retreat in a battle without sacrificing major political and military objectives, which makes the so-called “territorial standard” central to naval warfare. One major characteristic that previously distinguished land from maritime territories was the presence and protection of population and industrial assets, but such distinction no longer exists. Maritime territories today have inherent economic values, and states often endow political and military significance to these territories as well. Despite having no human or industrial assets, maritime territories have trade routes, natural resources and undersea cables. It is well-known, for example, that the South China Sea (SCS) carries almost one third of the world’s global shipping.¹²⁵ Those who have guaranteed access to the area, therefore, have secured trade routes and economic rights. This is not to even mention the economic benefits that come out fisheries and other natural resources in the area. But economic significance is not the only nor the most significant factor that gives maritime territories meanings. States often bestow political and nationalist significance upon contested maritime areas. Like land territories, the ownership of certain maritime regions completes national sovereignty and has added political benefits to a regime.¹²⁶

C/R’s area denial strategies and U.S. global sea control manifest the territorial nature of maritime warfare today. For China, for example, monopolized access to maritime territories in South or East China Sea means that the PLAN can push potential armed conflicts farther away from its landmass and protect its population and commercial centers.¹²⁷ For Russia, ensuring

¹²⁵ “How much trade transits the South China Sea?” *CSIS China Power*, <https://chinapower.csis.org/much-trade-transits-south-china-sea/>

¹²⁶ Alexis Dudden, *The State of Japan: Islands, Empire, Nation* (Oxford: Oxford University Press), forthcoming.

¹²⁷ For China’s military and strategic thinking on this topic, see for example Wenmu Zhang, “Sea Power and China’s Strategic Choice,” *China Security* (Summer 2006).

naval access to the Black Sea and beyond will protect the contested territory of Crimea.¹²⁸ For the U.S., the use of aircraft carriers strike groups “resembles an island-hopping campaign . . . [where] pieces of the ocean will be seized and held for some period of time from which offensive operations are then conducted.”¹²⁹ In other words, offensive warfare necessitates seizing and using maritime territories as a forward-deployed base to launch combat missions. Without the ability to deploy forward, U.S. ability to fight an all-domain war will be significantly diminished. When maritime territories are contested and have heavy military presence, a state has a much harder chance defeating enemy forces without seizing territories, and cannot seize territories without defeating enemy forces.

Maritime territoriality provides a foundation for offense dominance – the tendency to conquer – because in contested territories, all involved parties will heavily employ technologies and strategies that ensure access and conquest, for the lack of a better word, of the given maritime territory. The key distinction between territorial conquest and territorial defense is the status quo ownership over a particular territory. In other words, territorial conquest entails gaining access and ownership over another entity’s territory, while territorial defense entails ensuring access and ownership over one’s own territory. Although the legal ownership of contested sea areas such as SCS and Black Sea is beyond the scope of discussion for this project, it is widely understood that such waters are not exclusively under one state’s sovereignty in the same way that for example, a state or a republic may belong to China, Russia or the U.S. In an environment where no party can claim legitimate ownership over a given territory, every party is

¹²⁸ For Russia’s naval strategic thinking on this topic, see for example Victor Zaborosky, “Crimea and the Black Sea Fleet in Russian-Ukrainian Relations,” *Belfer Center for Science and International Affairs*, Discussion Paper 95-11, Kennedy School of Government, Harvard University, September 1995.

¹²⁹ U.S. Congress, House, *The Role of Surface Forces in Presence, Deterrence, and Warfighting: Hearings before the Subcommittee on Seapower and Projection Forces*, 114th Cong., 2015, 6 (Testimony of Bryan McGrath).

on a mission to conquer.

U.S. Global Sea Control and Offense Dominance

Global sea control and all-domain access are overarching U.S. naval strategic concepts.¹³⁰ U.S. policymakers, therefore, consider them non-negotiation and non-questionable national-level guiding objectives. I argue that global sea control and forward-deployed U.S. vessels create offense dominant environment in Western Pacific and Eastern Europe for two reasons. Technologically speaking, maritime territorial defense limits naval vessels' mobility and subjects them to easier targeting by technologically sophisticated cruise missiles. As the missiles are significantly cheaper than the vessels, offense and territorial conquest require less costs and firepower than territorial defense does. Geographically, unlike land warfare, the maritime geography provides natural cover for attack submarines that can launch surprise attacks and provide penetration against C/R's A2/AD capabilities. Ultimately, I argue that offense dominance compels all states, including C/R, to pursue offensive capabilities because access denial requires a high concentration of firepower to offset U.S. offensive advantages and penetrating strike capabilities.

The concept of global sea control requires the deployment of U.S. naval vessels worldwide to ensure U.S. access to every corner of the world's oceans. "Sea control" denotes a condition in which a state's navy can successfully exercise the full range of operations in all domains, including undersea, surface, air and electronic.¹³¹ U.S. policymakers and naval officers consider U.S. "command of the commons" as critical to the provision of public goods – namely,

¹³⁰ Rowden, "Surface Force Strategy: Return to Sea Control."

¹³¹ Vice Admiral Thomas A. Rowden, "Sea Control First," *Proceedings Magazine* 143, no. 1, January 2017, <https://www.usni.org/magazines/proceedings/2017-01/commentary-sea-control-first>. Also see table 4a in appendix for a summary on levels of naval in different domains.

freedom of navigation (FON) – that currently underpin the global maritime order. Assistant Secretary of Navy, Sean Stackley spells out the range of the USN’s missions geographically and thematically:

Today ... nearly half of [the Navy] is routinely underway . . . from the Eastern Med [Mediterranean] to the Sea of Japan to the South Atlantic and points beyond . . . They are the providers of maritime security around the world. They are our first responders to crisis, in the aftermath of natural disaster to provide relief, in the face of regional turmoil to weigh against aggression, and when called into action to defeat our foe. They are our surest defense against the threat of ballistic missiles and they are the Nation’s surest deterrent against the use of strategic weapons. Their effectiveness in providing stability is a product of their presence, their response time, and their ability to project power.¹³²

As shown in the quotation here, the provision of public goods such as maritime security may be an added benefit. But the real function of global sea control is military access to all of the world’s maritime areas where the U.S. has vested interests, so that when conflicts draw near, the USN is combat-ready and combat-effective against all potential adversaries. For that reason, global sea control is merely a benevolent equivalent of global maritime conquest.

Access requires naval superiority, and to gain access to maritime territories under U.S. global sea control, the two states must pursue naval buildups to offset U.S. naval presence in the region. For the previous two decades, the U.S. has maintained global maritime access through naval superiority. Starting from 2010 or so, R/C have replicated the American recipe for territorial dominance. To this move American policymakers have vehemently objected, essentially citing U.S. hegemony as the only legitimate form of maritime domination. While China may have “a very expansive interpretation of . . . exclusive economic zone (EEZ)” and want to “control the military activities within it,” retired U.S. Admiral Dennis Blair declares, “but more important than whether we run a particular destroyer within 3 miles or 4 miles of a

¹³² U.S. Congress, House, *Aircraft Carrier – Presence and Surge Limitations and Expanding Power Projection Options: Joint Hearing before the Subcommittee on Seapower and Projection Forces jointly with Subcommittee on Readiness*, 114th Cong., 2015, 2 (Testimony of Sean Stackley).

particular rock . . . is that the United States freely operates its air, naval, and, if necessary, its ground forces in that part of the world. And we do not need anybody's permission to do it.”¹³³

R/C's naval modernization programs essentially strengthen the two states' capabilities, on both the high-end and the low-end, as the only way to ensure their own access to the near-sea contested maritime territories. Under U.S. global sea control, the competition over access necessitates a matchup in naval capabilities, leading to C/R's naval arms racing behaviors.

Furthermore, I argue that offense dominance compels naval buildups to be highly offensive regardless of intentions, as the amount of firepower that C/R must build in order to neutralize American offensive capacity significantly outweighs the amount of firepower required for the U.S. to penetrate the denied area. Almost all naval capabilities are tactically offensive, that is to say, they are highly mobile and have firepower that can neutralize an adversary's fleet. But there are external technological and geographical factors that place strategic offensive in a more favorable position than strategic defensive. As scholars have previously argued in the literature, offense-defense balance is a two-directional compound ratio comprised of (1) the cost effectiveness associated with successful defense, and (2) the cost effectiveness associated with successful offense. I define the first one as the ratio of costs required for the defender to neutralize the offender's firepower capacity – the requirement for a defensive victory. And I define the second one as the ratio of costs required for the offender to overcome the defender's firepower capacity – the requirement for an offensive victory.

Offense dominates the naval standoffs between C/R and the U.S. because the requirement for a defensive victory is much higher than that for an offensive victory, which makes territorial conquest is much less costly than territorial defense. For example, consider the following

¹³³ U.S. Congress, Senate, *U.S. Policy Options in the South China Sea: Hearing before the Subcommittee on East Asia, the Pacific and International Cybersecurity Policy*, 114th Cong., 2016, 24.

testimony by Dr. Andrew Erickson of U.S. Naval War College:

To be sure, both U.S. SSNs and long-range anti-ship missiles (LRASM) and Chinese A2/AD forces could achieve denial effects. Long-range surface-to-air and air missiles from both sides might hold air operations over the features in question at risk, prevent continuous operations, or even fully create a no man's land. U.S. forces other than SSNs might not be able to operate without assuming great risk and hence be denied unfettered access. But Chinese forces would also not have access and would thereby be denied their objective of seizing and holding disputed territory.¹³⁴

In other words, offensive capacity, including A2/AD capabilities, by either side could deny the other side access to a particular maritime area but cannot guarantee access to one's own.

Essentially, one side can easily seize an area but cannot fend off attacks against potential assets.

The sheer operational difficulties associated with defense speaks volume to the offense dominance within these territorial waters.

Attacking is much easier than defending a maritime region because the ocean provides cover for surprise attacks, and long-range cruise missile technology disadvantages the side with limited mobility, as mobility is one of naval vessels' greatest natural defense against incoming attacks. For one, the maritime geography provides natural cover for stealthy attack submarines that are particularly useful for launching offensives. Rear Admiral Richard Breckenridge states with regards to U.S. submarine attack force: "By leveraging stealthy concealment, our undersea forces can deploy forward without being provocative, penetrate an adversary's defensive perimeter, and . . . exploit the element of surprise and attack at a time and place of our choosing."¹³⁵ Contrary to Sagan's argument that land warfare always favors the defense, I would argue that naval warfare is always the opposite and favors offense because ocean provides a natural cover for vessels such as submarines, make them harder to detect and allow for a first-

¹³⁴ U.S. Congress, House, *U.S. Asia-Pacific Strategic Considerations Related to People's Liberation Army Naval Forces Modernization: Hearing before the Subcommittee on Seapower and Projection Forces*, 113th Cong., 2013, 4 (Testimony of Andrew Erickson).

¹³⁵ U.S. Congress, House, *Undersea Warfare Capabilities and Challenges: Hearing before the Subcommittee on Seapower and Projection*, 113th Cong., 2013, 5.

strike advantage. For that reason, conquest is much easier than defense. Some have pointed out that it is tautological to argue that offense dominance increases the incentive to strike first and the incentive to strike first demonstrates offense dominance.¹³⁶ For that reason, we should not necessarily define offense dominance as the tendency to strike first, but instead use such tendency as an indication of offense dominance. In this scenario of maritime warfare, it is the natural geography that puts first-strike in a favorable position and indicates offense dominance.

Technological factors also favor conquest because long-range precision-guided missiles are the predominant method to neutralize incoming firepower from the other side. For example, concerning U.S. long-range cruise missiles, Mr. Bryan Clark of the Center for Strategic and Budgetary Assessments (CSBA) says:

If I shoot 10 or 12 Tomahawks at [high-end Chinese destroyers], they may not shoot all of them down; all it takes is one to get through. . . . If I am paying for 10 or 12 Tomahawks at about a million dollars apiece to destroy a \$1.5 billion or \$2 billion Chinese destroyer, that would be a good tradeoff to accept.¹³⁷

Mr. Clark's implied logic here is a rational trade-off calculation. An adversary's large combatants have inherent firepower that can attack U.S. vessels, and the cheapest way to offset firepower is by liquidating them, not by building thicker hulls on our part, although reinforced hulls may certainly help. As navies can now easily target adversaries across long distance, striking first helps disarm the other side and minimize damage to oneself. Therefore, those who operate within a confined maritime territory are particularly subject to high-density incoming missile attacks. The more long-range and precise these missiles are, the more they aid conquest and the less they help with defense. J. Randy Forbes, chairman of the Subcommittee on Seapower and Projection Forces, nicely sums up the advantage of offense that natural cover and

¹³⁶ "The Offensive/Defensive Balance of Military Technology," 229.

¹³⁷ U.S. Congress, House, *Game Changers – Undersea Warfare: Hearing before the Subcommittee on Seapower and Projection*, 114th Cong., 2015, 12.

long-range cruise missile technology offer: “I think that our Navy needs to place more emphasis on undersea warfare and long-range power projection as part of a strategy to prevent potential adversaries from achieving the benefits offered by anti-access/aerial denial strategies.”¹³⁸ Taken together, the technology and the geography are such that offense has a huge advantage in naval warfare because of cost-effectiveness and natural cover.

In addition to long-range missile technologies and stealthy attack submarines, low-end capabilities and smaller surface combatants – typically thought to be more useful for near-sea defense – are also integral to high-end fighting and territorial conquest. For example, the USN initiated the contracts for littoral combat ships (LCS), otherwise known as corvettes, only in the last decade or so. But even LCSs are constantly upgraded and integrated into high-end warfighting. Vice Admiral of the USN and Director of Navy Staff, Richard Hunt states: “For the initial phase [LCS is] to be in the theater and sense the environment before hostilities may occur . . . [LCS]s can . . . link that information back to the larger group, and she provides those unique capabilities in each one of the mission modules that the fleet commander would then tailor.”¹³⁹ What’s more, like Russia, the U.S. is furthering the long-range missile capabilities of smaller surface combatants. In the words of Admiral Harry Harris: “We used to track and be concerned the [Nanuchkas, Osa’s, and Tarantuls] that the Soviets had because they were missile-armed corvettes. And I want the Chinese and the Russians and other adversaries we might have to think about the LCS in that way. . . if we put the right kind of missile on it and up-gun it.” The integrated nature of modern naval warfare and the “missilization” of small surface combatants demonstrate that for all three states, the so-called distinction in wartime or peacetime deployment

¹³⁸ U.S. Congress, House, *The Future of Seapower: Hearing before the Subcommittee on Seapower and Projection*, 113th Cong., 2013, 2 (Opening Statement of Randy Forbes).

¹³⁹ U.S. Congress, House, *Acquisition and Development Challenges Associated with the Littoral Combat Ship: Hearing before the Subcommittee on Seapower and Projection*, 113th Cong., 2013, 22.

requirements is theoretically sound but rather blurred in reality.

Indeed, one can say that we are moving beyond verbal coercive threats and into an era of physical military threats. In *A Model of Military Threat*, Slantchev argues that a military threat is a physical move that (1) is inherently costly because the actor must pay to make it, and (2) changes the distribution of power during crisis.¹⁴⁰ Slantchev's conception of military threat describes the U.S. denial-penetration strategy – what lawmakers and naval officers consider as necessary for deterring China and Russia – because such strategy is costly and increases combat readiness. As tensions build in the Black Sea and in SCS, the USN has emphasized sending high-end warships to the region to provide presence of warfighting capabilities, whether for the purpose of multilateral military exercise or otherwise. When asked how the Navy is working to deter Russia following the events that transpired in and around Crimea, Assistant Secretary of Defense Derek Chollet answered: “Measures so far include . . . extending the USS *Truxtun* stay in the Black Sea to conduct exercises with Romanian and Bulgarian naval forces. We will also send another ship to the Black Sea within a week.”¹⁴¹ The two ships mentioned here are a nuclear-powered cruiser and an *Arleigh Burke*-class guided missile destroyer, respectively.¹⁴² Compared to the Black Sea, the dialogues on “deterrence through high-end capabilities” are even more extensive for the Western Pacific rim at the congressional level, calling for the deployments of specific aircraft carrier strike groups,¹⁴³ destroyers,¹⁴⁴ and attack submarines, all

¹⁴⁰ Slantchev, *Military Threats*, 66.

¹⁴¹ U.S. Congress, House, *U.S. Russian Military Developments and Strategic Implications: Hearing before the Committee on Armed Services*, 113th Cong., 2014, 5 (Testimony of Derek Chollet).

¹⁴² Sam LaGrone, “U.S. Destroyer Donald Cook Returns to Black Sea,” *USNI News*, December 29, 2014, <https://news.usni.org/2014/12/29/u-s-destroyer-donald-cook-returns-black-sea>

¹⁴³ U.S. Congress, House, Committee, *Aircraft Carrier – Presence and Surge Limitations and Expanding Power Projection Options*.

¹⁴⁴ U.S. Congress, House, *The Challenge of Conventional and Hybrid Warfare in the Asia Pacific Region: The Changing Nature of the Security Environment and its Effect on Military Planning: Hearing before the Armed Services Committee*, House, 114th Cong., 2016, 7.

of which can be broadly categorized as long-range, penetrating strike capabilities.¹⁴⁵ The USN's key objective is to maintain all-domain access and global sea control. However, because deterrence requires and reinforces offense dominance, it would then tend to elicit a reaction that is equally offensive in nature from the other side.

The logic of deterrence through the presence of large surface combatants is two-fold. First, the A2/AD strategy is a competition of capabilities so as to raise the cost of victory and make conflicts less desirable for the other side in a given area. Based on this logic, naval capabilities should receive funding and deployment priorities if they “can substantially increase surface ship magazine depth and, by dramatically reducing cost per shot, substantially improve cost-exchange ratios against the other side’s A2/AD weapons.”¹⁴⁶ Additionally, the presence of naval warships demonstrates revolve to escalate through combat readiness. Theoretically, as the USN prepares its navy for combat vis-à-vis an identified adversary, it can interject into conflicts at a shorter notice and with more intense firepower. This piece also has the additional benefits of alliance reassurance, which is related but not equivalent to deterrence. General Phillip Breedlove states that the European Reassurance Initiative (EPI) has the key components of “providing more rotational forces and increasing prepositioned warfighting equipment in theater,” and would “both assure our allies and . . . begin the movement or the changes we need to make to fully deter Russia.”¹⁴⁷ The USN faces qualitative challenges in maritime areas adjacent to China and Russia, and perceives the strategy of offensive deterrence as the only solution to these challenges.

In sum, offense dominates these contested maritime areas because long-range strike

¹⁴⁵ U.S. Congress, House, *Carrier Air Wing and the Future of Naval Aviation: Hearing before the Subcommittee on Seapower and Projection*, House, 114th Cong., 2016, 13.

¹⁴⁶ U.S. Congress, House, Committee, *U.S. Asia-Pacific Strategic Considerations*, 92 (Testimony of Ronald O'Rourke).

¹⁴⁷ U.S. Congress, House, *Full Spectrum Security Challenges in Europe and Their Effects on Deterrence and Defense: Hearing before Committee on Armed Services*, House, 114th Cong., 2016, 5.

capabilities and the maritime geography naturally put territorial conquest in a favorable position. For the USN, the cost for penetration is lower than defense but nevertheless climbing, as U.S. lawmakers work to keep up with the fiscal responsibilities required to maintain all-domain naval access in peace or war. Because the USN patrols globally, it uses qualitative superiority as a tradeoff for the lack of quantity within a specific maritime area. The technological challenges that C/R pose to the U.S. also affect its global deployments elsewhere, and contributes to the U.S. perception of China and Russia as near-peer competitors.

Near-Peer Competition and a Three-Way Offensive Arms Race

On a strategic level, U.S. global naval dominance is highly dependent on ensuring superiority in key maritime areas all around the globe. The deployment of naval combatants to one particularly contested maritime area more or less impacts the composition of U.S. fleets elsewhere due to the interlinked patrol, mission, maintenance, and retirement requirements. To be sure, the USN is still qualitatively superior to C/R navies in many ways. Nevertheless, the rise of the Chinese and the Russian Navies exerts direct and indirect pressure on USN's deployments all around the world. As lawmakers and naval officers attempt to quantitatively measure the evasive balance in capabilities, the impact of C/R's naval buildups on USN's global deployments contributes to the perception of China and Russia as near-peer competitors in the surface and subsurface realms.

The so-called "quantitative requirement" of national-level strategic guidance captures the interconnected nature of U.S. naval deployment worldwide and demonstrates the ripple effect that the rise of a regional power may have on U.S. naval hegemony. The USN first came up with an estimate of the total number of U.S. vessels required "to maintain stability and freedom of the

seas wherever our vital interests are involved” in the 1993 DOD’s Bottom-Up Review (BUR).¹⁴⁸ Over the years, the USN has used the 1993 estimate as a baseline and constantly scaled up the number, which currently stands at 349. Congressional dialogues frequently cite this number to steer and evaluate strategy development and naval acquisition. Numerous factors play a role in this aggregate number – patrol requirements around the globe, alliance requirements due to, for example, multilateral military exercises, as well as ships’ expected life expectancy as impacted by maintenance and current usage. And the surge in one area of requirement necessarily leads to shortage of capabilities in other areas.

Most recently, the quantitative estimates serve as a way for policymakers to evaluate – albeit not a perfect measure – not only the difference in naval capabilities between the U.S. and C/R but also the varying speed at which all three states modernize and acquire new “game-changing technologies.”¹⁴⁹ C/R’s naval modernization programs have heavily factored into the “deployment requirement for global deterrence” because of the urgent need to address “expanding requirements” with “decreasing fleet” under U.S. domestic fiscal constraints.¹⁵⁰ It is important to note, however, that the Chinese and the Russian naval modernization programs pose challenge in different domains, that is to say, the USN may consider either navy to be a peer competitor in some realm but not others.

Testimonial evidence demonstrates that through quantitative numbers, the U.S. naval

¹⁴⁸ U.S. Congress, House, Committee, *The Future of Seapower*, 4 (Testimony of John Lehman).

¹⁴⁹ “Game-changing technology” is the title of a series of congressional hearings that primarily look at naval modernizations around the world, especially that of China and Russia.

¹⁵⁰ Many in the congress expressed this concern. For example, Congresswoman Vicky Hartzler and Senator Randy Forbes in U.S. Congress, House, *Ensuring Navy Surface Force Effectiveness with Limited Maintenance Resources: Hearing before the Subcommittee on Seapower and Projection Forces*, House, 113th Cong., 2013, 15, 47; Rear Admiral Richard Breckenridge in U.S. Congress, House, Committee, *Undersea Warfare Capabilities*, p. 5-6 (Testimony of Richard Breckenridge); as well as Mr. Bonner in U.S. Congress, House, Committee, *Acquisition and Development Challenges Associated with the Littoral Combat Ship*, 29. I am not sure what Mr. Bonner’s first name is, as it is not present anywhere in the transcript or online records.

strategists try to pinpoint the evasive balance between U.S. overall naval capabilities and those of the Chinese and Russian navies. Congressional witnesses frequently point out that China will have between 313 and 342 submarines and surface combatants by 2020,¹⁵¹ and is slated to exceed the USN in size in 2020.¹⁵² Similarly, analysts also use numbers to measure the balance in capabilities between the U.S. and Russia. The Chairman of the Armed Services committee asks with regards to the Russian Navy: “How many ships do we have in our Navy right now?” To which Admiral Pandolfe answers: “Well, last time I checked, it was 287.” The Chairman followed up by asking: “And how many does Russia have? . . . I saw something last week that they had 300 ships just in the Black Sea.” Of course, Admiral Pandolfe then quickly suggests that quantity is only one side of the story. The key here, in the words of Admiral Harry Harris, is that “quantity has a quality of its own.”¹⁵³ That quantitatively speaking, both the C/R navies are closely matching the USN contributes to the perception of the two navies as near-peer competitors.

In addition to numerical measures, U.S. policymakers and naval strategists are critically aware that the two rising navies may be peer competitors in some realm but not others. For example, Director of Studies at CSBA Jim Thomas lists five areas where China has made major qualitative improvements: Advanced submarines, guided-missile destroyers, guided-missile corvettes, and naval fighter and strike aircrafts.¹⁵⁴ At the same time, witnesses have often discussed anti-submarine warfare (ASW) as the PLAN’s main weakness, because “[PLAN’s] conventionally powered submarines . . . have a large focus on missile firing,” and based on the

¹⁵¹ Ronald O’Rourke, Dr. Seth Cropsey and Senator Randy Forbes repeatedly brought up this point during the hearing on U.S. Congress, House, Committee, *U.S. Asia-Pacific Strategic Considerations*, 89, 95, 99.

¹⁵² *Ibid*, 89 (Questions submitted by Randy Forbes).

¹⁵³ U.S. Congress, House, Committee, *The Challenge of Conventional and Hybrid Warfare in the Asia Pacific Region*, 29.

¹⁵⁴ U.S. Congress, House, Committee, *U.S. Asia-Pacific Strategic Consideration*, 75 (Testimony of Jim Thomas).

photographs available, “the firing load-outs have a high ratio of anti-ship cruise missiles to torpedoes.”¹⁵⁵ In other words, the USN has ruled out China’s ASW capabilities as a U.S. peer competitor. Similarly, USN primarily focuses on Russia’s submarines as the main peer competitor in controlling the sea from the subsurface realm. Contrary to the perception of the PLAN as a general threat, U.S. lawmakers and naval officers are well aware that “[Russia] is a land-centric force with good . . . submarines and a limited power-projection navy with only one aircraft carrier.”¹⁵⁶ But the competition in the subsurface sphere is much fiercer. USN Admiral Richard P. Breckenridge says: “Russia and the United States use the undersea domain [as] . . . a global strategic lever of power. And the Russians . . . a close second with regard to their capability, their shipbuilding industry and the capabilities they are putting into their new classes of submarines.”¹⁵⁷ As a result, the U.S. heavily focuses on Russia’s submarine fleet as the main peer competitor in the subsurface realm. Generally speaking, when the U.S. perceives near-peer competition in specific capabilities, the U.S. is much more likely to further build up and deploy in that realm of capabilities.

As the U.S. adjusts to the rise of C/R navies, it becomes costlier and harder to maintain the U.S. global maritime hegemony in the long term. In order to address the challenges posed by C/R, the USN will increase the rotation and deployment of its fleets, which have significant implications for repair and maintenance on the road. In western Asia Pacific, the Navy “will be rotating more forces to the Pacific, and forward-stationing more forces in the Pacific, according to [Navy’s] strategy, to the point where [the Navy] will have about 60 percent of our forces

¹⁵⁵ *Ibid.*, 15.

¹⁵⁶ U.S. Congress, House, *Russian Strategy and Military Operation: Hearing before the Committee on Armed Services*, Senate, 114th. Cong., 2015, 7 (Testimony John Keane).

¹⁵⁷ U.S. Congress, House, Committee, *Undersea Warfare Capabilities and Challenges*, 9.

focused on the Pacific,” according to Admiral Matthews.¹⁵⁸ Similarly, “as part of reassurance measures [against Russia], [the U.S.] has maintained a persistent presence of military forces in each of the Baltic States, Poland, and the Black Sea since April of [2014]. [The U.S. Navy has] deployed ships to the Black and Baltic Seas 14 times, and increased training flights in Poland.”¹⁵⁹ For reasons previously mentioned such as deterrence, the USN has increased reliance on large surface combatants such as destroyers, cruisers and aircraft carrier strike groups.

As the USN increases rotation of high-end warfighting capabilities to the European and the Pacific theaters, such policy also places significant fiscal burdens to speed up maintenance, retirement, and acquisition of U.S. high-end fleets in the long term. Take the fleet of *Arleigh Burke*-class destroyer (DDG-51) as an example. U.S. policymakers and naval officers heavily rely on DDG-51 guided-missile destroyers to Western Pacific, the Black and Baltic Seas for missions such as ballistic missile defense, ASW and more. DDG-51s’ presence provides the escalatory deterrence that U.S. policymakers look for to deter China and Russia because these destroyers are large surface combatants capable of operating independently and in conjunction with aircraft carrier strike groups. Due to increased usage, however, the Navy cannot help but also lessen the amount of scheduled maintenance and modernization work for these destroyers, which will then in turn shorten their expected service life expectancy to less than the expected 35 to 40 years.¹⁶⁰ If the USN fails to acquire more destroyers at the moment, the fleet size will decrease exponentially in the coming decade due to lack of maintenance and modernization, and the cost of acquisition will proportionally increase even further. Congressional testimonies have

¹⁵⁸ U.S. Congress, House, Committee, *Ensuring Navy Surface Force Effectiveness*, 16.

¹⁵⁹ U.S. Congress, Senate, *U.S. Policy in Ukraine, Countering Russia and Driving Reform: Hearing before Committee on Foreign Relations*, Senate, 114th. Cong., 2015, 12.

¹⁶⁰ U.S. Congress, House, *An Independent Assessment of the Navy’s 30-year Shipbuilding Plan: Hearing before the Subcommittee on Seapower and Projection Forces*, 113th Cong., 2014, 25.

spelled out the same logic for cruisers, aircraft carriers, as well as nuclear submarines.¹⁶¹ Unless the U.S. significantly raises its defense budget or breaks the one-third, one-third, one-third rule by moving budget from the other two branches of service, C/R's offensive buildups *will* continue to exert significant pressure on U.S. long-term global dominance. For this reason, C/R's modernization programs expose the inherent vulnerability of a global navy like the USN, which contributes to the perception of the two navies as peer competitors.

Additionally, U.S. policymakers and naval officers treat buildups by different countries differently based on their current military standing. This, I argue, reflects the centrality of peer competition as a cause to offensive arms race. U.S. policymakers are generally aware that there is usually a strong correlation between a nation's economic and military status, which rules out offensive intentions as the only cause for offensive buildups. For example, Dr. Patrick Cronin of Center for a New American Security (CNAS) states: "the trend that is driving Asian militaries has a lot to do with their own economic success," and that "we want to keep pushing that economic success. These countries should be, first and foremost, responsible for their self-defense. This is a positive trend." Retired Admiral Gary Roughead agreed with the assessment: "What . . . the People's Liberation Navy have done over the last few years . . . is what rising economies and rising nations dependent on trade do. You can go back in history, Spain, England, the United States, Portugal, Holland—it is the pattern."¹⁶² This awareness of overall power balance, I argue, is critical to the understanding that not all military buildups harm U.S. security interests. When weak states pursue offensive buildups, such actions will not make them any

¹⁶¹ Assessments provided by Senator Randy Forbes, Ronald O'Rourke, and Admiral Robert Natter separately, see U.S. Congress, House, *Independent Assessments of the Fiscal Year 2015 Budget Request for Seapower and Projection Forces: Hearing before the Subcommittee on Seapower and Projection Forces*, 113th Cong., 2014, 14, 43.

¹⁶² U.S. Congress, House, *Rebalancing to the Asia-Pacific Region and Implications for U.S. National Security: Hearing before the Committee on Armed Services*, 113th Cong., 2014, 24.

more likely to defeat the U.S. Offensive buildups are costly, in game-theoretic terms, only when the actor is a peer competitor, as it alters power balance, makes the rising state more likely to defeat the other side, and may qualify as signals of offensive intentions. Such assessments of overall naval power balance confirm the third condition of rational signaling theory. Namely, the U.S. deduces intentions based on arms policies from a potential adversary only when there is some level of parity in capabilities.

In addition to perception of peer competition, a comparative framework for assessing navies is particularly fitting here. Todd and Lindberg previously set forth a set of ranking criteria in 1996, as seen below. It is important to note that any type of ranking is a generalization, and may miss the distinctive features of various navies' force structures. It is nevertheless useful in this context to have a general framework through which we may compare different states' naval capabilities.

Based on the standards set forth here, as well as some of the challenges discussed in the previous chapter, it is obvious that the C/R navies are still far behind the U.S. in their assigned ranking. China and Russia currently fall squarely within the category of level-four navy, but their upward or downward development tendencies diverge. In the medium- to long- term of more than ten years, China is likely to achieve the tier-3 and possibly tier-2 status, while Russia lingers between tier-4 and tier-5. Key technological barriers that prevent a faster rise of the Chinese navy through the rankings include the lack of a nuclear-powered aircraft carrier, as well as stealthy nuclear-powered submarines in the high numbers.

Rank	Designation	Typical Inventory	Defining Capabilities	Categorization
1	Global-reach power-projection	All larger ships in high numbers	Multiple, regular, sustained power projection missions globally	U.S.
2	Limited global-reach power-projection	CVN, other aviation-capable ships, many SSN/SSK, support ships	At least one major power-projection operation globally in addition to homeland defense	
3	Regional power-projection	CVL, other aviation-capable ships, many SSN/SSK, support ships	Power-projection missions in regions beyond own EEZ in addition to homeland defense	
4	Regional offshore coastal defense	Aviation-capable ships (DD, FF), submarines, some support ships	No at-sea fleet air support other than organic helicopters, thus limited to area of land-based aircraft range for power projection missions	China (↑), Russia (↓)
5	Regional offshore coastal defense	Smaller ships (FF, corvettes), no underway replenishment	Coastal defense operations at least in own EEZ and slightly beyond	
6	Inshore Coastal defense	Only smaller ships (Corvettes, FAC)	Confined to inner reaches of own EEZ	
7	Regional offshore constabulary	Lightly armed OPV, PB, PC for CG-type duties	Geographic reach like Rank 5, but maritime policing instead of defense	
8	Inshore constabulary	Only patrol boats and patrol craft	Confined to missions well within own EEZ	
9	Inland waterway	Patrol craft	Waterborne riverine defense of landlocked states	
10	Token	Often only one or two small craft	Only very basic constabulary capabilities, if any	

Table 3. Ranking of Navies Based on Sea Control Capacity.

Source: Daniel Todd and Michael Lindberg. *Navies and Shipbuilding Industries: The Strained Symbiosis* (Westport, CT: Praeger, 1996), 53-64, cited in *Assessing China's Naval Power*, 60.

In this chapter, I argue that China's and Russia's A2/AD strategies as well as U.S. global sea control both focus on access to contested maritime territories through offensive conquest.

Technology and geographical factors both contribute to offense dominance in China's and

Russia's surrounding waters. To address the perceived challenges, the USN has pursued its own

buildup in both low-end and high-end capabilities in order to ensure technological edge, qualitative superiority, and deterrence. In so doing, all sides have ruled out defensive buildup as one possibility to make offensive missions costlier for the other side. In addition to qualitative superiority, U.S. analysts, lawmakers and naval war planners have used quantitative measures to evaluate the overall balance in naval capabilities between the U.S. and its adversaries. C/R's offensive buildups increase deployment requirements, exponentially raise the costs of maintenance and modernization, and therefore make U.S. maritime hegemony much harder to sustain in the long term. Not surprisingly, U.S. policymakers have reacted with much more alarm to C/R navies because of their peer competitor status. Based on assessments presented in this chapter, I argue that relative parity in naval capabilities is present, but ODB is not. The necessary conditions for rational signaling are not fulfilled, and offense dominance propels China and Russia to pursue offensive naval arms race.

**CHAPTER 4. “WE HAVE A NOBLE FOE”:
A SEFL-FULFILLING SECURITY DILEMMA AND HOW TO ALTER IT**

On Attempts to Read China’s and Russia’s Intentions

Offense dominance and relative parity drive states to pursue offensive buildups. Consequently, U.S. policymakers cannot and should not evaluate Chinese and Russian arms policies as credible signals of intentions. But as we have seen from media narratives in chapter 1, many still do it. This chapter seeks to explore the pathways through which policymakers may understand state intentions as malign despite lack of clear signals. For one, American policymakers sometimes argue that one cannot read intentions from capabilities, not because of structural factors but because authoritarian regimes are too secretive with their capabilities. This approach disregards the importance of intentions all together, and leads to the conclusion that one needs not to assess intentions at all but should “confront power with power and threat with threat.”¹⁶³ For another, other observers and policymakers consider “aggressive” or “malign” intentions to be driving C/R’s naval buildups simply because A2/AD capabilities encroach on the global sea control that underpins U.S. maritime dominance. This view once again disregards the structural factors at work. Consequently, regardless of whether U.S. lawmakers are able to read intentions from the naval modernization programs, they consider a counter-buildup as necessary. This chapter and thesis concludes with the argument that the structural conditions outlined in the previous chapters have presently led to the onset of a rational arms race, although some steps can be taken by all parties involved to alter offense dominance and slow down investments in

¹⁶³ U.S. Congress, Senate, Committee, *U.S. Policy in Ukraine*, 39.

offensive capacity.

From the perspective of U.S. policymakers, “lack of transparency” is an all-inclusive term that explains why they cannot read capabilities or intentions. During a senate hearing in 2014, Bob Corker, the Democrat ranking member on the Committee on Foreign Relations, stated: “The pace and lack of transparency with respect to the Chinese military modernization, coupled with China’s actions in the East and South China Seas, has cast doubt on the idea of the peaceful rise of China.” Daniel Russel, the senior Department of State (DoS) official directly in charge of all Asia Pacific affairs, concurred in the same session: “China’s neighbors and many Americans feel China’s long-term intentions, which . . . is fueled both by its problematic behavior with regard to territorial disputes [and] the opacity of its military modernization, represent an impediment to real progress. . . in the bilateral relationship [and] in regional growth.”¹⁶⁴ Despite all public appeals for transparency, it is unclear how China may comply with the terms without making significant security sacrifices. Reflective of the “basic paradox of tacit bargaining,” the constant condemnation of “opacity” is states playing the blame game, in an effort to put pressure on the other side to sacrifice security in order to signal benign intentions.¹⁶⁵ By finding faults with China’s secrecy, American analysts and lawmakers are essentially looking for signals at a time when signaling benign intentions is extremely costly and hard due to offense dominance and relative parity.

U.S. policymakers and military officers find secrecy so threatening partially because they view the modernization programs as part and parcel of a collective threat known as

¹⁶⁴ U.S. Congress, Senate, *The Future of U.S.-China Relations: Hearing before the Committee on Foreign Relations*, 113th Cong., 2014, 3, 15.

¹⁶⁵ See chapter 1 of this thesis.

“authoritarianism.” American policymakers call the buildups aggressive because of the perceived illiberal nature of C/R’s regimes. For example, the Deputy Assistant Secretary of Defense for Russia, Ukraine and Eurasia, Michael Carpenter claimed: “Across the board, Russia’s aggressive actions and flouting of international norms have been enabled by a military modernization campaign,” with “significant advances in warfighting technology, especially in the areas of precision guided munitions, missile technology, and submarine warfare.”¹⁶⁶ Similarly, Jeff Smith, a senior fellow at American Foreign Policy Council states in a congressional testimony: “By design, the PLA ranks remain conspiracy-minded, hawkish, and insulated from the Western world, and even to some liberal influences within China. This is worrying, because many Chinese nationalists inside and outside the PLA see the U.S. as engaged in a containment strategy designed to prevent China’s rise and undermine its security.”¹⁶⁷ U.S. policymakers and analysts insinuate a direct causal mechanism between authoritarian regimes and aggressive foreign policies. Consequently, they presume buildup of any kind to be “aggressive” and “malign.” Instead of asking why and under what conditions states pursue offensive arms policies, U.S. policymakers frequently predetermined the intentions of such policies based on their prior understandings of a regime and its foreign policy objectives. In so doing, U.S. policymakers risk conflating regime type with other structural factors at play, molding new information to support their pre-existing beliefs and feeding into an unnecessary arms race.

Those in Washington are finding more similarities in the “malign” and aggressive” nature

¹⁶⁶ U.S. Congress, Senate, *Russian Violations of Borders, Treaties, and Human Rights: Hearing before the Committee on Foreign Relations*, 114th Cong., 2016, 10 (Testimony of Michael Carpenter). For more comments specifically on Russia’s malign influence, see U.S. Congress, Senate, *NATO Expansion: Examining the Accession of Montenegro: Hearing before Committee on Foreign Relations*, 114th Cong., 2016, 11; U.S. Congress, House, *Military Assessment of Russian Activities and Security Challenges in Europe: Committee on Armed Services*, 115th Cong., 2017, 46.

¹⁶⁷ U.S. Congress, House, Committee, *Maritime Sovereignty in the East and South China Sea*, 14-15 (Testimony of Jeff Smith).

of Chinese and Russian military buildups because they both undermine freedom of navigation (FON) and thus indirectly, U.S. global sea control. There has been a growing debate in congress regarding the extent to which China and Russia are “watching each other,” or “teaming up” to implement A2/AD networks and collectively undermine the existing international maritime order based on FON.¹⁶⁸ Even the descriptions of the two modernization programs bear resemblance to each other. Consider, for example, the following phraseology contained in two congressional testimonies. In regard to the PLAN, Dr. Andrew Erickson said: “China’s navy . . . is achieving formidable A2/AD capabilities closer to shore. Beijing seeks to wield this growing might to carve out in the Yellow, East, and South China Seas an airspace above them, a zone of exceptionalism within which existing global security, legal, and resource management norms are subordinated to its parochial national interests.”¹⁶⁹ In regard to the Russian Navy, General James Jones said: “There have also seen the deployment of more aggressive and more capable Russian naval forces. Starting with new Arctic bases, to Leningrad in the Baltic and Crimea in the Black Sea, Russia has introduced advanced air defense, cruise missile systems and new platforms. Mr. Putin is signaling to [the U.S.] that the maritime domain is contested.”¹⁷⁰ U.S. senior policymakers find the contestation and subordination of an international space to national interests, enabled by the A2/AD buildup, indicative of aggressive intentions. The U.S. considers the naval buildups highly offensive because they undermine the FON by controlling and monopolizing access to certain maritime territories.

While FON indeed has normative and legal foundations, the threat that C/R’s naval

¹⁶⁸ U.S. Congress, Senate, Committee, *Russian Violations of Borders, Treaties, and Human Rights*, 23; U.S. Congress, Senate, *Safeguarding American Interests in East and South China Sea: Hearing before Committee on Foreign Relations*, 114th Cong., 2015, 23.

¹⁶⁹ U.S. Congress, House, *U.S. Asia-Pacific Strategic Considerations*, 3 (Testimony of Dr. Andrew Erickson).

¹⁷⁰ U.S. Congress, House, *Russian Strategy and Military Operations*, 34.

buildups pose against FON is a military one because FON is the foundation of U.S. maritime hegemony. As a continental power and a global hegemon, the U.S. must fulfill its global presence through global deployment and forward basing. As Danis Blair, former Commander of the U.S. Pacific Command articulated: “The U.S. has a core interest in FON and the maintenance of naval mobility and maneuverability and access in the all of the world’s oceans. Freedom of navigation is principally a naval and military right.”¹⁷¹ FON is critical to U.S. maritime hegemony because it supports surveillance efforts on all exclusive economic zones, and guarantees U.S. military access to all areas of the sea where it has vital interests. And capabilities that deny such access, as a result, is directly threatening to U.S. maritime hegemony. Unless the U.S. is willing to forgo its global influence or commitments as a hegemon, any attempt by regional powers to increase security through buildup of capabilities will land in an offensive arms race and come to be regarded as aggressive and revisionist regardless of actual intentions.

RCT predicts that states will only read other states’ arms policies as costly and credible when there is offense-defense distinction and balance, as well as relative parity. This section demonstrates that U.S. domestic actors have an outright disregard for structural factors. When American policymakers and naval officers cannot not read intentions, they find the lack of signals a sign of aggression; when American policymakers and naval officers do read intentions, they assume buildups as necessarily dangerous and aggressive because they encroach on established U.S. maritime dominance. These readings of intentions occur even when conditions have disqualified arms policies as signals of intention. Relative parity in naval capabilities makes arms reduction too costly to undertake. Offense dominance makes offensive buildup as the only way to pursue security. Given such structural factors, signaling benign intentions becomes

¹⁷¹ U.S. Congress, Senate, Committee, *U.S. Policy Options in the South China Sea*, 8 (Testimony of Dennis Blair).

extremely difficult. After two-decade U.S. domination over the world's oceans, the emerging great power competition ushers in a new era of rational maritime arms race.

On Rational Arms Race and Altering the Payoff Structure

All three states are already deeply engaged in an arms buildup where territorial conquest and counter-conquest are the main objectives. For China and Russia especially, the current naval buildup is of unprecedented scale since the founding of the two nations. The deployment of the said capabilities have already established an offense-dominated environment where the Chinese and Russian navies, with high concentration of vessels in near seas, reach the status of near-peer competitors with the USN. Given these structural material variables, uncertainty in intentions necessitates an offensive buildup, yet the buildup will likely also result in the other side perceiving revisionist intentions. As Montgomery argued in “Breaking Out of Security Dilemma,” states that are even slightly unsure about each other's intentions will find it quite dangerous to undertake benign gestures, which then leaves competition as the preferred option.¹⁷² However, even given the present case of rational arms race, there are still concrete steps that each state can take to minimize strategic distrust and lessen offense dominance.

The first major impediment to signaling benign intentions is that all credible signals would have been very costly in terms of security to the signaling state when intentions are uncertain, and the lack of signals only adds to uncertainty in intentions. There are, however, possible steps that are not too costly to undertake and yet can meaningfully lessen uncertainty in intentions. For example, the DOD has invited China to participate in Rim of the Pacific Multilateral Naval Exercise (RIMPAC) for the last 6 years in an effort to engage China in a

¹⁷² See chapter 1, p. 20.

collective security forum. Chinese participation in RIMPAC has withstood many lows in bilateral relations such as arms sales to Taiwan and U.S. FON operation in SCS, as a sign of good faith in positive bilateral relations.¹⁷³ Some lawmakers and military leaders have petitioned to cancel China's invitation to the RIMPAC exercises following Chinese land reclamation acts in the SCS.¹⁷⁴ This would be a disastrous move that adds to the uncertainty about the other side's intentions. Presently, no formal cooperation exists between the U.S. and Russia like the one between the U.S. and China, although the DOD has taken steps to ensure U.S.-Russia mil-to-mil contacts. Such arrangements can also be made between Russia, the United States and NATO, perhaps to a lesser extent in the beginning. Short of a formal standing relations, multilateral and bilateral military forums and cooperation in areas such as disaster relief and humanitarian assistance missions are the best ways to maintain mil-mil ties. As tensions persist and rise in bilateral relations, leaders in Congress should work to institute and strengthen such confidence-building mechanisms with China and Russia.

Second, just short of a formal arms control initiative, all three states can still make efforts to divert investments away from surface large combatants and towards cost-imposition capabilities such as submarines and electromagnetic jamming technology. ECM capabilities make attack costlier for the other side. However, such capabilities do not necessarily effect control or conquest of the territorial waters. In other words, it makes coordinated, large-scale offensive military campaigns harder for the other side, but does not necessarily increase the presence of one's own military vessels in a given territory. Another possibility is investments in

¹⁷³ For a more detailed history and importance on mil-mil ties, see Roy Kamphausen and Jessica Drun, "What are Mil-Mil Ties between the U.S. and China Good For," *War on the Rocks*, <https://warontherocks.com/2016/04/what-are-mil-mil-ties-between-the-u-s-and-china-good-for/>

¹⁷⁴ U.S. Congress, Senate, Committee, *Safeguarding American Interests in East and South China Sea*, 39.

nuclear submarines. Although there have been great advancements in anti-submarine warfare, anti-submarine technologies that can successfully neutralize a nuclear submarine fleet –if they were to exist – would be very costly. A nuclear submarine’s greatest value lies in stealth, is rarely used for first strike, can carry out counter-value punishment and therefore best serves as tools of survivable deterrence. Investments in such technologies are likely to shift the balance away from the current offense dominance and more towards neutral offense-defense balance.

Last but perhaps the most controversial possibility is to concede all-domain U.S. global sea control. U.S. all-domain sea control is the reason why offense dominance is prevalent in the first place in all territorial waters bordering rising powers such as China and Russia. Such a strategy would likely work better in Baltic and South China Seas than it will in East China Sea, given that Japan might rearm as a result of retrenchment of U.S. influence from the region. And while one cannot claim with absolute certainty that the withdrawal of a peer competitor can at once suspend offense dominance, intense competition will likely subdue and states no longer have a need for offensive buildup in order to gain security.

Conclusion

I formerly introduced two competing hypotheses based on great power transition and rational signaling theories. I hypothesized that C/R’s arms policies can signal intentions in the presence of offense-defense distinguishability, neutral offense-defense balance and relative power. I also hypothesized that C/R’s arms policies may not signal intentions if one of the three necessary intentions is missing. An investigation of the international strategic environment reveals that neutral offense-defense balance does not exist, and offense heavily dominates the contested maritime environment.

China and Russia are pursuing highly offensive capabilities but not due to aggressive intentions. The structural variables in the international strategic and military environment, independent of intentions, compel states to pursue offensive arms policies. The structural environment breaks down into offense dominance and near-peer competition. Technological development and geographical factors have led to offense dominance in the contested maritime space. For one, the current technological development in long-range cruise missiles, for example, puts territorial conquest in a much more favorable position than defense. For another, the ocean provides natural cover for stealthy vessels like submarines – further aided by technological development like the AIP systems – and allows them to deal devastating damage by attacking first. Furthermore, due to the interlinked nature of USN’s patrol, alliance, deterrence, maintenance and retirement requirements, the rise of C/R navies threatens to upend U.S. maritime hegemony in the long term. This threat contributes to the perception of the two navies as peer competitors in certain realms of capabilities. The perception of near-peer competition, in turn, requires that states must pursue their own buildups in order to secure military superiority in anticipation of a potential conflict. When these structural factors entrap multiple great powers, we have in our world today a new, rational offensive arms race.

Further research on the topic of why states pursue offensive naval arms race should evaluate state-level and sub-state level causes. The theory of rational signaling exists exclusively at the systemic level of analysis, and therefore omits other drivers of arms buildup such as economic growth.¹⁷⁵ The argument of economic expansionism as a sign of revisionist intentions usually presumes a liberalist causal pathway of rewriting institutional rules of the game. But

¹⁷⁵ Indeed, this was the point brought up by Dr. Patrick Cronin and Admiral Gary Roughead in congressional testimonies, see chapter 3, p. 73.

might high-speed economic development and offensive arms racing behaviors also be correlational? The fact that maritime superiority guarantees trade routes certainly suggests so. Fast economic development, as in the case of China, might also reinforce the peer-competition causal pathway of offensive arms race. The economic-growth argument is certainly a hypothesis worth testing as an additional explanation for why states pursue offensive arms race.

Arms race is a game of chicken. Demonstrating resolve and escalating risks may seem rational from a player's point of view. But from an outsider's perspective, it is a game of excessive risk, a potentially explosive outcome and with little return to all parties involved. In order to lower the incentives to arm or increase the benefits of cooperation, all three states should work to alter offense dominance, a key factor that necessitates offensive buildups between near-peer competitors. Like in any human society, in an international system no state has absolute agency. Going forward, it is critical that U.S. naval officers and policymakers recognize the structural factors at play so that parties may shift blame away from individual state actors and more towards structural influences. For the collective, this is perhaps the only way to break out the mutual distrusts that presently constrain inter-state cooperation.

Appendix

Level	Designation	Defining Capabilities	Required Hardware	Logistics, Maintenance, Organizational Infrastructure
I	Coastal defense and mining	Basic naval competency: independent patrolling of coastal waters, mine laying or defensive operations	Small craft	Almost none; spare parts, elementary repairs
II	Coastal anti-surface warfare	Ships operate independently close to shore; targeting of surface vessels, limited VHF communications	Smaller ships with converted army weapon; land-based missile batteries	
III	Anti-surface and anti-air warfare with surface ships	surface warfare; ships act independently or in groups; no far-sea operations extended periods; limited air/surface search, targeting of low-tech missiles	Corvettes, older frigates, destroyers, mine sweepers; elementary radars	Elementary logistics and maintenance; elementary shipyard infrastructure
IV	Anti-surface warfare with submarines	Targeting of military and civilian shipping traffic at moderate distances; submarines acting independently, stationing themselves at choke points	Small elementary diesel submarines; elementary torpedoes	Logistics and maintenance also for submarine operations
V	Anti-submarine warfare with surface ships	Combined anti-submarine operations with ships and helicopters acting in coordination	Dedicated surface combatants with embarked helicopters; elementary data links for tactical coordination; target submarines for fleet training	Tactical coordination and integration between ships and helicopters
VI	Anti-submarine warfare with submarines	High integrative demands on fleet due to inherent difficulty of subsurface ASW targeting	Quiet, advanced submarines (nuclear or modern diesel); basic torpedoes	Basic maintenance and effective logistics support, basic infrastructure
VII	Naval strike and limited air control	Important threshold which signals the ability to project power ashore; forming of carrier battle groups sharing moderate amounts of tactical data	Basic carrier with embarked aircraft, other large aviation-capable ships for carrier protection; satellite imagery or land-based, long-range maritime patrol aircraft, basic comm	Basic intelligence; high level of integrative efficiency required
VIII	Multi-mission air control, limited sea control, and deep strike	True “blue water” capability; deep strike capability against both land and sea targets, forward presence	Advanced carriers, capable of launching aircraft; advanced comm systems, sophisticated offensive and defensive systems, advanced cruise missiles	Advanced large-scale fleet exercises, substantial joint exercises, underway replenishment, advanced shore establishment for maintenance and logistics, advanced intelligence support
IX	Comprehensive sea control	True network-centric forms of warfare that enable a force to successfully interdict an adversary’s assets in any operating medium	Over the horizon reconnaissance, surveillance, target acquisition systems, real-time processing, pervasive communications, advanced tactical displays	

Table 4A. Classification of Naval Combat Proficiency Levels based on Mission Complexity.

Source: Ashley J Tellis *et al.*, *Measuring National Power in the Postindustrial Age* (Santa Monica: RAND, 2000), 164-176.

Name/Project number	Chief Role & Fleet	Disruption/delay, if any	Active	Expecting Total
Frigates				
<i>Gorshkov</i> , project 22350	Blue-water, Black Sea Fleet	Ukraine-caused sanctions	0	20 in total, 6 before 2020
<i>Grigorovich</i> , project 11356	Coastal mission &	Ukraine-caused sanctions	3	6 before 2020 ^a
Corvettes				
<i>Steregushchiy</i> , 20380	Coastal, multi-purpose, all four major fleets	Ukraine-caused sanctions	5	30
<i>Gremyaschiy</i> , project 20385	Coastal, multi-purpose, Baltic and Northern Fleets	Ukraine-caused sanctions	0	13 (but only 2 will be finished) ^b
<i>Derzky</i> , 20386		--	0	First ship expected to enter into service by 2021
<i>Buyan</i> , project 21630/21631	Coastal mission, Black Sea, ^c and Caspian Flotilla ^d	Ukraine-caused sanctions	8	15
<i>Karakurt</i> , project 22800	Coastal & far-sea, Black Sea and Northern Fleets	--	0	18
Destroyers				
<i>Lider</i> , project 23560 ^e	Far-sea, Northern Fleet and Pacific Fleet	Funding issues	Indefinitely delayed	12
Aircraft Carriers				
<i>Shtorm</i> , project 23000 E	Far-sea, Northern Fleet	Funding issues	Indefinitely delayed	1
Light Multipurpose Aircraft Carrier	Far-sea, N/A	Not considered until after 2025	NA	NA
Submarines				
<i>Yasen/Graney</i> , project 885	Far-sea, Northern Fleet	Funding issues	1, significantly delayed ^f	7 before 2023 ^g
<i>Borei</i> , project 955/955A	Far-sea, Northern & Pacific Fleets	Funding issues	4 ^h	8 before 2020
<i>Lada</i> , project 677	Northern & Blatic Fleets	Engineering deficiencies led to major redesign in subsequent ships	1	5
<i>Varshavyanka</i> (improved <i>Kilo</i> -class), project 636.3	Anti-shipping and anti-submarine in shallow water, Black Sea and Pacific Fleets	--	6	12 before 2021
<i>Husky</i> , project # unknown	Unknown	Unknown	Unknown	Unknown

Table 5A. Russian Surface Combatants Modernization Projects, Problems and Non-Deliveries.

a. "Construction of Russia's fourth Project 11356 ship to begin on 18 April," *Naval Technology*, April 17, 2013, <https://www.naval-technology.com/news/newsconstruction-russias-fourth-project-11356-ship-begin-18-april/>

- b. “Project 20385 *Gremyaschiy* class corvette,” *Global Security*, <https://www.globalsecurity.org/military/world/russia/20385.htm>
- c. “The newest SRC ‘Serpukhov’ and ‘Green Dol’ of the Black Sea Fleet will be part of the permanent connection of the Russian Navy in the Mediterranean Sea,” *Ministry of Defense of Russia*, October 10, 2016, https://function.mil.ru/news_page/country/more.htm?id=12098513@egNews
- d. Two *Buyan-M* vessels were deployed from the Black Sea Fleet to the Baltic Fleet in support of Russia’s intervention in the Syrian Civil War.
- e. Julian Cooper, “Russia’s State Armament Programme to 2020,” 107.
- f. The first *Yasen*-class submarine was first designed in 1993, and was only recently handed over to the navy in 2015. “*Yasen/Graney* Class Submarine”; “Russia commissions new attack submarine,” *Sputnik News*, December 30, 2013, <https://sptnkne.ws/gXu7>
- g. “Second *Yasen* nuclear submarine launched in northern Russian port,” *TASS*, March 31, 2017, <http://tass.com/defense/938628>. Various sources dispute the total number of *Yasen*-class submarines to be built. Another source at [lenta.ru](http://rusnavy.com/news/navy/index.php?ELEMENT_ID=12780) says 10. “Russia to build ten *Yasen*-class subs,” http://rusnavy.com/news/navy/index.php?ELEMENT_ID=12780
- h. As of February 2018, 3 *Borei* are active in duty; the fourth and the first *Borei-A* vessel will be officially in 2018. “SSBN *Borei* Class Nuclear-Powered Submarines,” *Naval Technology*, <http://www.naval-technology.com/projects/borei-class/>.

	Jiangwei I (Type 053 H2G)	Jiangwei II (Type 053H3)	Jiangkai I (Type 054)	Jiangkai II (Type 054A)	Annual total	Cumulative total
1991	1				1	1
1992	1				1	2
1993	1				1	3
1994	1				1	4
1995					0	4
1996					0	4
1997					0	4
1998		1			1	5
1999		4			4	9
2000		1			1	10
2001					0	10
2002		2			2	12
2003					0	12
2004		1			1	13
2005		1	1		2	15
2006			1		1	16
2007					0	16
2008				4	4	20
2009					0	20
2010				3	3	23
2011				2	2	25
2012				4	4	29
2013				3	3	32
2014					0	32
2015				3	3	35
2016				4	4	39
2017				2	2	41
2018				2 ^a	2	43

Table 6A. PLAN Frigate Commissioning.

Source: IHS Jane’s Fighting Ships, 2017-2018, and previous editions, cited in “China Naval Modernization,” 35.

	Sovremenny (Russian-made)	Luhu (Type 052A)	Luhai (Type 051B)	Luyang I (Type 052B)	Lyugang II (Type 052C)	Louzhou (Type 051C)	Luyang III (Type 052D)	Annual total	Cumulative total
1994		1						1	1
1995								0	1
1996		1						1	2
1997								0	2
1998								0	2
1999	1		1					2	4
2000	1							1	5
2001								0	5
2002								0	5
2003								0	5
2004				2	1			3	8
2005	1				1			2	10
2006	1					1		2	12
2007						1		1	13
2008								0	13
2009								0	13
2010								0	13
2011								0	13
2012								0	13
2013					2			2	15
2014					1		1	2	17
2015					1		2	3	20
2016							1	1	21
2017							5	5	26
2018							3	3	29
2019							1	1	30

Table 7A. PLAN Destroyer Commissioning.

Source: IHS Jane's Fighting Ships, 2017-2018, and previous editions, cited in "China Naval Modernization," 33.

	Jin (Type 094) SSBN	Shang (Type 093/093A) SSN	Kilo SS (Russian-made)	Ming (Type 035) SS ^a	Song (Type 039/039G) SS	Yuan (Type 039A/B/C) SS ^b	Qing (Type 032) SS	Annual total for all types shown	Cumulative total for all types shown	Cumulative total for modern attack boats ^c
1995			2 ^d	1				3	3	2
1996				1				1	4	2
1997			1	2				3	7	3
1998			1	2				3	10	4
1999					1			1	11	5
2000				1				1	12	5
2001				1	2			3	15	7
2002				1				1	16	7
2003					2			2	18	9
2004			1		3			4	22	13
2005			6		3			9	31	22
2006		1	1		2	1		5	36	27
2007	1	1						2	38	28
2008								0	38	28
2009						2		2	40	30
2010	1					1		2	42	31
2011						3		3	45	34
2012	1					5	1 ^e	7	52	39
2013								0	52	39
2014								0	52	39
2015	1					2 ^f		3	55	41
2016		2 ^h						2	57	43
2017		n/a				n/a		n/a	n/a	n/a
2018	1 ^g	n/a				n/a		n/a	n/a	n/a
2019		n/a				n/a		n/a	n/a	n/a

Table 8A. PLAN Submarine Commissioning.

Source: IHS Jane's Fighting Ships, 2017-2018, and previous editions, cited in "China Naval Modernization," 17.

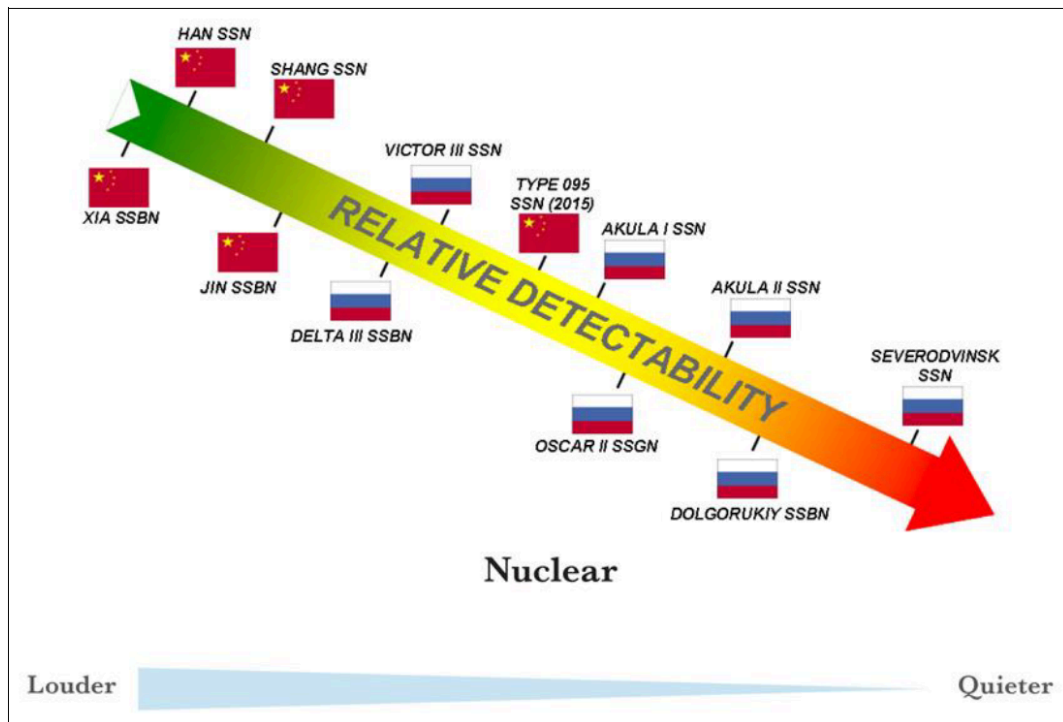


Table 9A. Acoustic Quietness of Chinese and Russian Nuclear Submarine.

Source: "The People's Liberation Army Navy, A Modern Navy with Chinese Characteristics," August 2009, p. 22.

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