

THE IMPACT OF XI-ERA REFORMS ON THE CHINESE NAVY

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This chapter examines how China has come to declare itself a maritime country and how the reforms of the People's Liberation Army (PLA) under Xi Jinping affect the navy's ability to protect and advance China's maritime interests and its own organizational interests. It examines the context within which China's maritime evolution is occurring, explores three vectors of naval modernization, and considers the difference that PLA reforms might make for each. Xi, general-secretary of the Chinese Communist Party, chairman of the Central Military Commission (CMC), and commander in chief of the armed forces, has stated that his "China Dream" includes a "strong military dream" and has tasked the PLA to be able to fight and win informationized wars. In pursuit of this goal, Xi has implemented ambitious reforms intended to force collaboration between the services and improve their ability to conduct joint operations. The PLA Navy (PLAN) stands to benefit from a reduction in traditional ground force dominance, but the reforms may also shift the trajectory of naval modernization efforts in directions less supportive of an independent navy.

This chapter is organized in five sections. The first frames China's maritime development by examining its strategic drivers. The second

outlines the navy's three vectors of modernization: hardware and "software" developments aimed at creating a blue-water navy capable of power projection; creation of a maritime component that can work effectively with other services as part of a joint PLA; and further development of an "interagency" maritime force wherein the navy works with the coast guard, maritime militia, and other parts of the Chinese government to advance China's maritime sovereignty claims. Sections two, three, and four lay out each of these vectors and examine the impact of the reforms on it. The last section offers broad findings concerning the reform of China's sea forces and related implications, with particular focus on the tensions among the three modernization vectors.

Strategic Drivers of China's Maritime Development

"Reform and Opening Up," "Going Out," and "New Historic Missions"

Since Deng Xiaoping ushered in the policy of "Reform and Opening Up" in late 1978, the People's Republic of China (PRC) has become increasingly integrated into the global economy. China took full advantage of opportunities provided by globalization, with foreign companies investing in China to tap cheap labor and Chinese state and private companies gradually developing the expertise and technology to produce for export markets. Rapid economic growth increased Chinese demand for imported components, oil and natural gas, and food and tied the employment of millions of Chinese workers to exports. China's integration with the global economy received a further boost when Hu Jintao urged Chinese companies to "go out" into the world by investing abroad to acquire natural resources and technology and to compete for foreign construction contracts.¹

The growing importance of sea-borne trade and increased PRC investment and citizen presence overseas, some in unstable places, prompted Beijing to take measures to secure its new interests. In 2004, Hu Jintao gave the PLA "New Historic Missions," including defending China's expanding international interests.² Under this aegis, the PLA Navy has conducted counterpiracy patrols in the Gulf of Aden since December 2008 and

participated in evacuations of PRC citizens during unrest in Libya and Yemen. Social media and press coverage have produced growing calls for the Chinese government to better protect PRC citizens abroad.³ China's overseas presence has continued to deepen with Xi Jinping's Belt and Road Initiative, an ambitious plan to fund infrastructure construction to increase China's connectivity with Eurasia and the rest of the world. The initiative now even includes an additional maritime component, a proposed "Polar Silk Road" through the Arctic Ocean.⁴

Navy Primed to Take Advantage of China's New Orientation

Of all the services, the navy was best positioned to exploit the increasing importance of the outside world. The navy has long worked to articulate the importance of Chinese maritime interests and to advocate for a more capable navy to protect these interests.⁵ PLAN leaders like Vice Admiral Chen Mingshan have argued since the early 1990s that the navy is "a direct defender of its [China's] economy, especially its maritime economy and foreign trade."⁶ Chinese analysts have insisted that the navy needs capabilities "to protect [China's] long and increasingly vital maritime energy supply lines."⁷ PLAN publications such as *Modern Navy*⁸ have emphasized topics such as "maritime resources" more frequently than mainstream civilian publications and general defense publications.⁹ The Chinese maritime lobby has grown to include officials in maritime provinces, state-owned and private firms reliant on overseas trade, companies that build equipment and technology used to seize and build on claimed areas, and military and civilian organizations charged with seizing, building, and administering claimed areas.¹⁰

The navy not only leveraged the growing importance of the sea for China's economy but also stressed the growing importance of China's maritime and sovereignty claims. China's three highest profile sovereignty disputes (Taiwan, South China Sea, and East China Sea) all involve islands or other physical features surrounded by vast bodies of water. The navy and marines have occupied physical features in the Paracels and the Spratlys for decades. As maritime and sovereignty disputes in the South China Sea

and East China Sea intensified after 2012, the navy took center stage in defending China's interests. Efforts by the Chinese naval and maritime lobby to emphasize the growing importance of Chinese maritime interests helped attract resources for naval modernization and culminated in the 18th Party Congress work report in November 2012 that set the task of "building China into a sea power nation."¹¹

Calls for greater efforts to protect Chinese maritime interests were supported by rapid economic growth following China's reform and opening up that enabled the PLA to receive double-digit budget increases for decades. Higher budgets benefited all PLA services, but the navy received an increasing share of the defense budget beginning in 2004, allowing it to create and expand a fleet of modern warships and aircraft. Improved underwater, surface, and aerial platforms have allowed the navy to operate farther from the PRC more frequently and for longer periods of time. Given exposure from port calls, international military exercises, and its increasing presence in the South China Sea, East China Sea, and Indian Ocean, the navy has in many ways become the face of the PLA to the world.

Chinese Naval Modernization

China's naval modernization can be analyzed in terms of three vectors of modernization. The first involves hardware and "software" developments aimed at creating a blue-water navy capable of power projection. The second is creation of a potent maritime component that can work effectively with other services to achieve operational synergies as part of a joint PLA capable of fighting and winning wars against advanced militaries. The third is further development of an "interagency" maritime force where the navy works with the coast guard, maritime militia (which the U.S. Department of Defense refers to as the People's Armed Force's Maritime Militia), and other parts of the Chinese government to advance China's maritime sovereignty claims. Each vector is driven by certain factors, is supported by certain actors, emphasizes different missions, and is optimized for use in different areas. As resources are finite, any increase in resources for one particular

vector potentially reduces those available for the others, thereby affecting the composition of the navy and its capacity to perform other missions.¹²

The table illustrates key aspects of each vector.

Table. Three Modernization Vectors for the PLA Navy

	Blue-Water Navy	Joint Operations Force for the Maritime Domain	“Interagency” Maritime Force
Type/Mode of Operation	Combined-arms naval operations	Joint operations	Sovereignty claim advancement operations
Maritime Challenges	SLOC protection, far-seas defense, power projection, military diplomacy	War vs. high-tech adversary, Taiwan, ECS, long-range piece of joint campaign	Maritime territorial disputes, regional naval clashes
Missions	ASuW, ASW, strike, amphibious operations, nuclear deterrence	ASuW, ASW, strike, transportation, amphibious operations, nuclear deterrence	Presence, deterrence, C2, escalation control
Partners	Navy branches	Other services	CCG, PAFMM, MoFA, SOEs
What Do Partners Provide?	Nothing	ASBMs, long-range strike, manpower for land ops., air control, air defense, airlift, cyberspace capabilities, counter-space	White hulls, fishing vessels, deniability, messaging, numbers (swarming), asymmetric approach

Key: SLOC: sea lines of communication; ASuW: anti-surface warfare; ASW: anti-submarine warfare; ECS: East China Sea; ASBM: anti-ship ballistic missile; C2: command and control; CCG: China coast guard; PAFMM: People’s Armed Forces Maritime Militia; MoFA: Ministry of Foreign Affairs; SOE: state-owned enterprise.

First Vector: Blue-Water Navy

Possession of a blue-water navy has been the “blue dream” of every great power since technology made such fleets possible.¹³ A blue-water fleet is commonly seen as the epitome of naval development, with the ability to operate far from the homeland and perform combined arms naval operations. In the Chinese context, such a fleet would allow the navy to operate independently to address

the maritime challenges of protecting sea lines of communication, far-seas defense, power projection, and military diplomacy in distant seas. It would also require the navy to perform the missions of antisurface warfare, anti-submarine warfare, strike, amphibious operations, and nuclear deterrence.

The navy has been working for decades to create its own blue-water fleet. This involves two main elements: hardware modernization (military equipment) and software modernization (education, training, doctrine, and so forth). This vector of modernization supports PLAN interests by providing a rationale for moving beyond its original role as a support force for the army toward an independent operational capability.

Building the Fleet

The navy had been undergoing modernization for decades prior to Xi's reforms. Early Soviet (1950–1960), later American (1980s), and post-Cold War Russian (1991–present) assistance for Chinese naval modernization have been largely supplanted by efforts to replace foreign equipment and technology with indigenously developed or improved Chinese versions. Soviet support created an initial foundation for the navy, both in terms of hardware and personnel training.¹⁴ However, the withdrawal of Soviet advisors in 1960 and the Western technology blockade forced China to rely on indigenous efforts to reverse-engineer foreign technology and to make incremental improvements on Soviet designs. Rapprochement with the United States eventually allowed China access to some Western arms and military technology, but this window largely closed after the Tiananmen massacre in 1989, when the United States and Europe imposed bans on arms sales to China.

Improved relations with the Soviet Union in the late 1980s and its eventual breakup gave the Chinese military and defense industry access to advanced weapons such as the *Kilo*-class submarine, Su-27 fighter (assembled in China, then reverse-engineered and produced as the J-11), *Sovremenny*-class destroyers (and their advanced antiship cruise missiles), and S-300 surface-to-air missile systems. The combination of broad improvements in China's technology base, direct access to advanced Russian

weapons, assistance from weapons scientists from the former Soviet Union, and industrial espionage helped the Chinese defense industry assimilate advanced technologies into more advanced weapons systems.

Rapid economic growth spurred on by Deng's reform and opening up initiative provided both technology and resources that allowed the PLA to import greater numbers of more advanced equipment and weapons and procure the increasingly advanced weapons produced by the Chinese defense industry. The PLA's limited ability to respond to the deployment of two U.S. carriers during the 1995–1996 Taiwan Strait crisis and the accidental bombing of the Chinese embassy in Belgrade in 1999 during the Kosovo War persuaded Chinese leadership to increase funding for military modernization. Preparing for a potential invasion or blockade of Taiwan in the face of U.S. intervention became the chief scenario for PLA planning and force modernization, with the maritime aspects of the Taiwan scenario supporting PLAN efforts to procure a range of advanced weapons systems.

China's naval modernization includes the development and deployment of advanced surface ships, submarines, aircraft and aircraft carriers, and amphibious vessels that will improve the PLAN ability to conduct a range of missions. China's shipyards are now launching new ships at a brisk pace, but have also shifted to focus on "quality over quantity."¹⁵ The old surface fleet, based on largely antiquated 1950s Soviet technology with some indigenous improvements, is being replaced with new advanced vessels, such as the Type 054/054A frigate, Type 052C/D destroyer, and cruiser-sized Type 055 destroyer. These vessels feature advanced weapons and modern design features such as vertical launch systems capable of launching different types of antiship, antiaircraft, and land-attack missiles, phased-array radars, and improved air and cruise missile defenses.¹⁶ The navy had no corvettes prior to 2014, but had 37 Type 056/056A ships as of November 2017.¹⁷

The notoriously noisy PLAN submarines have been gradually reducing their noise footprint.¹⁸ The submarine force consists primarily of diesel-powered attack submarines, most of which are capable of launching advanced antiship cruise missiles. The navy has also added 10 nuclear submarines

to the force since 2002, including 6 longer range nuclear-powered attack submarines, and 4 nuclear-powered ballistic missile submarines (SSBNs). The submarine force may grow to between 69 and 78 submarines by 2020.¹⁹

China's first aircraft carrier, the *Liaoning* (Type 001), began sea trials in August 2011 and was declared combat ready in November 2016. The *Liaoning* carries J-15 fighters that launch off its ski jump-style flight deck. The navy is currently developing two more advanced aircraft carriers, with the Type 001A carrier beginning sea trials in May 2018.²⁰ The planned inclusion of an integrated propulsion system on the Type 002 aircraft carrier, which would support an electromagnetic aircraft launch system, could allow more rapid aircraft launches.²¹ Xinhua hailed the launch of China's first carrier as a symbolic step forward: "building a strong navy that is commensurate with China's rising status is a necessary step and an inevitable choice for the country to safeguard its increasingly globalized national interests."²²

Due to their value and vulnerability to attack, aircraft carriers typically operate as part of a carrier group with multiple vessels protecting and supporting them.²³ The navy has made clear its intent to establish carrier groups by rushing production of the Type 055 destroyer. The Type 055 destroyers will join the growing array of vessels and weapon systems that will provide Chinese carriers protection against air and cruise missile attack and allow them to operate more safely outside the range of land-based aircraft. The navy has also been producing a new type of large replenishment ship, the Type 901, which is similar in size to those used by the U.S. Navy.²⁴ The production of such support vessels is particularly important given the continuing poor ratio of support vessels to frontline ships of the navy, especially when compared with the U.S. Navy.²⁵

The navy has also been deploying new ships to improve its limited amphibious capabilities. These include semi-submersible amphibious landing vessels, the Type 726A air-cushioned landing craft, and the Type 071 landing platform dock. The new ships, coupled with the PLA Navy Marine Corps expansion to add additional marine brigades, should significantly improve PLAN amphibious warfare capabilities.²⁶

Creating a “New Type” of Sailor for the New Navy: Recruiting, Educating, and Training

Naval modernization also requires talented personnel capable of executing independent and joint operations far from the country’s shores. The service and its branches have reformed their efforts to recruit higher caliber personnel to fill their ranks, especially with graduates from civilian universities.²⁷ From 1999 onward, the navy planned to recruit 600 officers from civilian higher education institutions each year.²⁸ Naval aviation began recruiting its own personnel in 1988, an important step toward achieving independence from the PLA Air Force (PLAAF), which enabled it to educate and train individuals for aeronautical operations in the maritime domain from the beginning of their careers.²⁹

The navy has also reformed the education and training of recruits. Since 1987, the navy has utilized the training ship *Zheng He*, a “classroom at sea,” to help train its cadets.³⁰ This ship has been an “especially prolific traveler,” even embarking on the first circumnavigation of the world by a Chinese navy training ship in mid-2012.³¹ This has allowed the navy to give thousands of cadets hands-on experience in a variety of maritime environments around the world.³² The navy has also recently added a “tall ship,” the *Polang*, as well as the advanced naval training ships, *Qi Jiguang* and *Yupeng*. These ships and the push for naval personnel to undergo “tempering” on a vessel allowed the navy to provide onboard experience for 92 percent of the 3,000 “new soldiers” trained by the South Sea Fleet from 2011 to 2012.³³ To give its aviators at-sea experience, the navy launched the air training ship *Shichang* in 1996.³⁴ The PLAN aviation training base at Huangdicun has added land-based facilities and equipment, such as ski jumps on runways, to allow pilots to practice carrier takeoffs and landings more safely, and added catapult launch systems to support training for the Type 002 carrier.³⁵

Similarly, the navy created Vessel Training Centers in the 1980s for each of its fleets to provide more detailed and vessel-specific training, facilitating the introduction of new classes of ships. The centers can assemble military personnel, industry representatives, and other experts to help

create an “Outline for Military Training and Evaluation” specific to each class of vessel to accelerate training for the first crews.³⁶ This was seen with the *Bengbu*, the first *Jiangdao*-class (Type 056) corvette to be introduced to the East Sea Fleet.³⁷

An increased operational tempo contributes to training of the force. *China Daily* stated that “each year every combat vessel and submarine will spend nearly eight months at sea, carrying out patrols, drills, and training. Every day, dozens of aircraft, more than 100 ships and submarines, and thousands of navy personnel are in operation.”³⁸ Since December 2008, PLAN activity has included continuous deployment of an escort task force in the Gulf of Aden to conduct escort and counterpiracy operations. This high operations tempo is paralleled by more port calls and increased participation in international military exercises. The navy only conducted 11 port calls from 2003 to 2008, but conducted 40 in 2015 alone. The navy has also led the way in international military exercises. From 2003 to 2016, the navy conducted almost half of all international military exercises that involved the PLA, more than any other service. The navy has also begun to participate in multilateral exercises such as the U.S. Rim of the Pacific exercise series.³⁹

A growing number of these exercises, especially those with Russia, include combat or combat-support elements. The navy “completed its first overseas joint beach landing drill” as part of the Joint Sea–2015 exercise in Russia.⁴⁰ Sino-Russian naval exercises are being held in new locations, such as in the Baltic Sea, Mediterranean Sea, and Sea of Okhotsk, expanding the operational horizons of the navy. Some Sino-Russian naval exercises have expanded to include combined arms operations with the participation of multiple branches.⁴¹ Spurred on by their increasing experience and confidence, some navy officers have even begun using run-ins with foreign forces as training opportunities, and they have been recognized and rewarded for their actions.⁴²

All these exercises and training have begun to pay off as the traditionally strict control by senior officers is starting to relax, giving operational commanders more flexibility. Submarine units have been applauded in

recent military media reports for undertaking significant operations without additional senior officers onboard, whose presence often reduced the captain of a submarine to a “duty officer.”⁴³ Naval aviation began introducing greater “pilot autonomy” back in 2013, marking a shift from “nanny-style” control of pilots by superior officers.⁴⁴

Years after the army first established special operations forces (SOF) units in the 1980s, the navy finally established its own SOF regiment in the South Sea Fleet.⁴⁵ This regiment has been able to gain operational experience from the navy’s antipiracy patrols, which have included a SOF contingent with every flotilla.⁴⁶ PLA SOF operators have also benefited from the establishment of the Special Operations Academy in Guangzhou and have sought to gain experience from foreign units by participating in international SOF competitions.⁴⁷ The navy’s SOF regiment is augmented by smaller units established in at least two marine corps brigades.⁴⁸

The PLA marines corps functions as the naval infantry branch of the navy but has recently established a separate headquarters and is expanding its number of operational brigades as part of PLA reforms. The marines were relatively late in joining the rest of the PLA in exercising abroad but performed their first overseas exercise in Thailand in 2010.⁴⁹ The marines also appear to now have their own helicopters, which had previously been provided by naval aviation.⁵⁰ The Marine Corps College now boasts more than 20 professional programs, an educated faculty, and simulation training systems.⁵¹ Faculty are being encouraged to participate in exercises to rectify their lack of combat and operational experience.⁵²

Other branches such as naval aviation are making similar efforts to improve education and training to produce officers and seaman capable of operating modern weapons. To leverage carriers, the Naval Aviation Academy and Naval Aeronautical Engineering Institute have been combined to form the Naval Aviation University/Naval Aeronautical University, which will train China’s carrier-based fighter pilots.⁵³ The new university has recruited 450 pilot cadets, which will eventually translate into a significant boost in naval aviation personnel to support the deployment of more carriers.⁵⁴ Naval

aviation has also changed the way it trains pilots to emphasize extended daytime and nighttime operations and increasing flights over water and at low altitudes.⁵⁵ To improve the quality and realism of training, naval aviation held its first actual combat confrontation exercise between different aircraft models in 2011.⁵⁶

Impact of Reforms on the Blue-Water Navy Vector of Modernization

The reforms have three main effects on the blue-water navy vector of modernization: altering the role of the services, assigning operational control to the theater commands, and improving PLA education, training, and personnel systems. First, the services are now responsible for force-building rather than operations. This should reduce the operational role of navy headquarters. However, the navy appears to be utilizing several methods to keep a not-insignificant role in operations. PLAN headquarters appears to have retained operational responsibility for counterpiracy deployments to the Gulf of Aden. The headquarters role in force-building and setting naval training requirements allows the navy to use training exercises to maintain an operational role, since virtually anything can be promoted as having “training” value. The navy refers to this as moving from “separation of training and operations” [*xunzhan fenli*, 训战分离] to “embedding training in operations” [*yizhan zaixun*, 以战载训].⁵⁷ The navy headquarters also appears to be using tri-fleet exercises, which do not fall under the responsibility of any particular theater command, as another way to hold onto some operational responsibilities.⁵⁸ An unintended consequence of attempting to relegate service headquarters to training and force-building is that it frees time and resources for the headquarters to advocate for the interests of its individual service.⁵⁹ Such lobbying is more important as the Chinese economy slows, which has already led to slowdowns in military budget growth. For the navy, this could lead to clashes with the other services and with the new theater commands, which have their own distinct interests. Some platforms, like land-based aircraft, are highly relevant for the Eastern Theater Command in planning for the invasion of Taiwan, while blue-water

systems such as aircraft carriers are less relevant. It remains unclear how such discrepancies in interests will be resolved.

The second major impact, placing the theater commands in charge of operations, reduces the navy's autonomy in conducting operations. It also complicates operations to protect China's maritime sovereignty claims by adding another bureaucratic actor into the mix, especially if a non-navy officer is in charge of the theater. However, the navy has used theater command geographic constraints to lead some operations. The Indian Ocean, for example, falls outside of the geographic jurisdiction of the theater commands, giving the navy headquarters a strong case for continued leadership in counterpiracy operations, even if these have joint elements.⁶⁰ Port calls and exercises with foreign militaries also fall outside the geographic responsibilities of the theater commands, giving navy headquarters another opportunity. However, while navy headquarters can task its components to meet certain requirements through training, the theater commands nominally control naval forces within their jurisdiction and may have different priorities. This situation is complicated by the fact that the service chiefs are no longer on the CMC but are now theater-leader grade, putting them on equal footing with the heads of the theater commands.⁶¹ Neither side has the authority to force the other to follow orders. It is unclear whether one of the CMC vice chairmen, or perhaps even Xi himself, will arbitrate such disputes.

While the Joint Staff Department Overseas Operations Office coordinates army peacekeeping operations, the navy appears to control its far-seas operations.⁶² This might be partly due to the unique nature of navies and the history of "independent command at sea" that they cherish.⁶³ Despite the increasing number of military diplomacy activities and exercises involving naval forces, the theater commands do not appear to have been able to curtail these activities to increase focus on joint training and theater-specific missions.⁶⁴

The third major impact of the reforms on this vector of modernization involves personnel issues. Some of the most important aspects of the reforms and anticorruption campaign have to do with career paths

and the health of the military force as a whole. As of April 2018, PLA personnel have received two pay increases since Xi announced the 300,000-troop cut in September 2015.⁶⁵ How any military deals with its veterans is of immense importance for recruiting and for the morale of existing active-duty personnel. The PLA has historically been parsimonious toward honoring commitments to its veterans.⁶⁶ To address these shortcomings, Xi announced that the government would “set up an agency that will manage veterans and protect their legal rights and interests,”⁶⁷ and a new Ministry of Veterans Affairs was established to care for the PLA’s 57 million retired personnel.⁶⁸ Ensuring fair treatment of veterans will help “make a career in the military one that is revered and respected by all.”⁶⁹ As subsequent large-scale veterans protests have demonstrated, this is still one area where the armed forces and civilian government are struggling.⁷⁰

The anticorruption crackdown within the PLA may also make a military career more attractive and respected. While the campaign has often selectively removed individuals who were seen as potentially disloyal to the Party or to Xi himself, many of those individuals were nonetheless spectacularly corrupt.⁷¹ The anticorruption campaign has helped officers who resented the negative effects corruption has had on the PLA, those unable to afford the bribes necessary to advance within a corrupt system, and junior officers who can advance more quickly to fulfill positions vacated by corrupt officers.⁷² This should allow professional military criteria to become more important for career advancement, especially for the officer corps.

Second Vector: Naval Component of a Joint Force

The PLA is a “latecomer” to joint operations.⁷³ Its first and only real joint operation was the attack and conquest of the Yijiangshan Islands in 1955.⁷⁴ An effective joint force, in the Chinese context, can respond to the maritime challenges of war against a high-tech adversary, an attempted conquest of Taiwan or the Senkakus, and the long-range aspect of joint campaigns in the near seas. Officers have acknowledged that the PLA must become more joint, which is seen as a fundamental part of modern warfare.⁷⁵ For this to

happen, the concept of winning as a joint force must replace the old concept of a “single service victory” [*danyi junzhong zhisheng*, 单一军种制胜].⁷⁶ The push for jointness has undercut the army’s traditional dominance of the PLA to the benefit of the other services. While the navy looks to be a big winner under the reforms, interservice rivalry and competition for resources and missions remain powerful obstacles to jointness and may have some negative impact on navy interests. Moreover, jointness implies that naval operations will be conducted via joint command and control structures, potentially undercutting the navy’s efforts to develop more autonomy and the ability to conduct its own combined arms operations in the far seas.

Joint Education and Training

The PLA’s conceptualization of jointness involves achieving victory by fusing the “operational strengths” of the separate services together to achieve collectively what no service could accomplish alone.⁷⁷ Jointness received a much-needed boost following the ground force–dominated PLA’s inability to respond effectively to the U.S. Navy’s sending two aircraft carrier battle groups toward Taiwan in March 1996. The role of airpower in the Kosovo War and sea power in the Falklands War impressed upon the PLA the strategic importance of other services.⁷⁸ However, despite frequent mention of jointness in articles and internal publications, the reality of jointness still lags far behind the rhetoric.

The PLA has tried to rectify the imbalance among the services by adding the commanders of other services to the CMC (2004–2017) and by increasing students and faculty from services other than the army at PLA National Defense University and the Academy of Military Science. The presence of these officers was intended to facilitate joint thinking by ensuring that non-army perspectives are included in the classroom and in important debates.

PLA texts acknowledge that China’s armed forces still have a long way to go to achieve true jointness.⁷⁹ Even with increased focus on educating joint commanders and theater command staff, joint experience remains a widely

acknowledged weakness of the PLA as a whole.⁸⁰ Officers complain that the lack of joint command experience could reduce its joint commanders to mere “armchair strategists” [*zhishang tanbing*, 纸上谈兵].⁸¹ The 2015 book *Theater Joint Operations Command* [*zhanqu lianhe zuozhan zhihui*, 战区联合作战指挥] suggested that the PLA should engage more in exchanges and exercises with foreign militaries to compensate for this lack of experience.⁸² However, despite increasing PLA participation in international military exercises, only a few of these (a mere 7 percent from 2003–2016) involve two or more PLA services.⁸³ The navy has been most active in international exercises, but these are usually combined arms exercises with multiple navy branches rather than joint exercises with multiple PLA services.

Joint training between the various services continues to be limited, but some progress is being made.⁸⁴ The navy (including surface vessels, marines, and naval aviation) and air force participated together in a Sino-Russian international exercise, Joint Sea–2015 (II), for the first time in 2015.⁸⁵ However, in the words of one expert, “true joint interoperability remains largely a work in progress for the PLA.”⁸⁶ The navy and air force are doing some joint training, most notably in name-brand exercises, such as Sharp Sword–2015.⁸⁷ In some of the highest profile joint exercises between naval aviation and air force, including Golden Helmet–2015, the two were actually competing against one another as opposing forces rather than working together.⁸⁸

Training between the navy and army is also limited, though this appears to be changing as well. One example involves army aviation and naval aviation providing air support for marines during amphibious training exercises.⁸⁹ Another involves joint amphibious exercises with army amphibious and ground force units, which would provide the bulk of the troops for large-scale amphibious landings, such as an invasion of Taiwan.⁹⁰

In reviewing PLA joint exercises, press reports highlight “cases in which PLA commanders were not well-versed in the wide range of capabilities at their disposal, failed to coordinate and share information among the units under their command, and demonstrated their weak command and organization skills.”⁹¹ The lack of qualified joint commanders and staff

officers continues to plague China's armed forces.⁹² Without significant progress, the PLA's lack of jointness will result in "deconflicted operations," where the services operate in proximity to, but not with, each other.⁹³

Reduced Army Dominance

Recognition of the increasing value of the maritime domain and the push for jointness have benefited navy modernization efforts. One of the earliest indicators of a shift in attention and resources away from the army was the 2003 force reduction, when it took a disproportionate share of the cuts.⁹⁴ (Blasko's chapter in this volume argues that the army is the biggest loser in the current PLA personnel reductions, as the PLA places more emphasis on the other services.)

Decreasing army dominance can also be seen in the PLA's changing strategic outlook. When the 2002 defense white paper stated that the "primary missions" of each service were to be performed "independently or jointly," it simultaneously encouraged the services not only to work together jointly, but also to be able to operate on their own.⁹⁵ Non-army services received a further boost with the 2004 defense white paper, which explicitly stated the PLA would "enhance the development of its operational strength with priority given to the navy, air force, and Second Artillery Force."⁹⁶ Acknowledgment of the important role non-army services would play in an invasion of Taiwan also gave the navy a new toehold in operational planning.

While the navy's focus has gradually shifted outward from coastal to offshore defense, establishment of an "active defense" strategy for the PLA saw the military leadership formally inaugurate a shift in focus from China and its immediately periphery, which favored the army, toward "open seas protection," which favors the navy.⁹⁷ These changes were illustrated in the 2013 edition of the *Science of Military Strategy* that argued, "the main threat of war has already shifted from traditional inland direction to the ocean direction." In addition, the "strong enemy," a common PLA euphemism for the United States, "will rely on its comprehensive distant combat superiority from the ocean direction." Under such circumstances, it will

be “increasingly difficult to protect the homeland from the homeland and the near seas from near seas, it might even become untenable.” Therefore, defensive operations should be pushed farther away from Chinese territory.⁹⁸ Efforts to “push forward the strategic frontier” to gain additional strategic space boosted the navy because the geography of the region means that additional strategic space is maritime space. As maritime concerns—such as Taiwan, the South China Sea, and sea-borne trade—have grown over the years, the navy appears to have been increasingly successful at capitalizing on them to bolster itself as a service.

The push for jointness has opened new opportunities for the navy to make itself relevant for additional missions. The service has moved beyond its initial coastal defense and sealift missions into missions ranging from interdiction to amphibious operations to nuclear deterrence.

Increased Competition for Maritime Missions

The increased priority of maritime missions not only favors the navy, but has also encouraged other services to encroach on PLAN turf by highlighting the relevance of their own current and future capabilities to the maritime domain. The navy has responded by further developing its own ability to perform “diversified tasks” to reduce the need for help from the other services.⁹⁹ These trends highlight the tension between the navy’s desire to be able to conduct independent operations (especially in blue water far from China’s coast) and the potential for other services to contribute useful capabilities in a joint operational context.

As growth in PLA budgets has slowed, the air force, army, and even Rocket Force are attempting to carve out new maritime responsibilities (and associated budget claims). The air force has made the clearest effort to ensure that it is not left out of the new emphasis on the maritime domain. In the past few years, it has taken significant steps to emphasize operations over water, the traditional domain of the navy and naval aviation.¹⁰⁰ This has been marked by a number of firsts, including flights over the Western Pacific through new air corridors,¹⁰¹ PLAAF H-6K bombers practicing

attacks on Guam,¹⁰² and deploying some of the air force's most advanced aircraft, such as the Su-35, to the South China Sea. The air force has also expanded the role of its vessel troops to support maritime combat operations.¹⁰³ A professor from the Air Force Command Academy stated that South China Sea deployments showed PLAAF "resolution to implement missions in the new era and firmly maintain national sovereignty and security and maritime interests."¹⁰⁴

The air force has overhauled training for its pilots to emphasize operations over water, including those farther from shore.¹⁰⁵ These included the creation of new textbooks, including *A Practical Handbook on Maritime Live-Fire Training with Trainer Aircraft* and *Safety Checklist for Maritime Live-Fire Training*.¹⁰⁶ Classroom work has been augmented by "regular high seas training" that began in 2015.¹⁰⁷ The air force has held seminars attended by senior officers to review its progress in overwater training.¹⁰⁸ These efforts put the air force in direct competition with the navy for maritime missions and resources.

The air force has followed the PLAN lead in using the need to protect China's economic interests as an argument to support its strategic relevance. Then-PLAAF Commander Ma Xiaotian gave a speech in 2014 emphasizing the importance of airpower for the maritime domain. According to Ma, "[W]inning the initiative in the air is important in effectively responding to all kinds of security threats at sea. . . . [We must] fully recognize the new circumstances in the defense of maritime rights; [it] gives the air force new meaning to accelerate the transition from territorial air defense toward attack and defense. . . . [We must] transform the 'center of gravity' of sea operations toward the employment of airpower."¹⁰⁹

The air force is acquiring two types of aircraft that will expand its maritime capabilities. The first is the Y-20 long-range transport, which can carry paratroopers and their equipment to the remote physical features controlled by China in the South China Sea.¹¹⁰ Paratroopers have conducted simulated airdrops over "unfamiliar island targets" in exercises.¹¹¹ The second is the acquisition of additional and updated tankers, such as the IL-78/

MIDAS, to augment its small and aging fleet of tankers.¹¹² Expansion of the PLAAF tanker fleet, including the rumored development of a tanker variant of the Y-20, would increase the range of PLAAF fighters, surveillance aircraft, and bombers, improving their ability to operate far over the ocean from land bases in China.¹¹³

By contrast, the army has found it harder to carve out a maritime role. Although Taiwan has been the main driver of PLA modernization for decades, the army only had one amphibious tank brigade in 1997.¹¹⁴ The army's amphibious force has grown since then, but these units only spend 3 to 4 months a year on amphibious operations, with the rest of their time spent on nonamphibious training.¹¹⁵ In 2010, only one army ship group was exclusively focused on amphibious support.¹¹⁶ However, it has been trying to make itself more relevant for maritime missions. Army amphibious units have traditionally focused on the conquest of Taiwan, where the need for large numbers of ground troops would guarantee it a prominent role. PLAN marines have primary responsibility for amphibious operations involving smaller physical features, such as the land features that dot the South China Sea. However, the army has recently suggested that it could too have a role in capturing and holding smaller islands.¹¹⁷

Even the Rocket Force, the “hermit” of the PLA, is pushing into the maritime domain. Its control of the PLA's land-based antiship ballistic missiles (ASBM) represents another attempt by a land-based service to “use the land to control the sea” [*yi luzhihai*, 以陆制海].¹¹⁸ Literature from the Second Artillery Force (now the Rocket Force) has been overwhelmingly positive on the development and future utility of ASBMs, while PLAN analysts have been more pessimistic about the weapon's value.¹¹⁹ The DF-21D ASBM, dubbed the “carrier-killer,” is an obvious attempt to credibly hold U.S. carriers at risk. It is joined by the Rocket Force's DF-26, which also has an ASBM variant and has the range to target U.S. facilities on Guam.¹²⁰

The Rocket Force can also use its arsenal of conventional ballistic missiles to hit maritime-relevant land targets, such as ports. The 2006 edition of *The Science of Campaigns* discussed how conventional cruise missiles can

be used to “implement sea blockades” and “capture localized campaign sea superiority.”¹²¹ Other tactics, such as a “missile fire blockade” [*daodan huoli fengsuo*, 导弹火力封锁], can disrupt facilities important for naval forces, such as ports and relevant airfields.¹²² While these efforts could be done jointly in coordination with the navy and air force, the Rocket Force could also conduct such campaigns independently, inserting itself into operations for “sea blockades” and “sea dominance.”¹²³

This competition for roles and missions goes both ways. The navy now has submarines that can compete with Rocket Force conventional and nuclear assets. The navy has four SSBNs armed with nuclear intercontinental ballistic missiles and attack submarines that can carry land-attack cruise missiles.¹²⁴ Such assets allow the navy to duplicate some Rocket Force capabilities, potentially with greater survivability than land-based Rocket Force assets. The navy also has numerous surface vessels and aircraft armed with antiship cruise missiles, which give it a strong tool to beat back Rocket Force efforts to intrude too far onto navy turf.¹²⁵ These systems, and the Rocket Force’s desire to maintain primacy in nuclear deterrence and long-range conventional strike missions, are likely to limit the Rocket Force’s ability to carve out too much space in the maritime domain.¹²⁶ Despite the clear interest of other services in competing for maritime missions and associated resources, spending too much time on these missions may compromise their combat effectiveness in their primary missions.¹²⁷

The final advantage the navy has over the other services in the maritime domain is presence. It is the only service that can operate assets on or over the high seas for long periods of time. It also has advantages in its ability to use overseas bases and commercial port facilities to provide logistics support for its peacetime operations. PLAN ability to launch and recover helicopters and planes from frigates and carriers allows it to maintain an air presence much longer than the air-refuelable land-based aircraft that the air force operates.¹²⁸ The navy can loiter under the waves, on the waves, and in the sky—something no other service can do.

Impact of Reforms on Joint Force Vector of Modernization

The reduction of army dominance presents new opportunities for the navy to promote its own interests, advocate for increased focus on Chinese maritime interests, and argue for new military capabilities to protect those interests. However, the intent to eliminate the operational role of the service headquarters and to conduct operations via joint command and control structures also implies a reduction in PLAN autonomy and increased competition for maritime roles and missions from other services.

The shifting of operational responsibilities away from the military regions and service headquarters to joint theater commands is perhaps the most significant operational change instituted by the reforms. The establishment of new joint command structures ends the PLA's reliance on army-dominated military regions and ad hoc wartime joint command structures. This shift, combined with placing some non-army officers in charge of theater commands (Navy Vice Admiral Yuan Yubai in the Southern Theater Command and PLAAF General Yi Xiaoguang in the Central Theater Command) and presence of non-army staff in all the theater commands, constitutes an important step toward a more joint force.

The role of theater commands in leading military operations within their geographic purview presents both a challenge and opportunity for the navy. If the head of a theater command is a naval officer, as in the Southern Theater Command, then the navy can theoretically run non-navy operations there and decide how to integrate relevant capabilities of other services into naval operations.¹²⁹ Even if another service is in charge of a theater command, each of the theater commands with a fleet (Northern, Eastern, and Southern) has a navy officer as a deputy commander in charge of theater command naval forces. Much will depend on how much centralized control the theater commander exerts over the theater ground, naval, and air components and how much authority the commander is willing to delegate to his component commanders. The fact that army officers have little experience in commanding naval operations, and the fact that the navy can perform many of its near-seas missions using its own assets to

conduct combined arms operations, suggests that navy component commanders are likely to retain a great deal of autonomy in most circumstances. Most PLA operations in the South China Sea, for example, are kept below the threshold where another country would respond with force. However, PLA planning for a Taiwan contingency, which would involve both coastal operations to support an amphibious landing and blue-water operations to delay U.S. intervention, would require the Eastern Theater Commander (currently an army officer) to make difficult choices about priorities.

Third Vector: “Interagency” Operations

China has a long history of drawing on military and militia vessels, as well as civilian ships and fishing boats, to compensate for its limited naval capabilities. However, in recent decades, the PLA has increasingly cooperated with other parts of the Chinese government and civilian actors to respond to maritime and territorial sovereignty disputes and possible regional naval clashes in the East China Sea and South China Sea. The heightened importance of the maritime domain and maritime sovereignty disputes, as well as the proven utility of other components of China’s armed forces such as the coast guard and maritime militia in pressing Beijing’s claims, have helped drive this vector of modernization. However, the other two vectors of modernization have also allowed the navy to build capabilities that strengthen its ability to conduct “interagency” operations.

These operations involve the navy working with the maritime militia and coast guard, as well as utilizing a network of bases and outposts throughout the South China Sea.¹³⁰ Civilian agencies are involved in some aspects: the Ministry of Foreign Affairs and state-run media, for instance, play an important role in shaping and propagating the narrative of the day.

Navy Leading from Behind

China’s approach to the South China Sea involves seeking to use a range of military, paramilitary, legal, and administrative tactics to expand Chinese control of disputed features and waters, while minimizing the chances

of military conflict breaking out. The PRC has adopted three lines of “defense” in this effort, with the maritime militia as the first, maritime law enforcement agencies as the second, and the PLA (especially the navy) as the third.¹³¹ While the navy is deliberately kept away from the frontline to minimize escalation risks, it played a significant role in crafting the strategy and continues to directly and indirectly support the other actors.¹³²

China’s maritime militia has always been an integral component of China’s maritime forces, and in recent years, its importance and interactions with the navy have increased significantly.¹³³ The maritime militia has benefited from a generous building program that has seen its branches acquire new, large steel-hulled vessels.¹³⁴ Trends seen in the PLA at large, such as a shift toward greater professionalism and phasing out less advanced units, are also evident in the maritime militia.¹³⁵ Leading personnel in the maritime militia are being militarized, professionalized, and incentivized; the organization can now call on elite units for more specialized and challenging tasks. Some maritime militia branches have become so well trained and are so useful that they have even been referred to as a “veritable ‘light cavalry.’”¹³⁶ Some maritime militia detachments have developed specialized combat support and technical skills to better aid the navy in operations.¹³⁷ While the maritime militia organization has a limited ability to engage in high-end warfare, it is optimized for sovereignty advancement operations that stay below the threshold of military conflict.¹³⁸

The navy also has been closely tied to the coast guard since the latter was formed by merging several different maritime law enforcement agencies. Its role in protecting disputed Chinese maritime and sovereignty claims and projecting Chinese domestic law into disputed waters have led many to call it “China’s second navy.”¹³⁹ The PLA influenced its creation, and the navy plays a significant role in planning, coordinating, and conducting coast guard operations.¹⁴⁰ Like the maritime militia, coast guard vessels have been significantly upgraded in recent years. Some are actually former PLAN vessels with some weapons systems removed.¹⁴¹ Some larger coast guard vessels even have 76mm main guns, among other armaments.¹⁴²

The maritime militia and coast guard have carried out several successful interagency operations against foreign countries in cooperation with the navy. Two examples are the *Impeccable* incident in March 2009 and HYSY-981 oil rig incident in May–July 2014.

Impeccable Incident, March 8–9, 2009. The *Impeccable* incident involved the USNS *Impeccable*, an ocean surveillance ship that was shadowed and harassed by Chinese vessels that maneuvered in ways that threatened its safety. The Chinese ships and aircraft involved included a PLAN frigate, Fisheries Law Enforcement patrol vessel, State Oceanic Administration patrol vessel, two trawlers (one of which was from the Sanya maritime militia), and at least one Y-12 aircraft.¹⁴³ The Chinese action involved multiple military and civilian government organizations and maritime militia vessels, necessitating a certain level of coordination. Chinese vessels came dangerously close to the *Impeccable*, dropped objects directly in its path, tried to snag its acoustics equipment, and even obstructed it after it announced it was trying to leave the area.¹⁴⁴ At one point a Chinese Y-12 buzzed the *Impeccable* 11 times.¹⁴⁵ The Chinese operation was reportedly led by then-head of the Fisheries Law Enforcement’s South China Sea Bureau, Wu Zheng.¹⁴⁶ Given the variety of Chinese assets and their close proximity to each other and to the *Impeccable*, a high degree of communication and control was necessary to coordinate actions and avoid collisions.

HYSY-981 Oil Rig Incident, May 2–July 15, 2014. The HYSY-981 oil rig incident is China’s largest and most sophisticated “Three-Sea-Force” operation to date.¹⁴⁷ Throughout the operation, China maintained between 110 and 115 vessels around the oil rig in an approximately 10 nautical mile cordon. These included four navy vessels, 35 to 40 coast guard ships, 30 transport and tugs, and more than 40 maritime militia vessels.¹⁴⁸ While the cordon radiated about 10 nautical miles out from the rig, the Chinese side utilized maritime militia and “fishing vessels” to harass, and in some cases attack and sink, Vietnamese fishing vessels operating miles beyond the cordon.¹⁴⁹ During the incident, China was able to maintain around twice as many vessels as Vietnam did in the area.¹⁵⁰ Operating a cordon

of so many vessels from so many different organizations over such a long period, while sending out skirmishing parties to attack Vietnamese vessels miles from the cordon, required careful coordination across multiple military and civilian organizations. This included cooperation with the China National Offshore Oil Corporation, a state-owned enterprise that owned and operated the HYSY-981 drilling platform.

The maritime militia was given mobilization orders for the operation by the Guangzhou Military Region. In the case of the participating Sansha City maritime militia, a sea command post was set up and a command and coordination group was sent to the coast guard's "forward command post at sea."¹⁵¹

China appears to plan to conduct more operations like these in the future. While the navy is the main military service involved in maritime sovereignty defense operations, at least one training event featured limited involvement by other services. A 2014 joint escort defense and joint oil rig defense exercise in the Gulf of Tonkin involved a maritime police unit under the navy's South Sea Fleet, personnel and vessels from fisheries, maritime police, and maritime militia, as well as aircraft from naval aviation and the air force. Just as in the HYSY-981 oil rig incident, a maritime command post was set up to help coordinate the effort. The exercise took the "defensive" actions utilized in the HYSY-981 oil rig a step further when fighter aircraft and surface vessels armed with missiles "destroyed" enemy vessels during the escort part of the mission. To defend the rig, the Chinese forces practiced blocking the passage of a "suspicious fishing boat" and shooting the water to prevent frogmen from getting close to the rig. The exercise ended with the arrest of "militants" and a journalist on the boat.¹⁵² Although this example involved limited participation of the air force, the navy continues to regularly perform such drills without the participation of another service.

Artificial "Islands," More Than Just the "Big Three." While China's "Big Three" artificial islands in the South China Sea (Fiery Cross, Mischief, and Subi Reefs) have dominated the coverage of China's artificial island-building activities in the region, they are part of a larger network of Chinese

bases and outposts scattered across the South China Sea.¹⁵³ While PLAAF aircraft might be able to operate from runways on the artificial islands, the navy regularly operates from both larger and smaller land features in cooperation with the coast guard, maritime militia, and other Chinese government organizations.

The 2013 edition of the *Science of Military Strategy* argued that China relies on islands and reefs to help create a “large-area maritime defense system” [*da quyū haishang fangwei tixī*, 大区域海上防卫体系] for power projection.¹⁵⁴ In addition to the large artificial islands that have harbors and airstrips, the smaller, but still vital, islands and reefs have facilities called “coastal defense militia outposts” [*haifang minbing shaosuo*, 海防民兵哨所], which are staffed by maritime militia and People’s Armed Forces Department personnel, to monitor the maritime domain.¹⁵⁵ This type of force can help maintain a constant forward presence and play peacetime (and potentially wartime) operations roles that would be much more visible and sensitive if performed by military units.

Reform Impact on the Interagency Vector of Modernization

The PLA reforms have facilitated some aspects of interagency maritime operations but have also created new organizational roles and responsibilities that may complicate existing understandings and procedures. The reforms placed the coast guard under the authority of the People’s Armed Police, which was itself subordinated to report solely to the CMC.¹⁵⁶ This gives the CMC the ability to issue orders to both the PLA and coast guard, facilitating interagency planning and operations. Certain elite and specialized branches of the maritime militia have also drawn much closer to the navy and coast guard in terms of funding, equipment, training, personnel, and coordination in recent years.¹⁵⁷ Such closer relations should help reduce the coordination burden in interagency maritime operations.

That said, the PRC appears to lack a permanent mechanism to coordinate operations of the maritime militia and coast guard with services other than the navy. Previous coordination mechanisms appear to have

been run through PLAN headquarters and the three fleets, with no or limited involvement of the military regions. The establishment of new joint theater commands will require adjustments in these command and coordination mechanisms, which may be challenging since the theater commands have no natural channels to coordinate with national-level ministries and state-owned enterprises. The challenge is further increased because some maritime militia units are designed primarily for use in peacetime sovereignty advancement operations, while others are designed to provide support during combat operations. Given the high number of maritime militia branches and specialized units within those branches and the local nature of these branches, the lack of a mechanism to coordinate with non-PLAN services will limit the ability of these forces to contribute to joint operations with other services. For the time being, the navy will likely have to coordinate directly with the maritime militias and coast guard and then coordinate joint operations with the other services on behalf of China's maritime forces.

Conclusion

Like any large organization, the PLA is made up of different bureaucratic actors, each with its own interests. As with any military, there is disagreement among the services, and even between different branches of the same service, as to how the force should develop. The three vectors of modernization employed in this chapter are a useful device for highlighting these divergent interests and thinking about how they may affect decisions about PLA modernization in general, and navy modernization in particular.

We argue that there will be continued tension between the PLAN desire to create a blue-water navy optimized for independent operations in the far seas and the desire of the CMC and theater commands for a naval component that is optimized for joint operations and executing theater contingency plans. Theater commanders are likely to advocate for naval forces that suit the specific missions and geography of their region and use their operational control to focus the naval components in their theaters on those

particular priorities. This tension will likely manifest itself in arguments over how PLAN headquarters and the theater commands want naval units to spend their time and potentially even what platforms are assigned to what theaters. However, because the interagency navy vector of modernization involves support for a high national priority (defending and advancing China's maritime sovereignty claims) and does not involve expensive weapons development requirements, this mission set is not likely to be a major focus of tensions between the headquarters and theater commands.

There will also be tension among the services over what level of jointness they are comfortable with, since true jointness will require each service to give up some of its autonomy and limit its ability to maximize its organizational interests. The pursuit of joint synergies will inevitably involve creating new dependencies on other services to provide critical capabilities for joint operations. The logic of a blue-water navy whose different branches provide all the capabilities needed for far seas operations has inherent contradictions with the interdependence and cross-service coordination that are the essence of jointness. There may even be resentment between the navy and interagency maritime forces because resources going to the coast guard and maritime militia will not provide much support for the PLAN's own "blue dream." The navy's efforts to seek an even greater role in the training, education, personnel, and operations of the coast guard and maritime militia may also remove the gossamer-thin façade that these forces are mainly concerned with maritime safety and fishing.

In the short-term, it is hard to tell how the various bureaucratic actors in the navy, PLA as a whole, interagency maritime force, and civilian government will respond to the impacts of the reforms. The navy has made progress in all three vectors of modernization in recent years, as is evident in its improving capability to execute independent operations far from China's coastline, in the PLA's improving capability to execute joint operations, and in the interagency maritime force's capabilities to outclass the paramilitary or military forces of any other South China Sea claimant and to continue advancing China's maritime claims.

The longer term impact is even harder to predict. For the navy, the biggest factor will be how well it can sell itself as a service capable of contributing to the various missions each modernization vector is designed to serve. If the navy cannot convince Chinese and PLA leaders of the importance of a blue-water fleet, its efforts to develop blue-water capabilities will be hampered. If the navy does not play nice in pursuing jointness while holding off efforts of the other services to play greater roles in the maritime domain, it may find its roles and missions reduced along with its share of the budget. The navy could even lose out on resources if the interagency maritime force is too successful, with more resources going to the paramilitary and militia forces that are the frontline and public-facing elements of the maritime sovereignty defense strategy. On the whole, the reforms have provided new resources and new opportunities for the navy, but there are challenges on the horizon. How the navy meets them will decide its future as a service.

Notes

¹ Nargiza Salidjanova, *Going Out: An Overview of China's Outward Foreign Direct Investment* (Washington, DC: U.S.-China Security and Economic Review Commission, March 30, 2011).

² Daniel M. Hartnett, *The PLA's Domestic and Foreign Activities and Orientation* (Washington, DC: U.S.-China Economic and Security Review Commission, March 4, 2009), available at <www.uscc.gov/sites/default/files/3.4.09Hartnett.pdf>.

³ Jonas Parello-Plesner and Mathieu Duchatel, *China's Strong Arm: Protecting Citizens and Assets Abroad* (New York: Routledge, 2015), 37–41.

⁴ See “China Focus: China Publishes Arctic Policy, Eyeing Vision of ‘Polar Silk Road,’” *Xinhua Online*, January 26, 2018, available at <www.xinhuanet.com/english/2018-01/26/c_136927327.htm>.

⁵ See Christopher D. Yung, “The PLA Navy Lobby and Its Influence over China's Maritime Sovereignty Policies,” in *PLA Influence on China's National Security Policymaking*, ed. Phillip C. Saunders and Andrew Scobell (Stanford: Stanford University Press, 2015), 286–292.

⁶ Gordon Jacobs, “Chinese Naval Developments Post–Gulf War,” *Jane's Intelligence Review* 5, no. 2 (February 1993), 82.

⁷ See Gabriel B. Collins, Andrew S. Erickson, and Lyle J. Goldstein, “Chinese Naval Analysts Consider the Energy Question,” in *China’s Energy Strategy: The Impact on Beijing’s Maritime Policies*, ed. Gabriel B. Collins et al. (Annapolis, MD: China Maritime Studies Institute and the Naval Institute Press, 2008), 299.

⁸ While some experts translate *xiandai haijun* [现代海军] as *Modern Navy* or *Contemporary Navy*, the authors use the official English translation of *Navy Today*.

⁹ M. Taylor Fravel and Alexander Liebman, “Beyond the Moat: The PLAN’s Evolving Interests and Potential Influence,” in *The Chinese Navy: Expanding Capabilities, Evolving Roles*, ed. Phillip C. Saunders et al. (Washington, DC: NDU Press, 2011), 55–56.

¹⁰ For more on some of the civilian supporters and potential members of the maritime lobby, see Ian Burns McCaslin, *Role of the PLA in China’s Foreign Policy and Behavior Abroad* (Singapore: National University of Singapore, 2016), 138–145.

¹¹ See Wu Xiaoyan, *China’s “Sea Power Nation” Strategy* (Stockholm: Institute for Security and Development Policy, 2014).

¹² The extent to which this is a problem in practice depends on how fungible particular assets are across the three vectors of modernization.

¹³ For more on the attempts of non-Chinese powers in the modern era to build such fleets, see Andrew S. Erickson, Lyle J. Goldstein, and Carnes Lord, eds., *China Goes to Sea: Maritime Transformation in Comparative Historical Perspective* (Annapolis, MD: Naval Institute Press, 2009), 121–233.

¹⁴ From July 1949 to July 1960, the “Chinese Navy alone employed 3,390 Soviet advisers and experts.” Soviet advisers and experts were critical because many Chinese officers knew little about the forces they were charged with commanding or the equipment they were supposed to use. See Zhihua Shen and Danhui Li, *After Learning to One Side: China and Its Allies in the Cold War* (Stanford: Stanford University Press, 2011), 118–121.

¹⁵ A 2013 estimate by the U.S. Office of Naval Intelligence indicated that the PLA Navy could have between 313 and 342 warships (including submarines) by 2020. See Craig Murray, Andrew Berglund, and Kimberly Hsu, *China’s Naval Modernization and Implications for the United States* (Washington, DC: U.S.-China Economic and Security Review Commission, August 26, 2013), 6–7. For more on the quality-over-quantity shift in navy vessels, see *The People’s Liberation Army Navy: A Modern Navy with Chinese Characteristics* (Washington, DC: Office of Naval Intelligence, August 2009), 16–20.

¹⁶ Gabe Collins and Andrew Erickson, “The Type 054/054A Frigate Series: China’s Most Produced and Deployed Large Modern Surface Combatant,” *China SignPost*, August 2, 2015, available at <www.chinasignpost.com/2015/08/02/the-type-054054a-frigate-series-chinas-most-produced-and-deployed-large-modern-surface-combatant/>.

¹⁷ Ronald O’Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, RL33153 (Washington, DC: Congressional Research Service, May 21, 2018), 3.

¹⁸ *The People’s Liberation Army Navy*, 22–23.

¹⁹ *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017* (Washington, DC: Office of the Secretary of Defense, May 15, 2017), 24.

²⁰ For a comparison of the China’s first and second aircraft carrier, see “What Do We Know (So Far) about China’s Second Aircraft Carrier?” *China Power*, available at <<https://chinapower.csis.org/china-aircraft-carrier-type-001a/>>.

²¹ Minnie Chan, “Breakthrough to Power Most Advanced Jet Launch System on China’s Second Home-Grown Aircraft Carrier,” *South China Morning Post* (Hong Kong), November 1, 2017, available at <www.scmp.com/news/china/diplomacy-defence/article/2117947/breakthrough-power-most-advanced-jet-launch-system?utm_source=t.co&utm_medium=referral>.

²² Chris Buckley, “China Launches First Aircraft Carrier on Maiden Sea Trial,” Reuters, August 9, 2011, available at <www.reuters.com/article/us-china-military-carrier/china-launches-first-aircraft-carrier-on-maiden-sea-trial-idUSTRE77900D20110810>.

²³ A senior Chinese official stated in the mid-2000s that until recently carriers had “not been the best use of national resources” because the country lacked the platforms necessary for an “escort fleet.” See Andrew S. Erickson and Andrew R. Wilson, “China’s Aircraft Carrier Dilemma,” in *China’s Future Nuclear Submarine Force*, ed. Andrew S. Erickson et al. (Annapolis, MD: Naval Institute Press, 2007), 230.

²⁴ Andrew S. Erickson and Christopher P. Carlson, “Sustained Support: The PLAN Evolves Its Expeditionary Logistics Strategy,” *Jane’s Navy International*, March 9, 2016.

²⁵ The U.S. Navy enjoys a ratio of 1:5 of replenishment ships to frontline ships, while, as of December 2016, the PLA Navy only had a ratio of 1:15. See “PLAN First Type 901 Replenishment Oiler Started Sea Trails of Shenzhen, China,” *Navy Recognition*, December 23, 2016, available at <www.navyrecognition.com/>

index.php/news/defence-news/2016/december-2016-navy-naval-forces-defense-industry-technology-maritime-security-global-news/4720-plan-first-type-901-replenishment-oiler-started-sea-trials-off-shenzhen-china.html>.

²⁶ “868 Semi-Submersible Vessel Enters Service in the South Sea Fleet Can Carry European Bison Which Will Impact Island Attack” [868号半潜船入役南海舰队可载欧洲野牛冲击岛礁], *ifeng.com* [凤凰网], July 13, 2015, available at <http://news.ifeng.com/a/20150713/44156468_0.shtml#p=1>; Henri Kenhmann, “China Launches Mass Production of the New LCAC Type 726A” [La Chine lance la production en série de son nouveau LCAC Type 726A], *East Pendulum*, February 5, 2017, available at <www.eastpendulum.com/la-chine-lance-la-production-en-serie-de-son-nouveau-lcac-type-726a>; Andrew Tate, “China Launches Fifth LPD for PLAN,” *Jane’s 360*, June 16, 2017, available at <www.janes.com/article/71491/china-launches-fifth-lpd-for-plan>.

²⁷ This effort was aided by earlier PLA-wide reforms that sought to encourage civilians to work for the PLA. See Thomas J. Bickford, “Trends in Education and Training, 1924–2007: From Whampoa to Nanjing Polytechnic,” in *The “People” in the PLA: Recruitment, Training, and Education in China’s Military*, ed. Roy Kamphausen, Andrew Scobell, and Travis Tanner (Carlisle Barracks, PA: Strategic Studies Institute, 2008), 36–37.

²⁸ Roy D. Kamphausen, “ROTC with Chinese Characteristics: Training the PLA in Civilian Universities,” *China Brief* 7, no. 6 (April 13, 2007), available at <<https://jamestown.org/program/rotc-with-chinese-characteristics-training-the-pla-in-civilian-universities-3/>>. In an effort to further diversify those it recruits, the marines even began partnering with wushu schools, such as the Tagou Wushu School in Henan, to hold recruitment events at wushu competitions. See Li Faxin, *The PLA Marines* (Beijing: China Intercontinental Press, 2013), 78–80.

²⁹ Kenneth W. Allen, *PLA Air Force, Naval Aviation, and Army Aviation Aviator Recruitment, Education, and Training* (Washington, DC: Jamestown Foundation, 2015), 38.

³⁰ This move was in part done to address the complaint that cadets’ education focused too much on theory and not enough on gaining practical skills and experience. See Kenneth W. Allen and Morgan Clemens, *The Recruitment, Education, and Training of PLA Navy Personnel* (Newport, RI: China Maritime Studies Institute, August 2014), 7.

³¹ Kenneth W. Allen, Phillip C. Saunders, and John Chen, *Chinese Military Diplomacy, 2003–2016*, China Strategic Perspectives 11 (Washington, DC: NDU Press, July 2017), 35; Zhang Xiaomin, “Naval Training Ship Going Round the

Globe,” *China Daily* (Beijing), April 17, 2012, available at <http://usa.chinadaily.com.cn/china/2012-04/17/content_15063312.htm>.

³² Between April 1987 and August 1993, the *Zheng He* trained more than 6,000 navy cadets. See Srikanth Kondapalli, *China’s Naval Power* (New Delhi: Knowledge World, January 2001), 146.

³³ Allen and Clemens, *The Recruitment, Education, and Training of PLA Navy Personnel*, 32.

³⁴ “82 *Shichang* National Defense Mobilization Ship” [82 世昌号国防动员舰], *haijun360.com* [海军360], available at <www.haijun360.com/news/QTFZCZ/2011/716/11716153820777C426CG301JKC379.html>.

³⁵ Vinayak Bhat, “Satellite Images Reveal China’s State-of-Art Naval Air Base,” *The Print*, October 17, 2017, available at <<https://theprint.in/2017/10/17/satellite-images-reveal-china-naval-airbase/>>.

³⁶ Dale C. Rielage, “Chinese Navy Trains and Takes Risks,” U.S. Naval Institute *Proceedings* 142, no. 5 (May 2016), available at <www.usni.org/magazines/proceedings/2016-05/chinese-navy-trains-and-takes-risks>.

³⁷ Yan Jiangzhou, Fu Qiang, and Ren Wei [闫江洲, 付强, 任伟], “‘First Ship’ Brilliantly Draws Sword” [“首舰”精彩亮剑], *People’s Navy* [人民海军], June 9, 2014, 4.

³⁸ Zhao Lei, “Navy Training Exercises Deemed Success,” *China Daily* (Beijing), April 24, 2017, available at <www.chinadaily.com.cn/china/2017-04/24/content_29050321.htm>.

³⁹ Allen, Saunders, and Chen, *Chinese Military Diplomacy*, 23. Notably, however, the United States disinvited the PLA Navy from Rim of the Pacific exercise 2018.

⁴⁰ Yang Jie, “Navy Completes Joint Beach Drill,” *China Daily* (Beijing), August 26, 2015, available at <www.chinadaily.com.cn/kindle/2015-08/26/content_21711187.htm>.

⁴¹ Allen, Saunders, and Chen, *Chinese Military Diplomacy*, 24–26.

⁴² See Zhao Lei, “PLA Submarines Defy Death in the Depths,” *China Daily* (Beijing), December 18, 2014, available at <www.chinadaily.com.cn/china/2014-12/18/content_19111841.htm>.

⁴³ Rielage, “Chinese Navy Trains and Takes Risks.”

⁴⁴ Kenneth W. Allen and Lyle J. Morris, *PLA Naval Aviation Training and Operations: Missions, Organizational Structure and Training (2013–2015)* (Maxwell Air Force Base, AL: China Aerospace Studies Institute, 2017), 7.

⁴⁵ Fan Jianguai, Cao Haihua, and Shao Longfei [范江怀, 曹海华, 邵龙飞],

“These Self-Styled Special Forces—South Sea Fleet Units’ Special Mission, Training, and Knowledge” [这些自讨苦吃的特种兵——南海舰队某特种团训练见闻], *China Military Online* [中国军网], January 23, 2013, available at <www.81.cn/tzjy/2013-01/23/content_5500379.htm>.

⁴⁶ Dennis J. Blasko, “PLA Special Operations Forces: Organizations, Missions, and Training,” *China Brief* 15, no. 9 (May 1, 2015), 8. For the activities of naval special operations forces detachments on the antipiracy missions, see Li, *The PLA Marines*, 66–76.

⁴⁷ See Jeffrey Lin and P.W. Singer, “Chinese Special Forces Take 1st, 2nd, and 4th at ‘Olympics’ for Elite Warriors,” *Popular Science*, May 19, 2014, available at <www.popsci.com/blog-network/eastern-arsenal/chinese-special-forces-take-1st-2nd-and-4th-place-%E2%80%9Colympics%E2%80%9D-elite>; “Chinese Airborne Troops Win Glory in International Special Forces Competition,” *China Military Online*, July 10, 2015, available at <http://english.chinamil.com.cn/news-channels/china-military-news/2015-07/10/content_6581621.htm>.

⁴⁸ Dennis J. Blasko, “SOF a Priority in China,” *The Cipher Brief*, March 15, 2017, available at <<https://www.thecipherbrief.com/sof-a-priority-in-china>>.

⁴⁹ *China’s National Defense in 2010* (Beijing: Information Office of the State Council, 2010), available at <http://english.gov.cn/archive/white_paper/2014/09/09/content_281474986284525.htm>; Takeshi Yuzawa, “ASEAN in the Era of Japan-China Tensions: Diplomatic Opportunities or Strategic Dilemmas?” in *International Security in the Asia-Pacific*, ed. Alan Chong (New York: Palgrave Macmillan, 2018), 161. The marines were involved in joint exercises with foreign militaries prior to 2010, such as Peace Mission 2005 with Russia. See Li, *The PLA Marines*, 176–177.

⁵⁰ Li, *The PLA Marines*, 122. In at least one Chinese-language book that was part of a series that had the “strong support and guidance” of the Ministry of National Defense, the helicopters used by the marines were referred to as being part of a “海军陆战队直升机分队.” See Li Faxin [李发新], *The PLA Marines* [中国人民解放军海军陆战队] (Beijing: China Intercontinental Press [五洲传播出版社], 2013), 107.

⁵¹ “Chinese People’s Liberation Army Marine Corps College Brief Introduction” [中国人民解放军海军陆战学院简介], *KaoYan.com* [考研帮], April 22, 2014, available at <<http://yz.kaoyan.com/hjbzzhxy/jianjie/>>.

⁵² See Li Tang, Zhou Yuan, and Liu Chuan [李唐, 周园, 刘川], “Military Teachers, to Teach Warfighting First Must Train on the Frontline” [军校教员, 教打仗先到一线练打仗], *PLA Daily* [解放军报], April 26, 2015, available at <www.81.cn/jmywyl/2015-04/26/content_6460539.htm>.

⁵³ Both names have been used by official state media outlets. The new university will be located in Yantai, Shandong, with a campus and training base in Qingdao, as well as training bases in Huludao, Liaoning, in Changzhi, Shanxi, and in Qinhuangdao, Hebei. See Wang Lei, “China’s Only University to Train Carrier-Based Fighter Pilots Makes Debut,” *CGTN.com*, May 29, 2017, available at <https://news.cgtn.com/news/3d517a4e3241444e/share_p.html>.

⁵⁴ Deng Xiaoci, “PLA Navy to Streamline Pilot Training as More Aircraft Carriers Expected,” *Global Times* (Beijing), January 7, 2018, available at <www.globaltimes.cn/content/1083697.shtml>.

⁵⁵ Zhang Dabin and Gao Yi [张大宾, 高毅], “Night Training Bids Goodbye to Calm Winds and Waves—To Aim for Accurate Real Combat Night Training Environment, a South Sea Fleet Aviation Bombing Regiment Concentrates on Refining Night Combat Capability” [夜训告别“风平浪带”—瞄准实战构设夜训环境, 潜心锤炼夜战本领. 南海舰队航空兵某轰炸机团], *People’s Navy* [人民海军], May 18, 2015, 3; Allen and Morris, *PLA Naval Aviation Training and Operations*, 8.

⁵⁶ Allen and Morris, *PLA Naval Aviation Training and Operations*, 16. This training is important; the international militaries that naval aviation is most likely to come into conflict with—namely those of the United States, Japan, Taiwan, and South Korea—do not fly the same aircraft as it does.

⁵⁷ Dai Zongfeng, Wan Minwu, and Wu Dengfeng [代宗锋, 宛敏武, 吴登峰], “A Report on How PLA’s First AIP Submarine Unit Improves Its Ability to Win Battle” [全军首支AIP潜艇部队提升打胜仗能力纪实], *Xinhua* [新华], June 25, 2018.

⁵⁸ Authors’ discussions with Chinese naval officers in 2017. The navy performed its first tri-fleet exercise in 2010. See Christian Le Miere, *Maritime Diplomacy in the 21st Century: Drivers and Challenges* (New York: Routledge, 2014), 135.

⁵⁹ Even in the U.S. military, years after the Goldwater-Nichols Department of Defense Reorganization Act of 1986, the Services still engaged in “Service parochialism” to the point where “it is the single most important factor in force planning.” See William A. Owens, “Making the Joint Journey,” *Joint Force Quarterly* 34 (Spring 2003), 76.

⁶⁰ During a far-sea training exercise, a flotilla from the navy’s South Sea Fleet performed “over 20 training items including joint area air defense, joint maritime rights protection, sea and air combined assaults, close counterattacks and in-depth land strike and so on.” Despite being described as joint actions, they only involved naval forces. See Huang Panyue, ed., “PLA Fleet Returns to Homeport from Far-Sea Training,” *China Military Online*, February 26, 2018, available at <http://eng.chinamil.com.cn/view/2018-02/26/content_7952635.htm>.

⁶¹ The PLA service commanders were Central Military Commission (CMC) members from 2004 to 2017.

⁶² For more on the CMC's level of control and involvement in overseas naval actions via the Joint Staff Department Overseas Operations Office, see Huang Jiafu [黄家福], "Take Command of and Provide Support for Overseas Military Actions" [海外军事行动的指挥与保障], *Naval and Merchant Ships* [舰船知识] (September 2017), 75–76.

⁶³ Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins University Press, 1989), 18.

⁶⁴ Allen, Saunders, and Chen, *Chinese Military Diplomacy*, 18.

⁶⁵ Minnie Chan, "China Raises Pay, Pensions for Trimmed Down Military, Announces Plans for Veterans' Ministry," *South China Morning Post* (Hong Kong), March 13, 2018, available at <www.scmp.com/news/china/diplomacy-defence/article/2137008/china-raises-pay-pensions-trimmed-down-military>.

⁶⁶ Neil J. Diamant, *Embattled Glory: Veterans, Military Families, and the Politics of Patriotism in China, 1949–2007* (Lanham, MD: Rowman & Littlefield Publishers, Inc., 2010), 6–7.

⁶⁷ Luisetta Mudie, trans. and ed., "Chinese Military Veterans Skeptical over President's Promise to 'Protect Their Rights,'" *Radio Free Asia*, October 23, 2017, available <www.rfa.org/english/news/china/veterans-10232017114254.html>.

⁶⁸ Chan, "China Raises Pay."

⁶⁹ Mudie, "Chinese Military Veterans Skeptical." This claim has been undercut by continuing mistreatment and abuse of veterans by officials and police. See Yang Fan and Luisette Mudie, trans. and ed., "Chinese Military Veterans Detained, Beaten in Beijing after Pension Petition," *Radio Free Asia*, December 5, 2017, available at <www.rfa.org/english/news/china/chinese-military-veterans-detained-beaten-in-beijing-after-pension-petition-12052017110040.html>.

⁷⁰ Wong Siu-san et al., trans. and ed., "Chinese Military Veterans Converge on Zhenjiang as Protests Swell," *Radio Free Asia*, June 22, 2018, available at <www.rfa.org/english/news/china/chinese-military-veterans-converge-on-zhenjiang-06222018111306.html>.

⁷¹ "Former Top China Military Officer Hoarded Cash, Jade in Basement: Phoenix," Reuters, November 20, 2014, available at <www.reuters.com/article/us-china-politics-corruption/former-top-china-military-officer-hoarded-cash-jade-in-basement-phoenix-idUSKCN0J412Q20141120>.

⁷² See Peng Wang, "Military Corruption in China: The Role of *Guanxi* in the

Buying and Selling of Military Positions,” *China Quarterly*, no. 228 (December 2016), 970–991.

⁷³ Joel Wuthnow, “A Brave New World for Chinese Joint Operations,” *Journal of Strategic Studies* 40, nos. 1–2 (2017), 174.

⁷⁴ Jeffrey Engstrom and Michael Chase, “Enhancing China’s Status as a Great Power,” *The Cipher Brief*, August 1, 2017, available at <www.thecipherbrief.com/enhancing-chinas-status-great-power-1091>; also see Kevin McCauley, “PLA Yijiangshan Joint Amphibious Operation: Past Is Prologue,” *China Brief* 16, no. 4 (September 13, 2016), 12–16.

⁷⁵ Li Dianren [李殿仁] et al., “Foreword” [前言], *Study on the Development of Joint Commanding Officers* [联合作战指挥人才培养] (Beijing: National Defense University Press [国防大学出版社], 2008), 1.

⁷⁶ Liu Wei [刘伟], ed., “Theater Joint Operations Command” [战区联合作战指挥], (Beijing: National Defense University Press [国防大学出版社], 2016), 293.

⁷⁷ Mark R. Cozad, *PLA Joint Training and Implications for Future Expeditionary Capabilities* (Santa Monica, CA: RAND, January 2016), 2, available at <www.rand.org/pubs/testimonies/CT451.html>.

⁷⁸ June Teufel Dreyer, “People’s Liberation Army Lessons from Foreign Conflicts: The Air War in Kosovo,” in *Chinese Lessons from Other People’s Wars*, ed. Andrew Scobell, David Lai, and Roy Kamphausen (Carlisle Barracks, PA: Strategic Studies Institute, November 2011), 33–73; Christopher D. Yung, “Sinica Rules the Waves? The People’s Liberation Army Navy’s Power Projection and Anti-Access/Area Denial Lessons from the Falklands/Malvinas Conflict,” in *Chinese Lessons from Other People’s Wars*, 75–114.

⁷⁹ Li et al., *Study on the Development of Joint Commanding Officers*, 2.

⁸⁰ Dennis J. Blasko, “The PLA Joint Headquarters and Internal Assessments of PLA Capabilities,” *China Brief* 16, no.10 (June 21, 2016), 8–9.

⁸¹ Liu, “Theater Joint Operations Command,” 311.

⁸² *Ibid.*, 312.

⁸³ Allen, Saunders, and Chen, *Chinese Military Diplomacy*, 32–33.

⁸⁴ One expert stated that the PLA Air Force’s “most glaring” training weakness is the limited training that it conducts with other services. See Lee Fuell, “Broad Trends in Chinese Air Force and Missile Modernization,” Testimony Before the U.S.-China Security and Economic Review Commission, January 30, 2014, 9. More “robust” operations between the air force and navy only began “recently.” See Mark R. Cozad and Nathan Beauchamp-Mustafaga, *The People’s Liberation*

Army Air Force Operations over Water: Maintaining Relevance in China's Changing Security Environment (Santa Monica, CA: RAND, 2017), 49.

⁸⁵ Zhang Zhongkai and Wu Dengfeng [张钟凯, 吴登峰], "Military Experts Explain the Sino-Russian 'Joint Sea-2015 (II)' Exercise Highlights" [军事专家详解中俄“海上联合—2015(II)”演习亮点], Xinhua Online [新华网], August 24, 2015, available at <http://news.xinhuanet.com/world/2015-08/24/c_1116357242.htm>; Yang Jie, "Navy Completes Joint Beach Drill," *China Daily* (Beijing), August 26, 2015, available at <www.chinadaily.com.cn/kindle/2015-08/26/content_21711187.htm>.

⁸⁶ Fuell, "Broad Trends in Chinese Air Force and Missile Modernization," 10.

⁸⁷ Qiu Yue and Yan Jiaqi [邱越, 闫嘉琪], "Expert: Joint Navy and Air Force Exercise to Control the Contest of Air Supremacy Helps to Exert the Navy's Strike Capability" [专家: 海空军联演助力制空权争夺发挥海军打击能力], *People's Daily Online* [人民网], November 4, 2015, available at <<http://military.people.com.cn/n/2015/1104/c1011-27774164.html>>.

⁸⁸ See Liu Wenping and Zhao Haitao, "Flying Against a 'Golden Helmet,'" *China Armed Forces* 32, no. 2 (2015), 82–83. In exercises involving naval aviation and the air force, the two are mostly used as training opponents rather than operating on the same side as they would in a real conflict. See Zhang Heng [张恒], "Confrontation Between Different Models 'Back-to-Back' in Progress: Naval Aviation and Air Force Joint Training Deepening" [异型机对抗“背靠背”进行], *PLA Daily* [解放军报], September 21, 2015, available at <http://kj.81.cn/content/2015-09/21/content_6690270.htm>.

⁸⁹ Jeffrey Lin and P.W. Singer, "China's Marine Corps Is Getting Bigger and Stronger," *Popular Science*, March 29, 2017, available at <www.popsci.com/chinas-marine-corps-expansion-reorganization>. It is unclear how the marines having their own aviation assets will impact the level and frequency of joint training with army aviation units.

⁹⁰ Ian Easton, *The Chinese Invasion Threat: Taiwan's Defense and American Strategy in Asia* (Arlington, VA: Project 2049 Institute, 2017), 173–175.

⁹¹ Cozad, *PLA Joint Training*, 11.

⁹² Zhao Lei, "PLA Restructuring Changes Focus at Military Schools," *China Daily* (Beijing), April 28, 2016, available at <www.chinadaily.com.cn/china/2016-04/28/content_24911350.htm>.

⁹³ Fuell, "Broad Trends in Chinese Air Force and Missile Modernization," 10–11.

⁹⁴ "China to Cut Troops by 300,000: Xi," Xinhua, September 3, 2015, available at <www.xinhuanet.com/english/2015-09/03/c_134583730.htm>.

⁹⁵ *China's National Defense in 2002* (Beijing: Information Office of the State Council, December 2002), available at <www.china.org.cn/e-white/20021209/index.htm>.

⁹⁶ *China's National Defense in 2004* (Beijing: Information Office of the State Council, December 2004), available at <<http://en.people.cn/whitepaper/defense2004/defense2004.html>>.

⁹⁷ “White Paper Outlines China’s ‘Active Defense’ Strategy,” Xinhua, May 26, 2015, available at <<http://en.people.cn/n/2015/0526/c90786-8898060.html>>.

⁹⁸ Shou Xiaosong [寿晓松], ed., *Science of Military Strategy* [战略学] (Beijing: Military Science Press [军事科学出版社], December 2013), 106.

⁹⁹ Li Youtao [黎友陶], “Diversified Activities Will Help to Calmly Chase Navy Blue Dream” [行动多样化: 逐梦深蓝更加从容], *Navy Today* [当代海军], no. 273 (June 2016), 18–19.

¹⁰⁰ Cozad and Beauchamp-Mustafaga, *The People's Liberation Army Air Force Operations over Water*.

¹⁰¹ “PLA Air Force Conducts First Training in West Pacific,” *China Military Online*, March 30, 2015, available at <http://english.chinamil.com.cn/news-channels/2015-03/30/content_6420538.htm>.

¹⁰² Tara Copp, “China Has Practiced Bombing Runs Targeting Guam, U.S. Says,” *Defense News*, October 31, 2017, available at <www.defensenews.com/flash-points/2017/10/31/china-has-practiced-bombing-runs-against-guam-us-says/>.

¹⁰³ These include armed combat vessels for wartime maritime search and rescue missions. See Li Jiayao, ed., “Vessel Troops of the PLA Air Force,” *China Military Online*, January 19, 2018, available at <http://english.pladaily.com.cn/view/2018-01/19/content_7914789.htm>.

¹⁰⁴ Huang Panyue, ed., “Su-35, J-20 Fighter Jets Help Maintain China’s Air-space Safety,” *China Military Online*, February 12, 2018, available at <http://english.pladaily.com.cn/view/2018-02/12/content_7942685.htm>.

¹⁰⁵ According to air force spokesperson Senior Colonel Shen Jinke, “in the two years since the Chinese air force launched distant sea training, interference from various obstacles had been dealt with, engaged in reconnaissance and early warning, maritime patrolling, maritime assault, and mid-air refueling training, which improved distant sea mobility and tested distant sea combat capability.” See Zhang Yuqing and Zhang Mimi [张玉清, 张汨汨], “China’s Air Force Strengthens Distant Sea Training to Improve Strategic Capability” [中国空军加强远海训练提升战略能力], Xinhua Online [新华网], December 15, 2016, available at <http://news.xinhuanet.com/2016-12/15/c_1120123755.htm>.

¹⁰⁶ Li Kaiqiang and Zhang Hongwei [李开强, 张宏伟], “Air Force Organized First Live Fire Training at Sea for Flight School” [空军首次组织飞行院校海上实弹打靶], *PLA Daily* [解放军报], May 20, 2015, available at <www.mod.gov.cn/academy/2015-05/20/content_4585772.htm>.

¹⁰⁷ Liangyu, ed., “Chinese Air Force Patrol South China Sea,” *Xinhua Online*, November 23, 2017, available at <http://news.xinhuanet.com/english/2017-11/23/c_136774671.htm>. The Air Force Aviation University performed its first live-fire training at sea in 2015. See Li Kaiqiang and Zhang Hongwei [李开强, 张宏伟], “Air Force Organized First Live Fire Training at Sea for Flight School” [空军首次组织飞行院校海上实弹打靶], *PLA Daily* [解放军报], May 20, 2015, available at <www.mod.gov.cn/academy/2015-05/20/content_4585772.htm>.

¹⁰⁸ Cozad and Beauchamp-Mustafaga, *The People’s Liberation Army Air Force Operations over Water*, 19.

¹⁰⁹ Ma Xiaotian [马晓天], “Strive to Improve the Ability of the Air Force to Fight and Win” [努力提高空军部队能打仗打胜仗能力], *PLA Daily* [解放军报], April 2, 2014, available at <www.81.cn/2014-content_18620/2014-04/02/content_6153511.htm>.

¹¹⁰ Jeffrey Lin and P.W. Singer, “The World’s Largest Military Plane in Production Is China’s Y-20,” *Popular Science*, June 20, 2016, available at <www.popsci.com/worlds-largest-military-plane-in-production-is-chinas-y-20>.

¹¹¹ Yi Wenbo and Jiang Long [尹闻博, 蒋龙], “Achieving Airdrop Capability Through All-Domain Direct Reach Operations: Air Force Airborne’s Air Transport Brigade Carries Out Simulated Airdrop Over Unfamiliar Island Targets” [全域直达练就能降: 空降兵某空运旅对陌生海岛目标实施模拟空降训练小记] *Air Force Daily* [空军报], June 7, 2017, 1.

¹¹² Jeffrey Lin and P.W. Singer, “Finally, a Modern Chinese Aerial Tanker,” *Popular Science*, April 2, 2014, available at <www.popsci.com/blog-network/eastern-arsenal/finally-modern-chinese-aerial-tanker>.

¹¹³ “‘Chubby Girl’s’ Sister to Boost China’s Military Capability,” *Asia Times* (Hong Kong), December 14, 2017, available at <www.atimes.com/article/chubby-girls-sister-boost-chinas-military-capability/>.

¹¹⁴ For more on the conquest of Taiwan being the prime driver of the PLA for decades, see Easton, *The Chinese Invasion Threat*, 16–19; and Dennis J. Blasko, “PLA Amphibious Capabilities: Structured for Deterrence,” *China Brief* 10, no. 17 (August 19, 2010), 5.

¹¹⁵ Blasko, “PLA Amphibious Capabilities,” 6.

¹¹⁶ *Ibid.*, 7.

¹¹⁷ Cao Zhengrong, Sun Longhai, and Yang Ying, eds., *Informationized Army Operations* [信息化陆军作战] (Beijing: National Defense University Press [国防大学出版社], 2014), 12–14.

¹¹⁸ Andrew S. Erickson, *Chinese Anti-Ship Ballistic Missile Development: Drivers, Trajectories, and Strategic Implications* (Washington, DC: Jamestown Foundation, May 2013), 6–7.

¹¹⁹ Andrew S. Erickson and David D. Yang, “Using the Land to Control the Sea: Chinese Analysts Consider the Antiship Ballistic Missile,” *Naval War College Review* 62, no. 4 (Autumn 2009), 73.

¹²⁰ Chen Heying, “New Missiles for Defensive Purposes Only,” *Global Times* (Beijing), September 4, 2015, available at <www.globaltimes.cn/content/940518.shtml>.

¹²¹ *The Science of Campaigns* [战役学] (Beijing: National Defense University [国防大学出版社], 2006), 629–630. *The Science of Second Artillery Campaigns* similarly indicated the Second Artillery force, now the Rocket Force, would work with the navy to “execute focused naval blockades” and “achieve command of the seas.” *The Science of Second Artillery Campaigns* [第二炮兵战役学] (Beijing: PLA Press [中国人民解放军出版社], 2004), 140, 317–318.

¹²² *The Science of Campaigns* [战役学] (Beijing: National Defense University [国防大学出版社], 2006), 634–635.

¹²³ Erickson and Yang, “Using the Land to Control the Sea,” 60; *The Science of Campaigns*, 623, 629.

¹²⁴ For more on China’s nuclear-armed submarines, see Eric Heginbotham et al., *China’s Evolving Nuclear Deterrent: Major Drivers and Issues for the United States* (Santa Monica, CA: RAND, 2017), 107–110.

¹²⁵ For analysis on navy antiship cruise missiles, see Dennis M. Gormley, Andrew S. Erickson, and Jingdong Yuan, *A Low-Visibility Force Multiplier: Assessing China’s Cruise Missile Ambitions* (Washington, DC: NDU Press, 2014), 15–23.

¹²⁶ Anthony H. Cordesman, *The PLA Rocket Force: Evolving Beyond the Second Artillery Corps and Nuclear Dimension* (Washington, DC: Center for Strategic and International Studies, 2016), 5–6.

¹²⁷ This happened to the Imperial Japanese Navy aviation force when it took the lead aviation role in a land war in China. See Mark R. Peattie, *Sunburst: The Rise of Japanese Naval Air Power, 1909–1941* (Annapolis, MD: Naval Institute Press, 2001), 126.

¹²⁸ The air force has historically had limited mid-air refueling capabilities. See

Eric Heginbotham et al., *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power* (Santa Monica, CA: RAND, 2015), 33.

¹²⁹ In early 2017, Vice Admiral Yuan Yubai was appointed to lead the Southern Theater Command. See Nan Li, “The Southern Theater Command and China’s Maritime Strategy,” *China Brief* 17, no. 8 (June 9, 2017), 8. This appointment was important not only for what it signaled about the military’s view and orientation toward this region but also because he was the “first . . . non-army officer ever to command a military region or theater command.” See Dennis J. Blasko, “A ‘First’ for the People’s Liberation Army: A Navy Admiral Becomes a Joint, Regional, Commander,” *China Brief* 17, no. 5 (March 31, 2017), 7.

¹³⁰ The more formal name for the maritime militia was proposed in Conor M. Kennedy and Andrew S. Erickson, “China’s Third Sea Force, The People’s Armed Forces Maritime Militia: Tethered to the PLA,” *China Maritime Report*, no. 1 (March 2017), 1.

¹³¹ Wang Xiaobin, “Sansha City Promotes Military-Police-Community Joint Defense Mechanism to Construct a Three-Line Maritime Protection Structure” [三沙市推动军警民联防机制 构建三线海上维权格局], China News Service [中国新闻网], November 20, 2014, available at <www.chinanews.com/gn/2014/11-21/6803776.shtml>.

¹³² For more on the involvement and influence by the PLA, and specifically the navy, see McCaslin, *Role of the PLA in China’s Foreign Policy and Behavior Abroad*, 114–121, 132.

¹³³ For more on the PLA’s control of the maritime militia, see Kennedy and Erickson, “China’s Third Sea Force,” 2–10. Some maritime militia units, such as Tanmen’s, have been involved with Chinese naval activity in the South China Sea for decades. See “Spratlys Reef Construction Project” [南沙礁盘建设工程], *360doc.com* [个人图书馆], June 10, 2014, available at <www.360doc.com/content/14/0610/11/15447134_385347297.shtml>.

¹³⁴ Yi Xiucheng [易修呈], “Tanmen Militia: Riding Dark Blue Waves of a New Journey” [潭门民兵: 踏浪深蓝新征程], *China National Defense Daily* [中国国防报], December 24, 2015, available at <http://news.mod.gov.cn/militia/2015-12/24/content_4634045.htm>.

¹³⁵ In the PLA writ large, there has been a long-term reduction in overall numbers of maritime militia units, with some less advanced units (in equipment and capabilities) being phased out, even as units of unprecedented sophistication are introduced. See “On the Construction of the Militia Since the Reform and Opening-Up” [在创新发展中前行——改革开放以来民兵建设综述], Ministry

of National Defense [国防部网站], December 15, 2011, available at <www.gov.cn/gzdt/2011-12/15/content_2020745.htm>.

¹³⁶ Gao Chen [高辰], ed., “South China Sea Sanya Militia Handles Incursions by Foreign Fishing Boats (from) Mischief Reef” [南海三沙民兵处置侵入领海外籍渔船 部署美济礁], China News Service [中国新闻网], January 1, 2016, available at <www.chinanews.com/mil/2016/01-27/7735164.shtml>.

¹³⁷ Wu Weiman [吴维满], “China’s New Type of Service Militia Detachments Stage Battlefield to Adapt to Combat Requirements” [中国新型军兵种民兵分队上演兵场 适应作战需要], *PLA Daily* [解放军报], December 27, 2010, available at <<http://mil.sohu.com/20101227/n278525284.shtml>>. These navy militia detachments include ones specialized in oil-replenishment security and mobile ship repair.

¹³⁸ Official Chinese media have referred to there being three lines of defense to protect China’s disputed maritime and sovereignty claims. They state that the maritime militia is the first line, with maritime law enforcement being the second, and navy being the third. See Wang Xiaobin [王晓斌], “Sansha Promotes Military, Police, and Militia Joint Defense Mechanism, Constructs a Three Line Maritime Rights Protection Structure” [三沙市推动军警民联防机制 构建三线海上维权格局], China News Service [中国新闻网], November 20, 2014, available at <www.chinanews.com/gn/2014/11-21/6803776.shtml>. Even though such a defensive line system reduces the frontline role of the navy, interviews conducted by Christopher D. Yung indicate that the PLA “supports the idea that civilian law enforcement vessels should be on the ‘frontline’ while the military is ‘in the rear.’” See Christopher D. Yung, “The PLA Navy Lobby and Its Influence over China’s Maritime Sovereignty Policies,” in *PLA Influence on China’s National Security Policymaking*, 292.

¹³⁹ The coast guard is composed of four previously separate maritime law enforcement agencies: China Marine Surveillance (CMS), China Fisheries Law Enforcement, Border Defense Coast Guard, and Maritime Anti-Smuggling Police. The CMS fleet is by far the most militant and outward-looking element of the coast guard, so much so that authoritative Chinese publications openly refer to the CMS fleet as the country’s “second navy.” See Ryan D. Martinson, “China’s Second Navy,” *U.S. Naval Institute Proceedings* 141, no. 4 (April 2015), available at <www.usni.org/magazines/proceedings/2015-04-0/chinas-second-navy>.

¹⁴⁰ Yung, “The PLA Navy Lobby,” 292.

¹⁴¹ Franz-Stefan Gady, “Is China’s Coast Guard about to Field a Modified PLA Warship?” *The Diplomat*, June 3, 2016, available at <<http://thediplomat.com/2016/06/is-chinas-coast-guard-about-to-field-a-modified-pla-warship/>>.

¹⁴² Andrew S. Erickson, “Numbers Matter: China’s Three ‘Navies’ Each Have the World’s Most Ships,” *The National Interest*, February 26, 2018, available at <<http://nationalinterest.org/feature/numbers-matter-chinas-three-navies-each-have-the-worlds-most-24653>>.

¹⁴³ Andrew S. Erickson and Conor M. Kennedy, *China’s Daring Vanguard: Introducing Sanya City’s Maritime Militia* (Washington, DC: Center for International Maritime Security, 2015), available at <<http://cimsec.org/chinas-daring-vanguard-introducing-sanya-citys-maritime-militia/19753>>.

¹⁴⁴ “Pentagon Says Chinese Vessels Harassed U.S. Ship,” CNN, March 9, 2009, available at <www.cnn.com/2009/POLITICS/03/09/us.navy.china/index.html>.

¹⁴⁵ “Raw Data: Pentagon Statement on Chinese Incident with U.S. Navy,” Fox News, March 9, 2009, available at <www.foxnews.com/politics/2009/03/09/raw-data-pentagon-statement-chinese-incident-navy.html>.

¹⁴⁶ Ryan D. Martinson, “From Words to Actions: The Creation of the China Coast Guard,” paper prepared for China as a “Maritime Power” conference, CNA, Arlington, VA, July 28–29, 2015, 20.

¹⁴⁷ “Three-Sea Force” is a reference to the three maritime forces being employed by China: navy, maritime law enforcement agencies, and maritime militia.

¹⁴⁸ Erickson, “Numbers Matter.”

¹⁴⁹ One report, as well as video evidence, indicate that *Qiongdongfang* 11209 from Dongfang City intentionally rammed and sank a Vietnamese fishing vessel 7 miles outside of the cordon. See “The Latest on the Situation in the South China Sea: Vietnamese Media Says a Chinese Fishing Boat Crashed into and Sank a Vietnamese Fishing Boat Near (the) Haiyang (Shiyou) 981 (Oil Rig)” [南海局势最新消息: 越媒称中国渔船在海洋981附近撞沉越南渔船], *Guancha* [观察], May 27, 2014, available at <www.guancha.cn/Neighbors/2015_03_25_313539.shtml>. At least 10 vessels and 200 militia members from the Tanmen maritime militia were involved in the Chinese operation. See “Qionghai Wang Shumao: National Model Worker, the New Era of ‘Dinghai Shenzhen’” [琼海王书茂: 全国劳动模范, 新时期的“定海神针”], *Qionghai Shichuang* [琼海视窗], May 8, 2015, available at <www.qionghais.com/html/2015/jiaoyu/18391.html>. Sanya City’s maritime militia supplied 29 trawlers for the Chinese operation. See Erickson and Kennedy, “China’s Daring Vanguard.”

¹⁵⁰ “Japanese Media: Vietnamese Tried to Obstruct China’s Completion of Oil Drilling Preparations in the Paracels of the South China Sea” [日媒: 克服越南船只阻挠 中国在南海西沙群岛海域完成钻探石油准备], *Guancha* [观察], May 12, 2014, available at <www.guancha.cn/Neighbors/2014_05_12_228824.shtml>.

¹⁵¹ Conor M. Kennedy and Andrew S. Erickson, *Riding a New Wave of Professionalization and Militarization: Sansha City's Maritime Militia* (Washington, DC: Center for International Maritime Security, 2016), available at <<http://cimsec.org/riding-new-wave-professionalization-militarization-sansha-citys-maritime-militia/27689>>.

¹⁵² Zhang Yigen and He Peng [张毅根, 何鹏], "Protection of Drilling Platforms: Military Police and Civilians Surround and Annihilate in South China Sea Drill" [保护钻井平台: 军警民南海演练围歼], *China National Defense Daily—Military Affairs Special Edition* [中国国防报—军事特刊], August 23, 2014, available at <www.81.cn/jmywyl/2014-08/23/content_6107899.htm>.

¹⁵³ "Updated: China's Big Three Near Completion," Asia Maritime Transparency Initiative, June 29, 2017, available at <<https://amti.csis.org/chinas-big-three-near-completion/>>.

¹⁵⁴ Shou, *Science of Military Strategy*, 214.

¹⁵⁵ Gao "South China Sea Sanya Militia Handles Incursions."

¹⁵⁶ Liu Zhen, "China's Military Police Given Control of Coast Guard as Beijing Boosts Maritime Security," *South China Morning Post* (Hong Kong), March 21, 2018, available at <www.scmp.com/news/china/diplomacy-defence/article/2138257/chinas-military-police-given-control-coastguard-beijing>.

¹⁵⁷ Liu Weihua, Xu Qiang, and Zhang Ning [刘卫华, 徐强, 张宁], "Service Building, How Do Militia Specialized Detachments Correspond?" [军种主建, 民兵专业分队如何对接?] *China National Defense Daily* [中国国防报], January 27, 2016, available at <www.81.cn/mb/2016-01/27/content_7071697.htm>.