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**Reconceptualizing the PLA Navy
in Post – Mao China: Functions,
Warfare, Arms, and Organization**

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ABSTRACT

This paper examines the major changes regarding the Chinese Navy (PLAN, or the People's Liberation Army Navy) between the pre-1985 period and the post-1985 period. It shows that major conceptual changes have taken place to the PLAN's functions, warfare, arms, and organization since 1985. On functions, rather than the pre-1985 emphasis on protecting *continental territory* through resisting aggression by a singular adversary against China's coastlines, the new emphasis has been placed on defending *maritime territory* and *interests* against multiple potential adversaries away from China's shore. On warfare, instead of the pre-1985 stress on the defensive counter-amphibious landing operations, the new emphasis has been placed on capturing and sustaining sea control for the offensive amphibious landing operations. On naval arms, rather than the old stress on the defensive, short range, and more numerous light ships, new emphasis has been placed on developing fewer but better quality, longer range, and multi-role capital ships capable of offensive operations. On organization, unlike the old focus on the land-based command and control, manpower, and dispersion, the new stress has shifted to ship-based command and control and technology-based integration. In the meantime, major obstacles still exist for the new concepts to be fully translated into reality.

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RECONCEPTUALIZING THE PLA NAVY IN POST-MAO CHINA: FUNCTIONS, WARFARE, ARMS, AND ORGANIZATION¹

Introduction

In 1985, China's highest military policy body, the Central Military Commission (CMC), reached a major decision. This decision required the People's Liberation Army (PLA) to make a strategic transition from preparing for "early, total, and nuclear war" to "peacetime army building" with an eye towards preparing for local, limited wars. While the former implies an ideology-driven, imminent and major continental war where a massive Soviet invasion from the north would be dealt with, the latter refers to the limited armed conflicts that may arise from the issues of national sovereignty and territorial integrity, disputes over economic resources, and securing of major manufacturing platforms and trade-related transportation routes. To the extent many of such issues, disputes, platforms and routes are associated with China's coastal and maritime regions, the PLA Navy (PLAN) in China's defence posture has become more pronounced. Subsequently, a substantial body of PLA literature has emerged to redefine the functions, warfare, arms, and organization of the PLAN. This study examines the content of such literature. Specifically, it addresses the following research questions: what are the major new concepts regarding the PLAN's functions, warfare, arms, and organization? How are they different from the pre-1985 period? What are the major obstacles for the new concepts to be fully translated into reality?

This study is significant and necessary for empirical and policy reasons. Empirically, some analyses have provided extraordinary insight into the conceptual dynamics regarding the PLAN. One study, for instance, examines how the evolution of China's military doctrine has brought about changes to the PLAN's strategy, with a new emphasis on the extended strategic depth, on local war, on offence, and on "expertise" over "redness."² Such study, however, has some room for improvement. While discussing the PLAN's new strategy, it has addressed the essential and general principles,

¹ This paper was first presented at the CNA (Center for Naval Analyses) Conference on "The PLA Navy: Past, Present, and Future Prospects," Washington, DC, April 7, 2000."

²See Alexander Chieh-cheng Huang, "The Chinese Navy's Offshore Active Defense Strategy, Conceptualisation and Implications," *Naval War College Review*, Vol. XL VII, No. 3 (Summer 1994), pp. 7-32.

but has fallen short of fleshing out these principles with more specific concepts. It also has not addressed adequately the obstacles that may impede the new concepts from becoming full reality. To supplement the earlier work, this study intends to address the highly specific concepts regarding the PLAN's functions, warfare, arms, and organization, and discuss major obstacles for the new concepts to become full reality. Equally important, a detailed examination of the new concepts and the obstacles regarding the PLAN's functions, warfare, arms, and organization may help towards a better understanding of the scope, nature and limitations of China's naval modernization, which may have significant implications for Asian security.

The central argument of this study is that major conceptual changes to the PLAN's functions, warfare, arms, and organization have taken place since 1985. On functions, rather than the pre-1985 emphasis on protecting *continental territory* through resisting aggression by a singular adversary against China's coastline, the new emphasis has been placed on defending *maritime territory* and *interests* against multiple potential adversaries away from China's shores. On warfare, instead of the pre-1985 emphasis on defensive counter-amphibious landing operations, the new stress has been placed on capturing and sustaining sea control for offensive amphibious landing operations. On naval arms, rather than the old stress on the defensive, short range, and more numerous light ships, new emphasis has been placed on developing fewer but better quality, longer range, and multi-role capital ships capable of offensive operations. On organization, unlike the old focus on the land-based command and control, manpower, and dispersion, the new stress has shifted to ship-based command and control and technology-based integration. In the meantime, major obstacles still exist for the new concepts to be fully translated into reality.

Several caveats are in order. First, the emphasis of this study has been placed on the conceptual changes regarding China's naval development, but not on how these new concepts become reality. The benefit of this study, however, outweighs such a limitation for several reasons. In order to have a better assessment of whether and to what extent the new concepts translate into reality, for instance, it may be necessary to first gain a clear understanding of what these concepts are and how they are different from the old ones. Also, China's military planners themselves now believe that the PLA modernization should be concept-driven rather than situation-driven since a) there is no imminent, major

war; b) better conceptualisation leads to more optimal use of scarce resources for defence modernization; and c) conceptual innovation enhances the chances of winning wars by compensating for the relative inferiority in capabilities.³ Furthermore, some tentative evidence has shown that the PLA policy capacity to translate concepts into reality is improving with the decline of the old factional bickering between “redness” and “expertise”, which tended to cause policy paralysis.⁴ Whether and how much these concepts are likely to translate into reality, however, will be critically assessed in the conclusion.

Second, this study chooses 1985 as the dividing year largely because a major military policy shift had occurred due to the 1985 CMC decision, and it is logical to assume that such a shift had significant implications for the concepts regarding the PLAN. This does not mean that there was no discussion of local naval conflicts, offensive naval operations, larger ships, and integrated navy organization in China before 1985, or that the discussion of total war, defensive operations, light ships, and dispersed organization had disappeared after 1985. The study only suggests that the emphasis has shifted.

Finally, this study refers heavily to Chinese language materials, some of which are confined to circulation within the PLA. To the extent some of these materials are limited to a smaller group who are more involved in thinking and planning on the PLAN development, they should be more credible and less propagandistic if compared to the

³For the PLA’s emphasis on concepts to drive defence modernization, see Major General Zhang Yuqing, “Zhai gaojisu tiaojianxia jubu zhanzheng zhanyi lilun yantao hui kaimushi shang de jianghua” (“Speech at the Opening Ceremony of the Symposium on the Theory of Campaign in Local War under High-tech Conditions”); Lt. General Hu Changfa, “Zhai gaojisu tiaojianxia jubu zhanzheng zhanyi lilun yantao hui jiesu shi de jianghua” (“Speech at the Conclusion of the Symposium on the Theory of Campaign in Local War under High-tech Conditions”); Senior Colonel Chen Youyuan, “Junshi jisu geming yu zhanyi lilun de fazhan” (“Military Technological Revolution and the Development of the Campaign Theory”), all in the Scientific Research Department and the Campaign Research and Teaching Section of the National Defense University, eds., *Gaojisu tiaojianxia zhanyi lilun yanjiu* (Research on the Theory of Campaign under High-tech Conditions) (Beijing: National Defense University, 1997, for internal circulation only), pp. 2, 14-15, 21-22. See also Hu Guangzheng *et al.*, *Yingxiangdao ershiyi shiji de zhengming* (Contention Affecting the 21st Century) (Beijing: Liberation Army Press, 1989), p. 113.

⁴For policy successes in withdrawing from the societal politics of the Cultural Revolution, and in downsizing the PLA through reorganization and demobilizing a million men, see Nan Li, “Political-Military Changes in China, 1978-1989,” *Security Studies*, Vol. 4, No. 3 (Winter 1994/95), pp. 428-429; “Organizational Changes of the PLA, 1985-97,” *China Quarterly*, No. 158 (June 1999). When there are still no major studies on the more recent PLA policies to withdraw from the commercial activities and to demobilize another 500,000 men, no conclusive evidence has emerged to show that these policies have failed.

literature that caters to the general Chinese and foreign readers. The official bias of such literature, however, will be balanced by a critical assessment in the conclusion.

This study has five sections. The first four discuss the conceptual changes in functions, warfare, arms and organization respectively. The concluding section summarizes the findings and discusses the obstacles for the concepts to become full reality.

Functions

Pre-1985 Functions

The central premise that underlies the pre-1985 doctrine which requires the PLA to prepare for “early, total, and nuclear” war is a massive Soviet invasion from the north. This means that such a war, if it should ever occur, is continental in nature and primarily fought by land forces. But since China has a long coastline where some strategic assets are located, it constitutes the maritime flank (*binhai ceyi*) of China’s landmass, which is strategically important but also exposed and vulnerable. As a result, “for the purpose of accelerating their land offensive or averting negative strategic posture, the enemy in the initial or later phases of the war may launch an offensive on this maritime flank through amphibious landing operations to capture the coastal strategic targets, straits, and islands.” This serves the purpose of creating a posture of “advancing on both the land and the sea” (“*hailu binjin*”) and “two-pronged assault from both the south and the north” (“*nanbei jiaji*”).⁵

To deal with such an offensive from the sea, the central function of the PLAN, particularly during the late 1970s and the early 1980s, was to assist the land-based coastal defence to thwart enemy forces from driving straight inland (*changqu zhiru*) from the maritime direction through counter-amphibious landing operations. The PLAN was also responsible for preserving the maritime military forces by “defending the naval bases, harbours, and airfields to prevent the enemy from paralysing our defence systems at one

⁵See Liu Jixian *et al.*, *Haiyang zhanlue huanjing yu duiche yanjiu* (Research on the Maritime Strategic Environment and the Policy Response) (Beijing: Liberation Army Press, 1997, for internal circulation only), p. 355. Liu is a major general and deputy director of the Scientific Research Guidance Department at the Academy of Military Science. The book is alleged to have benefited from the input from the PLAN Command Department, the PLAN Command College, and the PLAN Military Science Research Institute.

stroke.” Moreover, since enemy offensive operations “are on a large scale and consume large amounts of materiel, and are far away from their homeland, they may rely on the sea transportation for manpower and equipment resupplies.” But since the merchant ships are relatively weak in defence, another function of the PLAN was to launch sabotage operations (“*poxi zhan*”) against enemy merchant fleets, and strike the enemy harbours, berth places (*bodi*), and ships, thus weakening the enemy’s land war effort.⁶ Generally speaking, the PLAN during this period functioned as a highly defensive and supportive force rather than an offence-oriented, highly independent force, and it served the central objective of assisting the defence of the coastal flank of a major continental war.

Post-1985 Changes

What separates the post-1985 PLA doctrine from the pre-1985 one is the new premise that a massive invasion of China’s landmass from the north is no longer likely to occur in the near and medium future. Therefore for the PLAN, rather than attempting to secure the coastal flank of that continental war, it is now required to secure a different and new space. Even though this space is closely connected to China’s landmass, it is also sufficiently separate and substantial to be on its own right. This new space refers to the so-called three million square kilometres of China’s maritime territory, which is allegedly “defined by the Law of the Sea Treaty, including the areas of Chinese sovereignty and sovereign authority and jurisdiction, and Chinese rights and interests on the high seas.”⁷ Within this new space, there are several unresolved issues that may involve the threat or the use of force, where the PLAN may play a central role. This means that the PLAN is now required to fulfil four new major functions.

The first is “achieving and maintaining the national unity and territorial integrity,” which relates primarily to the issues of Taiwan and the Nansha (Spratly) Islands in the South China Sea. On Taiwan, “increased cross-strait investment and trade and exchange of non-governmental personnel may enhance the chances of peaceful unification.” But “Taiwan authorities continue to evade official contact, and engage in ‘flexible and monetary diplomacy’ for international recognition of Taiwan as an independent state.” “Taiwan’s military has also been modernizing by strengthening its air and sea offensive

⁶*Ibid.*, pp. 355-356.

⁷*Ibid.*, p. 341.

capabilities; anti-submarine and anti-blockade capabilities; and antimissile and shore-based missile capabilities.” As for Nansha, “they are still occupied by the ‘four countries and five sides’ (*siguo wufang*)” and therefore is ‘split into four pieces and fragmented into five slices’ (*sifen wulie*).” Since both Taiwan and Nansha constitute the major islands component of China’s maritime territory, although neither is under China’s effective jurisdiction, they become the “top strategic priorities” (*shouyao zhanlue renwu*) for the PLAN.⁸

Besides territorial issues, another new PLAN function is “protecting the national maritime interests.” Since China is going through the transition from a dominantly agrarian, landlocked and highly self-sufficient economy to a more trade-based industrial economy, it has also become more dependent on the offshore energy, mineral and protein resources and the sea transportation of productive materials and finished goods for economic growth. Also, the new major export-manufacturing platforms are largely located in China’s coastal areas, which constitute China’s most prosperous regions and major sources of national revenue. On the other hand, these areas are exposed and vulnerable to foreign military strikes under the condition of modern military technology, which renders such strikes faster and more precise and therefore more lethal. It is therefore the responsibility of the PLAN to secure these maritime national economic interests, particularly through extending the defence depth of the maritime territory.⁹

Moreover, unlike the pre-1985 period when the PLAN had to deal with a major war of a global scale, the new conflicts are now assumed to be local and limited in scope and duration. Also, potential adversaries in such conflicts may not be as powerful as either of the two superpowers during the pre-1985 period. Both mean that it is now possible for the PLAN to achieve technological parity with and even conditional superiority over the potential adversaries. As a result, unlike the pre-1985 period when the PLAN had no choice but to prepare for fighting real war against overwhelming odds, a new PLAN function is naval conventional deterrence, i.e., “to deter real and potential adversaries from initiating war, and from realizing their objectives if war is initiated.” To fulfil this new function, “more research on the theory and practice of deterrence is

⁸*Ibid.*, pp. 341-342.

⁹*Ibid.*, p. 342.

necessary.” Also, to enhance the credibility of deterrence, “some levels of force and arms buildup are necessary.”¹⁰

Finally, unlike pre-1985 where an imminent total war had always been assumed, the post-1985 premise is more nuanced. First, when local and limited maritime conflicts are possible to occur, they may also be deterred or contained. Furthermore, some conflicts may be of a low-intensity nature and can be alleviated through non-lethal means. Others may be averted through diplomacy. Therefore, another new PLAN function is naval diplomacy. Two ways are specified in conducting naval diplomacy: static and dynamic. Static approach refers to “altering the deployment of the maritime military force, or developing such force and facilities to express our political and diplomatic intentions.” Dynamic approach, on the other hand, involves “the acts of the maritime military force to directly or indirectly express our diplomatic and policy intentions.” Such acts may “include fleet cruise and patrol (*xunyi*) and exercises, either to show strength or to demonstrate sovereign jurisdiction over the disputed areas.” Such acts also involve ship visits to foreign countries and naval participation in scientific exploration and survey. The former “serves to promote mutual understanding, and to propagate China’s independent foreign policy and the accomplishments of construction and reform.” The latter, on the other hand, “directly serves the future national scientific research and economic interests. To a certain degree, it also intends to show the resolve to protect our national interests as codified by the international law, in addition to our sincerity for the multilateral, cooperative exploration and survey.”¹¹

Warfare

Pre-1985 Warfighting

While the central function of the PLAN during this period was to secure the maritime flank of a major continental war, there had been at least one significant conceptual change on the issue of how to fight such a war. From the mid-1960s up to the mid-1970s while Maoism was rampant, the guiding concept was “luring the enemy in deep” (“*youdi shenru*”) through movement warfare (*yundong zhan*). This rendered the

¹⁰*Ibid.*, pp. 343-344.

¹¹*Ibid.*, pp. 344-345.

PLAN almost irrelevant since in such a scheme, coastal defence became virtually unnecessary. Such a concept, however, had been brought under critical scrutiny since the late 1970s and the early 1980s. For instance, one PLAN strategist argued that “‘luring the enemy in deep’ may mean ‘opening the door wide open’ (*dakai fengbian zhimen*) to the enemy, giving up fighting opportunities such as ‘striking when the enemy is half way in crossing’ (*bandu ji*) and ‘striking when the enemy fight with their back to the water’ (*beishui ji*), and handing the initiatives over to the enemy.”¹² To avert the negative effect of such a misconception, the PLA was now required to shift its warfighting emphasis from “luring enemy in deep” to preparing for counter-amphibious landing operations. Such operations aimed to “substantially wear down the enemy strength, to win time through delaying the enemy advances, and to provide cover for the eventual unfolding of our strategic initiatives.”¹³ Specifically, counter-amphibious landing operations may involve four phases: striking when the enemy are assembling, loading, and boarding; destroying or weakening the enemy landing forces when they are on voyage and crossing (*hangdu*); resisting the enemy from landing on shore; and fighting the enemy on shore.¹⁴ Since the first phase “may become a possibility in the future when our navy gains the long range strike capabilities,” and the third and fourth phases are largely the responsibilities of the land forces, discussion of the PLAN’s role had focused mainly on the second phase, and addressed the issues such as why destroying or weakening the enemy landing forces on voyage and crossing is necessary and feasible, and how to carry out such operations.

Destroying or weakening the enemy landing forces on voyage and crossing is allegedly necessary and feasible for several reasons. One is that such early strike makes it

¹²Nie Fengzhi, “Jiji fangyu, chijiu zuozhan: dui zhanzheng chuqi kang denglu zuozhan fangzhen wenti de tantao” (“Active Defense, Protracted Operations: an Exploratory Discussion of the Question regarding the Principle That Guides Counter-amphibious Landing Operations in the Early Phase of War”), in *Junshi xueshu* (Military Science), No. 3, 1980, collected in *Military Science* Editorial Department, ed., *Junshi xueshu lunwen ji, xiache* (A Collection of Academic Papers on Military Science, Book Two) (Beijing: Military Science Press, 1984, circulation at and above the regimental level within the PLA only), pp. 435-436. See also Zhang Feng, “Kang denglu zuozhan ying queli jianjue burang diren shanglu de zhidao sixiang” (“The Guiding Thought that the Enemy Must not Be Allowed to Land Should be Established for the Counter-Amphibious Landing Operations”), *Military Science*, No. 8, 1983, collected in *A Collection of Academic Papers*, p. 462.

¹³Nie Fengzhi, “Active Defense,” p. 436.

¹⁴Rao Shoukun, “Shilun kang denglu zhanyi zhong de luhaikong sanjun xietong” (“An Exploratory Comment on Coordinating the Ground Forces, Navy, and Air Force in Counter-Amphibious Landing Campaign”), *Military Science*, No. 6, 1983, collected in *A Collection of Academic Papers*, p. 456.

more difficult for the enemy offensive to swiftly capture China's coast. "This in turn helps to sustain China's war effort, since China's coast, particularly the coastal cities, is more developed and therefore more endowed with the supply of war materials than the other parts of China." Also, even though "the enemy forces are on the offensive and have certain sea control and air superiority, they are more exposed and are difficult to organize formation defence on voyage and crossing. Landing forces, being loaded on transport ships, are difficult to disperse to give full play to their firepower." Moreover, "the enemy voyage and crossing formation may be quite cumbersome so that its command and coordination are complex and therefore difficult, and the enemy landing forces may be vulnerable to our firepower since they fight with their back to the water." Furthermore, "numerous islands spread all over our coastal waters. Being geographically complex, they offer many natural bays, harbours, and berth places for establishing naval bases, and naval and air facilities in caves. They also facilitate the conditions for constructing the missile launching and artillery positions, and the forward sea and air observation posts." All these not only provide the advantageous conditions "for our concealment, mobility and coordination; for controlling the main harbours and the sea lanes; and for striking the enemy landing formation, they also compensate for the 'short legs' of the continent-based aviation and observation." Finally, compared to the enemy ships, "ours are lighter with smaller operational radius; more affected by weather conditions; poorer in observation, communications, electronic warfare, and air and self defence." On the other hand, "ours are good for concealment since they have smaller profile and can be meshed with the islands-based facilities. They are also agile and fast, more numerous in numbers and types, and therefore are good for multidirectional, multiple means, concentrated and sustained assaults. The weapons they carry such as the missiles and the torpedoes are very powerful. They are also within the range of our coastal firepower support and fire guidance."¹⁵

Regarding the issue of how to fight, several major steps were specified. First, since the enemy is on the offensive and has the technological superiority, prior to or in the

¹⁵Zhang Feng, "The Guiding Thought," pp. 463-464; Xiong Shuozhi, "Guanyu daoyu kang denglu zuozhan wenti de tantao" ("An Inquiry into the Question of the Islands-based Counter-Amphibious Landing Operations"), *Military Science*, No. 11, 1980, collected in *A Collection of Academic Papers*, p. 470; Zheng Guozhong, "Jin'an daji di haishang jidong biandui wenti zhi wojian" ("My Opinion on the Question of Striking the Enemy Mobile Formation on the Seas from Near Shore"), *Military Science*, No. 10, 1979, collected in *A Collection of Academic Papers*, p. 478.

initial enemy offensive, it is necessary to “hide” (“*chang*”), i.e., “to preserve our strength through concealment, dispersing ships, and transferring planes to the second line bases. This is then accompanied by organizing air defence, counter-blockade, and electronic interference operations to reduce the damage and to increase the difficulties of the enemy offensive.” The purpose of self-preservation, however, is to “strike” (“*da*”) back, “otherwise, self-preservation serves little purpose or becomes increasingly difficult.”¹⁶

Striking involves several major elements. First, when or where possible, it may be desirable to establish the “naval and air strike zone beyond the coastal waters of several dozen kilometres.” But since “the striking range of our arms is still limited,” the emphasis should be placed on “striking within the coastal waters of several dozen kilometres.” Such a close range has several benefits. “It makes it easier for our striking forces to achieve the element of surprise through concealing themselves in the islands-based and coastal facilities.” It also “gives full play to the firepower of the islands-based and coastal missile and artillery batteries.” Moreover, “it makes it possible to combine the effect of the obstacles with firepower.” Furthermore, it helps to “preserve our forces in the hardened islands-based and coastal positions and facilities.” Second, to strike effectively, it is necessary to “group the missile, torpedo and gun boats into small formations and take multiple routes and multi-directions, together with the torpedo bombers, to strike the enemy landing forces at the crucial moments such as ‘switching ships’ (“*huancheng*”), ‘removing obstacles’ (“*paizhang*”), and ‘organizing into waves of columns’ (“*bianbo*”) to drive to shore.” The central reason for choosing these moments is that the enemy is more vulnerable “since during these moments, their formation tends to be dense, their mobility restricted, and their communications and coordination hampered.” This also means that “sinking one enemy landing ship at this phase is equivalent to wiping out one enemy company or battalion later,” which should contribute greatly to the success of the overall counter-amphibious landing operations. Finally, it is necessary to combine the obstacles with firepower to block the enemy forces from driving to shore. This means ‘giving full play to the barriers, including fire barriers, engineered obstacles, fishing nets, and pre-installed or temporarily deployed mines, which are then enhanced by the ship or shore-

¹⁶Zhang Feng, “The Guiding Thought,” p. 467.

based artillery firepower to prevent the enemy from removing obstacles and from driving to shore.”¹⁷

Post-1985 Changes

In contrast to the pre-1985 emphasis on assisting the defensive, counter-amphibious landing operations, the post-1985 emphasis has shifted to capturing and sustaining sea control for the offensive amphibious landing operations. This shift took place largely because one new strategic priority of the PLAN is “achieving and maintaining the national unity and territorial integrity,” which, if necessary, requires the offensive amphibious landing operations to capture “the lost national maritime territories.” The central goal of the PLAN in such offensive operations is defined as “three alls” (“*sanquan*”): i.e., “to capture sea control with all force” (“*quanli duoqu*”); “to have sea control in all spatial spheres” (“*quanyu kongzhi*”); and “to maintain sea control throughout all times of the operations” (“*quanshi baochi*”).¹⁸

Achieving “three alls” is supposedly necessary for several major reasons. First, since amphibious landing operations mean “attacking powerful enemy positions with our back to the water” (“*beishui gongjian*”), whether sea control is captured and maintained is crucial to whether such operations can be successful. Also, since the stakes are high to the extent of “affecting the highest national interests,” once such operations are initiated, victory must be achieved. “Otherwise, we may end up in political and diplomatic vulnerability and suffer more military and economic losses.” Moreover, history shows that if sea control is lost over any of the major phases, great losses would be incurred and the whole operation would fail. This is particularly reflected in “the big losses of the Japanese military at the staging and boarding phase in attempting to capture Port Moresby, and at the voyage and crossing phase in the Battle of Midway during World War Two; and our heavy losses in trying to capture Jinmen at the landing assault (*tuji shanglu*) phase.”

¹⁷Chen Jingsan, “Kang denglu ruogan zhanshu shouduan de yanjiu” (“Research on Several Tactical Means in Countering Amphibious Landing”), *Military Science*, No. 12, 1981, collected in *A Collection of Academic Papers*, p. 442; Rao Shuokun, “An Exploratory Comment,” p. 457-458; Zhang Feng, “The Guiding Thought,” pp. 467-468.

¹⁸Vice Admiral Yang Yushu, “Shilun lianhe denglu zhanyi zhong duoqu he baochi zhihaiquan wenti” (“An Exploratory Comment on the Question of Capturing and Maintaining Sea Control in Joint Amphibious Landing Campaign”), in *Research on the Theory of Campaign*, pp. 186-187. Yang is the commander of the PLAN’s East Sea Fleet.

Finally, “to prevent the war from extending to shore, the potential enemy has shifted the emphasis of their counter-amphibious landing operations from the coast to offshore. They also possess some high-tech arms, and advanced surveillance and early warning sensors and command and communications systems, which render them the capabilities to ‘strike and attack throughout all distance and all time’ (*quancheng daji, quanshi gongji*). Our emphasis on ‘three alls’ can match such shift well.”¹⁹

Two major reasons were spelled out on why such operations are possible to succeed. First, in terms of the general posture, “the enemy is in a defensive, vulnerable position. This means that we not only have the initiative to launch concentrated and surprise strikes, but also can choose the timing to shift phases; to choose the primary operational direction and the space; and to control the pace of operations.” Furthermore, “even though the enemy is relatively powerful and has the capabilities to compete for sea control, their geography is narrow and limited. This means that their targets are relatively concentrated and therefore are easier to be hit and destroyed.” On the other hand, “we now not only possess the campaign and tactical missiles, but also have absolute superiority in air assets and submarines. As long as we apply the right ‘stratagem’ (*mou*), use the flexible ‘methods’ (*fa*), and employ the right proportion of force; stress close coordination to give full play to the comprehensive superiority; and contain the enemy’s strength and strike its weakness, victory is possible.”²⁰

For the PLAN, there are four specific tasks to accomplish in sea control operations. One is “destroying props” (*po yituo*), i.e., “to reduce the enemy’s sea control capabilities by denying them the base and logistics support; and to create fighting opportunities by forcing them to fight far away from their bases.” The second is “wrecking outposts” (*hui qianshao*), which aims to “deny the enemy the defensive hedges and the strong points for counterattack, to cause systematic paralysis of the enemy defence systems, thus laying the basis for us to capture sea control.” The third is “annihilating main forces” (*jian zhuli*), which serves to “reduce the enemy’s vital forces capable of counterattack.” The final one

¹⁹*Ibid.*, pp. 187-188.

²⁰*Ibid.*, p. 188.

is “controlling the sea area” (“*kong haiyu*”), which means “establishing the multilayered support and cover system for the amphibious landing operations.”²¹

To accomplish these tasks, several warfighting methods are specified. One is “block and isolate” (“*fengsuo zhuge*”). This means “using mines, submarines, and air assets to establish the multilayered blockade of enemy bases and harbours of anchorage; sea lanes; and water areas.” In implementation, there are two major types of situations that require different approaches. For the major and most threatening bases and harbours, the purpose of the blockade is “to annihilate the enemy’s vital forces.” This requires establishing a blocking line based on “the highly threatening and long-lasting mines that are easy to lay, difficult to sweep, which is assisted by the submarines.” The optimal timing “is either immediately before or when the firepower strikes of the key enemy targets begin.” This serves “to prevent the enemy ships from exiting bases and harbours, thus enhancing the striking effect.” For other bases, harbours, sea-lanes and water areas, however, the central purpose is “to restrict the enemy mobility, to keep the enemy out of the areas of our operations, thus enhancing the freedom and the security of our forces.” Specifically, “for bases, harbours and sea lanes that are frequently used but not threatening to our follow-up amphibious landing operations, mining blockade is sufficient to prevent the enemy from exiting to engage us.” “For water areas that are close to the enemy shore, which constitute the possible primary direction of the enemy counterattack, submarines should be used to establishing a blocking line based on the methods of ‘local cruise and hunting’ and ‘positional ambush,’ and preliminary strikes should be applied with the purpose of forcing the enemy to abandon the attempt of a counterattack.” “For enemy beyond the security range of our amphibious landing operations, surface ships should be used to keep them at a distance. For those that break through the mine and submarine blocking lines, mobile strikes should be applied to ensure the security of our landing forces.” Finally, air assets should be utilized to provide the firepower for the blocking and isolating operations.²²

²¹*Ibid.*

²²*Ibid.*, p. 189. See also Vice Admiral Wang Yongguo, “Haishang fengsuo zuozhan tantao” (“An Inquiry into the question of Sea Blocking Operations”); Vice Admiral Li Dingwen, “Lun haijun bingli zhai lianhe duhai jingong zhanyi zhong de diwei he zuoyong” (“On the Status and Role of the Naval Forces in Joint Sea-crossing Offensive Campaign”), both in *Research on Theory of Campaign*, pp. 193-199, 201. Wang is the commander of the PLAN’s South Sea Fleet, and Li is the commandant of the PLAN Command College.

The second method is “joint strike” (*“lianhe daji”*), which refers to “the use of the Second Artillery, air, naval, and special operations forces and arms for the comprehensive, continuous, and concentrated strikes against the enemy naval and air bases, logistics, command and communications, and reconnaissance and early warning systems.” “Destroying or damaging the ships within the harbours and the planes parked on the runways serves the purpose of disabling the enemy vital forces so that they cannot organize large-scale and multidirectional competition for sea control.” “Damaging other facilities and systems helps to reduce the enemy sustaining (*zhicheng li*) and supporting (*zhichi li*) capabilities for maintaining sea control.” Strikes need to be “sudden and fierce through successful concealment so that the effect of the initial battle can be maximized.” Regarding sequence, it is desirable to first “use the conventional missiles to strike air base runways; and command, early warning, and coastal defence systems. This serves the purpose of preventing the enemy planes from taking off, and paralysing the enemy command and control.” This is then “followed by aerial bombardment to reduce the enemy operational forces, assets and facilities.” If conditions are favourable, “ships and submarines can launch missile strikes against the targets close to shore to expand the effect.” Finally, such strikes would be assisted by “sabotage operations of the special operations forces in the enemy rear.” Generally speaking, “all steps must be closely coordinated and connected to give the enemy little breathing space.”²³

The third method is to “destroy and suppress the outlying islands” (*“huiya waidao”*). This means “employing coastal firepower, air assets and light surface ships to continuously strike at the enemy’s outlying islands, with the purpose of blocking and encircling these islands, destroying their defence systems, cutting off their connection with the primary areas of operations, and reducing their role as the ‘outposts’ and the ‘hedges’ for counter-amphibious landing operations.” When suppressing these islands is “a necessary condition to ensure the mobility and security of our amphibious landing forces, such operations also should not take up too many of our forces.” As a result, a more nuanced approach is desirable. “For the heavily fortified islands that are within the range of our coastal artillery, the primary approach should be firepower suppression, which is

²³Yang Yushu, “An Exploratory Comment,” pp. 189-190; Li Dingwen, “On the Status and Role,” pp. 201-202, 205.

then supplemented by the blockade and encirclement. The purpose is to land the enemy in a position of “finding it difficult to defend but also being unable to withdraw.” “For the relatively isolated, poorly defended islands that may have a big impact on the concealed mobility of our forces, air firepower should be applied to destroy facilities, assisted by surface ship firepower. Depending on circumstances, some can be captured for our use.” Finally, “for those that are well fortified and close to the enemy shore, they would be treated as targets for the joint strike, their defence systems to be paralysed and they be neutralized as platforms for the counter-amphibious landing operations.”²⁴

The fourth method is “search and destroy on the seas” (“*haishang xunjian*”), which means “comprehensive use of submarines, surface ships, and planes to search and destroy enemy mobile forces outside the blocked areas for the purpose of capturing and maintaining sea control.” Such a method may involve “flanking movement, deception, inducement and compulsion. The purpose is to shift the enemy or to lure them out of the harbours, thus creating fighting opportunities. It is also necessary to constitute substantial force and firepower superiority in each battle so that the enemy’s sea control forces can be annihilated.”²⁵

The final method is “comprehensive barrier removal” (“*zonghe pozhang*”), which refers to “using various means to remove the threat of mines so that the freedom of our amphibious landing operations and our mobility can be ensured.” Such method involves several elements. One is “to establish military, police, and civilian reconnaissance systems to detect the enemy mine-laying activities; and the areas, positions, and numbers of mines.” The second is “to destroy or damage the enemy mine-laying forces and maintenance bases through early joint strike before they become operational.” The third is “to strike the enemy mine-laying platforms either right before or during the enemy mine-laying operations.” Finally, it is imperative “to remove the threat of mines through employing both the standard mine-sweeping ships and planes and the civilian ships, and combining various means, including hunting, sweeping, sabotaging, and exploding.” To ensure that minesweeping does not occupy too many forces, it is necessary to set priorities. “More resources should be devoted to the primary area, where mines should be

²⁴Yang Yushu, “An Exploratory Comment,” p. 190.

²⁵*Ibid.*, pp. 190-191; Wang Yongguo, “An Inquiry,” pp. 197-198.

cleared through sweeping and exploding to open a secure passage for the amphibious landing forces.” For the secondary areas, a “moderate level of resources should be used and the emphasis should be placed on identifying and controlling mines to reduce their threat to our landing forces.”²⁶

Finally, several macro-guidance principles have been specified for conducting sea control operations. Since sea control cannot be achieved without information and air superiority, “it is necessary to treat information and electronic warfare operations as the precursor; Second Artillery and air strikes of the enemy coastal targets as the basis; and ‘search and destroy on the seas’ as the fundamental.” “The navy will play the central role in sea control operations.” It, however, needs to “be closely coordinated with the other services to achieve mutual complementarity.” “‘Block and isolate,’ for instance, creates the condition for the Second Artillery and air strikes to destroy enemy ships inside the harbours. ‘Search and destroy on the seas’ consolidates and expands the result of these strikes. The purpose is to capture sea control at one stroke and to hold it to ensure the success of the amphibious landing operations.” Moreover, since such operations are conducted with multiplicity of forces in the multidimensional space, and each service engages in relatively independent operations, “unified planning in the deployment, organization, command, and operations are absolutely necessary to realize concerted and cohesive action.” “Under the unified command of the joint campaign commander, the commander of the navy operational groupings is responsible for the detailed planning and organization. The commanders of the other services or functional branches involved then implement the plan accordingly. This should lead to the organic combination of centralized control with service-based initiatives.” Finally, it is necessary to “achieve victory through stratagem” (“*yimou qusheng*”). “The competition over sea control is not just the competition of forces but also of brains.” This requires “using stratagem to create fighting opportunities, to ‘give full play to our advantages and to avoid our shortcomings’ (*yangchang biduan*), and to ‘avoid the enemy’s strong points and strike its weak points’ (*biquang jiruo*).” Specifically, such a principle may mean two things. One is “to achieve the element of surprise for initial strikes to inflict heavy casualty before the enemy could disperse.” The other is “the flexible use of flanking movement, deception, inducement, and compulsion to mislead and shift the enemy. The purpose is to create

²⁶Yang Yushu, “An Exploratory Comment,” p. 191; Li Dingwen, “On the Status and Role,” p. 205.

fighting opportunities; to transform the enemy from invulnerable to vulnerable positions; and to gain the initiatives of the battlefield.”²⁷

Arms

Pre-1985 Arms and Arms Development

Since the PLAN during this period was a highly defensive force, its arms and arms development had several major characteristics that were consistent with the notion of defence. PLAN fleets, for instance, were dominated by a large number of gun, torpedo, and missile fast attack boats, which were then supplemented by some light destroyers and frigates, submarine chasers, and mine layers/sweepers; dozens of submarines that are suited to operate in the shallow coastal waters; and short range naval bombers and attack planes. Their more numerous number and smaller sizes served well the purpose of disrupting the enemy’s amphibious landing operations through dispersed and concealed, multi-route, close assaults. The short range of these ships and planes also determined that they were better for defensive, coastal operations. Moreover, these ships were equipped with primitive surveillance, communications, electronic warfare, air defence, and anti-submarine capabilities. This means that they were heavily dependent on the land-based command and capabilities for many of these functions. Finally, naval arms development tended to be highly secretive, a consequence of the dominant influence of the Maoist ideology of self-reliance. Also, constrained by the assumption of an imminent, total war, there was little concern for the balanced and long term planning on naval arms development.

Post-1985 Changes

Since 1985, rather than assuming an imminent total war, the new emphasis has shifted to peacetime army building with an eye toward naval deterrence, and if deterrence fails, to fight local, limited conflicts to secure China’s newly defined maritime territory. In such conflicts, as discussed earlier, the strategic emphasis of the PLAN has shifted to more offensive operations to capture and sustain sea control. As a result, several new concepts have been introduced. First, it is desirable that “the total tonnage of ships goes up, while the total number of ships come down.” This means that rather than the more

²⁷Yang Yushu, “An Exploratory Comment,” pp. 191-192; Wang Yongguo, “An Inquiry,” pp. 198-199.

numerous, smaller, and single-role ships for coastal defence purpose, it is now desirable to build fewer but better quality, multirole capital ships, and several reasons were provided. One is that in a local crisis, the enemy may not be as powerful as either of the two superpowers during the Cold War. Therefore, fewer but more powerful capital ships may enhance the chances of successful deterrence. If deterrence fails and crisis degenerates into conflict, fewer but better capital ships are sufficient to constitute local superiority to either contain the conflict or to fight and win it. Moreover, since such conflict may erupt further away from shore, only capital ships can reach the ‘hot spot’ more timely since they have longer range. Moreover, capital ships are more survivable than the smaller ones since they are more self-sustaining and less dependent on the shore-based protection.²⁸

If capital surface ships are the new priorities of naval arms development, the central issues to be addressed become: what defensive capabilities are to be developed to reduce the vulnerability of these ships and what offensive capabilities are necessary to enhance the strike power of these ships? On defence, it is recognized that advancement in modern military technology renders the offence more lethal as strikes become more precise, faster, and multidimensional. It is therefore necessary to reinforce several protective capabilities. One is the so-called “passive protective measures,” which refer to the reduction of the radar, infrared, acoustic and magnetic signatures through the incorporation of stealth features in ship design and construction; light armour reinforcement of crucial ship command and operational components; and enhancing protective mechanisms against nuclear, biological and chemical contamination and fire distinguishing devices.²⁹ The other is the so-called “active protective measures.” These refer to the establishment of layered interception against incoming targets and projectiles by deploying or enhancing electronic warfare, air defence and anti-submarine systems. “The air defence system should be capable of covering the high, medium, and low

²⁸Yu Chuanxin *et al.*, *Kexue jishu yu weilai wuqi zhuangbei* (Science and Technology and Future Arms and Equipment) (Beijing: National Defense University, 1997), p. 41; Liu Jian *et al.*, *Kexue jishu yu weilai jundui jianshe* (Science and Technology and Future Army Construction) (Beijing: National Defense University, 1997), p. 68.

²⁹Yu Chuanxin, *Science and Technology*, p.41; Wen Jishen *et al.*, *Guofang kexue jishu lun* (Theory on National Defense Science and Technology) (Changsha: National Defense Science and Technology University Press, 1997), pp. 186-187; Zhang Yukun *et al.*, *Shuimian jianting yu zhanzheng* (Surface Ships and War) (Beijing: National Defense Industry Press, 1997), pp. 248-251. Wen is professor and president of the National Defense Science and Technology University.

altitudes, and the short, medium, and long ranges, while the anti-submarine system should be capable of covering wider range and deeper depth, particularly in employing anti-submarine helicopters equipped with better sensors and more effective torpedoes.” Finally, capital ships themselves are less vulnerable than smaller ones since “quantitative analysis shows that on average, it takes a single anti-ship missile to cripple a 100-metre long ship, but it needs three to cripple a 150-metre long ship.”³⁰

On offensive capabilities, anti-ship missiles, particularly the middle range (*zhongcheng*, 60-200 km) and the long range (*yuancheng*, 500 km and above) missiles, are now regarded as the most powerful and therefore the primary assets for enhancement. “The middle range missiles can achieve the effect of pre-emption regarding far away enemy ships, and the long range missiles are primarily used to attack aircraft carrier battle groups.” These missiles “have generally provided the long range strike capability for a navy that has no ship-borne strike aircraft capability.” Finally, “these missiles are flexible and can be used in different ways (*yidan duoyong*), being capable of being carried on ships, submarines, and planes.” But in order for such missiles to be more effective, they need to be continuously improved in several key areas. These include: integrating better rocket technology to expand further their range and enhancing their speed from the subsonic level to the supersonic level of Mach 2-3; adopting new types of guidance systems, a variety of interception interference and evasion measures, and stealth feature; developing the active (*zhizhu shi*) target recognizing system; further improving the warhead and the fuse; developing better target sensors and the midcourse guidance system; and integrating the miniature technology to reduce the size of the carrying and launching cases so that more can be stored on board.³¹

Besides missiles, ship guns are still considered as the indispensable assets for both defence and offence since they have certain advantages that missiles lack. Smaller calibre guns, for instance, “are effective as the last resort system to defeat the low-altitude incoming targets such as anti-ship missiles.” Medium calibre guns, on the other hand, “still play the primary role in bombarding the enemy’s shore.” Finally, ship guns are “versatile, self-sustaining, good in interference resistance, and economical.” To improve

³⁰Yu Chuanxin, *Science and Technology*, p. 41; Liu Jian, *Science and Technology*, p. 68.

³¹Yu Chuanxin, *Science and Technology*, pp.44-45; Wen Jishen, *Theory on National Defense*, pp. 188-189.

further the effectiveness of the ship guns, technological upgrade is necessary. The general objectives of the technological upgrade include “enhancing firepower and fire rate; improving reaction speed, precision and reliability; and reducing manpower.” Specifically, for medium calibre guns, “single barrel systems need to be developed where the size is to be further reduced and full automation is necessary, particularly in munitions transmitting and loading systems.” For small calibre, “the emphasis should be placed on developing the compact multibarreled systems with enhanced reaction speed.” Finally, “research and development are necessary for new types of munitions.”³²

In addition to the weapon systems, improvement in three key areas is deemed essential to amplify the effectiveness of the weapon systems for both defence and offence. One is developing better onboard sensors such as surveillance radar and sonar to the extent that “they are capable of longer range, and of multispatial identification, discrimination and tracking of enemy targets.” The other is improving the combat system (*zhandou xitong*, referring to the tactical data system) that integrates the sensors with the weapon systems. The emphasis should be placed on a) improving input coordination (assessing the relative significance of the targets to set priorities), multimedia-based data display, and direction of the weapon systems to the targets; b) developing redundant and decentralized systems to enhance their invulnerability; and c) developing data link (*suju lian*) to integrate various naval platforms in the war zone and between the navy and the air force and the ground force C3I for joint operations.³³ Finally, new types of power plants need to be developed. Such development should focus on a) optimizing the ratio between power output and fuel efficiency to enhance the voyage range and sustainability; and b) reducing the infrared and noise signature to enhance concealment.³⁴

Besides capital surface ships, the submarine is the other priority item for development. “Submarines are more concealed if compared to other navy systems, even though the detection technologies have made remarkable advances ... Major naval powers develop aircraft carriers and amphibious landing ships. Smaller powers emphasize

³²Yu Chuanxin, *Science and Technology*, pp. 45-46.

³³*Ibid.*, pp. 41-42; Wen Xishen, *Theory on National Defense*, pp. 190-192.

³⁴Yu Chuanxin, *Science and Technology*, p. 42; Wen Xishen, *Theory on National Defense*, p. 184; Zhang Yukun, *Surface Ships*, pp. 261-262.

frigates and mine warfare ships. But all place emphasis on developing submarines.” Also, “the nuclear ballistic missile submarine (SSBN) force is the most survivable element among the nuclear strategic deterrence forces.” “Conventional submarines (SSK) may be slower and less sustainable than the nuclear-powered submarines (SSN), and less concealed since it has to surface regularly to charge batteries.” On the other hand, “it is less expensive and takes a shorter time to build.” SSK “is also smaller and less detectable, and more suitable for operations in shallow waters and island areas, particularly in amphibious operations than nuclear submarines.” Finally, the gap between the SSK and the SSN “in ship types, weapon systems, sensors, operational intelligence and automation is narrowing.” Therefore, SSK “will continue to be an important force in offshore operations.”³⁵

To enhance the effectiveness of submarines, several key areas are identified for further improvement. One is developing better propellants. For nuclear submarines, it is necessary to “develop a smaller size nuclear reactor that has higher output rate but lower overhaul rate.” For conventional submarines, the priority is to enhance concealment by introducing low noise propellant that does not require regular surfacing. Also, concealment may be further enhanced by a) increasing the diving depth through building submarines with more enduring materials; and b) applying wave-absorbing (*xibuo*) materials in submarine construction; and c) integrating more concealed communications technologies. Moreover, it is necessary “to adopt new technologies that enhance endurance (*xuhangli*); and new hydrodynamics and drag-reducing materials that enhance speed.” Furthermore, weapon systems need to be further improved so that submarines become truly multi-role platforms. This means that a) new systems would be integrated on board, including land attack, air defence and mine warfare systems in addition to the anti-submarine and anti-surface ship capabilities; and b) these systems would be upgraded to the extent they have longer range, become more precise, and each unit is endowed with sufficient payload; and c) better sensors would be developed and integrated for more effective target acquisition. Finally, it is necessary to a) develop better combat systems for more effective combat direction and coordination through integrating the weapon systems

³⁵Yu Chuanxin, *Science and Technology*, pp. 42-43; Shen Zhongchang *et al.*, “Xin junshi gemin yu haizhan ji haijun jianshe” (“New Revolution in Military Affairs, Naval Battles and Navy Construction”), *Zhongguo junshi kexue* (China’s Military Science), 1996, No. 1., p. 60; Cao Hong *et al.*, *Qianting yu zhanzheng* (Submarines and War) (Beijing: National Defense Industry Press, 1997), p. 310.

and the sensors; and b) develop new optic-electrical technologies to improve the navigational systems.³⁶

Naval aviation is another priority for improvement and development, since “sea control cannot be realized without air control.” For ship-borne capabilities, the current emphasis is on integrating the rotary wing aircraft such as helicopters with capital surface ships to strengthen the latter’s capabilities “in anti-submarine and anti-ship warfare, in search and rescue, in shipping supplies, and in missile guidance.” But in the longer run, both ship-borne and land-based planes, whether with fixed wings or rotary wings, need to be improved or developed, including “the air superiority fighters; attack planes; longer range navy bombers; and anti-submarine, early warning, electronic warfare, and air refuelling planes.” Improvement refers to modifying and upgrading the existing planes, which “would produce quick result with low investment.” But both upgrading of the current inventory and development of the new planes should place emphasis on integrating three clusters of new technologies. One includes the new engine and material technologies and the new aerodynamics that can “enhance lift, endurance, range, payload, concealment and reliability; and reduce fuel consumption and the cost of life-span cycle.” The other are “more advanced weapons systems capable of longer range and more precise strikes,” and still another is “advanced avionics suite that is flexible and stable to operate, and provides better target sensors, and better navigational and electronic warfare instruments.”³⁷

Finally, on issues related to the overall planning of naval arms development, such as research and development (R&D) institutions, priorities of R&D, and general ship design and construction, several new concepts have been advanced. For R&D institutions, it is now desirable to merge the highly diverse and specialized, more numerous departments into major categories such as surface, air, and underwater warfare, command and control, and maritime surveillance; and to reduce bureaucratic levels. Both would not only reduce waste by concentrating the scarce human and material resources on the more important areas, but are also conducive to horizontal flow of ideas, the basis for building

³⁶Yu Chuanxin, *Science and Technology*, p. 43; Wen Jishen, *Theory on National Defense*, pp. 184-185; Cao Hong, *Submarines*, pp. 305-310, 311-318.

³⁷Yu Chuanxin, *Science and Technology*, pp. 43-44; Wen Jishen, *Theory on National Defense*, pp. 192-194.

consensus on deciding major research programmes.³⁸ Moreover, the old practice of departmentalised secrecy and self-reliance needs to be replaced by the new concepts of synthesis and borrowing (*zonghe jiejian*) and joint R&D. “Statistics show that 95% of the knowledge content of an average new technology is based on the synthesis, exploitation, and use of existing knowledge while only 5% are original contributions.” But by insisting on secrecy, “all major projects have to start from scratch, even when mature technology exists elsewhere. This causes not only massive waste, but also delay, which expands the gap with the advanced countries.” As a result, it is now desirable to “borrow from predecessors and others.” “Through licensed production and sharing technical intelligence, the expense for early research can be saved and capabilities can be developed more swiftly. The risk involved is also low. This is indeed a low cost, high benefit approach.” Moreover, “since new technology is usually more complex, it may take a long time to research, the cost involved can be high, and the outcome can be uncertain.” On the other hand, “each country may have developed certain advantages and experience in certain areas.” Therefore, it is also “desirable to have joint R&D and construction. In this way, each partner can contribute its comparative advantage, share the risks involved, and avoid the cost of repetitive R&D. This is particularly necessary if the budget is limited.” Joint programmes can be initiated with foreign partners as well as with other services. For security reasons, “joint programmes can be applied to less sensitive systems such as the platforms, while the weapons and the electronics are installed separately.”³⁹

On setting priorities for R&D, two major issues are addressed: the relationship between the priority systems and the non-priority systems, and choosing systems for the future. On the first issue, it is recognized that setting priority is absolutely necessary to optimise the use of scarce resources. On the other hand, systems not assigned priority are more likely to be overlooked and rendered vulnerable, and this may have negative effects. “During World War Two, German neglect of its naval aviation makes it difficult for Germany to give full play to its strength in battleships and submarines.” Similarly, “due to Japan’s neglect of its anti-submarine capabilities, the US was able to inflict heavy losses

³⁸Zhang Zhaozhong, “Junshi geming jiqi dui weilai haijun fazhan de yingxiang” (“Revolution in Military Affairs and Its Impact on Future Navy Development”), *Zhanlue yu guanli* (Strategy and Management), 1996, No. 19, p. 56. Zhang, formerly of the PLAN Equipment Evaluation and Research Center, is professor and director of the Science and Technology Teaching and Research Section at the National Defense University.

³⁹*Ibid.*, p. 59.

on its merchant and combat fleets.” It is therefore necessary to carefully balance and coordinate the development of various systems so that comprehensive capabilities can be constituted and enhanced, but not reduced.⁴⁰ On the second issue, it is believed that before 2005-2010, whatever systems that are acquired would be stopgaps “based on the structure and styles of the mid-1980s,” but “advanced information and precision technologies would be integrated into these systems.” The challenge, however, is to decide what systems should be the priorities of R&D in the upcoming years, which would be deployed between 2005-2010 and 2020-2030. “If the type, performance, direction and emphasis of the chosen systems cannot adapt to future trends of technological development, they may become obsolete even at the R&D phase. The more effort and money spent on these systems, the heavier the loss would be.” On the other hand, “if future technological trends can be more accurately predicted and the right choices are made, it is possible to leap over some conventional development phases and directly join the rank of the advanced navies.” It is therefore necessary to analyse the technological trend in naval development more carefully, which provides the basis for more accurate forecast.⁴¹

On general ship design and construction, it is now necessary to apply the new concepts of standardization (*biaozhunhua*), modulation (*mokuaihua*), interchangeability (*tongyonghua*), and miniaturization (*xiaoxinghua*) to the development of the payload (*fuzhai*) such as weapons systems, sensors, and electronics suites. This is because standardized, modular construction and interchangeability provide a cost effective way to navalize the non-navy systems; and to upgrade the existing systems, and “such upgrade takes place more frequently due to rapid advances in related technologies.” Miniaturization, on the other hand, leads to substantial increase in weapons payload. Both are also conducive to systems integration and integrating new launching technologies, thus enhancing the comprehensive capabilities of the ships. Furthermore, to meet the challenges of the newly conceptualised payload, it is now necessary that the platform (*pingtai*) enhance its flexibility (*linghuoxing*) and adaptability (*shiyingxing*). This means that “platform must be designed and constructed in a way that it has sufficient spare space to accommodate both new technologies and frequent changes of the payload during its

⁴⁰Liu Jixian, *Research on the Maritime Strategic Environment*, p. 359.

⁴¹Zhang Zhaozhong, “Revolution in Military Affairs,” p. 55.

entire service time ... Under some circumstances, it is desirable to adopt the mercantile design.”⁴²

Organization

Pre-1985 Organization

The PLAN organization had four major characteristics during this period. First, the PLAN command and control were largely land-based. This is due to the fact that most PLAN ships were characterized by short range, poor air and underwater defence, and primitive sensors and communications technologies, and therefore had to rely on land for many of these functions. Moreover, the PLAN ships were required to operate in the areas close to shore since they functioned primarily as an assisting force in defending the coastal flank of a continental war. Second, due to its coast-dominant and low technology nature, the PLAN was also manpower-intensive if compared to the more advanced navies (if not to other PLA services), since many functions had to be fulfilled by non-technological means. The dominance of the Maoist ideology, which stresses human factor at the expense of technology, had also contributed to this problem. Third, the PLAN bureaucracy was excessively large. Like other PLA services, it got itself extensively involved in the societal politics of the Cultural Revolution. The need to create a parallel bureaucracy to run civilian administration contributed to the inflation of bureaucracy. The lack of technological advancement and the need for politics to take command also reduced the incentive to streamline bureaucracy in both horizontal and vertical terms. Finally, The PLAN was highly regionalized. Its three fleets, which operated in three separate strategic maritime regions (SMR, or *zhanlue haiqu*), had very little interaction with one another. This is due partly to the lack of long-range ships, and partly to the lack of incentive for long range, trans-regional seafaring since close coastal defence is primarily a local and dispersed matter.⁴³

⁴²*Ibid.* p. 57.

⁴³For pre-1985 organizational problems of the PLA, some of which were also shared by the PLAN, see Nan Li, “Organizational Changes,” pp. 318, 324-327, 334-335, 340-341.

Post-1985 Changes

Several new concepts regarding PLAN organization have been introduced during this period. First, with the deployment of newer capital ships that have longer range and better sensors and weapons systems, “command and control should be gradually transferred from land to ships.” This is desirable largely because it may cause delay and even loss of fighting opportunities if ships operating further away from shore have to rely on land-based command for instructions, particularly if the situational awareness of the land-based command is poorer than the ships. Furthermore, manpower needs to be further reduced, “particularly for personnel working on land and in offices (*jiguan*).” Obsolete arms should also be demobilized. Both would “save money to be invested in new technology.”⁴⁴ More deployment of new technology would reduce further the incentive for manpower expansion. With better technology, the PLAN would also become more capable to operate further away from shore, thus making a successful transition from coastal defence to defending maritime territory.

Moreover, it is necessary to reduce the intermediate levels of bureaucracy by “merging some fleet and base headquarters.” Fewer levels of bureaucracy may reduce the need for excessive vertical interaction and encourage horizontal interaction among operational elements such as the surface ships, planes, and submarines, thus enhancing the effectiveness of integrated operations within the PLAN. Smaller bureaucracy also means lower cost for integrating newer technology, which should reduce the need for future bureaucratic growth and enhance combat effectiveness. In the meantime, “new departments to coordinate joint operations between the navy and the other services need to be created and added.” This is because future maritime operations may require extensive inter-service cooperation to enhance the chances of success. “Participation of the air force, for instance, contributes to air superiority,” an indispensable condition for capturing sea control. “For island operations, participation of the ground forces and strategic rocket forces is essential.” Also, “conscripting merchant ships is necessary to accomplish tasks such as transportation, search and rescue, reconnaissance, patrol, and mine-sweeping.”⁴⁵

⁴⁴Shen Zhongchang, “New Revolution in Military Affairs,” p. 59.

⁴⁵*Ibid*; Liu Jixian, *Research on the Maritime Strategic Environment*, p. 353.

Finally, the old regionalized system of having three fleets requires modification, since it is too separated and fragmented. One option is to replace the SMR-based fleets with the centrally deployed battle groups. Such centralized deployment, however, has some drawbacks. “In peacetime, they would be kept constantly on the run from the north to the south and vice versa. In war time, they may lack the reserve strength and the staying power (*houjin*).” As a result, a better alternative is to deploy substantial number of forces in each SMR to deal with local war and contingencies. In the meantime, they can also be redeployed to other SMRs as reinforcement to constitute local and temporary superiority. This means that first of all, these forces and weapons systems are required to adapt to the climatic and hydrographical conditions of their own SMR, which vary greatly from one to the other. Second, they need to be intensively trained in transregional mobility and integrated operations.⁴⁶

Conclusion and Critique

This essay has shown that major conceptual changes have taken place in the PLAN’s functions, warfare, arms, and organization. In functions, instead of assisting in defending the coastal flank of a larger continental war, the PLAN is now required to secure a separate offshore maritime territory and the related territorial and economic interests. Rather than an auxiliary, supportive service, it is now supposed to function as a more independent and self-sustained service operating in a realm of its own right. Instead of a defensive and inward looking force, it is now reconceptualized as being more offensive and outward looking, as reflected in the new functions of naval deterrence and diplomacy. In warfare, the emphasis has clearly shifted from assisting the defensive, counter-amphibious landing operations to capturing and sustaining sea control for the offensive amphibious landing operations. In arms, rather than the more numerous, light, single-role attack boats for coastal defence, the new stress is on building fewer, longer range, more survivable, multiple-role capital ships for offensive operations. For arms development, the emphasis has also shifted from the Maoist dogma of departmentalised secrecy and self-reliance, and the absence of balanced and long-term planning, to integrated R&D, joint development through licensed and joint production, and balanced and long-term planning and forecast. On organization, instead of land-based command

⁴⁶Liu Jixian, *Research on the Maritime Strategic Environment*, pp. 352-353.

and control, manpower dominance, and dispersion, the new stress has been placed on ship-based command and control and technology-based integration.

Even though major new concepts have been introduced regarding the PLAN's functions, warfare, arms, and organization, significant obstacles still exist for the new concepts to become full reality. New functions such as naval deterrence through building up arms and adopting an offensive posture, for instance, are intended to secure the maritime territorial and economic interests without the actual use of force. This might work only if the countries in dispute with China over such interests are isolated, small, and weak. But some of these countries are highly developed and are capable of developing and deploying modern and powerful navies. In the meantime, small and weak countries can organize or join balancing alliances that may involve the more powerful Asian and non-Asian countries. An offensive posture may also reduce the credibility of naval diplomacy in the eyes of these countries. All these may contribute to an arms race in the nature of a security dilemma. In the long run, this may reduce rather than enhance Chinese maritime interests, thus negating the original purpose that the new functions such as naval deterrence and offence intended to serve.

For the new warfighting concepts such as capturing and sustaining sea control for the offensive amphibious landing operations, there are also major barriers for implementing them. While it may be true that offence may have certain advantages over defence in such operations, defence may have other advantages that may work against the offence. If the defensive side has more advanced surveillance and early warning sensors that can provide early detection and sufficient reaction time for thwarting the offence through interception and even pre-emption, for instance, the element of surprise may be lost for the offence and the chances of success for the first strike are reduced. Being unable to disable as many enemy ships and planes that can compete for sea control against the PLAN through the first strike, the chances of success for sea control operations are also reduced. Furthermore, while it is true that an island may be narrower and more concentrated and lacking in depth if compared to a continent, a larger island is less so than a smaller island and therefore can absorb more hits of the first strike without being fatally damaged. The more complex coastline and deeper depth of a larger island also allow ships and planes on the defensive side to disperse and hide, and for infrastructure and command and control to be deployed in redundant and hardened bunkers in order to

reduce the damage of the first strike. Being able to survive the first strike, the defensive side can launch more effective counterattacks in moments and places where the offensive side may be highly vulnerable.⁴⁷ The offensive side may also be more vulnerable than the defensive side since the former is in the open while the latter is better protected behind fortifications. Finally, sea control may become even more difficult to obtain if the defensive side fields a highly survivable navy that also possesses the more advanced and powerful missile and air defence, anti-surface ship, anti-submarine, and mine warfare capabilities. All these may reduce the chances of successful sea control operations on the part of the PLAN.

Regarding the new concepts on arms and arms development, there are also major limitations. Even though the PLAN has acquired some better quality capital surface ships, submarines, and planes in recent years, the majority are still small/medium and relatively obsolete assets with limited capabilities. Even among those newer and bigger assets, some have inadequate air defence, anti-submarine, early warning, and stealth capabilities, which may render them vulnerable in operations further away from shore. Moreover, large-scale acquisition of foreign systems and joint ventures may produce some unintended consequences. For instance, it may foster dependence on foreign systems and spare parts to the extent that China may become highly vulnerable if it is denied them due to deterioration of relations with the provider country. Such dependence may also make it difficult to timely replenish losses in a time-dependent local war, which may contribute to the loss of the war. Heavy reliance on a provider country for overhaul also raises the cost of maintaining these systems and reduces their service time. The possible incompatibility between the foreign systems and the indigenous systems and among systems from various foreign countries both within one unit and between units may mean higher costs for systems integration and software development. Furthermore, too much emphasis on balanced development without focusing on the more important programmes, may spread the already tight budget thin, thus expanding further the gap with the advanced navies. It is not an exaggeration to say that the PLAN has a limited budget even compared to the navies of similar size. On the other hand, it tries to accomplish many more tasks than other similar navies. These tasks include base defence, mobile operations on the high

⁴⁷It is ironic that the PLAN strategists proposed this point during the Cold War when the PLAN was on the defence. For the vulnerable moments and places of the offensive side that can be exploited in amphibious landing operations, see p. 9 of this article.

seas, amphibious landing operations, strategic nuclear deterrence, and numerous peacetime coastal services. Unless these tasks are substantially reduced so that limited money can be concentrated on key tasks, or there is a substantial budget increase, the PLAN may remain underdeveloped for some time. Finally, too much stress on long-term projection of technological trends may cause inattention and even neglect to the near term security demand. This may undermine readiness and even cause security crises. In the meantime, there may be too many uncertainties to forecast accurately the dominant technological trend twenty or so years from today.

As far as the new concepts on organization are concerned, obstacles also remain for their implementation. To shift command and control from land to ship may not yet be feasible since the PLAN ships are still inadequate in air defence and sensors and therefore can be highly vulnerable without land-based support. The PLAN may also lack experience in organizing and operating an integrated, self-sustained, and well-defended task force far away from shore under intense real war conditions. Moreover, even though the PLAN has made progress in reducing its non-combat manpower and downsizing its bureaucracy, there are certain structural limitations. The requirement to maintain substantial political officers and departments in the PLAN, for instance, may make it difficult to optimally streamline bureaucracy. When positions are limited by a tight personnel budget, the possible retaining of political officers at the expense of military and technical officers may negatively affect the professional and technological quality and development of the command structure. Finally, to require the current regional fleets to shoulder the dual task of regional defence and transregional mobility to support operations in other regions may cause uncertainty about priorities and therefore non-optimal allocation of attention, energy, and resources. A better alternative may be to separate the units that operate the small and medium ships from the PLAN and use them to establish a US Coast Guard-type service. This service would absorb the numerous peacetime chores related to coastal water security. This in turn would allow the PLAN to establish two major, highly mobile fleets that can concentrate on operations further away from shore.

Such a critical evaluation, however, does not suggest that the PLAN planners are unaware of these obstacles and limitations. It is actually plausible to assume that they are keenly aware of most of them and may be developing the analytical, financial, technological, and organizational initiatives and abilities to tackle them. It is therefore

highly desirable for the next study of the PLAN to examine how and to what extent the PLAN attempts to overcome these obstacles and limitations.

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