

CHINA'S MILITARY STRATEGY TOWARD THE U.S.

A View from Open Sources

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Introduction: Choosing the Framework is Everything

One key issue in understanding the Chinese military is what framework to use. The most common is to compare the PLA to the current US armed forces, and then to find the PLA to be pathetic. This framework leads many China specialists to be deeply upset at anyone who sees a threat from China now or in the future. Chinese authors also condemn the “China Threat Theory” as an elaborate and sinister deception. One Chinese author in a Beijing Review article even claims the theory was invented in Japan. There are many other frameworks, however, besides using current US armed forces as the standard to “prove” that the PLA is backward. Among them, one possible framework is the “transformation” framework.

Inside the Pentagon, the press has reported for many years there are many efforts to “transform” US armed forces” in the next two or three decades. Work began in the last few years on these “transformation” efforts in the US, so this framework of looking at the world is not yet well known to the many retired US military officers who constitute the majority of “work force” who write for open publication about the Chinese military. The consensus of this group has been that China is too backward and too poor and too focused on economic development to be considered as a possible candidate for military “transformation.” Indeed, this view would warn that Gordon Chang’s book *The Coming Collapse of China* provides a more realistic “China Threat” – the threat of collapse – than any Chinese effort at military transformation or military breakthrough capabilities. My understanding is that the research findings reported below from the China military press will be completely dismissed by those who hold this viewpoint as nothing more than wishful thinking, mere aspirations or even a kind of magical thinking by the Chinese.

This is a plausible interpretation of the findings to be reported. After all, the Chinese themselves stress the need for extreme secrecy in some of their future military developments. We on the outside must expect that nothing can be learned from Chinese open sources about the actual or “real” transformation in China. This places a very serious limit on what can be expected to be learned from the many conferences held in the U.S. about the Chinese military. If the Chinese are doing everything in the open, and very slowly, then these U.S. scholarly public conferences will be great achievements. If the Chinese are proceeding rapidly and in secret, especially with only a very, very small portion of their forces, then it is naive to expect public conferences to do anything other than mislead ourselves. Worse still, would be to hold public meetings with papers by American specialists who are not familiar with the U.S. DOD efforts to transform a small portion of our forces, as called for in the September 30, 2001 QDR.

Three Gaps in Our Knowledge of the Chinese Military. According to DOD

Public Law 106-113 was an act making consolidated appropriations for the fiscal year ending September 30, 2000, which stated that the “ Office of Net Assessment in the Office of the Secretary of Defense, jointly with the United States Pacific Command, shall submit, through the Under Secretary of Defense (Policy), a report to Congress which addresses the following issues:

- (1) A review of the operational planning and other preparations of the United States Department

of Defense, including but not limited to the United States Pacific Command, to implement the relevant sections of the Taiwan Relations Act since its enactment in 1979; and

(2) A review and evaluation of all gaps in relevant knowledge about the People 's Republic of China 's capabilities and intentions as they might affect the current and future military balance between Taiwan and the People 's Republic of China, including both classified United States intelligence information and Chinese open source writing. The report shall be submitted in classified form, with an unclassified summary. ”

Excerpt from the Net Assessment Report To Congress, December 2000

“ To judge whether the military balance adequately deters Beijing, we need to understand how the Chinese authorities assess the situation. Whether or not we or a hypothetical observer would think the consequences of their initiating a blockade, invasion, or strikes against Taiwan are promising or discouraging is not really sufficient for our purposes if China 's rulers see it differently.

Similarly, our ability to influence Taiwan 's security posture depends on understanding their assessments, including their assessments of our — and of China 's — likely behavior and capabilities.

Contingency outcomes

We cannot expect to predict confidently the outcome of a military conflict. The best approximation would be to consider systematically a range of plausible scenarios, relying on war gaming and experienced military analysts to judge the likely outcome given the forces, levels of training, and operational methods of all parties.

Where are the Gaps in Knowledge?

For each of the major topics of assessment just outlined, there are a number of more specific subjects on which better information would be very useful. In some cases, we are unlikely ever to obtain exactly the information we would want. If some knowledge gaps cannot be corrected, it is at least advantageous to be aware that they exist. In general, three kinds of gaps stand out .

First, we need to know more about how the authorities in the PRC and Taiwan view their military and political situation — in order to identify the most important conflict scenarios and hence the capabilities central to them; in order to assess whether the balance of forces adequately deters Chinese attack and reassures Taiwan; and in order to understand how both sides ' calculations of priority, risk, and military capability would shape the course and outcome of a conflict. We are unlikely to be able to replicate their precise views on this military balance, but we probably can learn much more about both sides ' ideas about statecraft, their approaches to the use of force, their perceived vulnerabilities, and their preferred operational methods, as well as about the political and military organizations that produce military assessments and plans.

Second, as might be predicted, we are less knowledgeable about things that are less visible or tangible — training, logistics, doctrine, command and control, special operations, mine warfare — than we are about airplanes and surface ships.

Third, although we can identify emerging methods of warfare that appear likely to be increasingly important in the future — particularly missiles and information warfare — we cannot confidently assess how each side 's capabilities will develop or the interaction of measures and countermeasures that these emerging military competitions will generate.”

The Potential of Open Source Contributions

Chinese open sources have the potential to contribute to the broad framework of the study of Chinese military capabilities, as I have argued in the books *Chinese Views of Future Warfare* and *China Debates the Future Security Environment*.

There is evidence that China's leadership cannot decide among several future paths that have been proposed by policy analysts and is therefore allocating resources among three distinct paths. Two of these paths represent reforms -- the Local War advocates since 1985, and the RMA advocates since 1993.

Advocates of these two reform schools seemed to be arrayed against a third group of conservative traditionalists who may be losing their share of the allocation of defense investments. The muted debate among these schools may affect defense resource allocations. There may be a “final” outcome of this debate, or none of the three schools may ever “defeat” the others, so China's future forces may be a blend of the recommendations of all three.

Investments Recommended by the RMA Advocates. The RMA visionaries (represented in numerous articles and five books in 1997) have been calling since at least 1993 for China to attempt to leapfrog the United States in the next two decades by investing mainly in the most exotic advanced military technology, and in new doctrines and new organizations.¹ Judging by the tone of the authors in this “RMA” school, they were not very successful prior to 1999. No senior leader endorsed their calls for Assassin's Mace weapons, or their other approaches to seeking breakthrough capabilities, until the late 1990s.

Jiang Zemin's Demand for Assassin's Mace Weapons August 1999

An authoritative article in the Liberation Army Daily by an official from the Policy

¹RMA advocates may be less known abroad than the other two schools. Since 1987, the US Foreign Broadcast Information Service (FBIS) has selected and translated hundreds of articles by PLA authors on the doctrine of Local War, almost entirely from Liberation Army Daily. Few articles and no books on the RMA were translated. The footnotes of many Western experts on the PLA suggest an almost total dependence on FBIS and its former partner JPRS, and since FBIS does not translate Chinese books or chapters in books, except by special request, RMA advocates are less known outside China..

Research Unit of the Central Committee revealed February 13, 2001 that **President Jiang Zemin had called for accelerated development of Assassin's Mace weapons in an undisclosed speech a year and a half earlier in August 1999.** [A full chronology of Chinese statements on Assassin's Mace weapons is below.] Prior to this time, the RMA visionaries members complained publicly in a manner that suggested they believed that they had little influence. For example, in an unusual signed article in the main military newspaper in February 1998, a complaint alleged that China's recent rates of innovation in doctrine, technology and organization has not been sufficient. Books by these RMA authors have warned that if China tries to match U.S. military technology in the short term (rather than by leapfrogging) the result after twenty years will be that China will only fall further behind.

Investments Recommended by the Local War Advocates Since 1985. A second reformist school of thought, identified by its use of the concept of Local War for defense near China's borders, has advocated evolutionary reforms. These evolutionary reformers are caught between the traditional conservatives who have the lion's share of the investment budget and the RMA advocates who appear to be championing unrealistic goals in the eyes of the Local War reformers.

Local War advocates, while satisfied at the *direction* of defense investment since 1985, seem discontent about the *level* of funding the central government is providing. They complain, for example, that all China's neighbors possess more advanced military technology. They complain of the too slow pace of Chinese programs to develop aerial refueling, at sea replenishment, airborne warning and control aircraft, a national command and control system, sufficient airborne and amphibious forces, an aircraft carrier program, and fighter aircraft. In the nuclear field, they express concern that U.S.-supplied theater missile defense will neutralize China's nuclear forces.

The Local War advocates, since Deng Xiaoping adopted their views in 1985, never advocated preparing for war with the doctrine of Assassin's Mace weapons, or the concept of The Inferior Defeats the Superior. Local War would not require taking on a super power.

Investments Recommended by the People's War Advocates. A third school of thought probably still commands the lion's share of Chinese defense investment. They still endorse the concept of People's War or Active Defense. They oppose troop cuts and the purchase of foreign weapons systems. The PLA was 7 million in the early 1980s, and only after major controversy was it reduced to 3 million today, with a recent promise (debated for the past five years) that another 500,000 may be cut. The People's War school also prefers to maintain a national mobilization capability for wartime defense industry (to include production of light arms and ammunition). The People's War school may not be completely antagonistic to the reforms of the Local War advocates in the direction of limited power projection, as long as the expense does not compromise the large standing army, a suitable defense mobilization base, and does not lead to dependence on foreign weapons or foreign technology.

China's defense reformers of both the RMA and Local War schools need to free up resources

by resolving the threats and challenges that the programs of People's War school are designed to handle. Otherwise, conservatives will continue to dominate the defense investment process.

For example, a China with a GNP equal to the United States and focused on the RMA or advanced power projection forces would be a challenge to the United States. In contrast, a China focused on defense investments "turned inward" would be very different. Instead of pursuing an RMA or power projection forces, China may decide to focus "inward" on:

- Layered strategic air defense,
- Enhanced underground defense complexes,
- Extensive ground forces around the national capital,
- Border defense forces, and
- A large People's Armed Police for internal stability and counter subversion,

Key Priorities for Chinese Defense Investment

The following may be high priorities for defense investment which must be sufficiently addressed before any additional resources may be allocated to the goals of the Local War and RMA advocates for power projection forces or technological efforts to leapfrog the United States.

Investments to Hedge Against Revival of Russian Nationalism. China has invested heavily since the 1960s in fixed defenses against a Soviet invasion. According to interviews, diplomatic agreements with Russia and three new Central Asian states have greatly reduced the need for defense investments in the "Three Norths," the nick name of the three military regions that border on Russia. Reductions in the 3 million ground forces are expected to come from these three military regions. China will probably:

- Ensure that the main axis of possible Russian armor attack through Northeastern China (Manchuria) continues to be garrisoned by the second largest concentration of ground forces and air forces in the entire nation, including depending on an extensive system of secret underground complexes 100 - 200 miles north of Beijing for ambushes.
- Continue to proceed slowly to reduce forces north of Beijing as long as Russia continues to agree to the current "strategic partnership" with China.

Investment in the Liberation of Taiwan. Until 1996, China did not appear to be developing the capacity to conquer Taiwan by force. Nor did China deploy more than symbolic land, sea or air forces within 300 miles of Taiwan. Indeed, the military command responsible for Taiwan (Fuzhou MR) since 1949 was dismantled around 1985. Similarly, there was little if any discussion of how to attack Taiwan in professional military journals. This began to change after the March 1996 missile incidents and deployment of two U.S. aircraft carrier battle groups to the area east of Taiwan. There is now some evidence of a debate about what military investments may be appropriate if force will have to be used to prevent Taiwan independence.

The People's War advocates would bring the least to this debate. The RMA advocates propose programs with long lead times so they would presumably have little to contribute to liberate Taiwan until after 2010. However, Local War advocates of power projection forces could well justify their programs by the need to dissuade or conquer an independent Taiwan. If so, the more Taiwan independence seems probable to China's leaders, the more investments will have to be made in infrastructure opposite Taiwan and forces appropriate to conquer an island of 20 million people 100 miles off the mainland coast which may be defended by the United States.

Conversely, the less the chances are that Taiwan will need to be liberated by force, the more resources will be available to the RMA advocates for long term technology programs. At present, it appears that China will:

- Continue to give relatively low priority to land, air, and naval forces deployed within 500 miles of Taiwan.
- Continue to debate what military investments may be necessary to liberate Taiwan in the decade ahead if reunification talks fail and trends toward independence continue.

Investment in Border Defenses Near India, Vietnam, and Central Asia. Imagine the frustrating dilemma that faces the Local War advocates who seek to build modest power projection forces to enhance China's defense of its borders. China has fought border wars with India in 1962 and Vietnam in 1979. But not lately. China's diplomats have since 1989 successfully improved diplomatic and trade ties with all of China's neighbors. Confidence building measures have been agreed to with India, Russia and three Central Asian nations. There is no longer a dramatic or compelling military threat to China's borders, at least in the short term. This may explain why China

- Continues to place a low priority on improving the quality and quantity of land, sea and air forces appropriate to border defense along China's *land* frontiers.

This aspect of the security environment may tend to free up Chinese defense resources for investments in maritime, air and even space forces. Indeed, according to interviews and military journals, China appears instead to

- Place a high priority on coastal and harbor defense of key ports serving the two largest cities of Beijing and Shanghai, historical avenues of approach of foreign invaders.

Investment in a National Layered Air Defense System. As noted above, after witnessing the performance of the U.S. Air Force in the Gulf War, senior Chinese authors have advocated construction of a nationwide air defense system. China may believe that its C3 nodes and national rail system are vulnerable to U.S. air strikes. (With little air or sea lift, China depends almost entirely on its railroad trunk lines to transport its ground forces.) Traditionally, the strategic intersection of

the sole east-west and north-south rail lines constitutes a decisive point to be defended from an invader. Japan seized it. Russian airborne forces supposedly planned to seize it. The elite 38th Group Army may be defending it today.

Investments in Counter Stealth, Counter Space and Counter Precision Strike. After the Gulf War, Chinese military authors and defense engineers began to advocate development of means to prevent stealth fighter-bomber attacks on China like those made on Baghdad. Similarly, Chinese experts drew attention to U.S. dependence on a sanctuary in space for military reconnaissance, targeting and communications assets. They have discussed several alternative systems for destruction or neutralization of U.S. military space assets. Still other authors have emphasized the need for China to develop its own long range precision strike systems as well as countermeasures to U.S. precision strikes such as false laser target generators (a system China marketed publicly at the 1997 United Arab Emirates defense exhibition.)

In general, capabilities for counter stealth, counter space and counter precision strike appear to be not only much more expensive than other investment priorities, but also to require a far more advanced national technology base than China possesses at present. Nevertheless, if sufficient resources can be freed up from other priorities, China's military authors have already emphasized the necessity of investing in these three areas.

The Defense Debate Since 1999: “Assassin’s Mace” and “Inferior Defeats Superior”

The RMA advocates have appeared in the open press to become more influential. There are far more references by higher ranking generals to the need to develop Assassin’s Mace weapons, as will be detailed below. This was once a rare plea by a few RMA advocates.

Indeed, it is now possible to see that a key premises relevant to breakthrough capabilities, especially as revealed in publications since 1999, is the importance of Assassin’s Mace weapons as a core part of the Chinese-style RMA. This merits a review of what open sources have been saying about this concept.

The second premise is the need for China to develop a tailored military plan to liberate Taiwan, even assuming that the US may intervene. This plan is often alluded to as part of a doctrine now being developed entitled “The Inferior Defeats the Superior.” Theoretical studies of “campaigns” claim China has pioneered for thousands of years in this doctrine, but needs in the future to improve it, linking Assassin’s Mace Weapons together with the doctrines categorized under the title “The Inferior Defeats the Superior.”

Both these two premises include a sub set of additional political-military assumptions the Chinese hold.

The focus of Chinese threat assessment appears to have shifted in the past decade from dealing with border conflicts involving only nations weaker than China to a new assessment that the most likely

conflict will be with the US, involving Taiwan. This scenario, now common in Chinese writings, was entirely absent in the 1980s and grew especially after 1996. There appears to have been no new for Assassin's Mace Weapons or the doctrine of "The Inferior Defeats the Superior" when the potential opponent was a weaker neighbor.

Because of this premise that China's main future opponent will be more powerful than China, Chinese publications began in the mid 1990s to focus on how to develop ideas by which "The Inferior Can Defeat the Superior." This subject has been an area for debate about the best strategy by which China can attain victory over such opponents. Much of the writing has focused on the specific weaknesses of both Taiwan and the United States in a cross strait scenario. These weaknesses must be targeted by the Assassin's Mace Weapons to be developed, or to be purchased from Russia.

Several premises support the new strategy to develop Assassin's Mace weapons and to conduct future conflicts employing the doctrine of "The Inferior Defeats the Superior." Most importantly, there is a political-military premise behind this strategy. Its success depends on correct and detailed assessments of the opponent's weakest points and the best means to surprise and to shock him into paralysis the powerful opponent. The selection and design of Assassin's Mace weapons also depend on correct intelligence assessments of the opponent's most vital vulnerabilities, his "acupuncture points." Only a small fraction of modern weaponry has qualified in the eyes of Chinese writers as Assassin's Mace Weapons. In fact, sensors and connectors [as well as shooters] may also qualify. It appears to depend on the effect to be achieved on the more powerful adversary, not on any abstract measure of effectiveness.

In order to be successful at the doctrine of "The Inferior Defeats the Superior," China assumes it can initially lull the opponent into complacency, or deceive him to take steps that will help China win. The premises here are quite elaborate. How the "Inferior Defeats the Superior" is the subject of many open source books and articles.

A necessary but not sufficient part the concept is the future development of Assassin's Mace weapons. Superior intelligence information about the opponent is also vital, particularly as needed to anticipate the opponents actions, to be able to lull and then deceive him, to disrupt his coalition, to build stealthily a counter coalition, and to strike at just the right moment under a concept known as "shi" or "propensity."

These concepts of how "The Inferior Defeats the Superior" are claimed to be unique to China, and to have developed by Chinese strategists over thousands of years. For this reason, PLA authors employ extensive examples from Chinese ancient military campaigns which they claim are the heart of Mao's military doctrines. Westerners are presumed to be ignorant of these Chinese "lessons learned" about Assassin's Mace employment concepts and the doctrines of "The Inferior Can Defeat the

Superior."

Indeed, there are indications from this author's interviews in China that some of the doctrines are considered to be highly classified in China, especially as they are taught in classified courses in military operations in the senior PLA schools. Available open sources thus only hint at the full set of concepts of the Inferior Defeats the Superior. Nor do open sources necessarily provide a full set of Assassin's Mace Weapons, either. After all, the need to surprise and even paralyze the opponent is an explicit goal of both these weapons and this doctrine. It is hardly to be expected that they would be fully described for the opponent to read and study in advance.

Leap Style Weapons - GAD Director Cao Gangchuan in 2001

In May 2001, the Chinese press reported a new phrase used in a speech by the director of the General Armament Department General Cao Gangchuan. He called for "Leap Style Weapons" using a new acquisition process he called the Four Mechanisms, which were vaguely defined as a new process of monitoring, evaluation and special incentives.² These concepts were familiar. As early as 1988, AMS authors had called for a Leap Style.

Many observers believe that Chinese concern with the RMA and future warfare dates only from the Gulf War in 1991. However, one of China's most important early studies of future warfare was published 13 years ago in 1988 by a team under the leadership of General Mi Zhenyu, a Vice President of the Academy of Military Science, entitled *China's National Defense Development Concepts*.³ He suggested:

- "China is in long term competition with other major powers."
- "The gap between the weapons we now possess compared to those of advanced countries is twenty to twenty-five years."
- "If our objective is merely to shrink this discrepancy to ten to fifteen years, then from the point of view of effectiveness, it would seem to be higher than others. But from the point of view of competitive effectiveness, it would only be an impractical increase in quality, perhaps even a decrease."

Chronology of Proposals to Develop Assassin's Mace Weapons

²Liberation Army Daily, May 2001.

³Mi Zhenyu, *Zhongguo guofang fazhan gouxiang* (China's National Defense Development Concepts) Beijing: PLA press, 1988) this quotation is translated in CVFW.

The first detailed public advocacy of China's need to develop Assassin's Mace weapons came in two articles in *China Military Science* in late 1995 and early 1996 on "Twenty-first Century Naval Warfare" by Captain Shen Zhongchang and his coauthors from the Chinese Navy Research Institute. They suggest that "certain cutting-edge technologies are likely to first be applied to naval warfare."⁴ They point out how China could adopt several asymmetrical approaches to defeating a larger and more powerful navy. These approaches include disabling the more powerful navy by attacking its space-based communications and surveillance systems and even attacking naval units from space. Shen writes, "The mastery of outer space will be a prerequisite for naval victory with outer space becoming the new commanding heights for naval combat." Ships at sea will carry out anti reconnaissance strikes against space satellites and other space systems. ***"The side with electromagnetic combat superiority will make full use of that Assassin's Mace weapon to win naval victory."*** They believe that direct attacks on naval battlefields will become possible from outer space because "naval battle space is going to expand unprecedentedly."

A second asymmetrical approach to defeating a more powerful navy is to **use shore-based missiles and aircraft instead of developing a large (symmetrical) naval fleet**. They write, "as land-based weapons will be sharply improved in reaction capacity, strike precision, and range, it will be possible to strike formations at sea, even individual warships."

A third asymmetrical approach will be for **China to pioneer in "Assassin's Mace weapons" such as tactical laser weapons which "will be used first in anti ship missile defense systems" and stealth technology for both naval ships and cruise missiles**. "Lightning attacks and powerful first strikes will be more widely used."

A fourth asymmetrical approach will be for China to **attack the naval logistics of the superior navy**. Shen explains that the vulnerability of an American-style navy will grow in the future because future naval warfare will expend large amounts of human and material resources so that "logistics survival will face a greater challenge." Shen predicts that "future maritime supply lines and logistic security bases will find it hard to survive." He states that the Gulf War's daily ammunition expenditure was 4.6 times that of the Vietnam War and twenty times that of the Korean War with an oil consumption rate of about nineteen million gallons a day, suggesting the vulnerability of American naval operations because of relatively unprotected supply lines.

A fifth asymmetrical approach will be for China to **attack American naval command and information systems**.

⁴ Shen Zhongchang, Zhang Haiying and Zhou Xinsheng, "21shiji haizhan chutan (21st Century Naval Warfare)," *Zhongguo junshi kexue* (China Military Science), 1995, No. 1, pp. 28-32, translated in CVFW.

In an article entitled “The Military Revolution in Naval Warfare,” Captain Shen Zhongchang and his co-authors list new technologies that will contribute to the defeat of the United States.⁵ They explain that protection of C3I is now so important that “the US Defense Department has invested \$1 billion in establishing a network to safeguard its information system.” However, the American system may not be so safe from attack. Captain Shen writes that there are many ways to destroy information systems such as:

- attacking radar and radio stations with smart weapons
- jamming enemy communication facilities with electronic warfare
- attacking communication centers, facilities and command ships
- destroying electronic systems with electromagnetic pulse weapons
- destroying computer software with computer viruses.
- developing directed energy weapons and electromagnetic pulse weapons.

In the summer 1996 issue of *China Military Science*, General Pan Junfeng was the first to propose that the United States could be defeated with Assassin’s Mace weapons. He explains three ways that in future wars American computers can be very vulnerable. “We can make the enemy’s command centers not work by changing their data system. We can cause the enemy’s headquarters to make incorrect judgments by sending disinformation. We can dominate the enemy’s banking system and even its entire social order.” General Pan puts forward five suggestions for ways in which China can strengthen its development and implementation of the RMA:

- Increase research on military doctrine
- Establish operational theory
- Train high-quality people in advanced degrees
- Establish combat laboratories and learn from the six laboratories the United States has created
- Create *sha shou jian*, or “Assassin’s Mace weapons.”⁶

The March 1997 issue of *China Military Science* featured a proposal by General Liu Jingsong, who

⁵Shen Zhongchang, Zhang Haiying and Zhou Xinsheng, “Xin junshi geming yu haizhan jianshi (The Military Revolution in Naval Warfare),” *Zhongguo junshi kexue* (China Military Science), 1996, No. 1, pp. 57-60, translated in CVFW.

⁶General Pan Junfeng, “Dui xin junshi de jidian kanfa” (Several views on new military affairs), *Zhongguo junshi kexue* (China Military Science) 35, no. 2 (Summer 1996): 111. General Pan is Director of the Foreign Military Studies Department of AMS in Beijing.

wrote that “in weapons and equipment, there is a great tradition that The Inferior Defeats the Superior. We need some **Assassin’s Mace weapons** that the enemy will fear .”

In the same March 1997 issue, General Tao Beijun, the Commander of the Guangzhou Military Region also called for Assassin’s Mace weapons will cause the enemy fear.”,

The same March 1997 issue also featured a proposal from General Liao Xilong, Commander of the Chengdu Military Region who advocated that China in a future war with a superior enemy must avoid his “spearhead” and “employ our own Assassin’s Mace weapons” that are based on the nature of the enemy in order to deny his combat supremacy.

The same March 1997 issue contained a proposal by Admiral Shi Yunshen, PLA Navy Commander, that we need to develop Assassin’s Mace weapons in the context of coastal combat and electronic warfare.

In May 1997, General Liu Jingsong made the first comprehensive proposal to link the need for pre-emptive employment of Assassin’s Mace weapons as a part of the emerging doctrine of The Inferior Defeats the Superior. He was one of China’s rapidly rising generals who had commanded the Shenyang and Lanzhou Military Regions and then was appointed President of the Academy of Military Science. In an article that advocated the use of missiles to attack aircraft carriers, General Liu laid out his approach to exploiting American military weaknesses to gain victory. The article appeared in the restricted *Journal of the National Defense University*. It is worth quoting at length.

“Particularly when weaponry is inferior, seizing the benefits of **striking first**, is of especially important significance to striving for battle and even warfare initiative. In this way, not only can you upset the enemy’s war plan and operational preparations, reduce and check the enemy’s high technology weapons superiority, and strengthen the combat effectiveness of our own army’s “*Assassin’s Mace weapon*”, but also advantageously give full play to the existing power of our weaponry, if the attack was good, then it could even limit or postpone the effect and result of the war.

Our so called “no first strike” is a political and strategic concept, in battle and combat it is another matter. Before the enemy mounts a large scale invasion, there must be a process of escalating political, economic, diplomatic and military actions, and there also must be a process of assembling and deploying armed forces, and mutual warning and friction. These warfare actions actually already strategically constitute a “first strike.” When these processes enter an inertia sequence, and when war can not be avoided, we must make clear and decisive choices.

There are many lessons from Iraq’s defeat in the Gulf War, among them, a very important one is that before the war, through watching and waiting, passive defense, and attempting nothing and accomplishing nothing, you lose the benefits of **striking first**.”

Information Warfare As An Assassin’s Mace Weapon

The April 1997 issue of the journal *Military Operational Art* carried a proposal by Admiral Yang

Yushu of the East Sea Fleet of the PLA Navy to develop a kind of “information warfare system” which must have Assassin’s Mace weapons which could defeat enemy.

“Soft” Kills by Assassin’s Mace Weapons

In their 1997 book, *Sun Zi and High Tech Warfare*, Colonels Yue Shuiyu and Liang Jingming wrote that the future will require development of *Assassin’s Mace weapon* with special characteristics. They advocated dividing warfare into ‘soft’ and ‘hard’ missions, with the emphasis on “soft” attack as the mission for which Assassin’s Mace weapons would be most needed.

In the January 1999 issue of *China Military Science*, General Fu Quanyou, Chief of the PLA General Staff wrote: “In order for The Inferior to Defeat the Superior, first, we need to rely on high quality people; second, we need to rely on the smart combat doctrines; third, we need to rely on the high quality Assassin’s Mace weapons.”

In August 1999, China’s President Jiang Zemin called for accelerated development of Assassin’s Mace weapons in a speech or report that was not disclosed until a February 13, 2001 article in *Liberation Army Daily* revealed it. The author was unusually authoritative – Wang Chongbiao, identified in the article as an official of the Central Committee Policy Research Unit. He would not normally write articles for a military newspaper.

1 of 3 Future Investment Categories – Assassin’s Mace Weapons

In the *China Military Science* issue for February 2000, General Wang Ke, a member of the Central Military Commission and Director of the PLA Logistics Department wrote about three areas in which the PLA should invest: defense infrastructure, education and training, and Assassin’s Mace weapons.

Nuclear weapons As Assassin’s Mace Weapons

The January 2000 issue of *Military Digest* featured an article by He Ling on deterrence which included the comment that “limited and effective nuclear strikes can be *Assassin’s Mace weapons* to contain the enemy.”

Countering US Air Attacks With Assassin’s Mace Weapons

Military Digest in January 2000 featured an article on how to defeat the US if it intervenes to defend Taiwan. If America becomes involved in a future possible conflict in the Taiwan Strait, Chinese author Ding Jun writes, then “(We) must try for a protracted war by strengthening our counter-air strike battlefield capabilities, using ‘*Assassin’s Mace weapons*’ as the major method.” Ding seems to link this approach to tying down the US. He adds that “if necessary, we should get aid from neighboring states by “internationalizing” the war with hegemony with a protracted war, and force them into the trap of a muddy war from which they cannot pull out.”

EMP Bombs Targeted on Command Centers as Assassin’s Mace Weapons

The March 2000 issue of *Military Digest* featured an article by Xian Fengli, Lu Young, and Ming Xiang who wrote that possessing EMP warheads will make it much easier to cross the nuclear threshold. Relatively inferior states will regard EMP as their own ‘ nuclear weapon’ as a defense weapon. In the future wars, EMP bombs will become a most important weapon when both sides struggle to control information and they are targeted on command centers.

In the April 2000 issue of *China Military Science*, General Yu Yongbo, a member of the CMC and the PLA’s chief commissar, supported Assassin’s Mace weapons, but cautioned that current weapons must inspire confidence as well. Victory, he wrote, requires not only Assassin’s Mace weapons, but also establishing confidence to win with current weapons and equipment.”

Surface to Air Missiles as Assassin’s Mace Weapons

A list of five Chinese surface to air missiles were called Assassin’s Mace weapons in the May 2000 issue of *Military Digest* by Tian Ji. He wrote that Assassin’s Maces can be air defense missiles, and advocated that China speed up new weapons development to increase the lethality of air defense missiles. Specifically, these:

QW-2 missile, shoulder fired

LY-60, medium range

FM-80 short range

S-300 “ which are better than America’s Patriot” in response time and accuracy”

S-300 PMU2, which will exceed America’s PAC-3.

Information Warfare Requires Assassin’s Mace Weapons

Colonel He Jiasheng, a senior editor from *Liberation Army Daily* wrote about leap-forward style “Assassin’s Mace weapons” as a part of Information Warfare in the February 2001 issue of *China Military Science*. He advocated at “focus on information warfare equipment and our **own Assassin’s Mace weapons.**”

Special Forces and Network Assassin’s Mace Weapons

The April 2, 2001 issue of *Liaowang* by the New China News Agency featured a PLA author’s proposal that “We can’t just use a keyboard and mouse in information warfare. We need special operations forces and direct destruction of the enemy network at headquarters, including research on Assassin’s Mace weapons to attack the enemy’s network.”

In an article in the April 4, 2001 issue of *Liberation Army Daily*, Sheng Changxiang of the Academy of Engineering wrote that one Assassin’s Mace weapon that can win contemporary wars is equipment for the “protection of information,” the mission area of information security.

Cruise Missiles as Assassin's Mace Weapons

The April 11, 2001 issue of *Liberation Army Daily* ran an article by PLA authors Zhou Yi and Jiang Dong proposing that cruise missiles, like the US Tomahawk, are effective Assassin's Mace weapons.

The May 9, 2001 issue of *Liberation Army Daily* featured a proposal to develop Assassin's Mace weapons for "joint information warfare" by PLA author Gao Jingfeng.

Mobile ICBM is an Assassin's Mace Weapon

The May 30, 2001 *Liberation Army Daily* praised a new Russian mobile, solid fuel ICBM as an Assassin's Mace weapon that could ensure "the most reliable" nuclear retaliation.

Genetic or DNA Assassin's Mace Weapons

The May 2001 issue of *Military Digest* had an article by Zhou Yi stating that development of DNA or genetic weapons will totally change the nature of the war," and may be used by the hegemonists as an **Assassin's Mace weapon** in order to implement blackmail and hegemony."

Assassin's Mace Weapons Are Mainly Long Range Precision Strike and IW

A June 12, 2001 article in the *Liberation Army Daily* by Liu Jun and Zhou Ruhong appeared to sum up many nation's military modernization by stating that Assassin's Mace weapons are mainly for Information Warfare and Long Range Precision Strike missions.

Russian Assassin's Mace Weapons – ASAT, Plasma weapons, and Satellite Warning

The June 2001 issue of *Military Digest* carried an article by Yun Zheng asserting that the first Russia has three Assassin's Maces with which to defeat US. An anti-satellite weapon; a plasma weapon; and its early warning satellites which could detect an attacking missile within 20 seconds."

America's Assassin's Mace weapon: Airborne divisions

The July 2001 issue of *Naval and Merchant Ships* featured Xian Yi's point that The US Army's 82nd and 101st air born divisions are the most important Assassin's Mace weapon that the Americans use to intervene in world conflicts."

US Space Strike Fighters Are Assassin's Mace Weapons

Colonel Jun Ma Wrote: "America's DOD is considering developing a extremely advanced Assassin's Mace weapon – space attack fighters," according to the *Liberation Army Daily*, August 22, 2001.

Ballistic Missiles As Assassin's Mace Weapons

General Hou Yunli, President of the Lanfang Army Missile Academy wrote: "Surface to surface missiles are Assassin's Mace weapons for land combat," according to the *Liberation Army Daily*, August 22, 2001.

ENGINEERING REFERENCES TO ASSASSIN'S MACE WEAPONS

Thomas Torda, a skilled translator who was the mainstay of Chinese S&T translations for over a decade at FBIS, has compiled a list of the following technologies specifically stated by the Chinese to be Assassin's Mace weapons:

- (1) Plasma stealth
- (2) HPM weapons
- (3) High-speed electromagnetic weapons
- (4) Joint information warfare
- (5) Information security protection systems
- (6) Low-momentum rocket propulsion in the first flight of the Shenzhou spacecraft.

In addition, Torda lists what the Chinese call "killer" weapons or super-weapons:

- (7) Killer satellites, including the Jisheng Xing system;
 - (8) The ballistic missile/supersonic ASCM system called an "anti-aircraft-carrier superweapon";
 - (9) The Bei xing zhi guang system;
 - (10) The Zhonghua xun ("Chinese sturgeon") high-speed torpedo, called an "aircraft carrier killer";
 - (11) The Hongniao (HN)-series and other land-attack cruise missiles (LACMs);
 - (12) Supersonic ASCMs, such as the Sunburn and Yakhont;
 - (13) PCL and bistatic/multistatic radar; and
 - (14) Shipborne HF OTH radar.
- Mark Stokes has also surveyed a great deal of Chinese engineering journals. He has identified four categories of Assassin's Mace weapons:

- 1) non-nuclear electromagnetic pulse warheads;
- 2) indigenous missile defense development;
- 3) anti-satellite (ASAT) development; and
- 4) short range ballistic missiles.

EMP Warheads – An Electronic Assassin's Mace

Mark Stokes has articles showing that PRC engineers are conducting feasibility studies on electromagnetic pulse weapons (EMP). EMP systems, such as a high powered microwave (HPM) warhead, could attack a variety of targets. PLA writings indicate that fielding of an EMP warhead is a relatively high priority. HPM devices in particular are viewed as a "natural enemy" of more technologically advanced militaries and an "electronic Assassin's Mace" (*dianzi shashou*).⁷ Due to challenges related to weaponizing a device with enough power, a first generation Chinese HPM warhead likely would only be effective against radiating targets within the immediate area of impact. Radar systems and communications centers would be the prime candidates. As the technology

⁷Gong Jinheng, "High Powered Microwave Weapons: A New Concept in Electronic Warfare," *Dianzi duikang jishu*, Feb 95, pp. 1-9. Gong is from the Southwest Institute of Electronic Equipment (SWIEE), China's premier electronic warfare research entity.

progresses, however, HPM warheads could achieve wider effects.⁸ The developers of the DF-11 SRBM – the 066 Base -- have demonstrated the most interest in HPM warheads.⁹

In addition to non-nuclear EMP weapons, Taiwan observers are concerned about the potential use of high altitude EMP (HEMP) bursts that use an actual nuclear device. Such a device, detonated at an altitude of 40 kilometers, would avoid casualties on the ground, yet would have significant effects on the island's electronic systems. The solution, according to Taiwan analysts, are missile defenses, such as Navy Theater Wide, that can engage the ballistic missile in its ascent phase and before detonation.¹⁰

Chinese articles sometimes call ballistic missile defense an Assassin's Mace.

⁸Zhu Youwen and Feng Yi, *Gaojishu tiaojianxia de xinxi zhan*, (Information Warfare Under High Technology Conditions), Academy of Military Science Press, 1994, pp. 308-310; "Beam Energy Weaponry: Powerful as Thunder and Lightning," *Jiefangjun bao*, 25 Dec 95, in FBIS-CHI-96-039; Outlook for 21st Century Information Warfare," *Guoji hangkong*, (International Aviation), 5 March 1995, in FBIS-CHI-95-114; "Microwave Pulse Generation," *Qiang jiguang yu lizishu*, May 1994, in JPRS-CST-94-014.

⁹See Liu Shiquan, "A New Type of 'Soft Kill' Weapon: The Electromagnetic Pulse Warhead," *Hubei hangtian jishu* (Hubei Space Technology), May 1997, pp. 46-48.

¹⁰ Chung Chien, "High Tech War Preparation of the PLA: Taking Taiwan Without Bloodshed," *Taiwan Defense Affairs*, October 2000, pp. 141-163.

Mark Stokes has identified China's research on missile defenses dating back to the 1960s. Under the 640 Program, the space and missile industry's Second Academy, traditionally responsible for SAM development, set out to field a missile defense system, consisting of a kinetic kill vehicle, high powered laser, space early warning, and target discrimination system components. While this program was abandoned in 1980, engineers associated with this effort are still active. Preliminary research on missile defenses was resumed in the 1980s, at least partly funded under the 863 program.¹¹

Mark Stokes has also found indications that Chinese aerospace engineers are examining the feasibility of a space-based early warning capability. Technical writings indicate the space industry is working to master specific technologies associated with missile early warning satellites. China has a well-established technology base in infrared sensors, which, when placed on satellites, can detect a missile almost immediately after launch by detecting the infrared radiation from its engine or motor plume.¹² In a potentially related program, China Academy of Space Technology is developing a satellite bus for an infrared telescope which, according to design outlines, will be placed in a geosynchronous orbit in a few years.¹³

Counter-Space Assassin's Mace Concepts

¹¹See Lewis and Xue, *China's Strategic Seapower*, for information on the 640 program.

¹² See Liu Jintian, "Hongwai Qijian Guoneiwai Fazhan Dongtai" (Developmental Prospects of Chinese and Foreign Infrared Devices), *Zhongguo hangtian*, March 1992, pp. 41-45; and Wu Runchou, "Hangtian linghuo hongwai jishu de fazhan" (Development of Space Infrared Technology), *Zhongguo hangtian*, Mar 93, pp. 19-23.

¹³For information on Chinese missile early warning systems and associated technology, see Lu Mingyu, Yi Kui, Yang Junfa, and Deng Ruzhen, "Development of Signal Source for Real-Time Infrared Earth Sensor," *Zhongguo kongjian kexue jishu*, Jun 96, pp. 63-70. in FBIS-CST-96-016; and Qiu Yulun, "Staring Focal Plane Array Imaging for Missile Early Warning," *Kongjian jishu qingbao yanjiu*, May 1995, pp. 150-160, in *CAMA*, 1997, Vol. 4, No. 2.

Mark Stokes has discovered Chinese literature about negating U.S. space systems. Chinese research and development on anti-satellite technologies has been underway since the 1960's. Technical literature suggests that a direct ascent ASAT program is underway involving an assessment of various design proposals for seekers and propulsion systems. As part of a missile defense countermeasure program, ASAT operations would be directed against satellites in low earth orbit, such as the SBIRS-Low system or against the SBIRS-High satellites in highly elliptical orbits. Technical papers demonstrate some of the greatest obstacles in developing an active counter-space capability are with development of a kill vehicle and associated terminal guidance. Modeling has been carried out on infrared, radar, and impulse radar terminal guidance systems.¹⁴ Harbin Institute of Technology and Beijing University of Astronautics and Aeronautics, for example, have carried out modeling and simulation of various space intercept control and terminal guidance systems. One concept introduces several small solid motors for orbital control stabilization.¹⁵ There also have been unconfirmed reports that China Academy of Space Technology (CAST) is developing nanometer-sized "parasitic satellites" that could function in an ASAT mode.¹⁶

Mark Stokes has found that Chinese engineers have conducted studies to counter satellite decoys as well.¹⁷ The PRC has stepped up its efforts to distinguish decoys from real satellites that conventional ground tracking stations using radar or visual means. In order to distinguish targets, one study, carried out by the National University of Defense Technology, determined that this problem could be solved through use of at least three ground stations using infrared sensors and neural networks.¹⁸ China's existing space tracking network can detect and track most satellites with sufficient accuracy for targeting purposes.¹⁹

China's desire to field a direct ascent ASAT asset may be affiliated with a program intended to support the launch of small satellite constellations. A small solid fueled launch vehicle, most likely a derivative of the DF-21, will be able to place small payloads in orbit at a time and place of Beijing's choosing. China intends to field these mobile, solid fueled launch vehicles by 2005.

¹⁴Stokes, pp. 118-119. Stokes notes that in the 1980s, the US considered modification of the Pershing-2 for ASAT missions, a system similar to the DF-21.

¹⁵For references to control problems, see Deng Zichen, "Problems in High Precision Computation for Nonlinear Control of Space Interceptors," *Feixing lixue*, 1998, 16(1), pp. 85-89, in CAMA, Vol. 5, No. 5; Shi Xiaoming, "Study on Pulse Guidance Law for Space Interception," in *Zhidao yu Yinxin*, 1994, (4), pp. 1-4, in CAMA, Vol. 2, No. 3.

¹⁶ Cheng Ho, China Eyes Anti-Satellite System, *SpaceDaily*, 8 Jan 00.

¹⁷Xu Hui and Sun Zhongkang, "Temperature Differences Between Satellites and Satellite Decoys," *NUDT Journal*, 94, Vol 16, no. 3.

¹⁸Li Hong'an, Wei Xuhui, and Sun Zhongkang, "Duo chuangangqi shuju ronghe shixian weixing jiqi xiliu xiu'er de zhibie" (Multi-sensor Data Fusion To Discriminate Satellites and Decoys), *Xiandai fangyu jishu* (Modern Defense Technology), November 1997, pp. 31-36.

¹⁹*DoD Report to Congress on the Cross-Strait Security Situation*, Feb 1999

Reduced size and complexity allows for faster manufacturing time and production in significant numbers.²⁰ Chinese engineers are conducting conceptual studies on a space based satellite tracking system that would serve as an potentially important component of any ASAT system.²¹

Mark Stokes has located articles showing that Beijing also is investing in the development of high powered lasers that, under certain conditions, could affect optical components of satellite systems, such SBIRS-Low. The 1998 Report to Congress on PRC Military Capabilities (pursuant to Section 1226 of the FY98 National Defense Authorization Act) states “China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. However, given China’s current interest in laser technology, it is reasonable to assume that Beijing would develop a weapon that could destroy satellites in the future.”

Anti-Radiation Missile Development

²⁰ “Hangtian guti yunzai huojian youxian gongsi chengli” (Aerospace Solid Launch Vehicle Corporation Established), *Zhongguo Hangtian*, June 2000 (internet version).

²¹ Cheng Yuejin, “Information Transmission System of Data Relay Satellites,” *Kongjian jishu qingbao yanjiu*, Jul 94, pp. 185-193, in CAMA, Vol. 1, No. 6. Cheng is from the Xian Institute of Radio Technology. Also see Tan Liying, “Selection of Wavelength Region for Optical Intersatellite Communication,” *Haerbin gongye daxue xuebao*, 1994, Vol. 26, No. 3, pp. 24-27, in CAMA Vol.1 No.6; Chen Daoming, “Frequency and Orbit of Data Relay Satellites,” in *Zhongguo kongjian kexue jishu*, 1996, Vol. 16, No.1, pp. 26-31, in CAMA, Vol. 3, No.3

An asymmetrical approach to countering missile defenses, Mark Stokes has discovered, includes attacking critical nodes within the missile defense system, particularly radar systems. The PRC is acquiring and/or developing an anti-radiation missile (ARM), such as the Russian Kh-31P, that is intended to negate early warning and fire control radar systems that are able to detect and/or track ballistic missiles during various phases of flight.²² There are persistent rumors of PLA procurement or joint production arrangement on the Kh-31P, which Chinese engineers note was specifically developed to counter the PATRIOT's MPQ-53 radar, and AEGIS SPY-1D phased array radar. China's defense industrial complex, specifically the Third Academy with support from the Harbin Institute of Technology, is aggressively pursuing deployment of a long range anti-radiation missile.²³ Western sources have designated China's new family of indigenously developed anti-radiation missiles as the Yingji-9 (YJ-9). Some Western sources allege an extended range version of the YJ-9 may have a range of 400 kilometers.²⁴

Short Range Ballistic Missiles As Assassin's Mace Weapons

In 1996, this author had the chance to visit China's primary organization for ballistic missile research, development, and production is the China Aerospace Corporation's First Academy. The First Academy, also known as the China Academy of Launch Technology (CALT), consists of an overall design and systems integration department, 13 research institutes, and seven factories which are responsible for engines, control technology, inertial systems, warheads, materials, testing, and launchers. With more than 27,000 personnel, the First Academy is the largest R&D organization within CASC.

DF-21 Medium Range Ballistic Missile System.

²²Gan and Liu, p. 45. Also see Zhang Demin, "Study on Penetration Techniques on New Generation Ballistic Missiles," in *Xinjunshi gemingzhong daodan wuqi fazhan qianjing*, Nov 96, pp. 18-24, in CAMA, Vol. 4, No. 2.

²³Si Xicai, "Research on Long Range Antiradiation Missile Passive Radar Seeker Technology," in *Zhanshu daodan jishu* (Tactical Missile Technology), 1995, Vol. 2, pp. 42-52.

²⁴Jane's Strategic Weapons Systems, 1998, People's Republic of China; Jane's Air-To-Ground Missile Programs.

The PRC's principal medium range ballistic missile is the solid fueled DF-21 (CSS-5). Research and development on the DF-21 began in 1967 and the missile was first tested in 1985. Assembled at the 307 Factory in Nanjing, the initial introduction of the missile into an experimental regiment took place as early as 1991. With a 600-kilogram warhead and an estimated CEP of 700 meters, the 2100 kilometer range DF-21 is currently equipped for nuclear missions only. A longer range version of the DF-21, the 2500 kilometer range DF-21 Mod 2, is reportedly under development. Both the DF-21 Mod 1 and Mod 2 likely have missile defense countermeasures, including endo-atmospheric decoys that were tested in 1995 and 1996.²⁵

Mark Stokes has identified articles about a conventionally armed variant of the DF-21 – the DF-21C -- has been under development since at least 1995. This system may adopt a terminal guidance package that uses on board computers to correlate stored images with landmarks that theoretically could achieve a CEP of 50 meters or better.²⁶ Such a capability naturally would require a maneuverable re-entry vehicle. The reentry speed of the DF-21C is likely to be fast enough to preclude engagement by lower-tier missile defense systems, such as the PAC-3. Equipped with a conventional warhead as large as 1500 kilograms, the DF-21C could force defenders such as Taiwan

²⁵The 700-meter CEP is extracted from *Janes Strategic Weapons Systems* 1998. See Bill Gertz, New Chinese Missiles Target All of East Asia, *Washington Times*, 10 July 1997. Also see “Dongfeng-21 zhongcheng daodan (DF-21 MRBM), *Shijie junshi luntan* (World Military Forum), January 2000, in Chinese; and Bill Gertz, *The China Threat*, Washington D.C: Regnery Press, 2000, pp. 234-235; and Bill Gertz, *Betrayal*, Washington DC: Regnery Press, 1999, p. 254.

²⁶According to Stokes's research, the conversion of the DF-21 from a strictly nuclear mission to a conventional role was reported as early as 1994 in the Chinese journal, *Guoji Hangkong* (International Aviation). Further indications of a terminally guided DF-21 are from discussions between Richard Fisher and an engineer from CALT's Beijing Research Institute of Telemetry (704th Research Institute) at the 1996 Zhuhai Air Show. For a discussion of terminally guided ballistic missiles, see Gan Chuxiong and Liu Jixiang, *Daodan yu yunzai huoqian zongti sheji* (General Design of Missiles and Launch Vehicles), Beijing: Defense Industry Press, January 1996, pp. 68-69. Also see Wang Honglei (Second Artillery Corps), “Optical Image Guidance Technology,” in *Zhidao yu Yinxin*, Jan 95, pp. 34-37, in Chinese Astronautics and Missilery Abstracts (hereafter referred to as CAMA), Vol. 2, No. 3.

to move toward upper tier, mid-course engagement solutions, such as the Theater High Altitude Area Defense (THAAD) and Navy Theater Wide (NTW) systems. As many as two conventional DF-21 brigades could be in operation before 2010.²⁷

²⁷ “Kongjun yu haihang zhuangbei fazhan” (Air Force and Naval Modernization) in *Zhonggong junshi xiandaihua* (PRC Military Modernization), Taipei: Ziyou Publishing, June 2000.

According to Mark Stokes, because of the its warhead size and the inability of lower tier missile defense systems to engage longer range MRBMs, incorporation of a terminal guidance system could have significant military implications. Because their re-entry speed precludes engagement by endo-atmospheric interceptors, conventional DF-21 MRBMs could be especially effective in neutralizing lower tier missile defense fire units. In a Taiwan scenario, the DF-21C could be used to counter critical nodes within a lower tier missile defense architecture, including engagement control centers, radar systems, and command centers. A high reentry speed, combined with a penetrator warhead, could be effective against hardened targets, such as intelligence facilities and strategic/operational command centers. The DF-21C could also range U.S. bases in the region. A terminally guided system with a maneuvering payload could complicate the U.S. carrier operations in the Western Pacific.²⁸

Short Range Ballistic Missiles

The deployment of the first conventional SRBM brigade opposite Taiwan in 1994 marked a significant new step in Chinese doctrine. Conventionally armed ballistic missiles, according to Chinese doctrine, would employ surprise and disarming first strikes to gain the initiative in the opening phase of a conflict.²⁹

The Second Artillery is said to be currently equipped with 350 conventional SRBMs distributed among three brigades opposite Taiwan. One source indicates that during annual meetings at Beidaihe in August 1999, China's senior leadership decided to accelerate the production and deployment of enough ballistic missiles to outfit four SRBM brigades by 2002.³⁰

²⁸Use of ballistic missiles in support of a naval blockade and for use against carrier battle groups is described in Hu Wenlong (ed), *Lianhe fengsuo zuozhan yanjiu* (Study on Joint Blockade Operations), Beijing: NDU Press, 1999.

²⁹Wang Houying and Zhang Xingye, *Zhanyixue (Campaign Studies)*, Beijing: NDU Press, 2000, pp. 375-385.

³⁰Will Young, "Shenmi de zhongguo daodan budui," (The Development of the Chinese Second Artillery), *Shijie junshi luntan* (World Military Forum), internet edition in Chinese ([http://:www.wforum.com](http://www.wforum.com)), January 2000.

According to Mark Stokes, Western sources believe the PLA may deploy as many as 650 SRBMs opposite Taiwan over the next several years, while Taiwan's Ministry of National Defense statements indicate that as many as 800 SRBMs could be deployed by 2006.³¹

Counter Aircraft Carrier Missile Strikes

³¹ Tony Walker and Stephen Fidler, "China Builds Up Missile Threat," *Financial Times*, 10 Feb 99, pg 1; and "Taiwan Boosts Defenses With Live Fire Test of Patriot System," *AFP*, 20 June 2001.

Chinese researchers have conducted extensive feasibility studies of the use of theater ballistic missiles against aircraft carriers. Analysts have noted how such a capability would require four components: ocean surveillance; mid-course guidance; terminal guidance; and applicable control systems to maneuver the reentry vehicle to the target. Proponents advocate use of GPS for mid-course inertial corrections and the use of a millimeter wave seeker for terminal guidance.³² Aware of the vulnerability of millimeter wave seekers to jamming, PLA engineers are surveying ECCM techniques to ensure effectiveness of terminally guided ballistic missiles.³³ In addition to aircraft carriers, Chinese writings indicate other targets would include regional airbases, naval facilities, and key C4I and logistical nodes from the area of operations.

An unusually detailed article in the June 2000 issue of *Missiles and Space Vehicles* assessed the challenge of developing re-entry warheads that could attack aircraft carriers, or what was euphemistically called “slowly moving targets on the sea” in the English language summary that the journal’s Chinese editor provided.³⁴ The team of five authors expressed confidence that this difficult problem could be solved if an elaborate system could be developed. Reconnaissance satellites “or a UAV” would first identify and relay the aircraft carrier’s location prior to the launch of the missile at the aircraft carrier. This relay is needed to supplement the Over the Horizon Radar, because OTH radars have “relatively poor positioning precision.” The missile’s warhead/re-entry vehicle would receive updated target position until just before launching. Then both “active and then passive compound radar guidance units” go into operation. The re-entry vehicle will need target recognition capability, strong anti-jamming capabilities, and functions as a “fire and forget” system. The key problem is that “positional error” issue, or how far the aircraft carrier may have moved [and in which direction] after the final pre-launch update was received. The five man team concludes that “this scheme is simple and easily feasible.”

The five man team does not make clear if they are writing a purely theoretically piece, or drawing from more practical work already underway. They are identified as working for the Beijing Institute of Astronautical Systems Engineering and the Beijing Institute of Special Mechanical and Electronic Devices.

³²Xu Minfei, Zhu Zili, and Li Yong, “Feasibility of Technologies for Use of Ballistic Missiles to Counter Aircraft Carriers,” *Guofang Keji Cankao*, 1997, 18(4), pp.126-130, summarized in CAMA. Also see Feng Jianbao, “Feasibility Study of Conventional Ballistic Missiles Attacking Aircraft Carriers,” paper presented at the Annual China Astronautics Society UAV Specialists Conference, April 1998, summarized in CAMA, Vol. 6. No. 1.

³³Wang Guobao, “Initial Discussion on Tactical Ballistic Missile Electronic Warfare,” *Hangtian dianzi duikang*, Apr 97, pp. 1-7, summarized in CAMA. China’s interest in millimeter wave technology is best exemplified by a Chinese firm’s illegal acquisition of a MMW traveling wave tube amplifier in 1996, according to Stoke’s research.

³⁴ Chen Haidong, Yu Menglun, Xin Wenqing, Li Junhui, and Zeng Qingxiang, “Study for Guidance Scheme for Re-Entry Vehicles Attacking Slowly Moving Targets,” *Missiles and Space Vehicles*, June 200.