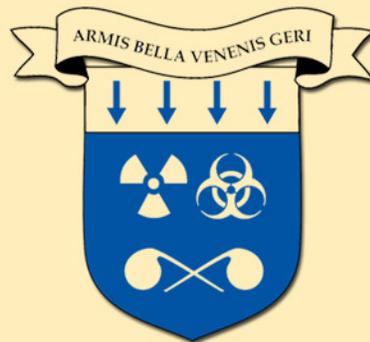


The Dragon Awakes: China's Military Modernization Trends and Implications

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CHAPTER 1

**CHINA'S MILITARY
MODERNIZATION TRENDS**

Introduction

Lawrence E. Grinter

2 . . . *China's Military Modernization*

CHINA'S MILITARY MODERNIZATION TRENDS

Introduction

Lawrence E. Grinter

When the most recent Cox Report was published in May 1999, it heightened concerns in the United States about how fast China has been modernizing its armed forces and military capabilities.¹ Of course the Cox Report focused on espionage and, in particular, on People's Republic of China (PRC) efforts to acquire U.S. military and commercial technologies with an emphasis on highly sensitive nuclear warhead designs. This was the third report which Congressman Cox's committee has issued in response to recent allegations that American businesses and U.S. government laboratories have shared, or allowed PRC operatives to obtain, sensitive strategic weapons information. In November 1998, the Cox committee issued a classified preliminary report warning the Clinton administration about Chinese espionage. On 3 January 1999, the classified full version was transmitted. Then on 25 May came declassified portions. While it is clear the Chinese have obtained sensitive information about U.S. nuclear capabilities, it is not clear whether this has resulted in actual modernization of deployed or planned PLA nuclear forces.

The four essays that follow analyze broad trends in Chinese military modernization. While they treat strategic capabilities—particularly those of the Second Artillery Corps, which has custody of the People's Liberation Army's (PLA) strategic and tactical missile forces—the four essays analyze considerably more. They look at the whole pattern of Chinese military modernization—strategy, doctrine, and weapons acquisition, and mobility changes in China's nuclear, space, Information Warfare (IW), ground, naval, and air forces. And the essays come to pretty much the same conclusion: that while the PLA (which also includes the navy, air force, and Second Artillery Corps) is acquiring “pockets” of modern capabilities through a variety of legal and illegal endeavors, these selective acquisitions do not offset the overall obsolescence of most of China's armed forces. The Chinese army is very unevenly equipped. The navy is not yet a power projection force. Air force capabilities vary widely. And the Second Artillery Corps, which can, and has, threatened Taiwan, does not possess a “first strike”

strategic capability against the United States.² Nevertheless, if China were to pursue asymmetrical warfare using its growing nuclear, space, and IW capabilities it might be able to emerge as a regional peer competitor to the United States in a future Asia-Pacific conflict.

In the second chapter of this book, Lt Col Kathryn L. Gauthier, USAF, analyzes the potential for China to emerge as a peer competitor of the United States in the coming decades. Her analysis focuses on China's nuclear forces, its space capabilities, and IW programs—each giving the PRC an asymmetrical warfare capability that could be used to partially level the playing field against a militarily superior foe like the United States. In Gauthier's analysis, she concludes that China has the potential to one day become a peer competitor if it were to use asymmetrical warfare tools and techniques, although she does not believe it inevitable that China will become an adversary if the United States pursues a policy of constructive engagement in the years ahead.

In the third chapter, Lt Col Steven W. Rogers, USAF, examines the kind of political, economic, and military trends that would accompany a Chinese military reach for a power projection capability. He argues that political change in China could give way either to a growing anti-American nationalism or a more liberal political system. Economically, he notes the downturn in China's GNP growth and the weakening of PLA professionalism due to commercial activities. The result has been a slow down and stretch out in weapons acquisition and PLA modernization. Finally, Colonel Rogers compares the evidence for and against a Chinese military power projection capacity. He concludes that while some recent military acquisitions are serious, nevertheless, on balance, Chinese pilots are poorly trained, all military services have grossly deficient maintenance and logistics capabilities, and the PLA's selective modernization in key pockets of capabilities do not give China a military power projection capability in the foreseeable future.

In the fourth chapter, Lt Col Joseph F. Cheney, USAF, carefully inventories China's doctrine and force modernization trends across the strategic and conventional arenas. He notes the obsolescence of most of China's aircraft, the inability of her navy to project power, and the lack of a high tech combined arms army. While the PLA is attempting to remedy all these deficiencies, at \$30 to \$35 billion in actual annual defense expenditures (Western estimates), it will be well into the first half of the 21st Century before China develops a modern military that can become a serious threat to most of her neighbors, much less the United States. Taiwan is an exception—

authorities in Taipei see the steady, threatening buildup of Chinese ballistic missiles across the Taiwan Strait.

In our fifth chapter, Lt Col Stephen J. Gensheimer, USAF, concentrates on the PLA's patterns of arms acquisition and one means of paying for those arms—Chinese weapons sales. He notes how the 1990-91 Gulf War prompted the PLA to seriously revise its doctrine and force structure in order to conduct high technology warfare. The PRC began serious new weapons imports, with Russia, Western Europe and Israel being the principal suppliers. Given constraints on the PLA's overall budget, the Chinese defense establishment was authorized to engage in arms sales. At its high point in the mid-1990s, PLA weapons sales probably reached \$2 billion per year. But the added money has not been sufficient to really accelerate the PLA's force modernization. China still has largely obsolescent armed forces, but with selected "pockets" of modern capabilities.

We can summarize the findings of this monograph by quoting from another recent (also post-Cox report) study on Chinese military modernization by Bates Gill and Michael O'Hanlon:

"An enormous gap separates China's military capabilities from its aspirations. The PRC's armed forces are not very good, and not getting better very fast. Whatever China's concerns and intentions, its capacity to act upon them in ways inimical to U.S. interests is severely limited, and will remain so for many years."³

Notes

1. Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China, House of Representatives, U.S. Congress, dated 25 May 1999.

2. The U.S. Defense Department defines a "first strike" strategic capability as the capacity, usually in a preemptive nuclear exchange, to decapitate an adversary's leadership, destroy its command and control system, and significantly damage its ability to respond after being hit.

3. Bates Gill and Michael O'Hanlon, "China's Hollow Military", *The National Interest*, Summer 1999, pp 55-56.

6 . . . *China's Military Modernization*

CHAPTER 2

CHINA AS A PEER COMPETITOR?

Trends in Nuclear Weapons, Space, and Information Warfare

Kathryn L. Gauthier

8 . . . *China's Military Modernization*

CHINA AS A PEER COMPETITOR? Trends in Nuclear Weapons, Space, and Information Warfare

Kathryn L. Gauthier

What threat will the People's Republic of China (PRC) pose to the U.S.? To some, it is an expansionist power bent on regaining the hegemony it enjoyed centuries ago in Asia. Beijing's aggressive moves toward Taiwan and its moves in the South China Sea are used as evidence of such poorly concealed ambitions. Some further claim the PRC is bent on achieving global power status.

Others argue that today's China has a quite distinct world view. They see an inwardly focused, non-aggressive, developing nation. This China is so burdened with internal problems arising from the necessity to provide basic services for a fifth of the planet's population, that it has neither the time nor the inclination to harbor hegemonic aspirations in the foreseeable future. Further, any change in that status is likely to take decades, allowing for ample strategic warning time and the opportunity to respond appropriately when the time comes.

This study sets out to analyze the threat, if any, that China poses to the United States as the world's sole remaining superpower. Specifically, it seeks to answer the question, "Does China have the potential to become a peer competitor of the United States in the coming decades?" A search for the answer to that question requires serious analysis of not only military and industrial potential, but also the economic, social, and political trends that are sweeping the nation. Even then, since the issue involves both capability and intent, the conclusion might be predictive but never definitive.

Given both the complexities of the issue and time constraints, this analysis focuses on three strategic factors in the peer competitor equation. It first examines two traditional pillars of national power—China's status as a nuclear weapons state, and as a nation in space. It then explores China's increasing focus on information warfare as a means of waging asymmetric war against a more powerful adversary. Why the selection of these three factors?

One of the lessons of the Gulf War is the inability of a strong adversary to defeat a technologically superior foe through the use of conventional weapons and warfighting techniques alone. An enemy facing the U.S. with

a nuclear arsenal—or even one bomb—however, quickly changes the equation. So does one with self-sustaining access to space, or one armed with anti-satellite weapons. Finally, an adversary unwilling to confront the U.S. “head on” might nevertheless seek to achieve strategic objectives through asymmetric means, such as attacking the information systems of the U.S., a nation highly dependent on access to information in both peacetime and conflict. In sum, since these three elements—nuclear weapons, access to space, and capabilities in the information warfare arena—could arguably pose the greatest threat to the United States in a future military conflict with China, they were considered a foundation for China’s potential emergence as a peer competitor to the United States.

The first three sections examine the current state of each program in turn, highlighting areas of concern or potential conflict with the U.S., and analyzing the implications of these issues for the United States. The overall assessment of China’s potential emergence as a peer competitor of the U.S. is contained in the final part of this chapter.

I. China's Nuclear Program

By the early 21st century, the PLA's nuclear arsenal will be more capable, accurate, flexible, and will allow the PRC to threaten most parts of the globe. Land-based missile systems will be mobile, enhancing survivability and making detection much more difficult. Sea-based systems, with longer ranges, will also be tremendously improved.¹

One of the characteristics that may help propel China to great power status—and potential peer competitor of the United States—is its nuclear weapons. This section first describes the Chinese nuclear arsenal—characteristics, governing doctrine, delivery systems, and recent modernization efforts. It then looks at China's nuclear program in light of international nonproliferation concerns and recent commitments by China to address those concerns. Finally, the section examines the implications of China's nuclear program to assess the threat of this modest but modernizing nuclear arsenal to U.S. interests.

China's Nuclear Arsenal

China became a nuclear weapons state in 1964 and since that time has conducted 45 nuclear weapon tests with yields ranging between approximately 1 kiloton and 4 megatons.² While China has never disclosed the size and disposition of its nuclear force, analysts estimate the entire arsenal consists of perhaps 250-300 strategic warheads and 150 tactical warheads.³ Beijing has never acknowledged the existence of any tactical nuclear weapons in its inventory.⁴ The U.S. Defense Department believes China has over 100 warheads currently deployed on ballistic missiles.⁵ China is also estimated to have a stockpile of fissile material sufficient to double or triple the size of its current nuclear arsenal.⁶

Nuclear Doctrine

Although ranked as the world's third largest nuclear power,⁷ China's nuclear inventory is small relative to those of the U.S. and Russia. Beijing maintains that its small nuclear arsenal is for self-defense purposes only.⁸ China has always maintained a policy of No First Use (NFU), and has long provided negative security assurances that it would never "use or threaten to use nuclear weapons against non-nuclear-weapon states or

nuclear-weapon-free zones.”⁹ China has frequently called on the other nuclear powers to adopt a NFU policy. China officially supports a goal of total nuclear disarmament by all nations, but has stated it would only join Strategic Arms Reduction Talks (START) negotiations when the U.S. and Russian stockpiles were reduced below the levels established by START II.¹⁰

Notwithstanding its official pronouncements, Beijing’s actual nuclear doctrine has been shrouded in an ambiguity that may be deliberate. The Chinese nuclear posture is believed to be based on a countervalue second-strike capability,¹¹ but may have evolved from a doctrine of “minimum deterrence” to one which envisages a limited war-fighting capability. The current consensus is that China’s nuclear doctrine is best characterized by the concept of “limited deterrence,” which is based on “communicating China’s ability to inflict costly damage on the adversary at every rung on the escalation ladder . . .”¹² Limited deterrence capabilities—such as the need to improve strike accuracy—are likely framing China’s current nuclear modernization program.

Nuclear Delivery Systems

China relies on a strategic triad of delivery systems—land-based ballistic missiles, submarine-launched ballistic missiles (SLBM), and bombers. The primary delivery means is the land-based missile, the most capable system being the liquid-fueled Dongfeng (DF)-5A, known in the West as the CSS-4. The DF-5A carries a payload of 3,200 kilograms and has a range in excess of 13,000 kilometers, making it capable of striking targets in the United States. “Four missiles, each with one 3-5 megaton warhead, are currently deployed in hardened underground silos.”¹³ China has also developed a mobile solid-fuel missile, the DF-21, assessed to be capable of delivering a 200-300 kiloton warhead a distance of 1,800 kilometers.¹⁴ Also in the inventory is the short-range DF-15, known by its export designator M-9, assessed to be a “nuclear-capable, tactical missile with a maximum range of 600 kilometers.”¹⁵

In the SLBM category, China developed the Julang-1 (JL-1) single-warhead missile with a payload of 200-300 kilotons and a range of 1,700 kilometers.¹⁶ China’s only ballistic missile submarine, the Xia, can carry 12 JL-1 missiles.¹⁷

In terms of aircraft delivery systems, China has over 100 H-6 medium bombers, of which at least 40 are believed to be nuclear-capable.¹⁸

The following chart summarizes the current inventory of Chinese nuclear delivery systems:¹⁹

SYSTEM	QUANTITY/MISSILES
DF-5 ICBM	7
DF-4 ICBM	10
DF-3 IRBM	38
DF-21 IRBM	8
CSS-N-3 SLBM	12
DF-15	4
DF-11	?
H-6 Bomber	120
H-5 Bomber	200
SSBN	1

Nuclear Force Modernization

As a result of reductions in the U.S. and Russian nuclear arsenals—which under START II will draw down to 3,500 and 3,000 respectively by the year 2003—the Chinese nuclear arsenal has improved quantitatively. The PRC is also taking steps to improve its force qualitatively. Beijing concluded a series of nuclear tests just prior to signing the Comprehensive Test Ban Treaty (CTBT) in 1996. Chinese officials claimed the tests were conducted to improve the safety and reliability of the PRC's nuclear arsenal, but it appears the tests were also motivated by Beijing's desire to develop smaller and more powerful nuclear weapons.²⁰

China is also making efforts to improve all three pillars of its strategic triad. Two land-based missiles, the DF-31 and DF-41, are under development and will give the Chinese a solid-fueled, road-mobile capability.²¹ According to the National Air Intelligence Center, the DF-31—slated to be deployed sometime next year—“will narrow the gap between current Chinese, U.S., and Russian ballistic missile designs.”²² These new missiles will slash launch preparation times to less than 15 minutes (DF-31) and 5 minutes (DF-41), and they will be Multiple Reentry Vehicle (MRV) or Multiple Independently Targeted Reentry Vehicle (MIRV)-capable.²³

China is also developing a second-generation submarine-launched ballistic missile, the 8,000-kilometer-range JL-2, which may be deployed on

a new class of nuclear submarine. With respect to the air-breathing leg of the triad, China is developing the H-7 (B-7) bomber, and may also decide to modify SU-27s purchased from Russia to make them nuclear-capable.²⁴

The immediate goal of these programs is to improve the accuracy, range, guidance systems, and control of China's strategic forces.

Proliferation Concerns and Commitments

China's record on nuclear nonproliferation has been far from stellar, but Beijing has certainly "come a long way" in the last three decades. As Secretary Albright noted last year: "On proliferation, China has progressed from advocating the spread of nuclear weapons to signing the Nuclear Nonproliferation Treaty (and) the Comprehensive Test Ban Treaty..."²⁵ In the 1970s, the U.S.-USSR Strategic Arms Limitations Talks were denounced by China as a cover for the arms race between the superpowers. By the 1980s, Beijing appeared to begin to appreciate the advantages of "free riding" on the various arms control agreements between Moscow and Washington, as subsequent accords reduced the superpowers' strategic forces, eliminated their intermediate-range missiles, and limited their anti-ballistic missile systems. In the 1990s, Beijing has come to recognize that it derives both political and security benefits from participating in multilateral negotiations to control nuclear weapons.²⁶ China's gradual and growing acceptance of international nonproliferation norms has been due in large part to "U.S. sanctions laws and policies, as well as positive inducements."²⁷

Before acceding to the NPT in 1992, China provided assistance to the Pakistani nuclear weapons program, which it saw as a balance to the conventional and nuclear strength of its rival India.²⁸ A 1997 U.S. Arms Control and Disarmament Agency report warned that, "Questions remain about contacts between Chinese entities and elements associated with Pakistan's nuclear weapons program."²⁹ China also assisted the Iranian nuclear program under International Atomic Energy Agency (IAEA) safeguards, but has since agreed not to provide further nuclear assistance to that nation. China's support to the "peaceful" nuclear programs of Pakistan, Iran, and Algeria has raised concern about "dual use" applications of materiel and technology.³⁰

However, China has recently taken meaningful steps toward becoming a more responsible partner in the international nonproliferation regime. A member of the IAEA since 1983, China acceded to the Nuclear Nonproliferation Treaty (NPT) in 1992. It also lived up to its commitment

to support a comprehensive ban on nuclear tests (after completing a series of tests in 1996), becoming one of the first signers of the CTBT that same year. More recently, China became a member of the Zangger Committee in October 1997, joining other NPT states in agreeing not to export items from a safeguard trigger list to facilities not under IAEA safeguards. Beijing is not yet a member of the Missile Technology Control Regime (MTCR), but has entered into a bilateral agreement with the U.S. to abide by MTCR guidelines.³¹

There have been setbacks in China's growing cooperation, however, as in the case of alleged 1994-95 deliveries of ring magnets—used in uranium enrichment—to Pakistan.³² The Chinese government denied awareness of the transfers, indicating the possibility of a “center-periphery problem” where Beijing may not have specifically approved the initiative of a Chinese enterprise to export the material.³³

Recently, China sharply criticized the May 1998 Pakistani and Indian nuclear tests, saying they “have not only seriously impeded international non-proliferation efforts, but have produced a grave impact on regional and world peace and stability.”³⁴ Beijing has good reason to fear a nuclear arms race on her southern border, especially in light of her long-standing rivalry with India.

Other recent positive developments in nuclear nonproliferation cooperation by China include:

- China and the U.S. have jointly stated their intention to pursue negotiation of a Fissile Material Cut-Off Treaty (Oct 94).³⁵
- China joined the other original nuclear powers in providing positive security assurances to non-nuclear weapon states which are signatories of the NPT (Apr 95).³⁶
- China and the U.S. reached an accord to de-target strategic nuclear weapons that had been aimed at the other and to establish a hotline between the two capitals (Jun 98).³⁷

Implications for the U.S.

Based on recent developments in Chinese nuclear nonproliferation cooperation, the U.S. has much to be satisfied with. As described above, in addition to China's more complete integration into the international nonproliferation regime, the number of bilateral U.S.-China agreements in

this arena has been growing. Despite the progress, however, there remain a number of areas of friction and divergence between the U.S. and China.

China is not a member of the Nuclear Suppliers Group (NSG) and does not require full-scope safeguards in the destination country as a precondition for Chinese nuclear exports.³⁸ There are also concerns about Chinese sales of nuclear-related or destabilizing conventional arms to countries of proliferation concern. These include exports of missiles and missile technology, such as the reported transfers of Chinese M-11 missiles to Pakistan.³⁹ In *Proliferation: Threat and Response*, the Office of the Secretary of Defense maintains that:

In most cases, Beijing agrees publicly on the danger and inadvisability of NBC weapons and missile proliferation. On the other hand, China's continuing and long-standing economic and security relationships provide incentives for activities that are inconsistent with some nonproliferation norms.⁴⁰

Chinese Opposition to TMD/NMD

China is very concerned about potential deployments by the U.S. of theater missile defense (TMD) systems in East Asia, as well as developments in the national missile defense (NMD) arena. Both of these will have the effect of undermining the deterrent value of China's nuclear arsenal. In 1995, a Chinese official publicly reiterated Beijing's long-standing opposition to the deployment of an advanced ballistic missile defense system as a development that would "trigger an arms race in outer space" and "increase the danger of nuclear war."⁴¹ Beijing has also warned that the deployment of a TMD system would be met with an expansion in Chinese offensive systems.⁴²

Modernization of China's Nuclear Arsenal

As described earlier, China's efforts to expand and modernize its nuclear arsenal are well underway. It should be noted that China is not constrained in these efforts by any arms control agreement (SALT, START, etc.), such as those governing the U.S. and Russia. In fact,

As the United States and Russia reduce the size of their arsenals as mandated by the START treaties, improvements to China's nuclear weapons will mean that asymmetries between

China's nuclear forces and those of the major nuclear powers will narrow.⁴³

Regional Security

Some analysts warn of the adverse impact China's nuclear modernization efforts may have on the region. Beijing's assessment of its nuclear force requirements may be driven by such factors as stability on the Korean peninsula, Chinese concerns vis-à-vis Japan, the Indian-Pakistani dispute, and Taiwanese stirrings for independence.⁴⁴ Additionally, China's modernization efforts might stimulate a "nuclear modernization race" among neighboring countries, including India and Russia.⁴⁵

Taiwan

Taiwan is one issue over which the interests of the U.S. and China seem destined to collide. The U.S. has long been committed to the security of Taiwan, and is opposed to resolution of the matter by force. The Chinese government, on the other hand, recently reaffirmed:

The issue of Taiwan is entirely an internal affair of China. . . . The Chinese government seeks to achieve the reunification of the country by peaceful means, but *will not commit itself not to resort to force.*⁴⁶ (emphasis added)

Chinese "saber rattling" near Taiwan in 1996 evoked a quick and powerful show of force by the U.S. However, a future, similar scenario may involve an entirely different calculus and drive completely distinct results. As one analyst recently emphasized, "China's possession of a credible nuclear arsenal may provide a deterrent against any state seeking to intervene in the Taiwan Strait. . . . (W)ould the United States risk a nuclear confrontation over Taiwan with a more assertive, more capable China?"⁴⁷ There is also the risk that China's nuclear modernization efforts might convince Taiwanese leaders they need a nuclear program of their own.⁴⁸

In summary, China's small nuclear arsenal, limited delivery means, and dogmatic commitment to a No First Use (NFU) policy have combined to minimize any direct threat to the U.S. In contrast, Chinese nuclear and missile assistance to a number of "rogue" states in the past has posed a clear threat to the critical U.S. interest of promoting the international nonproliferation regime. In recent years, Beijing has taken significant steps to address U.S. concerns in this arena, which China has increasingly

recognized are in its own best political and security interests. Notwithstanding Beijing's improving bilateral and multilateral cooperation efforts, the future may well present a new area of potential Sino-U.S. conflict. The accidental U.S. bombing of the Chinese embassy in Belgrade has seriously affected Sino-U.S. relations. A China of the not-so-distant future, economically stronger, possessed of an improved nuclear arsenal and associated delivery systems, may well feel more capable and assertive in defending what it sees as its vital interests in the region.

II. The Chinese Space Program

"Evidence is growing that the Chinese are working toward the launch of a domestic, manned spacecraft around the turn of the millennium."⁴⁹

A nation's prowess in space confers both prestige and power, and China has garnered a good measure of both in almost three decades of space activity. China's space program takes on special significance for the U.S. at the dawn of the 21st century, both because of the strategic advantages it confers to Beijing in the military realm and because of China's decision to open its space launches to international customers. This section provides an overview of China's space program, including its primary launchers, satellites, and launch complexes, then examines Beijing's progress and probable goals in space in the coming years.

Satellite Launchers

China has been a space-faring nation since 1970, when it launched its first *Dong Fang Hong* ("East is Red") satellite using a *Chang Zheng* (CZ/ "Long March") launch vehicle.⁵⁰ A more advanced vehicle, the CZ-2C, was first launched in 1975 and has become China's most-utilized launcher. It is capable of lifting 2,000 kilograms into low earth orbit (LEO) and has been used with a recoverable microgravity platform to return 150-kilogram payloads to earth.⁵¹ In 20 years of service, 14 of these 2-stage vehicles were launched, with a 100 percent success rate. In the 1980s the CZ-3 and CZ-4 launch vehicles, building on the CZ-2 design, added geosynchronous (GEO) and sun-synchronous capabilities to the Chinese launch program.⁵² The CZ-3 launcher includes a cryogenic (very cold, liquefied gases) third stage; with the first launch of this vehicle in January 1984, China became the third user—with the U.S. and European Space Agency—of cryogenic

propulsion.⁵³ The CZ-3 is capable of placing 1,400 kilograms into geosynchronous transfer orbit (GTO) or 5,000 kilograms into LEO, and has achieved a 73 percent success rate.⁵⁴ The CZ-4 similarly grew out of predecessor launch vehicle programs. CZ-4 lift capability is advertised to be 2,500 kilograms into sun-synchronous orbit and 4,000 kilograms into LEO.⁵⁵ Two launches have been conducted since 1988, with 100 percent success.⁵⁶ The comparative dimensions of the CZ family of launch vehicles are shown at Figure 1.

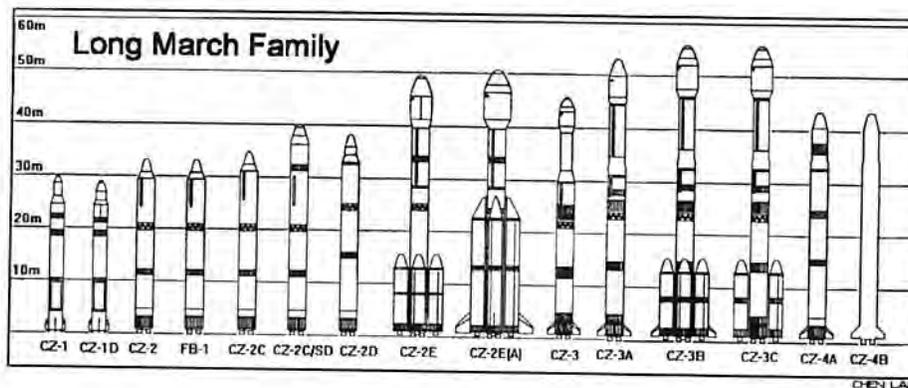


Figure 1. Long March Launch Vehicles⁵⁷

Chinese Satellites

Given China's information-restricted society, not surprisingly open sources vary in estimate concerning the total number of satellite launches conducted by China. The Air Force Association's Space Almanac sets the figure as "at least 50,"⁵⁸ while the Federation of American Scientists reports a total of 60 satellite launches by the Chinese, "of which 49 were completely successful, with another 7 failing to reach orbit and 4 suffering post-launch failures."⁵⁹ Jane's Space Directory itemizes 56 launches of 58 satellites between 1970 and 1996.⁶⁰

Chinese satellites can be divided into three broad categories. The most numerous are the recoverable *Fanhui Shi Weixing* satellites, originally designed for photoreconnaissance but later modified to add a remote sensing

capability. A second category of satellites includes those designed for communications, which China began launching in 1984.⁶¹ The latest version—the *Dong Fang Hong 3*—was launched into geosynchronous orbit in May 1997 to provide voice and video communications.⁶² Satellites designed for remote sensing and meteorology comprise the third category of Chinese satellites. Two *Feng Yun-1* satellites launched in 1988 and 1990 into sun-synchronous orbit subsequently suffered problems in orbit, but the June 1997 launch of a *Feng Yun-2* meteorological satellite into geosynchronous orbit was successful.⁶³ Additional test and scientific satellites have been launched throughout the duration of the Chinese space program.

Chinese Launch Infrastructure

The Chinese space industry has three major launch complexes. The nation's first launch center was built at Jiuquan (40.6N/99.9E) in northern China. To avoid vehicle overflight of Russia and Mongolia, launches from that site are limited to a southeasterly direction into orbits between 57 and 70 degrees.⁶⁴ The Chinese have launched more than 25 satellites into low earth orbit from Jiuquan since 1970.⁶⁵ Additionally, a new launch pad is being constructed at this site, reportedly to support a manned space flight program.⁶⁶ The Xichang launch center in south China (28N/102E) became operational in 1984 and is the nation's primary site for launches into geostationary orbit.⁶⁷ Xichang was also the site for China's first foreign commercial launch (*AsiaSat 1*) in April 1990. The nation's newest launch facility, Taiyuan, is located in northeastern China (38N/112E). Active since 1988, the site is used to launch satellites into polar orbit for missions including remote sensing, weather, and reconnaissance.⁶⁸

Operations at these sites as well as telemetry, tracking, and commanding (TT&C) functions are performed by the China Satellite Launch and TT&C General Organization, while the China Academy of Launch Vehicle Technology (CALT) provides on-site launch supervision.⁶⁹ According to the "Dragon in Space" internet site, China's Control and Tracking Network is comprised of the Beijing Aerospace Command and Control Center, the Xian Satellite Control Center, numerous domestic tracking stations throughout China, an overseas tracking station located in the south Pacific on Kiribati, and three tracking ships.⁷⁰

Commercial Launch Services

After its first successful GEO launch in 1984, China began offering launch services to international customers.⁷¹ The first foreign commercial launch took place in 1990. Great international interest notwithstanding, the program has been plagued by several mission failures, including the 1996 loss of a U.S. satellite. There have also been allegations of unfair pricing, leading to a 1988 agreement that limited Chinese launches to nine foreign satellites by the end of 1994. The agreement was revised in 1995 to permit an additional 11 satellites to be put into GEO by the year 2001.⁷² Provisions in the accord allow this figure to increase “if the annual global requirement is at least 20 satellites or if western vehicles cannot accommodate the market.”⁷³

With the expansion of space technology and the corresponding increase in the number of space-faring nations, competition for scarce launch capabilities is intense. Worldwide, some 1,700 commercial satellite launches are projected to take place over the next 10 years, exacerbating the approximate 3-year global backlog for launcher space.⁷⁴ With only three other competitors—U.S., Russia, and the European Union—on the supply side of space launches, the significance of China’s commercial launch capability is evident.

Space Technology Transfer Issues

Enter U.S. concerns about technology transfer to China, a potential future adversary and known proliferator of advanced technologies to “rogue states” such as Iran and North Korea. The current controversy over the U.S. use of Chinese launchers stems from the February 1996 accident involving a U.S. Loral/Intelsat satellite aboard a Long March (CZ) 3B launcher. Accident investigation documents given to the Chinese by the Loral Corporation may have contained sensitive guidance technology.⁷⁵ As a result, the U.S. House of Representatives voted in May 1998 to ban exports of all U.S. satellites to China, on the grounds the technology could be used by China to upgrade its ICBMs.⁷⁶ Additionally, in the wake of the May 1998 nuclear tests in South Asia, Congress allocated \$2.5 million to investigate technology transfers to China.⁷⁷

Some of the furor surrounding this issue is likely related to antagonism over China’s pricing of its “Long March” launches—reportedly some 30 percent cheaper than its U.S. competitor.⁷⁸ However, given this country’s limited space launch infrastructure and its focus on promoting national

competitiveness and economic growth, the U.S. may have no realistic alternative but to allow its American firms to take advantage of China's excess launch capacity.

PRC Space Program Trends and Implications for the United States

Just as the doctrine and disposition governing China's nuclear program are shrouded in ambiguity, so too are the capabilities and military implications of China's space program. While it is not unusual for civilian space programs to have military applications, China's has been described as "distinct in the degree of its military involvement, the extent of its military functions, and the scale of its military significance."⁷⁹ In fact, China's progress in its space program has been linked closely to progress in its ballistic missile program, with activities and tests in the former used to advance objectives in the latter.⁸⁰

At least five strategic objectives of the Chinese space program can be identified⁸¹:

- (1) Improve the accuracy of ICBM guidance systems;
- (2) Enhance the command, control, and communication (C³) of Chinese strategic forces;
- (3) Improve intelligence-gathering capabilities;
- (4) Provide early warning for Chinese civil and air defense; and
- (5) Lay the foundation for possible future capabilities in strategic defense.

The Chinese appear to have been working towards acquiring a manned space capability since the 1970s.⁸² By the late 1980s, China had officially disclosed its intention to launch a space shuttle by the year 2000⁸³, and was beginning to discuss a program for a limited space station.⁸⁴

In 1990, after the first flight of its CZ-2E launcher, China reportedly began to study a spacecraft that could be launched on that vehicle with four astronauts aboard. A 1995 ITAR-TASS news report stated China was seeking to buy Russian equipment for use in a manned space program—to be launched around the 2000-2002 timeframe—and that it also intended to build an orbital space station around the year 2015. One year later, the same news agency reported two "Chinese cosmonauts" were undergoing training in Russia for a mission on a Chinese spacecraft, planned for 1999 to coincide with the 50th anniversary of the founding of the People's Republic of

China.⁸⁵ A Russian defense analyst recently stated that the Chinese space shuttle program has been officially underway since 1992, and the first launch is due in 2005 from a site on Hainan Island.⁸⁶ While the specifics remain unclear, the evidence points to a Chinese attempt to achieve a recurring manned presence in space within ten years.

As China's capabilities in the space industry have advanced, so apparently has its determination to begin to "level the playing field" in this arena. Although Beijing recently officially reaffirmed its opposition to the development of anti-satellite weapons,⁸⁷ a November 1998 Pentagon report indicates the Chinese may be involved in exactly such an endeavor. The report warns that the Chinese may be building an anti-satellite laser, possibly with assistance from scientists from the former Soviet Union.⁸⁸ Such efforts could lead to a weapon that could cripple orbiting U.S. satellites.

The need to upgrade China's command, control, communications, and intelligence (C³I) system is now a top priority, and space-based assets are seen as vital to that effort.⁸⁹ As one example, there is a proposal to create a dedicated network for defense satellite communications, since the People's Liberation Army currently has only very limited access to China's six communications satellites.⁹⁰ Other Chinese efforts to prepare for high-tech wars of the future will be explored in the next section.

It should be noted that China does not need to close the technological gap with the United States in a sequential manner. China has repeatedly demonstrated the ability to "leap frog" over developmental stages in a number of defense programs, a talent especially well suited for the current information age with its wealth of available technology and data. There are also international commercial services that can help fill the gaps between current and desired capabilities. For example, the Global Positioning System (GPS) provides positioning and timing data to users around the globe—information with both navigational and targeting applications. Commercially available satellite imagery is also widely available from such systems as SPOT (*satellite pour l'observation de la terre*) and LANDSAT (land satellite). These two systems—with resolutions of 10 to 30 meters—clearly demonstrated their military utility during the Gulf War.⁹¹

Conclusions on the PRC Space Program

China's progress in its space program is all the more impressive because—with the exception of early assistance from the Soviet Union—its efforts have been almost entirely indigenous.⁹² Beijing has demonstrated in

the past its persistence in developing or acquiring the technology it needs to meet its self-established goals, and those goals may result in a Chinese capability for manned space flight within the next few years. Add to this technological prowess Beijing's careful study of the Gulf War, its push to acquire the capability to compete in high-tech wars of the future, its purported efforts to develop modern anti-satellite weapons, and the ready availability of off-the-shelf solutions to certain high-tech shortfalls. The result is that the U.S. may face an ever-more-capable potential adversary on the ultimate high ground of space. In this light, it may be worth reassessing the disadvantages of continued U.S. commercial participation in Chinese launches. Assuming realistic and enforceable restrictions to safeguard U.S. national security interests, the benefits of U.S. visibility into the scope and progress of Chinese space programs may be well worth the risks. Washington may very well need this information edge in the future, if China—now only a potential adversary—becomes a hostile “dragon in space.”

III. Information Warfare, Chinese Style

*A 1-ounce integrated-circuit chip in a computer will perhaps be much more useful than a ton of uranium.*⁹³

*In the networked world of the future, every chip is a potential threat and every computer a potential weapon.*⁹⁴

China's booming economy has allowed it to pursue selective modernization of its military capabilities, including certain conventional weapon systems, and—as discussed in previous sections—its nuclear arsenal and space assets. In addition, Chinese strategists are studying a newly emphasized form of warfare that focuses on gaining and exploiting information, attacking the information available to an adversary, and defending against attacks on one's own information and information systems. This section examines Chinese thinking about information warfare (IW), some peculiar characteristics of Chinese IW, and implications for the United States.

Chinese Views on Information Warfare

Operation DESERT STORM has been described as the first “information war,” and China is carefully studying the lessons learned from that conflict. While the Gulf War did not initiate Chinese thinking about future warfare, the conflict apparently stimulated the 1992 decision by PLA leaders to focus

on preparing China's armed forces to wage high-tech warfare.⁹⁵ China not only gained an appreciation for high-tech weaponry, it also saw the need to modernize the PLA's C³I network and to expand the nation's space-based communication and navigational systems.⁹⁶ Chinese military analysts understand that information-age technologies have changed how wars are fought.

Shen Weiguang, a Chinese IW expert, notes that concerns about Chinese vulnerability to IW have grown in the past decade.⁹⁷ China's response has been vigorous and broadly focused. According to a recent *China Defense News* article, war games are used to train China's IW experts, Chinese military schools offer such courses as "IW Command and Control" and "IW Technology," and the Ministry of Education now offers a specialization in information warfare. Further indicators are the appearance of specialized publications dedicated to the study of IW. In addition, the Chinese Academy of Sciences has established an "Information Security Engineering Center."⁹⁸

A survey of Chinese military literature reveals the scope and depth of Chinese interest in information warfare. Major General Wang Pufeng, former Director of the Strategy Department of China's Academy of Military Sciences, describes the role of information warfare for the PLA:

"In the near future, information warfare will control the form and future of war. We recognize this developmental trend . . . and see it as a driving force in the modernization of China's military and combat readiness. This trend will be highly critical to achieving victory in future wars."⁹⁹

Shen Weiguang has also analyzed how IW affects military doctrine. An examination of his main points indicates that Chinese military thinkers both grasp the tenets of IW and appreciate its inherent power:¹⁰⁰

- "Information power" gives a military unit its freedom of movement.
- IW targets focus on disrupting the enemy's decision-making process.
- IW makes surgical strikes possible.
- IW is a "high tech people's war"—to be waged from the home or office.
- In IW "front and rear are reversed"; civilian technicians may be the best soldiers.
- "Compared with nuclear weapons, information weapons are easier for small, weaker countries to obtain."

- “In the networked world of the future, every chip is a potential threat and every computer a potential weapon.”

Analysts from the PLA Academy of Electronic Technology summarized Chinese thinking in the field of information warfare in six concepts:¹⁰¹

- The primary goal of IW is to attack the enemy's command and control systems.
- Information should be used to harass and confuse the enemy.
- IW tactics are to attack enemy commanders and headquarters at every level.
- The enemy's “eyes and ears” should be destroyed, while protecting one's own ability to see and hear.
- Information deception and concealment procedures, such as multi-node, multi-path, and multi-frequency network systems, should be used to ensure survivability.
- Weapons with imbedded information technology (IT) will become the “dominant factors on the battlefield. . . . IT will be used to carry out electronic warfare, command and control warfare, and warfare characterized by attacks with computer viruses.”

Chinese thinkers have highlighted the critical role of information in high-tech warfare, and even assigned it the preeminent role in war. In *Information Warfare and Training of Skilled Commanders*, Lei Zhoumin describes information as a force multiplier and “a strategic resource more important than men, materials, and finances.”¹⁰² Chang Mengxiong, senior analyst in the Committee of Science, Technology, and Industry (COSTIND) Institute of Systems Engineering, predicts that in future high-tech wars, air and sea superiority will still be required, but information superiority will have to be won first. He asserts that in 21st century warfare, information warfare “will decide who will win and who will lose the war.”¹⁰³ Other analysts concur that “the struggle to wrest information dominance will permeate everything and will be exceptionally fierce and intense.”¹⁰⁴

IW is understood to have both offensive and defensive applications. One military strategist maintains that a situation of “information offensive” would exist only for the side with superior technology. For the side on the information defensive, tactics available include counter-reconnaissance (either *passive*—e.g., deception and concealment, or *active*—such as blinding or destroying the adversary's reconnaissance systems), anti-jamming measures, virus protection, and information counterattack.¹⁰⁵

Chinese military literature reflects concern about defensive counters to virus attacks. In an essay entitled *Exploration and Analysis of Military Computer Security and Virus Protection*, Chou Hsi alleges the U.S. is developing a “computer virus weapons plan” that would plant viruses in computers and electrical equipment exported abroad—the virus would presumably be activated during a conflict to cause the equipment to malfunction. His essay calls for China to take preventive measures against future IW attacks, including raising computer security awareness in the armed forces, creating security filters for imported electronic equipment, and conducting research on computer viruses.¹⁰⁶

Chinese military thinkers are also addressing the offensive use of computer viruses to destroy or degrade adversary capabilities. In *Information Warfare Poses Problems*, Zhou Li and Bai Lihong assert:

Computer viruses can be used to track down the enemy's target system and the enemy's guided missiles may end up attacking the side which has launched them . . .¹⁰⁷

On this same issue, another analyst highlights the superiority of IW over traditional weapons of war:

Once a computer system is damaged so that it cannot operate normally, cruise missiles and other precision-guided weapons become arrows without targets; and high-performance aircraft, tanks, warships, radar, and activated command systems will be totally in the dark about what to do.¹⁰⁸

In short, information warfare is seen as a phenomenon that is changing the nature of war from one focused on seizing territory or destroying forces, to one seeking to paralyze the adversary's information systems and destroy his will to resist.¹⁰⁹

Information Warfare With Chinese Characteristics

Cultural Foundations

Many of the principles of asymmetric warfare, including the foundation for information warfare, have been a part of Chinese thinking for over two millennia. Chinese strategists draw parallels between ancient wisdom and future warfare, relying on timeless prescriptions from such sources as Sun Zi (SunTzu)'s *The Art of War*:

- Know your enemy and know yourself, and in a hundred battles you will not be in peril.¹¹⁰
- The supreme skill in war is to defeat the enemy without fighting.¹¹¹
- Attack the enemy's strategy, then his alliances.¹¹²

Chinese military planners are well aware of the wide gap that exists between the current state of their military technology and that of potential competitors such as the United States. Even while their nation takes steps to improve its relative position, Chinese strategists see in Sun Zi a prescription for the defeat of the strong by the weak. As the former Director of the Strategy Department of China's Academy of Military Science recently noted:

In light of the fact that the military lags behind its strong enemies in information technology and information weapons, the military must emphasize the study of ways to use inferior equipment to achieve victory over enemies with superior equipment. 'Using the inferior to overcome the superior' is a tradition of China's military.¹¹³

These words capture the essence of the Chinese approach to *asymmetric warfare*. Sun Zi's exhortations to "stay clear of the enemy's main force and strike at its weak points,"¹¹⁴ and "the weak and the strong can shift their position"¹¹⁵ are applicable to the Chinese military situation today. While in a position of relative military inferiority, Beijing may also draw on ancient Chinese wisdom to "hide one's capacities and bide one's time" to strengthen its power.¹¹⁶

The wisdom of Sun Zi also underpins China's classic deterrence strategy. "The national security deterrence perception of 'overawing the enemy' is the important means to achieve the aim of 'subduing the enemy without fighting.'" ¹¹⁷ This concept is easily extended to the information realm; in fact, "*information deterrence*" may be the strongest suit in the Chinese inventory against an information-dependent adversary like the United States. COSTIND's Chang Mengxiong maintains that, given two unequal opponents, "if one side can effectively weaken the information capability of the other side, even if its capability in other ways is less, *the other side will dare not take any ill-considered action.*"¹¹⁸

Chinese military strategists continue to study the transformation of the U.S. military in the wake of the Gulf War. Since the U.S. is seen to be at the pinnacle of advances in high-tech warfare, the Chinese are analyzing the

thinking of U.S. futurists, revisions in U.S. military doctrine, C³I and organizational restructuring, etc.¹¹⁹ The Chinese have a long tradition of adapting outside thinking to fit their needs. Martin Libiki, a U.S. information warfare expert, notes that militaries prosper by adapting ideas to their specific circumstances and strategies. “We know the Chinese can copy our thoughts, but whether they can innovate in pursuit of their own objectives is not yet obvious.”¹²⁰ Indian analyst M. Ehsan Ahrari responds with this warning:

The Chinese have proven themselves remarkable in indigenizing Marxism to suit their cultural requirements and they are likely to develop information-based warfare techniques to suit their special needs before too long. The USA must remain especially sensitive to this profound historical reality about the PRC.¹²¹

Two young Chinese officers at the Academy of Military Science, in a work entitled *America, Russia and the Revolution in Military Affairs* have issued their own warning:¹²²

Those who believe that the current revolution in military affairs will be under the control of the United States or can develop only according to the speed and directions set by the United States are extremely wrong and quite dangerous.

Chinese attempts to “set the speed and directions” for the development of a unique information warfare capability may be well underway. For example, some PRC strategists have attempted to wed the traditional Maoist idea of a “people’s war” with the special nature of information warfare, creating the specter of “information warfare with Chinese characteristics.”

People’s Information War and the Internet—Is There a Connection?

While evolving from a strategy of “fighting a people’s war under modern conditions” to one of “fighting modern warfare under high-tech conditions,”¹²³ the PLA has not lost its appreciation for the force to be generated by mobilizing China’s vast human resources. “In the people’s war, no great significance is attributed to the differentiation between military and civilian realms, between military personnel and civilians.”¹²⁴ This approach is boosted by access to information technology:

Thanks to the widespread availability of computers, there are increasing opportunities for individuals as well to actively

take part in an information war. . . . We can drop into a café where a computer provides us with a wide variety of news and messages; in precisely the same way, thanks to special software and hardware, we are capable of destroying an enemy's data banks and information networks.¹²⁵

Other statements by Chinese military thinkers echo this view:

- “(A)nybody who understands computers may become a ‘fighter’ on the network.”¹²⁶
- “The development of the Internet opens up new opportunities for the individual to participate directly in an information war.”¹²⁷
- “(A)ll preconditions are in place for information warfare to be not simply a matter left up to armed forces, but rather one in which the general public can take part.”¹²⁸

In *Exploring Ways to Defeat the Enemy Through Information*, Cai Renzhao calls for the military and civilians to cooperate in “tapping the military potential of the ‘information superhighway.’”¹²⁹ His strategy is echoed by the previously cited analysts of the PLA Academy of Electronic Technology:

Computer networks form the foundation for IW. IW is warfare waged by all the people under high-tech conditions. It is waged not only with military forces, but also with the aid of networks throughout society as a whole.¹³⁰

Recognizing the multiplier effect of information technology on both the national economy and the national defense, several analysts have called for the nation to “build an information superhighway network with distinctively Chinese characteristics.”¹³¹ These “high-speed, high-capacity, broadband information” networks would serve both the “market” and the “battlefield.”¹³²

China's telecommunications infrastructure, currently second in size only to that of the U.S.,¹³³ has undergone significant expansion and modernization in recent years. A small but growing portion of the Internet, China has four major state-approved networks connected directly to the Net. The status of the networks as of December 1996 is depicted in Figure 2. With the Internet now linking 1.2 million of the 20 million computers in China,¹³⁴ Beijing appears to have made a conscious decision to loosen restrictions on access

to global information. Since economic modernization is China's top priority, Beijing may be willing to gamble with the political risks of broad Internet access to reap the benefits of increased exposure to Western information, especially in the scientific and technological realms.

Loosening restraints on access to the Internet is also a means to increase the technological sophistication of both workers and soldiers. A growing population of skilled computer users—with access to an unprecedented quality and quantity of information on potential adversaries (across the spectrum of economic, diplomatic, and military confrontation) are the pool of China's future military leaders and information warriors.

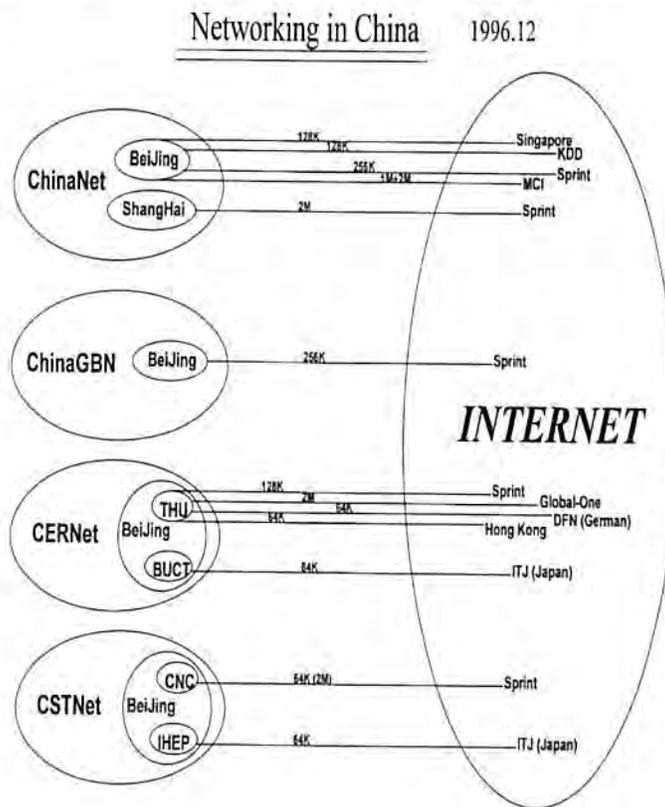


Figure 2. Chinese Network Connectivity with the Internet (Dec 96)¹³⁵

PRC IW: Implications for the U.S.

The United States is the most advanced nation in the world in cyberspace, but the dilemma for the Pentagon is that it may also be the nation most vulnerable to attacks in that arena.¹³⁶

The autumn 1996 edition of *Parameters* outlines the basic features of strategic information warfare. These include low cost for the aggressor, difficult warning and attack assessment problems, complications in building and sustaining coalitions in an IW environment, and the vulnerability of the U.S. homeland.¹³⁷ All four of these elements appear to be favorable for Chinese use of IW.

First, an extraordinarily low investment can result in tremendous capability. As the Director of the National Security Agency (DIRNSA) recently stated in Congressional testimony, "Anyone with a computer, modem, and telephone line can make use of a burgeoning array of network sniffers, malicious software, and sophisticated information attack tools to disrupt network operations."¹³⁸ He also maintained that

a moderately sophisticated adversary can cause considerable damage with fewer than thirty people and a nominal amount of money if the systems they are attacking are not adequately protected and defended.¹³⁹

Furthermore, new hacker tools are constantly under development, widely disseminated, and available in open forum.¹⁴⁰ In the words of Chinese IW expert Shen Weiguang, "the information to attack the net is available on the net."¹⁴¹

Second, attacks against U.S. systems are widespread and difficult to trace. A 1996 DoD report estimated that a quarter of a million network attacks against U.S. defense systems occurred during the previous year.¹⁴² Even more disturbing is the fact that, according to DIRNSA, "even when attacks are detected and reported, we rarely know who the attacker was."¹⁴³ In the words of a Chinese author,

an information war is inexpensive, as the enemy country can receive a paralyzing blow through the Internet, and the party on the receiving end will not be able to tell whether it is a child's prank or an attack from its enemy.¹⁴⁴

Such a situation would work to China's advantage, should it choose to strike at U.S. vulnerabilities while taking advantage of ambiguity to avoid retaliation.

Third, IW is an ideal weapon to dissuade an adversary's ally from joining a hostile coalition. In a hypothetical scenario, if China used a limited information attack to demonstrate its capability to take down the Japanese financial system, Tokyo might well think twice about supporting U.S. operations in a regional confrontation. Recall Sun Zi's emphasis on the importance of disrupting alliances.

Fourth, the U.S. homeland itself is vulnerable to an IW attack. The Director of the CIA, George Tenet, recently predicted the Information Age battlespace will include the U.S. domestic infrastructure, with electric power grids and telecommunications networks "targets of the first order."¹⁴⁵ To illustrate his point, Director Tenet quoted an article in the *China's People Liberation Daily* which stated, "an adversary wishing to destroy the United States only has to mess up the computer systems of its banks by high-tech means. This would disrupt and destroy the U.S. economy."¹⁴⁶ Tenet further noted that:

As I recently testified before the Senate Intelligence Committee in January [1998], we have identified several countries that have government-sponsored information warfare programs. Foreign nations have begun to include information warfare in their military doctrine, as well as their war college curricula, with respect to both defensive and offensive applications. It is clear that nations developing these programs recognize the value of attacking a country's computer systems, both on the battlefield and in the civilian arena. The *magnitude of the threat* from various forms of intrusion, tampering, and delivery of malicious code, is *extraordinary*.¹⁴⁷

The DIRNSA differentiated between two types of IW threats: unstructured threats (random and limited) and structured threats (methodical, well-supported, extensively funded, with long term goals).¹⁴⁸

The Chinese present a good example of the structured threat. In 1995, the Chinese military openly acknowledged that attacks against financial systems could be a useful asymmetrical weapon. By 1997, the Chinese military had incorporated computer warfare into an exercise scenario.¹⁴⁹

The Directors of both CIA and NSA further concurred in outlining the risk that an adversary would turn to IW as a means of asymmetric warfare to “level the playing field” in a military confrontation with the U.S.¹⁵⁰ If China chose to employ information attacks against U.S. systems, it could achieve success both by concealing the identity of the attacker and by striking a blow against a U.S. vulnerability.

Of course, the preferred Chinese strategy would be to “defeat the enemy without fighting.” In this regard, it would seem the Chinese would have their choice of stratagems to employ: “hide one’s capabilities” or “overawe the enemy.” Either lever of “information deterrence” could serve to deter a potential adversary such as the U.S. from engaging it in war, and may serve China well in the coming decades.

PRC IW Capabilities: Conclusions

It is difficult to determine the extent of Chinese offensive and defense capability in information warfare. There is no doubt, however, that Chinese strategists are seriously studying IW concepts, methods, and applications; disseminating ideas through the PLA military academies; and testing these concepts in war games. Given the low cost and low technology required, the Chinese have in IW an ideal weapon with which to wage asymmetric warfare against a more powerful military adversary. As the nation’s highest ranking intelligence officials have testified, the U.S. is vulnerable to just such an attack against its information infrastructure. This recognition leaves the Chinese with both a potent weapon and tremendous deterrent leverage should it find itself in confrontation with the U.S. over what Beijing considers its vital strategic interests.

IV. Conclusions

Hide one’s capacities and bide one’s time to strengthen one’s power.¹⁵¹

A collision of interests between the U.S. and China is inevitable. The question is not whether the two nations will collide, but when and how. Already, bilateral relations have been strained and tested over such issues as human rights, intellectual property, weapons proliferation, and the Kosovo war, not to mention Chinese espionage at U.S. laboratories. Will a more confident and militarily capable China be more willing to take on the U.S. over what it perceives as threats to its vital interests, such as the status of

Taiwan, stability on the Korean peninsula, and PRC claims in the South China Sea? A fundamental goal of the U.S. currently is to prevent the rise of a single dominant power in Northeast Asia. It is not inevitable that the U.S.—in 15 years and beyond—will be in the position to maintain this goal and back it up with the credible threat of force in the region.

China has the potential to become a peer competitor of the United States. China's emergence as a great power seems almost inevitable when one considers its diplomatic strength, economic growth, natural resources—including its immense population—and its military potential, including the nuclear “card.” To this one must add China's advances in its nuclear and space capabilities. Needless to say, the eventuality and timing of such a scenario cannot be predicted with certainty. Factors that would tend to favor China's rise include sustainment of its economic growth, internal political stability, ability to address the domestic needs of a developing country, regional stability, and avoidance of military conflict in the near term with the United States.

U.S. military advantages over China are diminishing in such critical areas as nuclear weapons, space technology, and information warfare. With its ongoing modernization program, China is developing nuclear weapons with increased accuracy, mobility, and range. In addition, its arsenal will be in a better relative position quantitatively due to ongoing U.S. and Russian strategic arms reductions. Beijing's growing prowess in space—including a possible manned presence in space within the decade—will also provide tremendous benefits in the military realm. In these areas and in information technology as a whole, China has been a beneficiary of the so-called “technology paradox”: the further technology advances, the easier it is to catch up.¹⁵² Through concerted effort and investment, China has demonstrated its ability to “leap frog” over some of the evolutionary stages followed by advanced nations in developing its strategic capabilities. Beijing continues to leverage global advances in technology and communications to improve its own systems and/or upgrade its inventories at a fraction of others' development costs.

China's rapid economic growth has supported technological modernization, and both have gone hand-in-hand with an improved defense posture. This is the case both because an expanding economy creates more money for direct investment in the military (if the political leaders so choose), and because of the opportunities to leverage dual-use (civilian and military) technology and infrastructure, such as electronics and space technology. An excellent example is Beijing's investment in the nation's telecommunications

infrastructure—the expanding and modernizing network advances both commercial and military aims.

China does not (philosophically or militarily) have to approach U.S. levels of capability or proficiency to pose a threat to the United States. There is strong evidence the Chinese are vigorously analyzing, pursuing, and acquiring the means to wage “asymmetric” warfare against a more powerful adversary. Even in the near term, reliance on asymmetric warfare could help Beijing “level the playing field” with the United States. It would be dangerous to draw parallels to “prove” Chinese military inadequacy far into the future. “Warfighting with Chinese characteristics” could be unrecognizable to a Western foe expecting an alter ego adversary. Asymmetric warfare can be cheap, low tech, readily available, and devastatingly effective. U.S. advantages in military capabilities based on space and information systems have increased its reliance on these assets and correspondingly increased U.S. vulnerabilities to their degradation or destruction. Reported Chinese research in anti-satellite systems and its progress in information warfare capabilities may allow it to successfully stand up to a technologically advanced adversary.

Information warfare may be the weapon of choice for China against a capable military adversary. There would be little reason for a hostile China to confine IW attacks to military targets. In fact, the U.S. civilian infrastructure—the power grid, telecommunications infrastructure, financial systems, emergency systems, etc.—is vulnerable. So are the infrastructures of U.S. allies in Asia. The shared knowledge of this fact may permit China to employ a strategy of information deterrence in a situation of confrontation with the United States. This is in keeping with 2-millennia-old Chinese stratagems which advocate “defeating the enemy without fighting.” Alternatively, it could choose to wage IW, employing its traditional strategy of “using the inferior to overcome the superior.” Consistent with the principles of Sun Zi, an IW attack could be carried out with complete surprise, and with sufficient deception to potentially avert a devastating counterattack.

It is not inevitable that China will become an adversary of the U.S.; however, such a possibility could become a self-fulfilling prophecy if the U.S. “mishandles” its relationship with China. A U.S. policy of constructive engagement appears to offer more prospects for peaceful coexistence than attempts to contain China, which seem destined to fail. Beijing has repeatedly demonstrated its ability to develop or acquire the technology it needs to progress technologically. Attempts to isolate or contain China are likely to backfire, since the U.S. would lose both influence and leverage, and

the action would simply invite responses ranging from indigenous solutions to reliance on non-U.S. suppliers for critical technology and components. Although concerted efforts of a powerful country like the U.S. could slow Chinese progress in "sensitive" areas, the globalization of technology and profit motivations of other players effectively conspire to remove the technology "veto" from any one actor's hands. The U.S. holds some of the cards with which to positively shape the future of Sino-U.S. relations—the specter of a militarily capable and potentially hostile China make a compelling case for doing so.

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Chapter 3

CHINESE POWER PROJECTION

Steven W. Rogers

Chinese Power Projection

Steven W. Rogers

Are the Chinese seeking to exert influence, establish a new balance of power, or project dominant power in Asia? Opinions obviously vary on what the Chinese are after. This chapter focuses on the requirements the Chinese would need in the 21st century to effectively project military power in East Asia. Power projection as defined here is not limited to the use of strictly military assets. Rather it is examined from the perspectives of political, economic, and military power projection assets and trends. Also addressed is the question of whether China is really seeking to secure a regional influence or regional balance of power or whether China is attempting to modernize to project its power and presence outside its current sphere of control.

There is an almost perceptible yearning within some quarters of the United States military-industrial complex for the emergence of a "peer competitor" to the United States. Decades of threat-based budgeting during the Cold War justified big missions, big force structures, and big weapon systems. But the collapse of the Soviet Union has severely eroded the rationale behind threat based budgeting. The emergence of a new peer competitor would reinvigorate the threat to U.S. interests. In some quarters, there are longing gazes turning to the Far East to find this new threat, to focus on the most populous nation on earth—China.

The Chinese government, in many of its practices, seems to pose a threat potential to many of its neighbors, and to the United States. The Chinese government remains an autocratic Communist regime. Lack of transparency in policy formulation and decision making among the Chinese leadership constrains our understanding. Their cultural tradition of deception and secretiveness inhibits our ability to discern true intent. State control of flows of information and the secrecy of much of the official information raises barriers to understanding. Constraints on a free press also inhibit our understanding.

Two prominent schools of thought have emerged in the debate about China. One is that China and the United States are on an inevitable collision course. Rivalry over military, economic, diplomatic and ideological differences will dominate relations between the two predominant powers of the early 21st Century.¹ The other school of thought asserts that concerns about the Chinese threat are exaggerated. China is mainly preoccupied with internal concerns as its economy and society go through wrenching transformations. Accordingly, China will become a responsible power and

not a rogue nation. If the U.S. treats China as an enemy, this will become a self-fulfilling prophecy.² There are also some analysts that split the difference and see China seeking only regional hegemony with limited expansionist ambitions.³ They feel that needed infrastructure investments and anemic power projection capabilities will keep Chinese ambitions moderated. Which interpretation is correct? To discern that it is necessary to examine the actual elements of Chinese power and see what they tell us about potential Chinese power projection capabilities and trends.

Political Aspects

The Chinese have traditionally believed in the “Mandate of Heaven”—the notion that the rulers have the favor of the gods as indicated by the good fortune befalling the country and its people. This is an exclusive Chinese ideology. Foreigners have been a source of instability and tragedy for the Chinese, particularly during the last 150 years. Thus a strong xenophobic strain informs Chinese foreign relations.

This Chinese belief in their own moral superiority and an aversion to foreign intrusions sets up a potential for confrontation with the United States. U.S. policy is currently driven by the idea that the world will be a safer place if free markets and democratic government that honored human rights were increased and entrenched in all regions of the globe.

American policy directed at reforming China’s internal affairs, particularly in the realm of human rights, is hard for Chinese leaders to accept conditioned by their past to resist foreign intervention of any kind and a belief in China’s inherent superiority. These two competing sets of values have the potential to produce a clash of civilizations.⁴

Communist ideology has lost much of its moral authority. Western ideals pose a threat to the regime in Beijing. Is the Chinese leadership seeking to substitute Chinese nationalism and pride as a motivation for the populace? Coupled with its xenophobic tradition, the Chinese leadership might see advantages in a more aggressive foreign policy.⁵ Certainly, China’s approach to issues such as Taiwan and the South China Sea is consistent with reducing American influence in the region as well as consistent with historical territorial claims. Is this a looming clash of civilizations, or just competition to dominate the regional balance of power?

One thing the Chinese desire is stability, since they have seen so little of it for the last 150 years. However, as the Chinese government continues to encourage economic growth, it faces the inevitable dilemma of relinquishing

considerable state control over its people and the economy. The internal contradictions of command economies have produced conditions described as "mutually shared poverty." However, free-market capitalism is requiring the bureaucracy and the party to relax their grip. Some corresponding dismantling of the bureaucracy is occurring. As economic growth has slowed in the last two years, discontent has increased among the population over corruption, crime, abuse of power by local officials, and the shredding of the social safety net.

The leadership worries that this discontent will lead to instability. In this century instability devastated China and caused the deaths of millions. But continued economic expansion at the rates seen in the early 1990s, even if it were possible, will require greater autonomy for individuals, industries and local officials. Economic performance and nationalism seem to form the new underpinnings of the communist regime. Yet this is a two-edged sword continued economic progress may require a looser grip on power by the Communist Party of China (CPC). Further erosion in the legitimacy of the Communist Party could be accompanied by historical patterns of insecurity, paranoia and arrogance.⁶

As the older leadership of the Chinese government passes from the scene, it is possible the new generation will be more pragmatic and less ideological in governing China. Many of these future leaders have been educated in foreign universities. Further, there is now no PLA official serving in the party's highest decision-making body, the Standing Committee of the Politburo of the Central Committee. Party-PLA relations have always been complicated, and secretive. China's current leaders lack Mao's charisma or the ideological appeal of Cold War communism. However, nationalism is growing in China, and it might be a substitute to encourage loyalty and civilian control of the military. The emerging nationalistic strain among Chinese is demonstrated by publications of anti-American books such as *China Can Say No*.⁷ The shrill public reactions to the May 1999 NATO accidental bombing of the Chinese embassy in Belgrade reveal a new and rising nationalism in China. The regime is likely to exploit the incident as a means of boosting demand for new weapons expenditures.

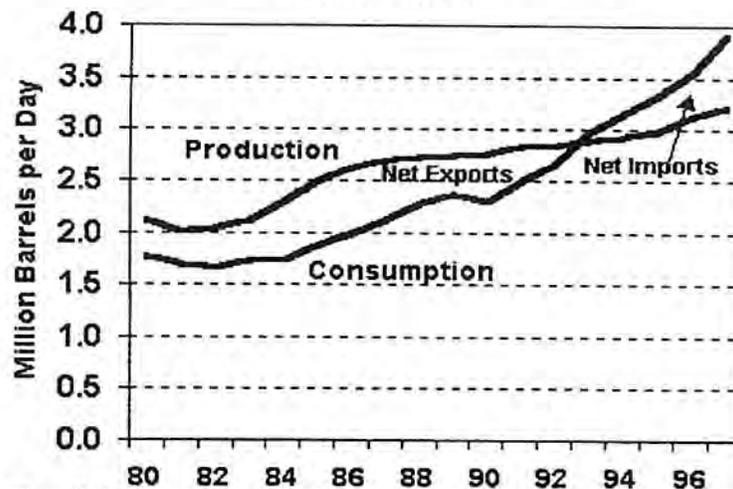
Economic Trends

The Chinese leadership evidently learned from the collapse of the Soviet Union. Instead of a powerful military inhibiting a weak economy, they are trying to create a powerful economy that will allow them to afford a strong

military.⁸ Social stability and critical infrastructure demands are driving forces that give economic development top priority. Estimates are that current unemployment during this massive economic transformation may be as high as 17 percent.⁹ China's budget deficit for 1999 is estimated at \$12.75 billion, and demands for infrastructure spending could push it even higher. However, China's leaders also see such major government spending as a means to ensure social stability and, by extension, their continued position of power and influence.

In pursuit of a world class economy, Beijing has resisted devaluing China's currency in the face of Asia's current economic woes. It has hoarded its hard currency reserves to an estimated \$140 billion.¹⁰ China is the world's most populous country and the second largest consumer of energy. China has become an oil importing country as shown in Figure 1. It gets its crude oil from Indonesia and the Middle East, with half its imports coming from the Middle East.

China's Oil Production and Consumption 1980-1997



Source: "China," United States Energy Information Administration, May 1998, n.p. On-line, Internet, 11 January 1999. Available from <http://www.eia.doe.gov/emeu/cabs/china.html>.

Figure 1. China's Oil Production and Consumption (U.S. Energy Information Administration)

In 1997, China exported \$40 billion more than it imported (\$183 billion versus \$142 billion).¹¹ Not surprisingly China now runs a trade surplus with the U.S. of about \$58 billion per year. The trade surplus with the U.S. rose

15^{1/2} percent in the first 11 months of 1998 to \$52.9 billion¹² and was \$4.9 billion in January 1999, surpassing Japan's January surplus with the U.S. of \$4.7 billion.¹³ Interestingly, a dependence on foreign trade and foreign capital for further economic growth will be essential for continued growth of China's economy. The extent of China's interdependence in the world economy has reached a level where it may be a potential restraining influence on adventurism and aggressive militarism.

Part of Deng Xiaoping's emphasis on economic realignment involved defense conversion. An indicator of Deng's intentions was captured in his cryptic "16-Character Slogan" from 1982:

Combine the military and civil,
Combine peace and war,
Give priority to military products,
Let the civil support the military.¹⁴

How should one interpret this slogan? Is it a short-term call for defense conversion, then defense modernization? Or does it mean develop the civilian economy before military modernization over a long timespan? Or maybe both? The focus on the economy by President Jiang Zemin since Deng's death, and the 1998 directive for the PLA to divest itself of its thousands of business enterprises, seems to indicate the latter is closer to the true intent of the Beijing leadership.

By taking on the PLA, Jiang Zemin has chosen to reform one of the most powerful institutions in China. Weaning the PLA from their off-budget money sources has not been easy. However, the rule of law and greater transparency are essential for the continued growth of the Chinese economy. Getting rich, smuggling and black marketeering have distracted the PLA from its prime mission.¹⁵ China's military may have been operating more than 15,000 ventures with revenues of approximately \$18 billion in areas as divergent as telecommunications, pharmaceuticals, real estate, and illicit arms deals.¹⁶ Will the reforms work? Only time will tell, but there are indications that PLA elements are resorting to subterfuges, such as business name changes and bogus ownership transfers.

As the Party reasserts control over China's military, it is also attempting to re-professionalize the PLA. Not only have smuggling and corruption diminished the effectiveness of the PLA, it has destabilized portions of China's economy. Businesses competing with PLA enterprises are not only

at a price disadvantage, at times they are intimidated and blackmailed to discourage further competition. There also have been foreign policy embarrassments for China as illicit arms deals by rogue officers came to light. The down side to increasing the effectiveness and the professionalism of the military is that China might become less constrained in its foreign relations and more belligerent as its combat capabilities improve.

The involvement of the PLA in numerous economic enterprises was an attempt to provide the funding necessary for the modernization of China's armed forces. However, the unintended consequences of corruption and the inherent inefficiencies of state-run enterprises caused serious problems. The late Harvard historian John K. Fairbank described China as divided into three parts: bureaucratic China for government administration; the interior, under-developed China; and commercial China. The military-industrial complex has created a fourth China.¹⁷ Untangling the many tentacles of the PLA's money machine is a difficult and time-consuming process. It remains to be seen whether the Party can succeed.

As the economic growth rate in China slows, a variety of problems such as rising unemployment, an archaic banking system, and inefficient tax collection inhibits the government's ability to devote more resources to defense. However, this conflicts with government promises to the military leadership to increase defense spending to offset the losses in revenue as the military divests itself of its business enterprises. Budget deficits are growing.¹⁸ Great pressure on defense spending will result from increasing interest payments on debt, propping up the banking system to defend the Chinese currency, and continuing to employ more people than needed in state-owned enterprises. This in turn will impede the power projection capabilities of the Chinese military for a number of years.

Military Problems

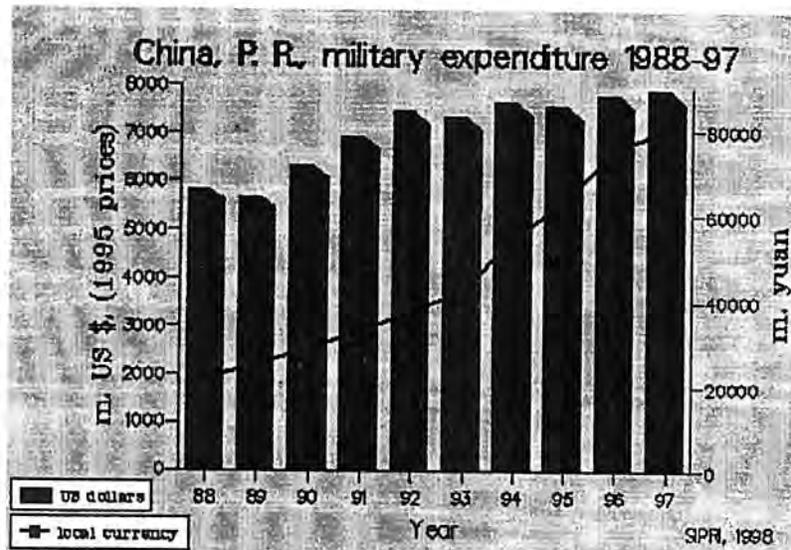
China's military doctrine has evolved from "People's War" to active defense with high technology. Deng Xiaoping instituted long-term reforms whose objective was to nurture China's ability to design and build its own weapons and to limit dependence on foreign suppliers.¹⁹ However, the first priority in the PLA was improving the leadership, managerial and technical proficiency of the officer corps. Selective modernization and the upgrading of key units have been Beijing's approach since the mid-1980s.

The Gulf War was a wake-up call for China's leadership. They had not expected such a quick allied victory, and they were concerned this campaign

might be the “first step toward U.S. hegemony in a unipolar world.”²⁰ Experts at the National Defense University in Beijing have studied the Desert Storm campaign extensively. They concluded: the PLA should (1) reduce the number of soldiers and improve the armed forces’ equipment, training quality, and actual combat capability; (2) give priority to conventional arms over nuclear weapons; (3) introduce high technology, including advanced guidance systems, pinpoint accuracy bombing, weapons of mass destruction, and stealth aircraft; and (4) build a rapid-response force.²¹

This is now Chinese policy. Chinese purchases of foreign military equipment have been substantial, including supersonic fighter jets, bombers, submarines and air defense systems.²² Central Intelligence Agency Director George Tenet recently told Congress that China has been modernizing its weapons and armed forces for several years. This includes making its surface-to-surface missiles more accurate and powerful.²³ However, in many cases this modernization is limited to building “pockets” of excellence while the daunting task of upgrading the equipment available to the majority of the PLA is deferred to some unspecified future date.²⁴

It is difficult to discern whether China’s real intention is for military modernization, a revolution in military affairs, or to acquire power projection capabilities. There is little clear evidence about the real objectives and the real adversary. Determining if China wants to deter, delay, deny, destroy, or defeat a potential opponent would reveal China’s real objective.



Source: "China, P.R., Military Expenditure 1988-97," Stockholm International Peace Research Institute, 1998, n.p. On-line, Internet, 18 January 1999. Available from <http://www.sipri.se/cgi-bin/backend/milex.pl?coun=China%2C+P,+R>.

Figure 2. Chinese Military Expenditures

One thing is obvious, as shown by the chart in Figure 2, the Chinese defense budget has been consistently increasing since the late 1980s. These numbers reflect the officially published budget, which most experts calculate is vastly under-reported by a factor of five to ten. This lack of transparency is more than just the Chinese proclivity to secrecy. It is difficult to estimate the contribution from the thousands of military owned and operated businesses. The PLA has historically had little incentive to be candid with the amount of money it extracts from its commercial endeavors. Endemic corruption also limits full accounting. However, China's annual defense budget is generally estimated to still be smaller than Japan's, which is about \$50 billion. This places a definite constraint on the PRC acquiring the means for power projection.

Evidence of China continuing to acquire power projection capabilities is mixed. Several initiatives and purchase of systems are evident. These include aerial refueling, submarines, anti-submarine capabilities, anti-ship missiles, ballistic missile technology, and multi-role strike aircraft. Further, the Chinese military has increased construction of facilities on Woody Island in the Paracels and Mischief Reef in the Spratly Islands. Runway

improvements and fuel-storage facilities on Woody Island in conjunction with the purchase of Su-27 aircraft convince many of China's aggressive intentions. China may have converted at least 20 B-6 bombers into aerial refueling tankers, and added refueling pods to 24 F-8 fighters.²⁵ There are also reports that China has been conducting laser tests for possible anti-satellite use, as well as laser radar and advanced radar systems to track satellites. Additionally, the PLA is developing jammers for the Global Positioning System, high-powered microwave missile warheads, and improving the accuracy and stealthiness of their ballistic and cruise missiles.²⁶

China's acquisition of and research and development on advanced naval, air and missile systems are more than would be required for internal defense. They have acquired supersonic, sea-skimming SS-N-22 anti-ship missiles and wake-homing torpedoes from Russia. This provides capability against U.S. Aegis-equipped cruisers, destroyers and aircraft carriers. China is also improving its strategic missiles with more accurate guidance, solid-fuel propulsion and multiple warheads.²⁷ The purchase by Thailand of an aircraft carrier has stimulated China's determination to acquire the appropriate technology to also field this capability.²⁸

Chinese military leaders have studied the Gulf War closely for lessons learned. Some "asymmetric" warfare capabilities such as information warfare and ballistic missiles hold the potential for providing a military advantage to the Chinese without waiting for a complete modernization of their military. Over-the-horizon radar, long range communications and radar satellites for all-weather reconnaissance are other capabilities the Chinese are pursuing. These systems would improve the situational awareness the Chinese will need for effective power projection. A pattern of slow, deliberate, methodical improvement in China's military is emerging with emphasis given to economic growth as the first priority.

In spite of the impressive array of systems in which China is showing interest, the evidence indicates their purchases to date have been for limited quantities. Without sufficient numbers, these systems may continue to be research and development curiosities for the Chinese military, tantalizing appetizers promising great things at some yet-to-be specified date. Equipping enough units with these advanced systems seems beyond the current means of the Chinese military budget.

Very capable power projection forces, once achieved, could be a double-edged sword. China's ability to project power will require proficiency in combined arms and joint operations with an expertise and level

of integration that would produce a formidable concentration of power in its military that should give any autocratic CPC leadership—dictator or oligarchy—pause for concern. This level of competence and capabilities, to include command, control, communications, and intelligence employed in large-scale operations, can just as easily be turned inward as outward. Nurturing professionalism, education and esprit in the Chinese officer corps will most likely also nurture ambition. An intelligent, ambitious, aggressive PLA with the means at its disposal to seize and hold a nation with a dynastic tradition and no democratic legacy has to be the Chinese leadership's worst nightmare. Can this leadership really afford the unintended consequences of power projection? Control of the military may require restraint in its power projection capabilities and that further implies restraint in the extra-territorial ambitions of China's leaders.

Chinese Power Projection: Indicators

Nevertheless, there are some compelling reasons to believe that China is seeking a power projection military capability. The system procurements over the last decade form a pattern of acquisition beyond the needs of internal defense. In the mid-1990s, China bought supersonic jet fighters, bombers, submarines and air defense systems worth approximately \$4.4 billion from Russia.²⁹ China purchased 26 Su-27 aircraft from Russia in 1992, agreed to buy 50-75 more in 1995, and is attempting to nurture the indigenous capability to produce them by the hundreds in a licensed co-production agreement with Moscow.³⁰ Aerial refueling capability and advanced air-to-air missiles will increase the combat radius and lethality of this capability. The research and development efforts for an airborne early warning capability, if successful, would provide the situational awareness necessary to project power beyond Chinese territory. The prospects for acquiring some capability for airborne warning and control seem fairly good given that not only the Russians, but also the Israelis and the British are eager to assist the Chinese with hardware and expertise.

The French *Exocet* anti-ship missiles, Italian torpedoes, and four Kilo-class submarines the Chinese have purchased from the Russians are more than is necessary for coastal defense. China continues to build *Han*-class nuclear-powered attack submarines, with five in the inventory as of 1995.³¹ Chinese research and development on aircraft carrier technology and support are also indicative of a future desire to defend China's interests beyond its current borders.

Other indicators support the view that China's acquisition of power projection capabilities include a desire to diminish or supplant U.S. and Japanese influence in the Asia-Pacific region and expand China's historical impact. The efforts to improve the effectiveness and professionalism of the PLA indicate a desire not only to better defend Chinese territory, but also to defend Chinese interests in the South and East China Seas out to the "first island chain." Chinese defense spending has been significantly increasing for over a decade, and that trend is expected to continue.

Chinese Power Projection: Constraints

On the other hand, China's pilots are poorly trained and do not receive enough flight hours to become combat proficient in daytime visual flight rule conditions, let alone at night or in adverse weather conditions. Chinese Air Force pilots may receive as few as 30 flight hours per year and they lack "all-weather, night navigation, over-water operational skills."³² Power projection operations are more than just fair weather, daytime endeavors. Maintenance and logistics capabilities for the PLAAF and the PLA army and navy are grossly deficient. The Chinese have attempted a selective modernization of key pockets of excellence with modest, limited purchases of advanced systems from foreign suppliers, principally Russia. However, this creates a vulnerable dependence that has created difficulties in the past when foreign supplies were cut off. It will take a substantial number of years before the Chinese defense industry is capable of producing world class armaments in high technology fields such as stealth and sophisticated avionics and before the Chinese military is capable of sustaining a power projection force during high-intensity operations.

The Chinese economy is in the midst of a wrenching transformation from a command economy of state-owned enterprises to a mixture of market capitalism and socialism. Additionally, GDP growth is now down to about five percent per year. Moreover, the political leadership has directed the military to divest itself of the business base it acquired during Deng's reign. As this divestiture proceeds, a system of military customer and civilian supplier will emerge. In the short term, this could slow China's military modernization, although it might advance it in the long run. Further, the demands for infrastructure spending are increasing, as is the need to continue to stimulate the economy for purposes of social stability. With a civilization whose history spans thousands of years, one view taken by its leaders may

be that China can afford to be patient about increasing its power projection capabilities until it gets its economic house in better order.

However, such a go-slow approach may be resisted by part of the Chinese leadership. For example, will moving the PLA out of business activities risk the discontent and resistance of the senior military ranks? Critical funds for military infrastructure, modernization, and pay came from these businesses, and it is unclear how the political leaders will replace the lost revenues.

Conclusions

To paraphrase Churchill speaking about the Soviet Union years ago, China, too, is a mystery wrapped in a riddle inside an enigma. The lack of transparency in China's decision making makes it difficult to discern the true intentions of the leadership. And, it is clear they want it that way. This autocratic regime is still adamant that there be no competing parties or factions to challenge the Chinese Communist Party. Liberalizing trends in the economic arena and at the local political level are encouraging. However, Beijing has not relaxed the absolute political primacy of the Party in security matters and questions of political opposition.

China appears determined to gain its place as a world power and regional hegemon. The Europeans and Americans interrupted China's dynastic tradition for a time in the 1800s and early 1900s. The United States seems determined to prevent the emergence of a dominant regional power in Asia. Are these two positions irreconcilable? Possibly, if the communists in Beijing attempt to expand their influence with force. Are the U.S. and China pre-destined for conflict? They are if the Chinese government continues its political and economic liberalization. Thus, a very complex dynamic is at work as China modernizes. The factors leading China into the 21st Century could produce a Chinese version of Mikhail Gorbachev drawing them toward democracy and a larger emphasis on free market production. But just as likely at this point in time, they also could produce a Joseph Stalin pushing China into misery and despair.

Another complicating factor in deciphering Chinese intentions is the U.S. domestic political intrigue accompanying release of two critical reports on China that Congress asked the Pentagon to prepare. These reports concern potential satellite technology transfer and the extent of surface-to-surface missile deployment on the Chinese coast near Taiwan. The missile report apparently says China produced 150 M-9 and M-11 missiles in 1998 with a plan to have 650 by the year 2005. Opponents of the Clinton administration's

policy of "engagement" with China cite this as proof of China's belligerent intent while some Pentagon analysts speculate China intends to sell them.³³

Domestic politics in the U.S. plays a strong role in the public discussion of foreign policy issues. David Shambaugh, the prominent analyst of the Chinese armed forces, states, "The recent hype in the media and by those in the American political system about the so-called Chinese threat is grossly overblown, not empirically grounded, irresponsible and politically dangerous."³⁴ However, former Speaker of the House Newt Gingrich has said, "some of my friends are in the opponent business and want a new enemy."³⁵ Anxiety and uncertainty accompanies the rise of any new power, and the United States is still attempting to determine exactly what are the threats to national security in the post-Cold War world. Will China evolve into America's friend or our foe? The peace and security of Asia, and perhaps the world, will be affected by the answer to that question.

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Chapter 4

CHINESE MILITARY MODERNIZATION: AN UNEVEN PATH

Joseph F. Cheney

Chinese Military Modernization: An Uneven Path

Joseph F. Cheney

Since Mao's last days China had possessed another friend: the United States. It had felt comfortable with that relationship. America was not an ally, but it was a friendly neutral. Then came the Gulf War, or the Nintendo War, as some Chinese had begun to call it. The Chinese were glued to TV; a monitor tuned to CNN sat beside the desk of every official, including Deng and Yang Shangkun. The message of the smart bombs brought something close to terror . . . Suddenly the Chinese military felt naked in a world beyond its reckoning.

—Harrison Salisbury, Author of *The New Emperors*¹

The task of modernizing China's military is considerably more complex than simply acquiring new high-tech weapon systems. Although new weapons are required, China's military modernization requires coordinated efforts in four key areas: strategy and doctrine, force structure, combined arms competence, and conventional power projection capabilities. The push for Chinese military improvements was first openly recognized in January 1975 when Premier Zhou Enlai announced to the Fourth National Peoples Congress a program known as the "Four Modernizations." Four key areas of Chinese society were to be modernized—agriculture, industry, science-technology, and national defense.² Support for the Four Modernizations solidified when Deng Xiaoping emerged as China's paramount leader at the Third Plenum of the Eleventh National Party Congress Central Committee in December 1978.³ But military modernization could not begin in earnest until China developed an economy that could fund a modern military.

Military modernization accelerated after the People's Liberation Army's (PLA's) abysmal performance in its February 1979 invasion of northern Vietnam.⁴ Training improved after this debacle, but little attention was dedicated to the acquisition of high technology weapons. The real impetus for China's current military modernization effort is China's "economic miracle" that began in the late 1970s. This "miracle" produced consistent growth rates (until 1997) of up to 10-12 percent.⁵ Military modernization gained new emphasis in 1991 as the Chinese leadership watched the

performance of the U.S. military in the Gulf War. The swift U.S./coalition victory based on high technology warfare stunned the Chinese leadership and made it clear how backward the PLA was in comparison.⁶ Presumably the PLA has also been studying the U.S./NATO victorious air war performance in the Balkans' war.

What is the status and what are the implications of China's current military modernization efforts? What are the key elements? They are, in the author's view, the modernization of Chinese military strategy and doctrine, force structure, combined arms competence, and conventional power projection capability. A review of these factors indicates that although China has made significant progress in modernizing its armed forces and their capabilities, it is still several decades away from mounting a credible threat to a modern military power such as the United States.

Modernizing PLA Strategy and Doctrine

The military strategy and doctrine of the People's Republic of China (PRC) was based upon Mao Zedong's vision of "People's War," from the founding of the communist state in 1949 until Mao's death in 1976. Mao emphasized the peasant-based guerilla warfare strategy that had propelled him to power. Defensive in nature, it envisioned trading territory for time; wearing down a superior adversary until the power roles were revised; drawing an aggressor into the interior of China where it would be destroyed. Mao's theories kept China reliant on a huge peasant-based military that advanced little technologically from the 1950s. Mao further hamstrung China's military development by seriously damaging the officer corps during his "Great Proletarian Cultural Revolution" from 1966 to 1976.⁷

When Deng Xiaoping accelerated the Four Modernizations, he found that the PLA was at least three decades behind the major military powers. Although China's strategy was still defensive, Deng changed its doctrine from "People's War" to "People's War under modern conditions." Key efforts were made to improve training and correct shortfalls discovered during the 1979 war with Vietnam, including communications and logistics failures.⁸ While Beijing claimed that the PLA had achieved advanced world military standards, DESERT STORM proved that the PLA was still far behind.

The stunning results of DESERT STORM, coupled with China's expanding economic power, pushed China's leadership to modernize both PLA strategy and doctrine. The "new" concept of active defense calls for forward positioning, frontier defense, engagement of the enemy at or over

the border, and potential engagement in conflict beyond China's immediate periphery.⁹ Hans Binnendijk and Robert Montaperto of the National Defense University in Washington, observed that "PLA strategists believe that if war occurs, China should seek to achieve victory not on its territory, but at some distance from the nation's borders."¹⁰

Richard Fisher, a senior policy analyst at the Heritage Foundation, examined China's new outward looking strategy. He observed that influential Admiral Liu Huaqing (who retired in 1997 as Vice Chairman of the Central Military Commission) had set a goal of ". . . controlling the Pacific out to the 'first island chain,' which runs from Japan to Taiwan and down to the Philippines and Borneo." Liu also argued that ". . . the Chinese navy eventually should contest control of the 'second island chain,' from Japan to Guam and down over Pelau."¹¹

Chinese military doctrine also began to modernize. Known as "limited war under high technology conditions," the new doctrine tried to capture the lessons of DESERT STORM and the so-called Revolution in Military Affairs (RMA).¹² The new doctrine also required China to downsize its huge military establishment, while integrating new weapon systems and information technologies into a streamlined PLA. This has become a huge challenge for the PRC.

Force Structure Modernization

Modernization of the PLA's force structure is China's most daunting and expensive military task. But it is possible because of the great economic wealth that China generated in the 1980s and 1990s. The Chinese government continues to deliberately obscure the total amount it spends on defense. The official Chinese defense budget for 1999 is reported at \$12.64 billion, a 12.7 percent increase over 1998.¹³ But according to unclassified U.S. Central Intelligence Agency estimates, China's defense expenditures are "almost certainly two or three times the announced budget."¹⁴ Official figures indicate that the PLA's budget grew by about 150 percent from 1989 to 1995.¹⁵ Given this impressive budget increase, the PLA's leadership is undoubtedly assessing which technologies to invest in most with this increased funding.

What is the status of current and future modernization efforts of the PLA's four key combat elements—their strategic missile, air, naval, and ground forces? China's strategic missile forces are already the most technologically advanced arm of the PLA. China's "Second Artillery" consists of both

nuclear and conventional elements. Compared to the U.S. arsenal, China's nuclear forces are small. But as analyst Thomas Woodrow points out, "China currently has more ballistic missile firepower that can be targeted against the United States than did the Soviet Union during the Cuban Missile Crisis."¹⁶ The conventional elements of Chinese strategic rocket forces proved their mettle during the 1996 missile firings in the Taiwan Strait. They are an increasingly significant element of PRC's efforts to intimidate Taiwan.

Nuclear forces are the wild card in China's military strength. PLA nuclear forces include over 20 Intercontinental Ballistic Missiles (ICBMs), 80 Intermediate Range Ballistic Missiles (IRBMs), one ballistic missile submarine (equipped with 12 Submarine Launched Ballistic Missiles (SLBMs), and 120 nuclear bombers.¹⁷ According to Richard Fisher, "China is seeking foreign technology to build better intercontinental missile systems and to develop highly accurate short- and medium-range ballistic and cruise missiles."¹⁸ These efforts may include attempts to purchase Russian SS-20 ICBM components that will help China develop Multiple Independently-targetable Reentry Vehicle (MIRV) technology. A 1998 U.S. Department of Defense (DoD) report to Congress recognized that "China has embarked on a missile modernization program, and a warhead program probably exists to complement the missile program."¹⁹ The same report reveals that China is developing two new road-mobile, solid propellant ICBMs—one with a range of about 8,000 kilometers and the other with an estimated range of 12,000 kilometers.²⁰ Of course, as we now know from the Cox report, the PRC had a long range espionage plan focused on acquiring detailed technical information on U.S. nuclear warheads. The actual damage to U.S. security from this espionage is uncertain.²¹ Despite the fact that Chinese nuclear forces could threaten its East Asian neighbors and pose a threat to the continental United States, their role within the new Chinese strategy still appears to be primarily defensive. It appears that their purpose is both to provide the ultimate guarantee against an invasion of China and to prevent the kind of "nuclear blackmail" that China faced at the end of the Korean War.

China's dramatic firings of CSS-6 missiles (also known as the M-9 or DF-15) off the coast of Taiwan in March 1996 were the work of its strategic missile forces. Up to this point, their role had been strictly nuclear.²² These launches and the concurrent crisis demonstrated China's ability to use the CSS-6 for political and military influence. However, the resolution of this crisis also demonstrated the weakness of the PLA when faced with the U.S. deployment of two carrier battle groups. The CSS-6 is a short-range ballistic

missile (SRBM) that can deliver a 500-kilogram payload to a maximum range of 600 kilometers.²³ This enables the PLA to strike at distances beyond the range of their aircraft. Evidence indicates that the PLA is attempting to increase the accuracy of the CSS-6 using the U.S. Global Positioning System satellite data.²⁴ A new SRBM, the CSS-X-7, is expected to be deployed with the Second Artillery in the near future.²⁵

The PLA Air Force (PLAAF) has benefited most recently from China's military modernization efforts. Nevertheless, today most of the PLAAF still consists primarily of 1950s vintage Soviet aircraft that pose little threat to China's East Asian neighbors or to the United States or its forces.²⁶ The Chinese air force desperately needs to deactivate about 3,000 obsolete, Chinese-assembled MIG-19s to free funds for the procurement of more modern aircraft.²⁷ Currently, PLAAF pilots log only 80 hours a year and almost never train over water.²⁸

Despite these serious problems, a significant development has been the purchase of 50 Russian SU-27 fighters, followed by an agreement to co-produce at least 200 more.²⁹ The SU-27 is an advanced third-generation fighter in the same class as the best U.S. fighter, the F-15C. Despite the relatively small number acquired to date, the SU-27s reflect a significant increase in PLAAF combat capability.

Nevertheless, acquisition of the SU-27s highlights problems the PLAAF (and the PLA in general) have in assimilating new technology. China's SU-27s reportedly have suffered from a very low operational readiness rate due to poor logistics support and maintenance.³⁰ Other evidence indicates that even after lengthy training in Russia, the Chinese pilots were so unskilled that Russian pilots had to deliver the aircraft to China.³¹

Efforts are being made to correct these deficiencies in training, logistics, and maintenance. China is seeking Russian R-77 air-to-air missiles for their SU-27s. This missile is roughly the equivalent of the best U.S. missile, the AIM-120 advanced medium-range air-to-air missile (AMRAAM). China may also be trying to acquire Israel's phenomenal Python 4 short range, infrared, air-to-air missile along with the Elbit helmet mounted sight system.³²

Force structure modernization within the PLAAF is interwoven with doctrinal modernization. China's air force is changing its role from exclusively supporting ground forces to an offensive force with strategic attack as its primary task.³³ But two key force improvements are needed to make this doctrine work: the addition of an air refueling capability and the acquisition of Airborne Warning and Control System (AWACS) aircraft. The

PLAAF is experimenting with an indigenously developed air refueling capability,³⁴ and China is negotiating with the Russians to purchase IL-78 aerial tankers. Israel, Russia, and Britain are competing to sell AWACS to China.³⁵ The PLAAF will not be a true offensive power projection force until these two capabilities, not to mention the severe pilot skill problems, are added.

The Chinese Navy (PLAN) has become a key element in Beijing's efforts to isolate Taiwan and to project power into the South China Sea. Since 1978, the PLAN has transitioned from a "brown water navy" to a force that has a limited but growing "blue water" capability. PLAN major combatants currently consist of 62 attack submarines, 18 destroyers, and 35 frigates.³⁶ Despite the relatively large size of the PLAN (by East Asian standards) the navies of Singapore, Malaysia, Indonesia, and (certainly) Japan are assessed to have a qualitative advantage over the PLAN.³⁷ Significant current modernization efforts of the PLAN include the acquisition of Russian *Kilo* class conventional submarines and Russian *Sovremennyi* class missile destroyers.

Between 1995 and 1998 the Russians delivered four conventionally powered *Kilo* class submarines to China's navy. The last two *Kilos* are reported to be Type 636s, and are assessed to be as quiet as the improved U.S. *Los Angeles* class submarine.³⁸ These new Russian submarines represent a major improvement in the PLAN's ability to conduct sea denial and anti-submarine warfare. Similar to the situation with the SU-27s, however, low numbers, poor training and insufficient maintenance currently reduce the effectiveness of these assets. Despite these shortcomings, the capabilities of the *Kilos* will add an extra serious consideration for the U.S. Navy in any future crisis in the Taiwan Strait.

The second major current PLAN modernization effort involves the purchase of two *Sovremenny* class destroyers. These ships are expected to be delivered in the year 2000. *Sovremennys* are very advanced weapons platforms. They will be armed with the SS-N-22 *Sunburn* missiles that will allow them to outclass any ship in Taiwan's arsenal. The downside of acquiring *Sovremennys* is that they are extremely complex to maintain—the Russians, themselves suffer from severe spare parts shortages.³⁹

Despite these acquisitions, the most significant problem in acquiring the capabilities needed to execute China's new outward looking strategy are the absence of aircraft carriers and amphibious shipping. In the late 1980s the PLAN began to explore the possibility of acquiring an aircraft carrier.⁴⁰ An aircraft carrier would be a national prestige factor and would greatly improve

the PLA's ability to project power into the Spratlys or the Taiwan Strait. Rumors persist, but there is no current confirmation that the PLAN has taken any serious steps to acquire an aircraft carrier.⁴¹ Amphibious sealift would also be an essential element of Chinese power projection capability in the South China Sea. But the PLAN's lift capability is very limited.⁴² This makes it virtually impossible to invade or support offensive action against Taiwan or the Spratlys. Until the PLAN acquires both an aircraft carrier and a robust amphibious capability, they will not even be able to exert influence out to the first island chain.

China's ground forces have benefited least from the military modernization effort. The Chinese Army bore the brunt of the latest 500,000 man force reduction.⁴³ However, in sheer size, the current force structure is impressive. PLA ground forces include 24 group armies, consisting of an estimated 73 infantry divisions, 9 main force divisions with a rapid-reaction role, 11 tank divisions, and 5 artillery divisions.⁴⁴ PLA ground forces are equipped with some 8,500 main battle tanks and 1,200 light tanks.⁴⁵ The downside of this massive ground force is that it is equipped with antiquated weapons, suffers from severe training and maintenance shortfalls, and has had to devote considerable time to raising its own food and participating in PLA commercial enterprises. Certain units, such as the elite 15th Airborne Army (known as a "Rapid Reaction Unit"—or RRUs—and manned by the PLAAF) do maintain high standards of training and discipline. Units like the 15th Airborne Army receive the most training and are equipped with the most modern weapons and communications equipment. These types of units however, only comprise about 15 percent of the total PLA ground force strength.⁴⁶

While the long term prospects for modernization of China's army are not bright, nevertheless doctrine development definitely has been given priority. Following DESERT STORM, the PLA studied and largely copied U.S. doctrinal concepts. A three year cycle of experimental training reforms was conducted in which small units were selected to exercise modern concepts such as night operations and live fire exercises.⁴⁷ As a result, many of the doctrinal underpinnings of a 21st Century PLA ground force are in place, ready for the funds when they become available to modernize the force structure. In addition, President Jiang Zemin's efforts to force the PLA out of commercial enterprises—if successful—should increase training time and general military professionalism.

Significantly, most of the progress in Chinese force structure has been achieved through the purchase of foreign equipment. Indigenous Chinese

programs such as the F-10 fourth generation fighter and the Luhai-class destroyer experienced lengthy, problem plagued development and are still not operationally deployed. To revitalize their acquisition process, in April 1998 the Chinese overhauled the Commission for Science, Technology, and Industry for National Defense (COSTIND) which oversees the defense/industrial complex. The civilian components of COSTIND were retained in the organization and are responsible for research and development, weapons production, defense conversion, and managing arms trade. The former military portions of COSTIND have been incorporated into the PLA's new "General Equipment Department" (GED).⁴⁸ The GED is designed as the PLA's advocate to ensure that industry responds to the military's needs. During a March 1999 visit to Beijing, the writer asked a senior PLAAF official his view of the future role for the GED. He responded that the PLA hoped the GED would evolve into an organization similar to the U.S. Air Force Materiel Command that interfaces with industry and provides "cradle to grave" support for weapon systems. It is crucial to China's force structure modernization program that such reforms enable Chinese defense industry to produce its own high technology weapons. This is the only way that the PLA ultimately will be able to break its dependence on foreign weapons, spare parts, and technology.

Combined Arms Competence

Obviously the true test of PLA military capability cannot be measured solely by the acquisition of new weapons systems. Instead, what really counts is the PLA's ability to blend its air, naval, and ground assets into combined arms operations. Combined arms competence demonstrates a country's ability to create an integrated joint team to produce synergistic effects on the battlefield. Presently, however, China's combined arms competence is very low. According to Professor June Teufel Dreyer of the University of Miami, "... too few units have trained sufficiently in combined arms operations at division level and above to pose a sustained, large-scale threat to the PRC's neighbors. Tanks are not organic to Chinese infantry regiments, and the PLA's limited number of tank regiments is subordinate to divisional headquarters. Thus, since most army training occurs at the regimental level or below, combined arms training of tank units with infantry and other supporting forces is the exception rather than the rule."⁴⁹

During a March 1999 visit to a PLAAF fighter base, a senior PLAAF officer indicated to the writer that "most" of his training was combined.

After further conversation, however, he explained that this “combined” training included only PLAAF forces participating in simulated combined scenarios. Naval and ground forces were notional in these scenarios.

Evidence indicates that the PLA recognizes its weakness in combined arms and is attempting to solve the problems. Joint and combined exercises increased during the three year cycle of experimental reforms. But, as Dennis Blasko, Philip Klapakis, and John Corbett, Jr. point out, “It is obvious [the PLA is] working towards a greater joint capability; however, in some cases, it still appears that the PLA considers an exercise to be joint when forces from different services merely arrive in the same area at the same time and then conduct exercise scenarios separate from each other.”⁵⁰

Conventional Power Projection Capability

China’s more outward looking strategy requires military power to attack an enemy at some distance from China’s borders. Two obvious areas that China wants to project conventional military power into are Taiwan and the Spratlys. Assuming that the RRUs could be used, what is the PLA’s capacity to project power into these areas? Today the answer is poor. Both Taiwan and the Spratlys are separated from China by ocean areas and are outside the effective range of land-based fighter coverage from China’s mainland. In order to hit into either area, China will need air refueling capabilities (or an aircraft carrier), sufficient airlift assets to deploy ground forces and sustain combat operations, and sufficient amphibious capability and other sealift assets to conduct and sustain an invasion. However, China’s air refueling capability is still experimental and it looks to be years before it can field an aircraft carrier. The PLAAF does not have enough transport aircraft to support an airborne power projection capability.⁵¹ They could not quickly deploy the 15th Airborne Army, let alone sustain it during prolonged combat operations. A 1998 DoD report to Congress estimated that the Chinese air force has only enough airlift capability to deploy about 6,000 troops or two airborne regiments at a time.⁵² The PLAN is weak in both large amphibious ships and underway logistics ships. The PLA has a limited capability to deploy up to “1-3 infantry divisions, depending upon the mix of equipment and stores for immediate resupply.”⁵³ Even this capability is virtually useless without air cover. In addition, the Chinese show no signs of building the large numbers of landing craft that would be required to invade Taiwan.⁵⁴ The DoD report further concludes that “China has never conducted a large-scale amphibious exercise which has been fully coordinated with air support

and airborne operations.”⁵⁵ Based upon this severe lack of all the elements of conventional power projection capability, the International Institute for Strategic Studies concluded in mid 1997 that China does not have the resources to project a major conventional force beyond its territory. We do not see any fundamental change in that appraisal as the year 2000 approaches.

Conclusions

This chapter shows that the PLA's actual combat capabilities are just beginning to emerge from years of neglect. The Maoist adoration of “People's War” allowed the PLA's weapons and doctrine to become almost totally obsolete in terms of conducting “limited war under high technology conditions.” There are “pockets of modernity” in the Chinese armed forces, but these “pockets” do not offset the overall obsolescence of the force.⁵⁶ Even though the PLA has acquired some high technology weapons, to date they have shown little aptitude to maintain them well or to effectively train with them. China has very little combined arms competence or conventional power projection capability. However, the current weaknesses of the PLA are no cause for complacency. China is clearly embarked on a long term effort to modernize its armed forces and military capabilities. As the 1998 U.S. DoD report to Congress observed, “Chinese military planners are working to incorporate the concepts of modern warfare attributed to the *Revolution in Military Affairs* to Chinese military doctrine, particularly as they relate to information operations and strike warfare . . . China also is working to ameliorate weaknesses in C⁴I, training, and logistics, so as to improve gradually the PLA's overall warfighting capability.”⁵⁷ It would be a serious mistake to underestimate China's determination to become a major military power. Economic strength is the linchpin of military modernization. If the Chinese economy can rebound, the PLA can become a major military power by the middle of the 21st Century.

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Chapter 5

WEAPONS IMPORTS AND WEAPONS SALES: PATH TO CHINA'S MILITARY MODERNIZATION

Stephen J. Gensheimer

Weapons Imports and Weapons Sales: Path to China's Military Modernization

Stephen J. Gensheimer

Although military modernization is recognized as the last priority of China's "Four Modernizations," behind the development of agriculture, science and technology, and industry, the goals and capabilities of China's armed forces are of critical importance to the United States and its allies.

Out of China's changing strategic, economic, and military environments, the major requirements of a focused and challenging Chinese defense policy are evolving. Primarily aimed at the Asia-Pacific area, they include measures described by Michael Swaine taken to "increase China's overall global and regional stature. This will be done in several ways:

- acquiring new, high-technology weaponry and an ability to show the flag beyond China's borders;
- by measures taken to deal with the uncertainty of military posturing by the United States, Japan, and others within the region;
- by measures taken to maintain a credible threat of force toward an increasingly separatist-minded and economically potent Taiwan;
- by improving Chinese military and diplomatic leverage over, and access to, nearby strategic territories claimed by Beijing and to defend access to these areas in the event of conflict; and,
- by strengthening China's ability to deal with domestic social unrest and ethnically based border instabilities."¹

These new requirements have gradually pulled China away from its Maoist military doctrine of a large land army defending against threats to China's borders and threats from within to a vision of a joint force that can both provide territorial defense and project power rapidly. To accomplish these tasks and develop the forces needed, China needs to compete in the changed military environment, and be able to perform on the high tech battlefield.

China's military modernization program raises a number of questions to be addressed in this analysis:

First, what are China's requirements for high tech weapons acquisitions to facilitate its military modernization programs?

Second, why have the Chinese moved toward high technology in their military acquisitions and where are they putting their major emphasis?

Third, what is the importance and role of Chinese weapons and technology imports and exports in China's modernization plans and policies?

Finally, what might be done to influence China to act responsibly in its role as an arms importer and weapons supplier?

GOING "HIGH TECH": CHINA MOVES OUT

During the Gulf War in 1990-1991, the United States demonstrated the decisive importance of advanced weaponry and the significant technological edge it held. The use of highly sophisticated weaponry and other capabilities enabled the U.S.-led coalition to defeat, in just 42 days, the fourth largest Army and the sixth largest Air Force in the world equipped with Soviet and Chinese weapons. In David Shambaugh's view: particularly impressive to the Chinese, in fact, what "most stunned [the] Chinese leadership included precision guided munitions; stealth technology; the high volume of aircraft sorties; airborne command and control systems; satellite-based targeting; intelligence gathering; early warning and surveillance systems; coordinated large-scale naval, air, and land attacks; multifaceted night warfare capabilities; and the effective use of rapid deployment and special commando units."²

There were previous indications that Chinese forces, tactics, doctrine, and strategy were obsolete. For example, during the Sino-Vietnam border conflict in 1979, the poor PLA showing convinced Chinese military strategists that People's War was becoming outdated as a strategy. As Michael Swaine observed: Mao's "People's War" was primarily focused on "a protracted guerrilla war of attrition against a massive conventional invasion, conducted by large numbers of slow-moving enemy infantry and armor-led forces. This Chinese doctrine relied essentially on the use of WWII-era ground warfare tactics, largely armed with light weapons and deployed in mobile combat along a fluid front."³ The Gulf War confirmed these fears for the Chinese—that the PLA lagged "at least 10 to 15 years behind the state of the art in almost all weapons systems."⁴ China's military machine could not win a war against a "highly mobile, well-organized, and coordinated" joint coalition force that enjoyed the capabilities provided by precision-guided weaponry and the ability to deliver them under almost any conditions, day or night. Operation DESERT STORM convinced the Chinese that high-tech, smaller, more rapidly deployable forces with greater

and more precise destructive power were the way to go. Additionally, they viewed the Gulf War as a prototype war of the future,⁵ and, no doubt, are carefully studying the results of the high-tech NATO victory in the 1999 conflict with Serbia in Kosovo.

The early 1990s provided opportunities for China to accelerate its military modernization. Rapid economic growth generated the funds to purchase new capabilities. The Chinese goals have been the acquisition of more sophisticated conventional and unconventional force structures, capable of medium and long-range force projection, mobility, rapid reaction, and off-shore maneuverability, as well as more versatile and accurate nuclear weapons in their inventory. Nevertheless, in one analyst's view, "the lion's share of [China's] current defense budget is being wasted on masses of poorly trained surplus soldiers who would either be slaughtered or else never reach any battlefield if confronted by a modern, well-equipped enemy."⁶ So China's "take-off" toward military modernization is slow.

What seems to be Beijing's priorities? Ronald Montaperto, in a 1998 article, argues that Chinese modernization efforts will involve, but are not limited to "developing anti-submarine warfare, ship-borne air defense, sustained naval operations, amphibious warfare capabilities; developing strategic airlift, aerial refueling, and ground-attack capabilities, as well as a new generation of air superiority fighters; improving ground forces' mobility and logistical support, air defense, all weather operations, and command and control capabilities."⁷ Similarly, Michael Swaine suggests Chinese efforts in conventional weaponry will focus on amphibious landing capability, specifically landing craft capable "of traversing wide, shallow mud flats as are found on the West coast of Taiwan, medium-range fighter/interceptors, short- and medium range ballistic missiles, conventional attack submarines, improved C³I and carrier detection systems, and long-range, stand-off, anti-ship weapons—including cruise missiles and anti-carrier torpedoes."⁸

As far as unconventional weaponry modernization, Chinese forces may focus on survivability and improvements in accuracy and range, ultimately maintaining a deterrent capability against the major powers and, at the same time, providing a tactical nuclear capability "for possible use in limited conflict scenarios."⁹ And, while most of its military needs are met by the domestic armaments industry, China still has to purchase the more sophisticated and high-tech weapons in the Western and Russian markets.¹⁰

WEAPONS IMPORT STRATEGIES

Melvin Gurtov and Byong-Moo Hwang believe the purposes of Chinese arms imports are “to enable the PLA to fill in gaps in its weapons inventory and to acquire higher-level technology than its own industries are capable of creating.”¹¹ However, PLA acquisition is understandably selective: “China cannot afford to buy every advanced weapon the PLA would like, nor [should China] expect other countries to sell China its top-of-the-line weapons.”¹² One of China’s basic principles for modernizing its PLA forces is “self-reliance,” or relying on their own strength for regeneration, while selectively importing advanced technology from abroad, centering on some areas. Those areas where they are relying on imports, in a broad sense, are naval and air weaponry, where the most outdated Chinese equipment exists. They are focused also on quick response, power projecting, mobile forces.¹³

It was around 1991 when China began serious arms importing. Even with diminished access to western markets after the 1989 Tiananmen incident, from 1991 to 1994, China ranked sixth among developing countries in agreements for arms transfers,¹⁴ the largest suppliers to them being Russia and Israel.

Since the mid 1980s, Russia has provided about 75% of China’s arms imports.¹⁵ China accounts for the bulk of Russian weapons exports.¹⁶ This important two-way relationship keeps the defense industrial complex in Russia afloat, while providing China improved weapons and an emerging capability to manufacture them. Indicative of this relationship is the SU-27 deal that began with China’s purchase of 24 aircraft in 1991, a second batch of another 24-26 aircraft ordered in 1995, and reports of a 1996 agreement to purchase another 72 aircraft. On par with the US Air Force’s F-15, the SU-27 also provides a potential for aircraft carrier operations. More importantly, the deal culminated in the licensed production of up to 200 SU-27 in China, of which the first 2 reportedly were completed in 1998.¹⁷

After the 1989 Tiananmen incident, Israel remained one of the few Western nations that would provide China with arms and military technologies. According to the U.S. Arms Control and Disarmament Agency (ACDA), Israel provided China with about \$3.2 billion in military equipment between 1991 and 1995.¹⁸ Israel is among the world’s top 10 leading arms exporters and has a large and highly sophisticated defense industrial base. The relationship with China blossomed in the early 1990s, its significance revealed only when the U.S. became aware of secret and illegal Israel transfers of U.S. military technology to China. The transfer of technologies

for jet fighters, tanks, air-to-air missiles, and air-defense missiles like the Patriot¹⁹ which began in the early 1980s, has been extended to missile technologies in the mid-1990s.

RESULTS OF FORCE MODERNIZATION TO DATE

With the Russians, Israelis, other western nations and, even the United States providing higher technology (weapons or otherwise), China's selective military modernization has accelerated. The bulk of recent modernization money has been directed at the Chinese Air Force and the Navy.

Some modernization of PLA ground forces has occurred. For example, three to five divisions have been trained and equipped as rapid reaction units (RRUs), and more modern trucks, artillery, and light attack helicopters have been acquired. Jane's Information Group, in June 1998, stated that "new tanks and armored fighting vehicles are being developed, and that there are already two new main battle tanks and at least one new infantry combat vehicle undergoing trials."²⁰ Additionally, Jane's expects over that the next 20 years the deployment of new tanks and armored personnel carriers, fulfilling the development of a more mobile, mechanized force, although only 4 mechanized and 5 armored divisions are projected by 2015. Still, this is not the real focus of China's selective modernization plan.

Of all the armed services, China's air force (PLAAF) suffered most from decades of technological stagnation after the Sino-Soviet split of 1959-1960. The Cultural Revolution between 1966 and 1976, and also Deng Xiaoping's reforms introduced in 1979, had very negative effects on the PLAAF's development. The current air force is composed primarily of Soviet designs from the 1950s and 1960s, and includes the Chinese conversions of the MIG-17, -19, and -21. With an inventory of more than 4,000 interceptors, they still are far inferior to other air forces in Northeast Asia. The bomber force numbers between 400 and 500, is based on the Soviet Il-28 and Tu-16, and is asserted to be "equally slow and vulnerable."²¹

Chinese air power cannot be used in a power projection capacity. This is due to the lack of airborne warning and control system (AWACS) capability, and due to the lack of in-flight refueling capability. The Chinese themselves characterize their air force as "frail." Purchase of advanced, long-range interceptors (Russian SU-27s) begins the process of modernization. Additionally, 10 long-range transport aircraft, the Russian Il-76, have been bought, with the possible future purchase of another 15

aircraft. Also, 24 transport helicopters, the Russian Mi-17, have been acquired. The Israeli connection is visible too. With Israeli assistance, the Chinese have developed the prototype of the J-10 multi-role fighter/bomber modeled on the cancelled Israeli Lavi (USAF F-16 equivalent) project. Additionally, they have improved the design of the J-8II fighter, converting several into in-flight refueling capable aircraft. With foreign assistance, they converted five of their H-6 bombers to air refueling tanker aircraft. Finally, they have improved their airborne naval strike and ground attack capabilities and made incremental advances in air defense systems. As far as air defense is concerned, there have been reports of recent acquisitions of Israeli air defense systems, though such reports have been denied by both parties.²²

Just behind the air force in priority, China's naval modernization "can be traced back to 1975 as China sought to deal with the growing Soviet threat to its shores."²³ Additionally, China's growing interest in offshore oil reserves makes naval capabilities a requirement. The Chinese have added approximately 20 surface combatants, primarily advanced guided missile destroyers and guided missile frigates, to include 2 Sovremenny class destroyers purchased from Russia in late 1996. They have produced new types of fast attack, coastal patrol, and resupply craft, as well as additional amphibious and mine warfare ships, including large capacity tank landing ships. There have been improvements made in the submarine fleet, both indigenous and foreign assisted, and they have purchased four advanced diesel-electric anti-surface and anti-submarine warfare submarines (Kilo class) from the Russians in late 1994. With this purchase, China may have advanced its fleet by a generation. Finally, the prototype of the naval fighter/bomber has been developed. But, overall, key equipment for naval modernization, especially an aircraft carrier, appears to be financially beyond China's current reach. Lack of funds is impacting the Chinese plans. Plans to purchase four airborne early warning systems from Israel are stalled.²⁶ Plans to pursue an aircraft carrier seem to have been put on indefinite hold because of the enormous expense associated with procuring, deploying and integrating the new capability into the PLA force structure.²⁷

Compounding China's financial problem is the fact that there is a "growing reluctance by Russia, chief supplier to the PLA, to make front-line technology available"²⁴ to the Chinese. As mentioned earlier, Russia has sold two Sovremenny-class missile destroyers to China—follow-on discussions for the purchase of four additional destroyers have stalled, primarily based on how the ships are to be equipped. According to *Defense News*, another program that could fall victim to new Russian thinking about

front-line exports to China involves the denial of a fifth-generation Russian multi-role fighter touted as the counter to the U.S. F-22 now being developed. The Chinese have “made informal offers [to the Russians] to participate in joint development and share funding of the new aircraft.”²⁵ Despite financial limits and the reluctance of other states to sell their front-line equipment to Beijing, Chinese leaders remain committed to military modernization, and are expected to direct scarce resources toward essential upgrades. One way to acquire the funds is to export weapons.

FINDING THE MONEY: ARMS EXPORTS

Though the list of imports previously mentioned indicates there have been improvements to China’s military inventory, the PLA is still far below its desired levels of capability. How long will it take to reach the desired levels? According to Daniel Ginsberg, provided funding continues, the PLA is “probably two decades away from challenging or holding its own against a modern military force.”²⁸ But is the money there? A glance at China’s defense budget is useful.

Consensus is beginning to emerge among western analysts that the Chinese annual defense budget “falls within the \$28 to \$36 billion range, or 4 to 5 times the official [1996] figure”²⁹ of \$7.5 billion. The trend over that last decade has been that defense expenses have increased annually at a significant rate, “nearly 160 percent from 1986 to 1994.”³⁰ In real terms, though, this level of expenditure has barely kept pace with the inflation rate. A very large part of the annual budget goes to housing, feeding, training, and equipping the 2.5 million-man force at levels many western analysts believe to be inadequate. So, without making drastic changes in force structure, a significant increase in funding would be necessary just to adequately address the issues mentioned above. Moreover, recent changes in leadership, while strongly supporting military improvements, have not, as yet, given it the emphasis stated in its four modernizations policies. With slowing economic growth and the leadership’s focus on economic reform, military modernization money has to come from somewhere. Can arms exports can provide the answer?

When the PLA needed money in the early and mid-1980s, arms sales became a potential salvation. As Gurtov and Hwang analyzed it: “With a green light from Deng Xiaoping, the CMC, and the State Council, the entire defense establishment [was authorized] to engage in arms exports.”³¹ Between 1979 and 1983, total PRC conventional arms sales approached

\$3.5 billion, or about 5 times greater than in the previous five-year period. Nearly 62 percent of the sales went to the Middle East. Through the remainder of the 1980s and up to the Gulf War, conventional arms sales grew. Between 1984 and 1988, arms sales totaled \$9.1 billion, and \$4.5 billion from 1989 to 1991.³²

With an eye toward profits, in the past decade China has provided arms to more than 50 countries. Important recipients include Iraq, Iran, Syria, Vietnam, Burma, Thailand, Pakistan, Sri Lanka, and North Korea. In 1988, China sold ballistic missiles to Saudi Arabia, and sold arms to both sides of the Iran-Iraq War, accounting for over half of their sales between 1987 and 1989. China is one of the world's largest exporters of tanks, anti-air artillery and missile boats, and in May 1989, Thailand signed a deal to acquire "23 T-69 main battle tanks, 260 armored personnel carriers (APCs), an anti-aircraft radar guidance system, eight minesweepers, and 130mm ammunition."³³

But within recent years, arms transfer agreements have declined, producing only half as much in the first half of the 1990s as they had produced in the last three years of the 1980s. The figures do not look any better for the latter half of the 1990s. This may have been the largest percentage decline of any major arms supplier. As a Congressional report suggests, "The post-Cold War international marketplace in weapons is now an extremely competitive place where the troubled [Chinese] defense industry will have great difficulties appealing to potential customers."³⁴ Though the numbers are not as high as they once were, profits are still there, from customers that need second-tier, "rugged, simple to operate and maintain, and fairly reliable"³⁵ weapons. China has provided tanks, armored combat vehicles, missiles, and missile launchers to Pakistan; large caliber artillery systems to Bangladesh, Sudan, and Iran; aircraft, warships, missiles and missile launchers to Iran; armored combat vehicles to Sri Lanka; warships, missiles and missile launchers to Thailand; and even warships to Russia. Other customers have included Egypt, the now defunct Khmer Rouge in Cambodia, the Mujahideen resistance previously operating in Afghanistan, and Myanmar.³⁶ Along with Myanmar, Pakistan, Thailand, Algeria and Iran remain China's core customers for arms and assistance.

CHINESE POLICY ON TRANSFER OF CONVENTIONAL WEAPONS AND TECHNOLOGY

Given their list of customers, and the technologies transferred by the Chinese, there has been plenty of controversy associated with Chinese arms transfers. The Chinese have an official policy on arms sales—one that provides broad sweeping guidelines, and which gives the flexibility for interpretation the Chinese have, at times, used to their advantage.

PRC arms sales policy was officially announced in 1988, and contained the following principles: “first, our military exports should help strengthen the legitimate self-defense capability of the countries concerned; second, it should help safeguard and promote peace, security, and stability in the regions concerned; and third, we do not use the military sale to interfere in the internal affairs of other states.”³⁷ The following year, the policy was extended to nine principles, with the evident intention of establishing China as a “responsible” arms merchant.³⁸ According to the PRC’s July 1998 White Paper, entitled *China’s National Defense*, released by the Information Office of the State Council, “China practices strict control of the transfer of conventional military equipment and related technologies,”³⁹ and has been “consistently cautious and responsible” regarding certain technology transfers, upholding “the principles and measures to prevent proliferation of weaponry and unwarranted transfers.”⁴⁰

However, Gurtov’s interpretation of the official policy is “Chinese policy is to sell arms to any party that has not been barred by international agreement from receiving them. That includes governments that want to build up their weapons capability (in the name of ‘self defense’), political movements (such as the Palestine Liberation Organization and, until apartheid ended, the African National Congress in South Africa) that engage in ‘just struggles’ against occupying powers, oppressive regimes (such as Myanmar’s), and even soldiers engaged in genocide.”⁴¹ In short, China has resorted to anything to make a buck, or in this case, a yuan, to enable the modernization of China’s military forces.

EFFECTS AND OUTCOMES

Money problems continue to retard China’s military modernization. The debilitating effects of the two-year old East Asian currency crisis are evident in China. The Chinese have narrowed their focus to just a few areas of military modernization, primarily in the Air Force and Navy. These few projects concentrate on providing the highly mobile, power projection force they feel

they need, but under stretched out time lines. While importing selective new technologies might gradually bring the Chinese military up toward a potential “superpower” status and global recognition, exporting weapons, in small or large quantity, to whatever state or organization group in need continues to be on China’s agenda.

There are a variety of problems in understanding Chinese arms sales. The first is verifying what has been shipped or sold, and to whom—there is no sure way to confirm these transactions, especially if a third party, or middle man, is involved. Secondly, trying to interpret China’s compliance with international agreements is difficult—China, by offering denials and qualifications to their transactions, fuels doubts regarding exactly what has occurred. Thirdly, the fact that “the Chinese consider all these technology sales and arms transfers [to be] *commercial* transactions, performed under contract by PLA and state corporations to meet ordinary customer needs,”⁴² does not track with what the United States and most of the international community believes to be *commercial*.

A good example is the China-Iran partnership. China is a major weapons supplier to Iran. For China, Iran is a “cash cow.” For the United States, the sale of Silkworm surface-to-surface missiles in 1987 put U.S.-protected ships in the Gulf at potential risk, as well as enabling Iran to control or harass regional shipping. The threat to stop U.S. exports of advanced technology earned a Chinese promise to terminate sales and shipments, but the shipments apparently continued at least through 1991.⁴³

The China-Iran relationship is even more controversial when it comes to Weapons of Mass Destruction (WMD), specifically nuclear and chemical technologies. While China asserts its opposition to nuclear weapons technologies and merely states it provides nuclear technology and equipment for “peaceful purposes,” the sale of two nuclear-power plants to Iran in 1992 was viewed by the United States as providing nuclear technology to a non-nuclear nation.⁴⁴ The Chinese terminated the deal after a U.S. protest. In 1996, the United States once again had to pressure China to stop the sale of “a uranium conversion facility,” which the United States believed would enable the Iranians to eventually produce weapons-grade uranium. Finally, there are allegations that the Chinese have supported Iran’s efforts to acquire the capability to produce deadly chemicals, as well as the weapons used to deliver them.⁴⁵

WHAT U.S. POLICY RESPONSE?

China will continue to pursue military modernization, though a slow down is occurring due to the scarcity of funds. Problems include the lack of funds available from the government to accomplish the required upgrades, and decisions have to be made about whether these upgrades will occur through production or by importing weapons and technology. To date, acquisitions have been relatively modest and have not provided China with the means to significantly improve its technology or arms production capability, or to make major improvements in PLA capability. Additionally, the Russians are holding back certain advanced technologies. Regardless, the Chinese will pursue a selective modernization program, however difficult, seeking those special technologies which could provide the rapidly mobile, highly technical, power projection forces it wants.

As Karl W. Eikenberry, in his study *Explaining and Influencing Chinese Arms Transfers*, suggests China will attempt to become a major arms supplier to Asian states, and that while the "contribution of arms exports to China's trade balance and overall growth will decline in relative terms, great power aspirations . . . will encourage continued [PRC] aggressive sales abroad."⁴⁶

Dealing with China is not easy. The PRC has demonstrated on some issues it can be a responsible player concerned about weapons proliferation. But, China also has demonstrated it will apply its own policy in a self-serving manner, disregarding those issues which might restrain other nations from engaging in an arms deal. In some cases, the actions taken by Beijing have been based on China's own national interests, without regard for the international community. Ambiguity is what the Chinese seem to like and seem to be good at, and the international community has to deal with that.

Can the United States influence Chinese arms sales behavior? Although Washington has, on occasion, convinced Beijing to change its behavior, Karl Eikenberry suggests that "across-the-board assaults that lump together an array of unrelated issues such as trade, prison labor, Tibetan autonomy, human rights, and nuclear proliferation are unlikely to achieve meaningful results."⁴⁷ It may only be possible to really change Chinese behavior through international regimes holding the "stick." China is more likely to bend in an environment where a legal nonproliferation regime is in place, than succumb to "superpower bullying" by the United States. That is to say, in Karl Eikenberry's view: "widely-endorsed, specific, and verifiable arrangements to restrict arms flows in a given functional area (e.g., missiles), or to a particular region . . . are probably the most cost-effective way of

gaining China's cooperation and compliance."⁴⁸ Realistically, the only thing the international community can do is work hard to gain Chinese adherence to non-proliferation treaties and inspection regimes.

In the past, the United States has engaged in technology and weapons sales for the same reasons China has: to enhance security or to improve the capability of an ally, or to influence the politics of another state, or for economic gain. Accordingly, all Chinese arms sales cannot be condemned. Some are legitimate and may, on occasion, even be stabilizing depending on the recipient and regional balance of power of these clients.

Sometimes, views of U.S. leaders may border on paranoia concerning the Chinese threat, since a military peer competitor does not currently exist. In some cases, China does take aggressive steps to gradually gain influence in a region, and their military modernization plays a major role in bringing that plan to fruition. But, as long as China generally acts responsibly and does not isolate itself from international dialogue, many will believe that force modernization is something China has to do in its national interest.

No one wants another arms race and, on the surface, responsible countries are acting to prevent that from occurring. In China's case, there are indications that the PRC is now acting more responsibly, especially in the area of sales of WMD technology, than it did in past years. The U.S. can only hope that trend continues, and work to ensure it does, since "strengthening China's adherence to international non-proliferation norms, particularly its export controls,"⁴⁹ is one of our key national security objectives for East Asia.

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