

China

I. Current National Security Situation¹

Although China is a historical military power with a rich tradition that goes back 5000 years, modern Chinese security perspectives are about twenty-five years old. After two and a half decades as a nation under Mao Tse-Tung's leadership, his death in 1976 brought with it initiatives for broad strategic reform. These were focused on modernization, liberalization, internal reform, opening up China to outsiders, and exposing the Chinese to the outside world. The overarching mantra has been national economic development, focused broadly on industry, agriculture, science and technology, and defense. The overall economic goal is to double the Chinese GDP by the year 2000, and to double it again by the year 2050, thus placing China squarely in the class of modern nations.

Chinese grand strategy

China views its overall national security situation and current grand strategy to be consistent with this long-term approach to modernization.² China sees itself as a major Asian power, with three major classes of national security problems: national reunification, assertion of sovereignty, and protection of territorial integrity. China does not currently perceive a global military threat, but instead sees a variety of regional security challenges: Hong Kong, Taiwan, the South China Sea, the Diuoyu (Senaku) Islands, the Indian border, internal separatism, and economic threats to China's modernization strategy. China's declaratory foreign policy is based on the principles of peaceful coexistence: mutual respect for sovereignty and territorial integrity, non-interference in another's internal affairs, mutual non-aggression, equality and mutual benefit, and solution of all international issues by peaceful means.

China's overall grand strategy is based on the balanced development of "comprehensive national strength," including economic strength, scientific strength, technological strength, internal political stability, and military power. The central task of grand strategy for the period 1978-2050 is economic development. The Chinese military must be capable of supporting this strategy by repelling any aggressor, maintaining domestic stability, and contributing to the development of the national economy.

Within the overall context of current grand strategy, the Chinese are preparing for a wide range of warfare conditions. These include: small scale conflicts restricted to contested border areas; conflicts over territorial seas and islands; surprise air attacks, defense against deliberately limited attacks into Chinese territory; and punitive counterattacks launched by China into enemy territory to oppose invasion, protect sovereignty, uphold justice, and dispel threats.³ Chinese grand strategy is predicated on the current post Cold War period of reduced international tension. However one source argues that Chinese military thought more precisely views the probability of war to be declining with three nations (Russia, India, Vietnam), increasing with two (the United States, Japan), and ever present with two (Taiwan and the South China Sea regional states).⁴

Chinese military doctrine

Over the twenty-four year period since the death of Mao, China has articulated four very different statements of military doctrine to guide armament systems developments. Mao's People's War of strategic defense, and its attendant reliance on a successful counteroffensive from the depths of China, gave way in 1978-1985 to a "People's War Under Modern Conditions." This was focused principally on the threat of the Soviet Union, and revolved around modern conventional land warfare concepts of active defense, supported by the use of nuclear weapons. After the Gorbachev revolution started in the USSR, the Chinese concluded that there was a stalemate between the superpowers, and as a result, regional wars were the most probable. This resulted in another major change in military doctrine, a "Local People's War Under Modern Conditions," which revolved around modern Air-Land Battle concepts of ground force operations, mobility, air power, and command and control, again supported by nuclear weapons as necessary. Finally, Chinese conclusions from watching the Gulf War and global military technology developments led to the most modern, and current, doctrine, a "Local High Tech People's War Under Modern Conditions." This approach placed greater emphasis on modern strike and mobility concepts, an increased role for naval and air power,⁵ and, as necessary, an expanded role for nuclear weapons.

As an explicit component of the post Mao strategy, the Chinese leadership recognized that China did not have the modern infrastructure to carry out either economic or military reforms. They developed a coordinated approach in which military modernization (both of forces and of the defense industrial base) would take place within the overall construct of economic modernization. The military establishment, and defense industrial assets, would be used as an integral part of the economic modernization strategy, and this, in turn, would create the needed capabilities to create a modern defense infrastructure and military force posture.

Revolutionary military change

In the 1980's, China removed the barriers that had inhibited the development of Chinese military thought during the Mao era. This caused a renewed interest in modern military science, and began a concentrated study of the military developments and operational concepts that had emerged in the United States, Europe, and the Soviet Union since the Vietnam era. Chinese military failures on the Vietnam border in 1979, the experiences of the Falklands War, Operation Desert Storm, and the conflicts in the former Yugoslavia have also played a key role in stimulating Chinese military science.

In the 1990's, Chinese military thinkers have begun to focus on the components of the American revolution in military affairs—precision strike, information operations, power projection, and mobility. The goal of defense modernization, according to one Chinese source, is to develop a nuclear weapons capability and space technology not inferior to any superpower, and to have a conventional military which matches that of any global power by the middle of the 21st century.⁶ A general trend, widespread in Chinese military writings, is the theme that "land, sea, air, and space warfare will be highly integrated...not only in large-scale wars, but also in small-scale armed conflicts."⁷ It will be necessary to link together "ground forces, the navy, the air force, and the outer space force and a multi-level logistic support system."⁸ Although drawing on foreign military thought, in traditional style, the Chinese are also working to properly assimilate these

insights into Chinese culture, ultimately developing a modern armed force with distinguishing Chinese characteristics.⁹

China's defense budget

In 1997, China's military expenditures were \$74.9B (1997\$US) compared with \$55B (1997\$US) in 1991.¹⁰ This placed China 2nd globally. During the last half of the 1990's, the rate of increase also has grown slightly every year.

II. National Defense Industrial Base

China's need for a modern defense industrial base became apparent during the Korean War, when Chinese forces had armaments that were significantly inferior to those of the US forces. After the war, China requested help from the Soviet Union, and that led to massive construction of defense industries and institutes after the Soviet model. The PRC, with Soviet help, created production facilities for aircraft, ships, land warfare systems, and electronic systems. Political turbulence in China and the split with the Soviet Union in 1960 led to turbulence in the defense industrial base. It was reorganized under the control of six Ministries of Machine Building, focusing on nuclear weapons, aircraft and air-to-air missiles, electronics, ordnance, shipbuilding, and ballistic missiles. Production was based, however, mostly on Soviet-originated models.¹¹ Initially Chinese defense industrial facilities were constructed mostly in coastal areas, but after 1964 a new set of industries, the "Third Line" industries, numbering over 29, 000, were constructed in the Chinese interior in order to increase their survivability from potential strikes.

Today, China has a large and diversified defense industrial base, with the capacity for indigenous production of major weapons systems. They have sought self-sufficiency in defense production since 1949 but their early dependence on Soviet expertise resulted in a collection of huge state-owned corporations with a Soviet-style defense infrastructure. There was also relatively little redundancy among the defense industrial base elements. When Sino-Soviet relations broke down in 1960, it left China with little capability for their defense industry to keep pace with technological advancements in warfare, leading to the current situation requiring considerable force modernization. In spite of these difficulties, China can produce relatively complex military equipment in particular areas, such as combat aircraft, surface-to-air missiles, intercontinental ballistic missiles and nuclear warheads. At the same time, China continues to rely heavily on foreign design inputs for most advanced and complex systems. Today's defense industrial base is comprised of two distinct elements—over 2000 ministries and corporations organized under the State Council, and Chinese military industries reporting directly to the People's Liberation Army.¹²

China's Global Top 100 Defense Industries

China has not yet been successful in penetrating the list of global top 100 defense industries. One reason may be artificial, and due to Chinese accounting and management of its defense industrial base. Nevertheless, even the special defense companies that were established to support China's arms exports in the 1980's have not been successful in the 1990's of reaching a sufficient volume of defense revenue that they were reported on the Top 100 list.

III. National Armament Strategy

The Chinese armament process originally worked via a Soviet-style command economic five year plan. Priorities and schedules were established Soviet-style, tempered by Chinese regionalism that became a major factor in the actual selection of systems and levels of production. During the period from 1950 through 1978, there were major periods of political turbulence (e.g. the Cultural Revolution), and those periods caused the five year plans to be abandoned, and disrupted enterprise work schedules. Individual defense enterprises waxed and waned as a result of the turbulence, making it difficult to achieve a coherent national armament process.

There also was a strong emphasis on applied vs. basic research for new systems, and research and development was limited to major projects, with typically only one or two mods per system. The enterprises worked to targets established via the five year plan, and there were few financial incentives for enterprise managers. Work was tightly compartmentalized, and there was little coordination between the Services on systems development.

As a part of the Deng reforms, although economic modernization had priority for the use of defense industrial assets, it was also intended that the modernization of Chinese armaments was to take place, although in a subordinate role and pace. Chinese strategy for military modernization focused on modern conventional weapons, while at the same time working to develop nuclear weapons and other advanced technology weaponry.¹³ China also began to try and improve their armament system. In 1982 a new Commission on Science, Technology, and Industry for Defense (COSTIND) was created to oversee armaments development, production, and procurement. This combined the functions of three earlier organizations in order to promote greater rationality in the armament process.¹⁴ COSTIND has responsibility for the overall armaments research, development, and production program, for setting requirements for new systems with the research institutes, and for coordinating among the production factories.¹⁵

In spite of the reforms, as a socialist state, China's armament strategy is still based upon government developed five-year planning mechanisms. While this type of state planning mechanism provides greater structure and predictability than what Western nations experience in their armament planning process, there are also inherent tensions in this approach due to internal modernization efforts and the global impact of market-oriented economics.¹⁶

Towards advanced weaponry

China now fully understands the significance of advanced performance weaponry for the demands of modern warfare. But there are difficulties getting there in the short term. China has a relatively low level of scientific and technical capabilities to produce that weaponry across the board. Modernization of the defense industrial base and the Chinese Armed Forces will be very expensive, even for a country China's size with a growing GNP. Young talented scientific and technical workers are not attracted to the defense industries, given the commercial opportunities.

The Chinese are relying upon advances in science and technology. They strive to make the transition from a numerically superior type military force to one where quality and efficiency are guidelines, and from a force that is manpower intensive to one that is quality intensive. Precision strike weapons, and the reconnaissance (information) systems necessary to employ these systems in depth, stand out as one of the features of a “revolutionized” People’s Liberation Army (PLA). Many current writings from military scientists articulate key Chinese concepts of a Revolution in Military Affairs (RMA) adapted to China’s emerging security context. At the same time, even though open source information from leading Chinese strategic military institutions is replete with discussion and debate about revolutionary military change, China’s most senior military leaders have been publicly quiet about those issues, leading to some uncertainty as to what China’s short term intentions actually are.¹⁷

Improving scientific-technical progress

One part of China’s armament strategy is the creation of high technology development programs that focused on dual use technologies. Basic directions pursued are: educating the military and scientific community’s personnel, acquiring specific technological expertise through purchase, agreement or clandestine means; and reverse engineering of foreign weapons systems. The first of these, improving the general S&T knowledge level of the relevant populace, is being conducted through a variety of means: internal programs, re-alignment of the military academies,¹⁸ creation of joint R&D institutes,¹⁹ and in-house programs sponsored by U.S. companies.²⁰

Two major national development programs have been enacted. One is the National High Technology Development Program (also called the 863 program because it was initiated in March, 1986), focused on biotechnology, space technology, information technology, laser technology, automation technology, energy, and advanced materials. The second is the Torch program, focused on commercialization of government sponsored research. This program is concentrating on new materials, microelectronics and information, energy, biotechnology, and electromechanical devices. The two programs are directed by the State Science and Technology Commission and by COSTIND. The 863 and the Torch programs are a part of a larger reform intended to revitalize China’s scientific base.²¹ The reforms include partially commercializing scientific institutes by making them responsible for generating a portion of their operating revenues.²² China’s determination to acquire generic technology is reflected in its 1996 announcement of \$5 billion in spending to create ten high-tech manufacturing zones to become operational by 2010.²³ In 1999, China announced that its scientific development plan (2001-2005) will focus on technological innovation, emphasizing high technology.²⁴

Civil-military integration

A deliberate part of China’s armament strategy is to improve the weaknesses in the defense industrial base by a close integration of civilian and military assets.²⁵ This will share knowledge, and also limited assets, as well as allow progress in one sector to be rapidly diffused to the other sector. The intent is to try and improve manufacturing know-how and technology designs, to share limited instrumentation, critical materials, and key personnel, and to improve production and quality control methods.

A new urgency

China's views of urgency have also been colored by their analysis of the recent NATO actions in Kosovo.²⁶ The high-tech demonstration by the West in Yugoslavia has sparked new fears among some Chinese leaders (especially the PLA) that China lags far behind its western rivals in combat capability. The war has prompted repeated calls within China to develop, acquire, and train on more sophisticated weaponry. Specific recommendations have included: importing advanced technology, concentrating weapons developments on just a few high-payoff areas, accelerating national defense S&T programs; and following a policy of parallel upgrades and new weapons development. One of the conclusions from Chinese military analysis of the Kosovo war was that China clearly did not possess the military technology to engage a high-tech opponent and the one solution was importing foreign technology,²⁷ which is occurring through various efforts.

Recently China established a new high-technology military research group under the auspices of the Central Military Commission to coordinate the activities of leading military and civilian scientists, engineers, technicians, and intelligence personnel focused on coordinating advanced technology armaments development. The task force, headed by general officer, includes representatives from COSTIND, the Ministries of Science and Technology, Information Industry, and Education, and the Chinese Academies of Science and of Engineering.²⁸ Tensions associated with Taiwan have also resulted in increased research and development funding for selected defense industries.²⁹ In 1999, Chinese President Jiang Zemin announced that top priority should be placed on the development and production of advanced technology armaments, emphasizing the requirement to accelerate the pace of Chinese research and development to the level of the global state of the art.³⁰

The role of arms imports

China's specific short term armament strategy is to focus on the improvement of a few existing weapons, and to upgrade capabilities via purchases from abroad, licensed production, and co-development agreements. This is a continuation of China's historical approach to armaments development during periods in which China had new exposure to the outside world.

Since the mid-19th Century, China has used a strategy of importing foreign weaponry to offset her internal technical incapacity. China would purchase systems abroad, copy them, learn to produce them, and eventually modify the copies. At the same time, however, China has always intended that this approach be a means to self-sufficiency, since the fact of foreign dependence on armaments is viewed as a Chinese strategic weakness.³¹ In modern times, China has studied and purchased weaponry from many countries, including Great Britain, France, West Germany, Italy, Switzerland, Sweden, Yugoslavia, Egypt, Australia, and the United States.³² The Chinese Armed Forces has in the past consisted of a mix of systems for which the R&D and production was done indigenously, which were produced from prototypes provided via Soviet assistance, which were reverse engineered from purchases abroad, which were modifications to foreign equipment, or which were co-produced.³³

China's biggest current source of arms imports is Russia. Defense industrial cooperation between China and Russia has blossomed in this decade, driven by the twin motivations of China's perceived armament requirements and Russia's need for money or goods. China is consciously taking advantage of the weak economic situation in Russia to purchase Russian weaponry, contract for further defense research and production, and also hire Russians to construct new production facilities within China. China has purchased a broad range of Russian weaponry, including naval platforms, surface to air missiles, air defense systems, land systems, tactical aircraft, and missile technology. The purchases include 50 SU-30MKK fighters, which also includes licensed co-production of the KR-1 anti-radiation missile, a modified version of Russia's ramjet powered missile.³⁴ China also has imported SU-27 aircraft, including rights to the licensed production of 200 platforms. The renewed armament trade relationship with Russia will also help China in other aspects of its defense industrial upgrading; for example, under Russian license, China is acquiring unique technologies for manufacturing titanium structural elements, an essential feature of fourth generation fighter aircraft.³⁵

Although imports play a key role in China's current armament strategy, an increasingly vocal argument is being made that mere importation of foreign technology may not be the solution; independent innovative capacity is the answer. For example, the president of the Chinese Academy of Sciences recently argued that China's goal of becoming a medium developed country requires a share of the global market, which in turn requires an independent innovative capacity in order to be viewed favorably by other countries in terms of technology transfer.³⁶

Arms import level

In 1997, China's arms import level was \$0.5B (1997\$US), slightly upwards from the 1991 level of \$0.4B (1997\$US). This placed China 20th globally. However there were two intervening years, 1992 and 1996, in which the import level exceeded \$1.4B.³⁷

IV. Perspectives on the International Arms Export Market

China in the past has used arms exports as a major instrument of foreign policy. In the 1960's and 1970's, arms exports were provided at low cost, or even gratis, to countries important for Chinese regional security (e.g., North Korea, North Vietnam, Pakistan), and to African countries that the PRC was courting in her ideological competition with both the Soviet Union and the United States.³⁸ By comparison with later years, Chinese arms exports were relatively limited in scope.

Arms sales to support defense industrial modernization

However in the 1980's, arms exports assumed a very different purpose. The Chinese rationale stemmed directly from the extant Chinese grand strategy established in 1978 as a result of the Deng reforms. Within this strategy, the defense sector was assigned a key role in Chinese economic modernization—the transfer of technology, skills, and even revenues and consumer goods to the civilian sector. Chinese defense conversion, which started a decade before the Soviet version, was executed by reprogramming defense enterprise activities toward the civilian sector, while still operating within the established command-economic structure. In addition to

the transfer of military-developed technology to the civilian sector, the intent was to produce consumer goods and also generate revenues from the sale of those goods that could in turn be used to modernize the defense industrial base.

The Chinese ran into the same kind of difficulties that the Soviets and Russia experienced later. Since process was being directed by plan rather than by response to market demand, there was market saturation with some products. True cost pricing was non-competitive because of the costs of the defense industrial infrastructure. Enterprise managers did not know to execute the basic market-economic functions that determined such factors as production strategy, pricing, and profitability. As a result, in 1984 the Chinese government began to recognize the difficulties, and made several adjustments to the overall strategy in order to provide more focused efforts, better training for enterprise managers, and marketing assistance. Additionally, one of the major adjustments called for the deliberate use of commercial arms sales on the international market to help generate revenues for the modernization of the Chinese defense industrial base and to help with the costs of military reform.³⁹ COSTIND was given responsibility for supervising export of defense products for those industries under the State Council, including their cooperative technical exchange efforts with foreign countries.⁴⁰

To orchestrate Chinese arms sales, each of the Ministries of Machine Building established their own separate companies specifically to sell and manage arms exports. These included: the China North Industries Corporation (NORINCO) for ground force and combat support equipment; the China Shipbuilding Trading Company (CTSC) for naval vessels; the China Aviation Technology Import-Export Corporation (CATIC) for military aircraft and air-to-air missiles; the Chinese Precision Machinery Import-Export Corporation (CPMIEC) for surface-to-surface tactical missiles; and the China Electronics Import-Export Corporation for communications equipment. During the 1980's, as China's defense budget continued to drop dramatically, many other export companies were established to represent different elements of the PLA. The currency earned by these export companies became a source of revenue for funding armaments development and procurement.⁴¹ The arms companies administratively fall under the auspices of COSTIND.⁴²

Two central companies oversee arms exports, and control most of the arms trade. These are Poly Technologies, established in 1983 under the joint administration of the General Staff and COSTIND, and New Era, established in 1986 nominally under the Chinese International Trust and Investment Corporation but actually under the jurisdiction of the General Staff's Equipment and Technology Department. New Era is authorized to export weapons and military equipment manufactured by all of the defense industries or corporations associated with COSTIND. Poly Technologies is authorized to sell all types of conventional armaments.⁴³ Poly Technologies is the largest in terms of sales volume and profitability.⁴⁴

In the 1980's, Chinese arms exports grew steadily, mostly based on a product mix of older Soviet designs of the 1950's, modified and upgraded incrementally to increase combat performance. The Chinese, however, added a broad selection of tactical missiles to their arms export portfolio. For the most part, the arms import markets viewed Chinese weaponry as rugged, simple, and cheap. (For example, reportedly the 1992 cost on the open market of a Russian Mig-29 fighter was about \$25M, whereas the Chinese F-7, originally modeled after the older Mig-21, was \$2.5M.⁴⁵) Chinese weaponry was also, however, of inconsistent quality, and technologically

behind the armaments of both the Soviet Union and the United States.⁴⁶ Nevertheless, China managed to grow its international arms sales. During the 1980's, she was one of the five leading global armaments suppliers in terms of the volume of annual revenues, even though her market share was substantially less than that of the United States or the Soviet Union.

During this period, Chinese foreign aid subsidized some arms exports to African states and selected Asian countries; however the bulk of the arms sales were done commercially to the countries of the Middle East. Major Chinese customers included Bangladesh, Burma, Egypt, Iran, Iraq, Pakistan, Saudi Arabia, Tanzania, and Thailand.⁴⁷ From 1984-1987 Middle East sales constituted 89 percent of Chinese global arms exports, and 76 percent from 1988-1991. The Iran-Iraq war became a big source of demand for Chinese armaments. In 1987 China also sold CSS-2 intermediate-range ballistic missiles to Saudi Arabia.⁴⁸ In the early 1990s, due to several changes in the global and regional geopolitical situation, and the end of the Iran-Iraq war, China's arms sales fell precipitously.

Today, the Chinese appear to be using arms sales as a means of gaining greater regional influence, and for securing basing in regional countries in order to improve China's overall power projection capability.⁴⁹ In light of a growing demand for hydrocarbon products (China became net importer of oil for the first time in 1998), China may also be using arms sales to the Middle East as a means of obtaining reciprocal oil agreements, a trend that could continue for the foreseeable future.⁵⁰ It also appears that the demand for Chinese arms may gradually increase in the Third World countries due to the low cost of its armaments, the ability of China's growing economy to fund offset agreements, and, for some regional countries, China's willingness to expand bilateral security relationships.⁵¹

Arms export level

In 1997 China's arms export level was China's arms export level in 1997 was \$1.1B (1997\$US) compared with \$1.6B (1997\$US). This is significantly lower than the 1988 high of \$3.6B (\$1997US). However it represents a turnaround from the 1996 low of \$0.6B (\$1997US).⁵²

V. Transformations in the Defense Industrial Base

A significant transformation in the Chinese defense industrial base began in the early 1980's. One major reason was to promote a close integration between the defense and civilian industrial base elements in order to help modernize the commercial infrastructure. Another reason was to eventually create a new, a more efficient, and more capable defense industrial base. A third reason was a to allow the defense industrial base to operate within the new hybrid "socialist-market" economy that China has been working to implement. This is more market-oriented system that emphasizes financial accountability of individual enterprises along with decreasing state subsidies, while still scheduling major programs and resource commitments in accordance with a five-year planning process, and also attempting to maintain political control over key industries.

Defense conversion constitutes an important aspect of the Chinese transformation. However the focus is not on shifting defense assets to commercial products so as to downsize the defense

industrial base. Rather the focus is to use the defense industrial base to help upgrade the capabilities of the commercial sector, eventually resulting in an integrated military-civilian scientific research and military-industrial production system.⁵³

The transformation of China's defense industrial base is also taking place within a larger strategic transformation of Chinese industry that started in 1978. That transformation is focused on not only the improvement of production technology, processes, and equipment, but also on changing the reference frame for operations from that of a command economy to that of the new socialist-market economy. Capital investment, the import of technology, and management/procedural restructuring and training are at the heart of the transformation. Even though the process has been underway for two decades, there are still major obstacles, including the relatively low quality (by world standards) of existing equipment, excessively high consumption of raw materials due to inefficient processes, and the relatively low education of enterprise workers and staff. Progress has also been hindered by increasing world competition in Chinese domestic and international markets and by the slow pace of general economic reform. Nevertheless, the transformation remains a Chinese strategic objective, and plans and programs are underway to execute that transformation as quickly as it is feasible.⁵⁴

China is also trying to modernize the way in which defense and commercial sector enterprises are managed to be more consistent with the requirements of the socialist-market economy. Managers are being given more autonomy, for their own profits and losses, and authority to develop and upgrade their own products. The intent is to improve the ability of Chinese industry to operate in domestic and international competitive market environments. Enterprise groups are also being formed to horizontally tie together organizations into more complete and self-contained business teams to promote both efficiency and effectiveness. This new management system, among other objectives, seeks to address requirements posed by changes in the external financial environment and in the competition from domestic and international markets.

Opening up the defense industrial base to engage in the world market is viewed as an important element of the transformation. This includes a much greater emphasis on arms exports in order to not only generate revenue, but also to force an improvement in product quality as a result of international competition. Creating new products for export, and raising the technological level of armaments for export, are also seen to be essential elements. The reverse requirement, to actively import technology, is also essential. Other important elements of change include: the increased training of defense science and technology specialists; improvements in the overall management system orchestrating defense-industrial activities; and improvements in the legal system supporting the operation of defense industries in order to improve standardization, regulation, and operations.⁵⁵ For armament systems, the new management approach encourages defense enterprises to continuously develop new weaponry for external markets, with an objective being to always produce one generation of a product, have one generation in reserve, be conducting trial production of another generation, and carrying out scientific research for a new generation.

The third line industries

Another issue is the problem of the third line industries. About half of the defense industrial base still lies in the interior of China. Today this represents serious isolation from the other half located in coastal areas. The third line industries also are supported by inadequate infrastructure, and have difficulty interacting internationally. These industries are being encouraged to transfer assets to the coastal areas, but they are having difficulties remaining profitable. Governmental solutions to date are only piecemeal, and will probably require a long time and investment (including willingness to accept bankruptcy) before this problem will be solved.⁵⁶

Mergers and acquisitions

A part of the transformation also includes mergers and restructuring of defense industries to provide organizations more effectively able to operate in a semi-market environment. For example, China recently founded ten military-industrial groups from existing organizations in order to reform management structures, improve competitiveness, and accelerate modernization. One of the objectives is to allow the groups to better concentrate their research efforts on the development and production of armaments. The groups will eventually be responsible for their own profitability, and will have to learn to operate within market rules.⁵⁷

Leveraging Chinese domestic market potentials

China is actively using its market potential for foreign firms as a lever to obtain the kinds of advanced technologies that will help upgrade her industrial base. In fact, the modernization and self-sufficiency of domestic industrial and defense sectors are explicit goals of China's foreign investment and trade policies. The machinery, electronics, petrochemical, automotive, and construction materials industries have been singled out for priority technological development. Foreign investments in high-tech industries are given preferential treatment, and offset requirements typically require include local content demands, production export quotas, and collaborative research, development, and training. Because of the enormity of the Chinese market, foreign investors now compete for niche access, and are willing to offer increasing levels of technology and/or offsets in order to establish a foothold. Technology transfer is both explicitly required by Chinese regulations, and also offered as a competitive incentive by foreign companies trying to gain market access.⁵⁸

VI. Risks and Concerns

- Chinese defense industry transformation represents an effort to adapt to global impacts of market-oriented economics, while retaining some form of a socialist state planning mechanism. For example, while efforts to attract foreign investment in China for technology development have had some success, the residual rigidity of the state socialist system in China has generally dissuaded extensive foreign commitments to China. These contradictory trends present special problems for the Chinese state and the transformation of its defense industry, to include questions about the survival of the communist regime in its present form.
- State support of the defense industrial base has helped provide employment and social stability for China's massive work force, a stability that is threatened by the downsizing of the large and medium-sized enterprises and the resulting unemployment. Under these

circumstances, perceptions by the regime concerning its political survival can have an impact on funding decisions not easily discerned by the logic of economics alone.

- The high-tech demonstration by the West in Yugoslavia has sparked new fears among some Chinese leaders (especially the PLA) that China lags far behind its western rivals in combat capability. The war has prompted repeated calls within China to develop, acquire, and train on more sophisticated weaponry.
- Although imports play a key role in China's current armament strategy, an increasingly vocal argument is being made that mere importation of foreign technology may not be the solution; independent innovative capacity is the answer.
- China's defense industrial base is currently mal-deployed within the country, with about half (the third line industries) located in isolated regions of the interior. They are supported by inadequate infrastructure, and have difficulty interacting internationally. The industries are being encouraged to transfer assets to the coastal areas, but they are having difficulties remaining profitable, and governmental solutions to date are only piecemeal. It will probably require a long time and investment before this problem will be solved.

VII. Some Observations

- China's defense industry transformation is taking place within a strategic modernization of China, which also includes a transition to a hybrid socialist-market economy. This is a concept that has not been tested in prolonged practice and that creates operational difficulties for companies trying to support both state and commercial requirements.
- Defense conversion constitutes an important aspect of the Chinese defense industrial transformation. However the focus is not on shifting defense assets to commercial products so as to downsize the defense industrial base. Rather the focus is to use the defense industrial base to help upgrade the capabilities of the commercial sector, eventually resulting in an integrated military-civilian scientific research and military-industrial production system. This approach is intended to share knowledge, and also limited assets, as well as allow progress in one sector to be rapidly diffused to the other sector.
- Even though transformation of China's industrial base has been underway for two decades, there are still major obstacles, including the relatively low quality (by world standards) of existing equipment, excessively high consumption of raw materials due to inefficient processes, and the relatively low education of enterprise workers and staff. Progress has also been hindered by the increasing world competition in Chinese domestic and international markets, and the slow pace of general economic reform. Nevertheless, the transformation remains a Chinese strategic objective, and plans and programs are underway to execute that transformation as quickly as it is feasible.
- China is actively using its market potential for foreign firms as a lever to obtain the kinds of advanced technologies that will help upgrade her industrial base. Because of the enormity of the Chinese market, foreign investors compete for niche access, and are willing to offer

increasing levels of technology and/or offsets in order to establish a foothold. Technology transfer is both explicitly required by Chinese regulations, and also used as a competitive incentive by foreign companies trying to gain market access.

- Traditionally, most Chinese arms exports, whether by commercial sales or foreign military aid, have been to the developing countries or to guerrilla groups. After a period of using arms exports to support foreign policy objectives and to help provide Chinese regional security, in the early 1980's China turned to arms exports as a deliberate source of revenue for the modernization of her defense industrial base. China created several special arms export organizations and companies to promote and manage sales, and grew to become one of the five leading global arms suppliers in terms of volume of annual revenues. However in the early 1990's, the bottom fell out of the Chinese arms export market as the wars in the Middle East ended and the Gulf War demonstrated the advantages of the kinds of high-technology weaponry that China was unable to produce.
- Recently, China has used arms sales to encourage regional countries to provide basing that would help increase her regional power projection capability. China also may be starting to use arms sales to the Middle East as an incentive to secure increased access to new oil supplies.
- It appears that the demand for Chinese arms may gradually increase in the Third World countries due to the low cost of its armaments, the ability of China's growing economy to fund offset agreements, and, for some regional countries, China's willingness to expand bilateral security relationships.
- China's views of urgency have been colored by their analysis of the recent NATO actions in Kosovo. The high-tech demonstration by the West in Yugoslavia has sparked new fears among some Chinese leaders that China lags far behind its western rivals in combat capability. In 1999, Chinese President Jiang Zemin announced that top priority should be placed on the development and production of advanced technology armaments, emphasizing the requirement to accelerate the pace of Chinese research and development to the level of the global state of the art.

ENDNOTES

¹ Portions of this chapter have been adapted from “China: An Introduction,” in J. Battilega, et al, *An Introduction to Global RDA Processes*, Science Applications International Corporation SAIC-96/6006&FSRC/B, Denver, November 18, 1996, and Bruce Jackson, J. Battilega et al, *Trends in Foreign Perspectives on Foreign Military Operations and Associated Space Dependencies*, Science Applications International Corporation, SAIC-99-6014&FSRC, Denver, November 1999.

² COL Xu Xiuajun, China Academy of Military Sciences, “China’s Grand Strategy for the 21st Century,” in M. Bellows (ed.) *Asia in the 21st Century: Evolving Strategic Priorities*, NDU Press, Washington, 1995, and the recent Chinese Defense White Paper, reprinted as “China’s National Defense,” Information Office of the State Council of the People’s Republic of China,” *China Today*, July 28, 1998, pp. 4-12.

³ J. Wenxieu, et al, “Tentative Discussions of the Special Principles of a Future Chinese Limited War,” JPRS, China, No. 37, July 12, 1988, p. 48.

⁴ Xiao Bing and Qing Bo, eds, *Zhongguo jundui neng foding ying xiayichang zhanzheng* [Can the Chinese Army Win the Next War?], Chongqing, 1993 [JPRS-CAR-94-024-L, May 5, 1994]. Although parts of this book have been somewhat discredited as a biased argument for a new Chinese aircraft carrier, the introductory parts of the book appear to indicate serious Chinese strategic thought. See David Shambaugh, “The Insecurity of Insecurity: The PLA’s Evolving Doctrine and Threat Perceptions Towards 2000,” *Journal of Northeast Asian Studies*, Spring, 1994, p.16.

⁵ The term “local war,” in Chinese usage, is a loosely defined concept understood to mean a geographically confined war that arises abruptly on the Chinese periphery, including disputed borders, islands, and the continental shelf. (Weixing Hu, “China’s Security Agenda After the Cold War,” *The Pacific Review*, Vol. 8, No.1, 1995, p. 117).

⁶ Yang Dezhi and Huan Xiang et al, *Guofang Fazhan Xhanlue Sikao* [Thinking on National Defense Development Strategy], Beijing, Jiefangjun Chubanshe, 1987, p. 23. Cited by Weixing Hu, op. cit., p. 131.

⁷ Wang Bao Cun and Li Fei, *Jiefangjun Bao*, June 13, 1995, in M. Pillsbury, editor, *Chinese Views on Future Warfare*, NDU Press, 1997, p. 50.

⁸ Maj. Gen. Yang Chengyu, Headquarters, General Logistics Department, “Logistics Support for Regional Warfare,” in Pillsbury, op. cit., p. 134.

⁹ J. Battilega, op. cit.

¹⁰ *Worldwide Military Expenditures and Arms Transfers, 1998*, Department of State Bureau of Arms Control, Washington, DC, January, 2000.

¹¹ Karl W. Eikenberry, *Explaining and Influencing Chinese Arms Transfers*, McNair Paper No. 36, National Defense University, Washington, DC, February, 1995, p. 5.

¹² John Frankenstein and Bates Gill, “Current and Future Challenges Facing Chinese Defense Industries,” *The China Quarterly*, June, 1996, p. 403.

¹³ Defense Minister Xu Xiangiai, *Red Flag*, October 1, 1979.

¹⁴ John Frankenstein and Bates Gill, op.cit., p. 404.

¹⁵ W. Frieman, “China’s Defence Industries,” *Pacific Review*, 1993, p. 54.

¹⁶ Greater depth of discussion on this subject can be found in “China’s Ninth Five-Year Plan and Selected Indicators for a Changing Economy,” in D. Beck, et al, *The Research, Development and Acquisition Process in the People’s Republic of China: Selected Open Source Issues*, SAIC-97/6034&FSRC, Science Applications International Corporation, Denver, November 20, 1997.

¹⁷ For a discussion of this point, and alternative possibilities, see M. Pillsbury, “Chinese Views of Future Warfare,” in James R. Lilley and David Shambaugh, editors, *China’s Military Faces the Future*, M.E. Sharpe, New York, 1999, pp. 64-84.

¹⁸ Mary Kwang, *The Straits Times*, June 22, 1999

¹⁹ Cary Huang, *Hong Kong Standard*, June 11, 1999

²⁰ “China: Telecoms and MBAs,” *The Economist Intelligence Unit Views Wire*, Aug 5, 1999

²¹ Ronald D. Humble, “Science, Technology, and China’s Defence Industrial Base,” *Jane’s Intelligence Review*, January 1992, pp. 6-8.

²² W. Frieman, “The Understated Revolution in Chinese Science and Technology,” in Lilley and Shambaugh, op. cit., pp. 247-267.

²³ Susan Willett, “East Asia’s Changing Defense Industry,” *Survival*, Vol. 39, No. 3, Autumn, 1997, pp.107-134.

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- ²⁴ Zhu Lilan, Minister of Science and Technology, in “China’s Scientific Development Program to Focus on Innovation,” *Xinhua*, Beijing, August 26, 1999.
- ²⁵ *Other Approaches to Civil-Military Integration: The Chinese and Japanese Arms Industries*, Office of Technology Assessment, Congress of the United States, Washington DC, 1994.
- ²⁶ See J.T. Banks et al, *Global Perspectives on the Revolution in Military Affairs: Initial Views on Kosovo*, SAIC-98/6034 & FSRC, Science Applications International Corporation, Denver, August 26, 1999.
- ²⁷ “Thoughts on Developing Armaments by Leaps and Bounds,” An Weiping, *Beijing Jiefangjun Bao*, Apr 6, 1999, p. 6.
- ²⁸ Cary Huang, “Beijing Sets Up Panel of High-Tech Weapons,” *Hong Kong Standard*, June 11, 1999.
- ²⁹ Unattributed, “Weapons Plants Get Priority Funding,” *Hong Kong Standard*, September 2, 1999.
- ³⁰ Jian Zemin, in Pamela Pun, “PLA Told to Speed Weapons Research,” *Hong Kong Standard*, November 6, 1999.
- ³¹ In 1860, a Chinese leader, Feng Guinen, wrote that “if we can manufacture, can repair, and can use them [foreign weapons], then they are our weapons. If we cannot manufacture, nor repair, nor use them, then they are still the weapons of others...Eventually we must consider manufacturing, repairing, and using the weapons by ourselves...Only thus will we be able to pacify the empire,...play a leading role on the globe; and...restore our original strength and redeem ourselves from former humiliations.” Cited in Bates Gill, “Determinants and Directions for Chinese Weapons Imports,” *The Pacific Review*, Vol. 8, No. 2, 1995. This view of arms imports has continued since then.
- ³² D. Shambaugh, “China’s Defense Industries: Indigenous and Foreign Procurement,” in P. Godwin, *The Chinese Defense Establishment*, Westview Press, Boulder, 1983.
- ³³ W. Frieman, “Foreign Technology and Chinese Modernization,” in C. Lovejoy and B. Watson, *China’s Military Reforms*, Westview Press, Boulder, 1986. This source also contains a detailed table listing several specific Chinese armaments procurements in each category.
- ³⁴ *Defense News*, July 5, 1999, p. 4.
- ³⁵ Willett, *Ibid.*
- ³⁶ Unattributed, “Academician Stresses Technology Innovation,” Beijing *Zhongguo Xinwen She*, June 18, 1999 in FBIS-CHI-1999-0621.
- ³⁷ *Worldwide Military Expenditures and Arms Transfers, 1998*, op. cit.
- ³⁸ Eikenberry, op. cit., p. 6.
- ³⁹ According to one estimate, 30 percent of the profits from Chinese arms exports during the period 1984-1991 were used to finance defense research, and an additional 20 percent were used for other defense construction. See Cheng Zihua, “Communist China’s Weapons Diplomacy,” *The Nineties*, Hong Kong, May 1, 1991 [JPRS-CAR-91-052, September 23, 1991, p. 82]
- ⁴⁰ Frankenstein and Gill, op. cit, p. 404.
- ⁴¹ Eikenberry, op. cit., p. 7. See also *Other Approaches to Civil-Military Integration: The Chinese and Japanese Arms Industries*, op. cit., pp. 10-14.
- ⁴² John W. Lewis, Hua Di, and Xue Litai, “Beijing’s Defense Establishment,” *International Security*, Spring, 1991, p. 89.
- ⁴³ Lewis, Hua Di, and Xue Litai, op. cit, p. 92-93.
- ⁴⁴ Eikenberry, op. cit., p. 34.
- ⁴⁵ *Ibid.*, p. 34.
- ⁴⁶ *Ibid.*, p. 9.
- ⁴⁷ *Ibid.*, p. 33.
- ⁴⁸ *Ibid.*, p. 10.
- ⁴⁹ *Ibid.*, p. 22.
- ⁵⁰ John Calabrese, “China and the Persian Gulf: Energy and Security,” *Middle East Journal*, Summer, 1998, pp. 351-366.
- ⁵¹ Eikenberry, op. cit., p. 39.
- ⁵² *Worldwide Military Expenditures and Arms Transfers, 1998*, op. cit.
- ⁵³ Commission on Science and Technology for National Defense, Science and Technology Intelligence Agency, eds, *Survey of World Military Industry*, National Defense Industry Publishing House, 1990, p. 107, cited in Deba R. Mohanty, “Defense Industry Conversion in China,” *Strategic Analysis*, March, 1999, p. 1849.
- ⁵⁴ Jingpoing Ding, “Technical Transformation and Renovation in PRC Industry,” in Denis Fred Simon, ed., *The Emerging Technological Trajectory of the Pacific Rim*, M.E. Sharpe, Inc., New York, 1995, pp. 239-255.

⁵⁵ General Ding Henggao, Chairman, Defense Commission of Science, Technology, and Industry, “Reforming Defence Science, Technology, and Industry,” in M. Pillsbury, editor, *Chinese Views on the Future of Warfare*, National Defense University Press, Washington DC, 1997, pp. 155-171.

⁵⁶ Frankenstein and Gill, op. cit., p. 403.

⁵⁷ Unattributed, “*Chinese Premier Underlines Science and Technology for National Defense*,” Xinhua, Beijing, July 1, 1999.

⁵⁸ *Technology Transfer to China*, Office of Strategic Industries and Economic Security, US Department of Commerce, Washington DC, January, 1999 [http://www.doc-bxa.bmpcoe.org/dmrr_chinatech.html].