

# Chapter 3

## China's Military Modernisation

The patient, methodical and pragmatic manner in which China has approached its economic and broad foreign policy objectives has, if anything, been even more conspicuous in the military sphere. The evidence supports the contention that shaping the evolution of the People's Liberation Army (PLA) was a vital component of Deng Xiaoping's grand strategy and that an 'understanding' between the political and military leadership held together amazingly well.

The uncertainty and speculation surrounding the sort of power that China could become, and on the extent of the adaptation of familiar arrangements and processes in the security arena that could become necessary to accommodate it, are encapsulated in the cautious but persistent debate that has arisen concerning China's military modernisation. This debate can roughly be traced back to the mid 1990s when China's announced military expenditures began to rise even faster than its Gross Domestic Product (GDP), suggesting a policy development of some significance.

Given China's long and turbulent history, including its recent past, it is no surprise to find that the military, presently the PLA, has always been a formidable political and bureaucratic force within the Chinese 'Establishment'. For the first three decades of the People's Republic of China (PRC), the government played to its one strength, manpower. Under Mao Zedong's doctrine of 'people's war', or guerilla war on a massive scale, the PLA envisaged conceding territory and lives in the process of gradually smothering an invader. The putative aggressor was the United States in the 1950s, the United States and the Soviet Union in the 1960s and then the Soviet Union alone in the 1970s and 1980s. Since the end of the Cold War, the United States has re-emerged ever more clearly, not so much as an overt enemy, but as the power that China aspires to match in terms of economic strength and political influence, and to neutralise in terms of coercive military capacity.

To give effect to Mao's Cold War strategy, PLA strength hovered at around 5 million. This was by far the largest standing army in the world, with correspondingly formidable numbers of major weapon systems, particularly tanks, artillery, combat aircraft and submarines. Moreover, the armed forces consumed an onerous share of GDP, around 15 per cent in the mid 1960s. Despite this lavish funding (which was due also to the PLA's central role in maintaining internal security and the exclusive primacy of the Chinese Communist Party (CCP)), the PLA never approached the status of a 'modern' military force. After

the defeat of Japan in 1945, and of their domestic rivals the Kuomintang in 1949, China's economic and military revival was nurtured by the Soviet Union, itself neither wealthy nor disposed to seeing China emerge as a serious competitor in any dimension within the Socialist bloc. Moreover, this link was severed abruptly in 1959–60, long before China's indigenous capacities in science, technology and industrial skills were capable of flourishing independently (even setting aside the convulsions of the Great Leap Forward and the Cultural Revolution). The result was that the PLA continued to be equipped through the 1980s with second-echelon Soviet military hardware from the 1950s.

Then came Deng Xiaoping with his transforming determination to place economic revival ahead of all other national imperatives, including ideology. Deng succeeded in 1978 in committing the CCP to focus as exclusively as possible on economic development, and to abandon the command economy in favour of the market economy, including international trade and investment. This was an extraordinary political accomplishment. Deng certainly had compelling internal empirical evidence to support his case for 'revolutionary' change in China's economic settings, but he would also have used the fact that China was being out-classed to the point of humiliation by its former mortal enemy (Japan), by its errant province (Taiwan) and by other neighbouring states like Hong Kong and South Korea that had for millennia aspired to match China's economic, social, scientific and technological accomplishments. For the Chinese, the enduring shorthand for this remarkable reversal in its posture toward the world has been 'the reform and opening up'.

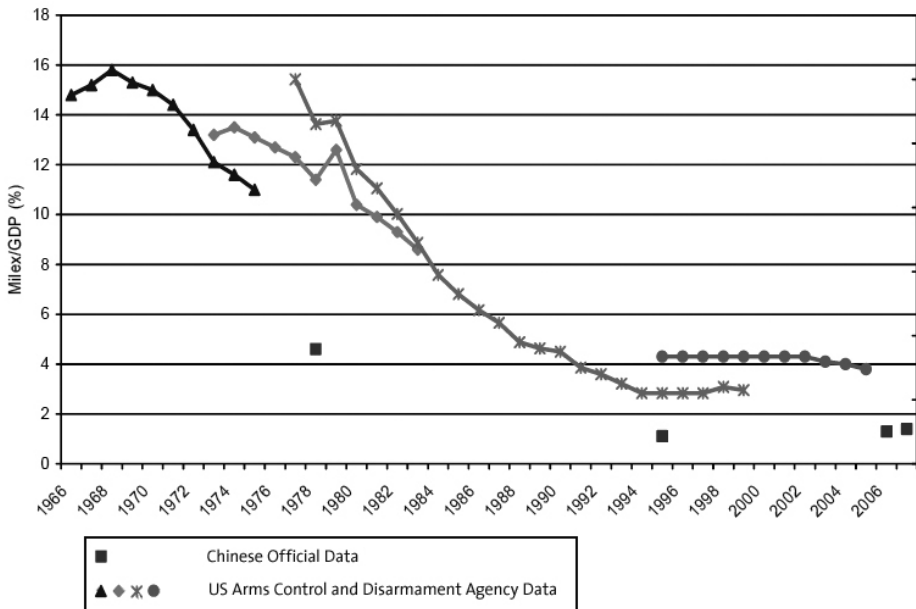
The evidence would support the view that a critical development supporting Deng's new policy settings was what might be termed a 'grand bargain' with the PLA. As noted earlier, Deng's case for revolutionary change included the strategic assessment that the international environment was both favourable for China's core interests and could be expected to remain reliably stable. If these judgements were considered sound, it made giving absolute priority to economic development look like a judicious gamble. It could be inferred that Deng pointed to the robust stalemate that the superpowers had fallen into, namely that (since normalising relations with the United States) China was well placed to enhance deterrence by manoeuvring between them if necessary, and that China's earlier concerns about superpower collusion against China could now be discounted.

It would appear that Deng persuaded the PLA to come on board with the argument that, absent a revolution in China's economic circumstances, the PLA would be competing for a slice of a comparatively static national cake. Alternatively, it could accept being ranked fourth and last in Deng's list the national priorities (behind agriculture, industry, and science and technology) and to receiving a declining share of GDP, and regard this relative abstinence

as an investment in building a robust economy which would, over the longer term, deliver the resources and national competencies needed to develop an internationally competitive military force.

This hypothesis is informed guesswork, at best, but the graph depicted in Chart 1 would seem to back it up. Chart 1 draws on data compiled by the *US Arms Control and Disarmament Agency* over the years 1966 to 2005, and published in *World Military Expenditure and Arms Transfers*. ACDA did change its methodology occasionally, but provided overlapping data so that trends can still be clearly discerned.

**Chart 1: Military Expenditure as Percentage of GDP, 1966–2007**



(Sources: *World Military Expenditure and Arms Transfers*, US Arms Control and Disarmament Agency (reports); *China's National Defense in 2008*, Information Office of the State Council of the People's Republic of China, Beijing, January 2009).

Trends of this scale and duration do not occur by accident: they are made to happen. It should be borne in mind however that, although ranking last, military modernisation was still in the top four national priorities. Moreover, the trends depicted in Chart 1 disguise an important reality. The success of the 'reform and opening up' proved to be so spectacular—an average annual rate of economic growth of nearly 10 per cent over the thirty years 1978–2008—that the military share of GDP could fall steadily while the absolute volume of resources devoted to the military actually continued to increase, at least in most years.

This is borne out by the official data set out in Table 2, and taken from the new Ministry of National Defense website. The respective trends in military expenditure and GDP resulted in the millex/GDP ratio falling from 4.6% in 1978 to 1.4% in 2007.

**Table 2: Average Annual Growth Rates of Military Expenditure and GDP, 1978–2007 (current price)**

	Mil. Expenditure	GDP
1978–87	3.5	14.1
1988–98	14.5	20.7
1998–2007	15.9	12.5

(Source: Ministry of National Defense ([www.mod.gov.cn](http://www.mod.gov.cn)), accessed 13 November 2009)

The PLA leadership, aided by Deng’s preparedness in 1985 to declare that a ‘people’s war’ against an invading Soviet Union could no longer be regarded as a realistic scenario, was pushed to cut personnel numbers substantially in order to make the relatively constrained military budget ‘go further’. One million personnel were cut between 1985 and 1987, another 500 000 between 1997 and 2000, and a further 200 000 between 2003 and 2005. Over the whole period, the PLA’s personnel strength fell from 4.2 million to 2.3 million (although the paramilitary People’s Armed Police roughly doubled in strength to 1.6 million over the same period, so the decline in the total number of ‘military’ personnel was more modest).

It would appear that the PLA’s brief was both to accept a sharp diminution in its relative share of the nation’s resources and to shift the focus of the resources it did have available away from strengthening immediate capabilities in favour of enhancing its capacities to develop, produce and make good use of modern weapon systems and equipment. In other words, with defence policy shifting progressively away from the land-based ‘people’s war’ toward shorter, more limited engagements in high-technology maritime environments and the PLA endeavouring to institutionalise integrated air/land/sea operations, China’s military–industrial–scientific complex set out to learn how to develop and produce advanced military equipment while minimising the costs of actually re-equipping the armed forces with successive generations of, at best, marginally better equipment. The evidence supports the contention that the PLA resisted the temptation to proliferate systems that it knew to be well below international standards and/or which were unduly dependent on critical components that China could not yet develop and produce indigenously and which had to be imported. In effect, during the 1980s and 1990s in particular, China focused on developing the submerged components of the military iceberg, while doing what it hoped would be just enough on the visible peak; that is, the PLA’s order of battle.

China's Government has undertaken several reforms of the scientific-industrial sector supporting the PLA. Like governments the world over, it is seeking arrangements best suited to taking the PLA to the cutting edge and keeping it there: how to capture the benefits of competition; decide whether research and development (R&D) and production should be performed in the same or separate enterprises; how to allow the military sector to capitalise on technological developments in the civilian world without compromising security and secrecy, and so on. This has been an iterative process. Given that China started with mammoth state-owned defence industries still comfortable with decades-old Soviet military technology, and that the government as a whole remains deeply committed to control, protection and secrecy, external observers are severely handicapped in assessing how much progress has been made. The instincts that external observers develop on this issue, often driven by how much weight they feel can sensibly be placed on the occasional hard data point like the destruction of an orbiting satellite in January 2007, play a key role in shaping assessments of how soon China could become a serious military challenge to anyone and everyone in its immediate neighbourhood.

To return to Chart 1, it is clear that China's phenomenal economic growth since the late 1970s has softened the pain of the bargain the PLA struck with the political leadership. In addition, it would seem that the PLA spent the next two decades focusing relatively heavily on the scientific and industrial capacities needed to support a modern military force. By the mid-1990s, however, the political leadership began to loosen the purse strings. Military expenditure as a share of GDP stopped falling and even rose slightly in some years. This means that, for the past decade, China's military expenditure has increased by at least 10 per cent annually in real terms. By any standards, and particularly for a country that is not at war (even though it does consider that it is confronted with a major security crisis in that Taiwan could step beyond the very narrow boundaries that Beijing considers acceptable as not involving significant loss of face), this rate of growth in military expenditure signals a new urgency about enhancing China's military capabilities. For those who believe that China has made important progress on the scientific and industrial fronts, it means that major capability improvements should be anticipated sooner rather than later.<sup>1</sup>

---

1 For example, see Michael Pillsbury, 'PLA Capabilities in the 21st Century: How Does China Assess its Future Security Needs?', in Larry Wortzel (ed.), *The Chinese Armed Forces in the 21st Century*, Strategic Studies Institute, US Army War College, Carlisle, PA, December 1999, pp. 89–158, available at <<http://www.au.af.mil/au/awc/awcgate/ssi/chin21cent.pdf>>, accessed 16 November 2009.

## The transparency question

Statistically, China seems a pretty normal state in terms of the resources it devotes to defence. In terms of military expenditure as a share of GDP or per head of population, armed forces as a proportion of population, and other possible indices, the Chinese figures all tend to fall well within the 'normal' range when compared to other states (especially, of course, if one makes commonsense adjustments or allowances for China's disproportionately large population).

The first dilemma, however, is that considerable scepticism surrounds the credibility of official figures. For the better part of two decades, from 1960 to the late 1980s, China published no information on military expenditure, not even a single number as its defence budget. Today, as was the case with the Soviet Union in the past, it is widely believed that official Chinese expenditure data exclude important categories of activity that are included in defence expenditure under Western accounting conventions.<sup>2</sup> The expenditures that various sources suggest are omitted range across paramilitary forces (especially the People's Armed Police), nuclear weapons, subsidies to defence industry, military R&D, defence imports, and military pensions.

In recent years, China has adopted the practice of issuing Defence 'White Papers'. These White Papers include long-winded and very general discussion about the roles and missions of the armed forces, but they are serious documents that the rest of the world has begun to study carefully. The White Papers also insist, quite explicitly, that just about every category of expenditure suspected by some foreign agency of being excluded from the official defence budget is in fact included in the official figures. The Chinese Government therefore directly contests the practice of supplementing its official figures with estimates of omitted categories of military expenditure to arrive at figures useful for international comparisons. Unfortunately, China has not relaxed the tight secrecy that surrounds its major resource allocation decisions. Although official Chinese documents insist that the National People's Congress is fully briefed on and approves total government expenditure, including defence expenditures, there are no visible internal processes requiring the leadership to expose and justify the full extent of the resources that flow to the military.<sup>3</sup> Nor has China

---

2 Many countries have entrenched institutional arrangements that make budget allocations to the 'Ministry of Defence' an incomplete picture of the state's defence or military expenditures. A simple example is that, in the United States, significant expenditure on nuclear weapons is to be found in the budget for the Department of Energy. In most cases, however, the governments concerned acknowledge and accept the validity of aggregating expenditures across a number of portfolios to arrive at a legitimate figure for the state's military expenditure.

3 For example, China's September 2005 White Paper, *China's Endeavors for Arms Control, Disarmament and Non-Proliferation* asserts on p. 14 that: 'Examined and approved by the National People's Congress, China's defence budget is open and transparent.' See 'Full text of White Paper on Arms Control', *China Daily*, available at <[http://www.chinadaily.com.cn/english/doc/2005-09/01/content\\_474248.htm](http://www.chinadaily.com.cn/english/doc/2005-09/01/content_474248.htm)>, accessed 24 June 2009.

made its government expenditure or national accounts sufficiently detailed and transparent to allow outsiders to develop confidence in the integrity of the numbers through techniques like as input-output analysis. It should also be pointed out, of course, that the Chinese leadership cannot be transparent to the outside world in this respect or any other without also sharing information with its own people and this raises a whole range of additional considerations about the internal balance of power. So we have an impasse. China claims that it is being responsive to calls for more transparency, but there is little in the way of enlightenment.

In addition to estimating the real size of China's military expenditure in the local currency, analysts can employ different exchange rates to convert these numbers into a common currency. The major option is to use a purchasing power parity (PPP) rate rather than the official exchange rate on the grounds that China is still a developing economy and that the official rate reflects only the narrow band of the economy that is modernised and exposed to international competition. For the past twenty years or so, World Bank PPP estimates suggested that the Chinese currency was some four times stronger than the official exchange would suggest. This means that a given economic activity in China that is valued at A\$25 when converted at the official exchange rate becomes A\$100 of economic activity using the PPP rate. New World Bank estimates, compiled in collaboration with China and released in February 2008, conclude that the old figures overstated China's economy by about 40 per cent. In PPP terms, China remains the world's second largest economy, but is less than half the size of the US economy rather than the 70–80 per cent figure that had become commonplace in recent years. Similarly, projections that China would overtake the United States around 2020 will now have to be revised. All of this, of course, underscores the fact that the precision and credibility most people instinctively attribute to numerical information is often misplaced.

Finally, it is common practice to make international comparisons of economic data in constant prices; that is, adjusting for inflation in each country and comparing the aggregates in real terms. Once again, options are also available when making this adjustment for inflation, from the familiar Consumer Price Index (CPI) to the more arcane (unless you are an economist) implicit GDP deflator.

Taking all this together, one can find estimates of China's military expenditure that range from about double the official figure converted at the official exchange rate to over ten times this figure. To illustrate this point, we can compare figures

---

People's Republic of China, *China's Endeavors for Arms Control, Disarmament and Non-Proliferation*, White Paper, Beijing, September 2005, available at *China Daily*, available at <[http://www.chinadaily.com.cn/english/doc/2005-09/01/content\\_474248.htm](http://www.chinadaily.com.cn/english/doc/2005-09/01/content_474248.htm)>, accessed 24 June 2009



from two established sources, the Stockholm International Peace Research Institute (SIPRI) and the International Institute for Strategic Studies (IISS). SIPRI supplements China's official figures for military expenditure with estimates for categories of expenditure not included, and converts total military expenditure and GDP to US dollars using the official exchange rate. The IISS also adds in estimated expenditure on military activities believed to be excluded from the official figures. It then estimates how much of the total is absorbed by personnel costs and operations and maintenance which it converts at PPP rates on the grounds that these expenses are largely divorced from the international sector of the Chinese economy. The remainder of the estimated total (composed mostly of procurement of weapons and equipment, and military R&D) is deemed to be more exposed to the international sector and is converted at the official rate. The IISS also employs estimates of China's GDP using PPP rates. The results are rather confusing. For 2005, SIPRI's estimate of total Chinese defence expenditure was US\$41 billion which accounted for 2.4 per cent of GDP. For the same year, the IISS figure for military expenditure was more than twice as big at US\$103.9 billion, but this larger figure accounts for a significantly smaller share of GDP (1.3 per cent).<sup>4</sup> The US Defense Intelligence Agency (DIA), however, estimates that China's military expenditure accounted for some 5 per cent of GDP in the early years of the new century—much higher than either the SIPRI or IISS estimates.<sup>5</sup>

Clearly, differences of this magnitude can colour broader assessments of the capability and rate of expansion of China's armed forces. Despite the fact that the military expenditure figures in circulation differ widely, and lose much of their apparent authority if one reads the footnotes on how they were constructed, these figures are very influential. Most observers feel more comfortable with this index of a country's military 'effort' than with assessments of the actual capabilities being acquired as a result of this effort. For one thing, assessments of capability are a very specialised business and, for another, these assessments tend to be even more varied in their conclusions than estimates of expenditure.

It is of some interest, therefore, that the RAND Corporation, one of the most respected security think-tanks in the United States, weighed in with a report in 2005 suggesting that some of the higher estimates of Chinese military spending constructed within the US Government were implausible. The RAND study suggested that omitted expenditures amounted to 40–70 per cent of the official budget (that is, the official figure should be multiplied by 1.4–1.7), and that, converted at PPP rates, China probably spent in the order of US\$70 billion (or

4 See Stockholm International Peace Research Institute, *SIPRI Yearbook 2006*, Oxford University Press, Oxford, 2006, pp. 326–52 and International Institute for Strategic Studies, *The Military Balance 2008*, Routledge, London, February 2008, p. 445.

5 See the quoted remarks by Defense Intelligence Agency Director Vice-Admiral Wilson in Robert Wall, 'China Defense Budget Could Double by 2005', *Aviation Week & Space Technology*, 25 March 2002, p. 33.



2.3–2.8 per cent of GDP) annually on its armed forces in the early 2000s. In a possible dig at the DIA, the RAND study estimated that if military expenditure increased at the maximum feasible rate (which was not elaborated on), it could account for 5 per cent of GDP by the year 2025.

Perhaps for these reasons, the annual Pentagon report to Congress, *The Military Power of the People's Republic of China*, has, until recently, eschewed financial and economic data altogether. The Pentagon's report for 2007, however, states that the official Chinese figures exclude expenditure on the strategic forces, imported weapons and equipment, military R&D, and the paramilitary forces.<sup>6</sup> It also notes that China's official budget converted at the official exchange rate produces a military expenditure figure of US\$45 billion for 2007, while the DIA estimate for the same year falls in the range of US\$85–125 billion.<sup>7</sup>

In these circumstances, the most sensible approach for the analyst is to accept that absolute magnitudes cannot be reliably estimated and to be content with the trends that can be discerned in time series data computed on a consistent basis, like the data used to construct Chart 1. Chart 1 reflects the sustained implementation over more than 15 years of a political decision to put economic growth first and, as we have argued, of a grand bargain with the PLA to accept a sharp reduction in its share of a miserable economic pie in return for the promise of an appropriate share of a much larger and expanding pie at some point in the future. The bargain was reviewed in the mid 1990s to allow a significant acceleration in funding for the PLA.

## Defence Doctrine and Force Posture

Mao Zedong's doctrine of 'people's war' played to China's limited strengths, had a strong resonance with socialist ideology and reflected deep-seated instincts of isolationism and rebellion against the prevailing international system. The scenario that dominated PLA thinking was a cataclysmic one: the invasion of China by a superpower, with the extensive use of nuclear weapons all but certain. Mao's dominance of China's political scene was such that, even after his death, political leaders had to be careful not to be seen to be trifling with his legacy. These circumstances highlight the enormity of Deng's political accomplishment in securing endorsement of his 'reforms and opening up' on the economic front just two years after Mao's death. On the defence front, Deng was a good deal

6 Office of the Secretary of Defense, *Annual Report to the Congress, Military Power of the People's Republic of China, 2007*, Washington, DC, 2007, available at <<http://www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf>>, accessed 24 June 2009, p. 25.

7 It should be stressed again that, to the extent these constructed estimates of China's military spending, and the share of GDP that they absorb, employ PPP conversion rates, we should expect significant revisions as the new World Bank figures flow into the calculations.

more cautious.<sup>8</sup> Even while Mao was alive, in mid 1975 Deng had remarked to a closed governmental audience that the PLA had become a massive, complacent and obsolete institution.<sup>9</sup> Publicly, however, after he assumed the leadership, he confined himself to a modest doctrinal adjustment—‘people’s war under modern conditions’—but one that opened the door to new and critical thinking about the roles and missions of the PLA. The PLA’s poor performance—very nearly disastrously poor—in teaching Vietnam a ‘lesson’ in 1979 for invading Cambodia, whose government Beijing supported, would have energised this new thinking.

In the mid 1980s, Deng concluded, and felt secure enough to articulate, that the defining scenario—a major, probably nuclear, war with the Soviet Union—was no longer credible and encouraged the PLA to begin to look at dealing with limited (in respect of both geography and political objectives) but intense conflicts on China’s periphery. This new imperative was brought into sharp and sobering perspective by Operation *Desert Storm* in 1991. The PLA was amongst the keenest students of this swift but absolute rout of the Iraqi armed forces by a US-dominated international coalition. With the end of the Cold War and the demise of the Soviet Union, the United States stood exposed as the defining world power, not least in military terms. Moreover, like the PLA, the Iraqi armed forces had a strong Soviet pedigree, adding to the salience of this conflict in terms of both the capabilities that the United States had displayed and the limitations of Iraqi doctrine and tactics. Within two years, in 1993, the PLA had formally adopted as its new aspiration *winning limited wars under high-tech conditions*.

The United States, of course, continued to move the goalposts on what modern conventional forces could accomplish, eventually committing itself, under the George W. Bush Administration, to a more systematic transformation of the US military to capitalise fully on the potential offered, in particular, by revolutionary developments in information technologies. By 2004–2005, following the campaigns in Afghanistan and the combat phase of Operation *Iraqi Freedom*, the PLA further refined its primary objective to winning local wars under conditions of informationisation. In addition, on this occasion, the PLA provided an indicative timetable, namely laying the foundations for a modernised military by 2010 and achieving ‘informationised’ forces capable of winning local wars by 2050. Some US assessments suggest that these indicative

---

8 Readers interested in a fuller discussion of Deng Xiaoping’s strategic pronouncements and the new scope they offered to China’s security community are referred to the opening chapters of Michael Pillsbury (ed.), *Chinese Views of Future Warfare*, National Defense University Press, Washington, DC, 1997, available at <<http://www.au.af.mil/au/awc/awcgate/ndu/chinview/chinacont.html>>, accessed 24 June 2009.

9 Deng Xiaoping, ‘Speech to an Enlarged Meeting of the Military Commission of the Party Central Committee’ (14 July 1975), *Selected Works of Deng Xiaoping*, Beijing, 1 July 1983, in Joint Publications Research Service, *China Report*, Foreign Broadcast Information Service, Reston, VA, 31 October 1983, p. 19.

dates are something of a smokescreen and that PLA strategies to be able to deter and, if necessary, prevent the United States from bringing its military assets into areas close to China involve a much shorter timeframe.<sup>10</sup>

As noted earlier, assessments of China's military capacities based on the number and quality of personnel, equipment levels, training, exercises, doctrine and so on, as well as on how quickly the PLA may be approaching its declared objective, vary markedly. Insofar as there is a mainstream view, it would probably be that the PLA is making impressive progress but still faces an enormous task in transitioning from a huge army focused on continental defence to a modern integrated force made up of substantial air and naval capabilities as well as ground forces, capable of joint operations focused on the maritime environment, with robust connectivity in command, control and communications, strong intelligence, surveillance and reconnaissance capabilities and so on.<sup>11</sup>

Earlier, we advanced the hypothesis that, consistent with the bargain struck with China's political leadership in the late 1970s, the PLA resisted the temptation to proliferate systems that it knew to be well below international standards and/or which were unduly dependent on critical sub-systems that China still had to import. This was done to minimise undue strain on the Chinese economy as the 'reform and opening up' program got underway. It was also done, pursuant to Deng's exhortation that China had to hide its strengths and keep a low profile while it rebuilt its economy, to minimise the risk of generating concerns among the established major powers that might then pursue countervailing strategies that would distract China from its economic objectives.

It has been an essentially universal experience for numbers of combat systems to fall because the cost premium associated with successive generations of technologically-advanced weaponry has been too great to allow systems to be replaced on a one-for-one basis. In China's case, however, this trend has been particularly dramatic across most major weapon systems. In the case of combat aircraft, submarines and tanks, holdings have shrunk by 50 per cent or more over the past 15–20 years. Moreover, modern systems are still being produced in small batches so that, even with significant acquisition from abroad (particularly of combat aircraft), these declining trends are likely to continue. Blue-water

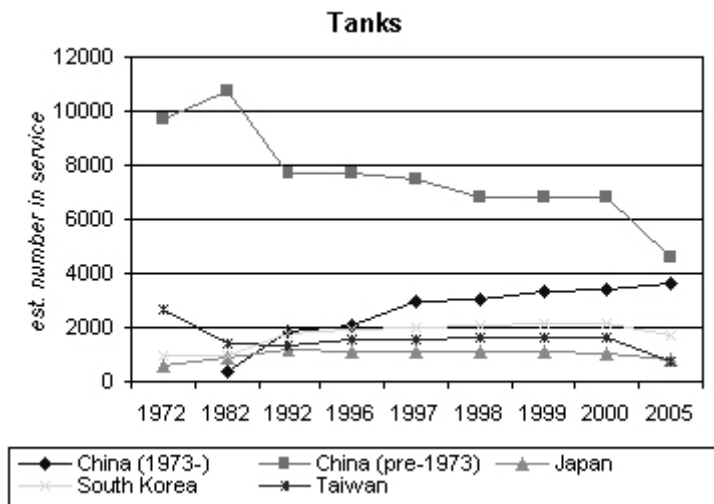
---

10 Roger Cliff, Mark Burles, Michael S. Chase, Derek Eaton, and Kevin L. Pollpeter, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, RAND Corporation, Santa Monica, 2007, available at <<http://rand.org/pubs/monographs/MG524/>>, accessed 24 June 2009.

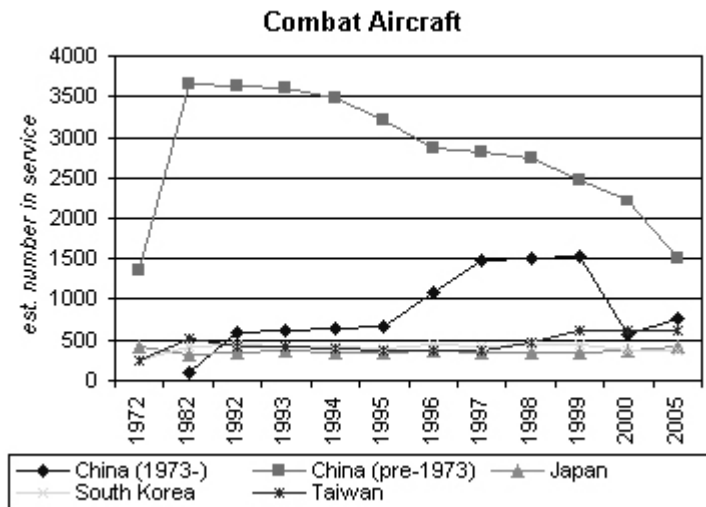
11 See, for example, *Chinese Military Power, Report of an Independent Task Force*, Council on Foreign Relations, 2003, available at <[http://www.cfr.org/content/publications/attachments/China\\_TE.pdf](http://www.cfr.org/content/publications/attachments/China_TE.pdf)>, accessed 24 June 2009; and Colonel John Caldwell (USMC), *China's Conventional Military Capabilities, 1994-2004: An Assessment*, Center for Strategic and International Studies, Washington, DC, 1994.

surface warships have been an interesting exception to this pattern, with total holdings rising gradually from a low base of 22 in the early 1970s to over 70 by 2006.<sup>12</sup>

**Chart 2: Tanks**



**Chart 3: Combat Aircraft**



<sup>12</sup> Frank W. Moore, *China's Military Capabilities*, Institute for Defense and Disarmament Studies, Cambridge, MA, June 2000, available at <<http://www.comw.org/cmp/fulltext/iddschina.html>>, accessed 24 June 2009.

Chart 4: Submarines (Tons)

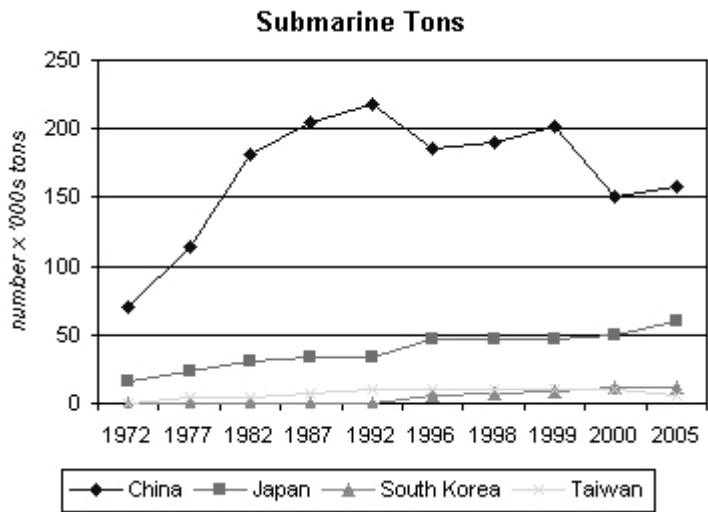
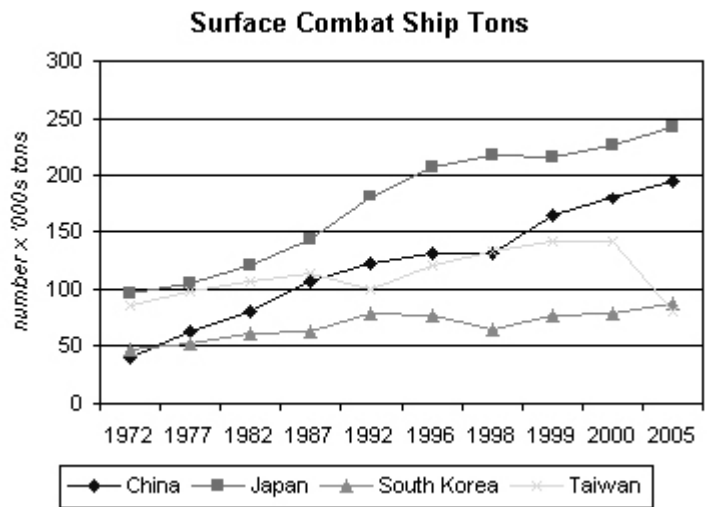


Chart 5: Surface Combat Ships



(Source for Charts 2–5: Frank W. Moore, 'China's Military Capabilities', Institute for Defense & Disarmament Studies, Cambridge, MA, June 2000, available at <<http://www.comw.org/cmp/fulltext/iddschina.html>>, accessed 16 November 2009)

The 'fit' between the author's hypothesis and the evidence is not, of course, perfect. The political leadership appears to have resolved a long time ago that certain capabilities, although involving a long and costly development process, were so clearly indispensable to China's longer-term aspirations that they could not be deferred. Nuclear weapons are the most obvious example and are

discussed more fully below. A strong capacity to exploit space, both for its military importance and its powerful symbolic association with great power status, is another.

A third exception is of a different kind and one that could be of defining importance. China's difficulties with Taiwan and, indirectly, the United States escalated steadily in the early 1990s until China's provocative missile tests in close proximity to Taiwanese territory and Washington's conspicuous deployment of two carrier battle groups in the waters southeast of Taiwan in March 1996 led to mutual disengagement. There is a widespread view that China's leadership determined at this point that it urgently needed more credible military capacities to back up its political rhetoric that it *would* use force to preclude any Taiwanese move toward independence. Some of the capabilities deemed appropriate for this purpose were within reach of China's defence industries, notably accurate, solid-fuel, short-range ballistic missiles. The number of these weapons deployed adjacent to Taiwan is now approaching 1000. Other imperatives, such as a credible capacity to establish air superiority over the Taiwan Strait or making the seas around Taiwan a hazardous environment for surface ships with anti-ship missiles launched from aircraft, submarines and surface ships were beyond China's capabilities, so Beijing had to resort to imports and production under licence. China turned to Russia for the systems it needed, including SU-27/30 combat aircraft, SA-10 long-range surface-to-air missiles, *Kilo*-class submarines and *Sovremennyy*-class destroyers. This arms supply relationship was made politically imaginable by the end of the Cold War, and almost ordained by the coincidence of Russia's desperate economic circumstances and the arms embargo imposed on China by the United States and the European Union following the violent suppression of student protesters in June 1989.

The debate in Chinese military journals supports this Taiwan focus to military strategy. Non-Chinese observers have called this an anti-access strategy as the core objective is to deter, delay and, if necessary, defeat any US endeavour to come to Taiwan's aid.<sup>13</sup> An anti-access strategy is viewed as an asymmetric approach since the objective is not to out-muscle the forces the United States could bring to bear but to delay them, to deny them an opportunity to operate according to their preferences and, hopefully, to persuade them that 'rescuing' Taiwan would be disproportionately costly. The tactics being discussed include saturating the defences of aircraft carrier battle groups with missile attacks from land, sea and air platforms, including long-range land-based ballistic missiles with manoeuvring warheads that could put the carriers at risk well beyond the combat range of their aircraft. In addition, the Chinese are signalling their determination to focus on degrading the information connectivity between US

---

13 See Cliff, Burles, Chase, Eaton, and Pollpeter, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*.

assets in space, on land, at sea and in the air. The anti-satellite capability China demonstrated in January 2007 was a particularly blunt signal to this effect. Finally, and disturbingly, some of the commentary in China's internal debate stresses that the imperative of keeping US forces as far away as possible places a premium on taking the initiative, that is, of striking first. Even though the capabilities being spoken of remain to a major extent aspirational, this internal debate illustrates both the potential for a crisis over Taiwan to escalate very quickly and the likely difficulty of confining hostilities to a particular geographic arena.

The reader will note the apparent contradiction between this decision in the mid 1990s to begin to accelerate the growth of China's military capacity and the simultaneous resolve discussed above to be more determined and creative in attenuating international concerns about an assertive and 'threatening' China. Governments, of course, often find themselves compelled to pursue contradictory policy objectives. In this case, it is reasonable to suppose that the directive, especially to the Foreign Ministry, to find ways of giving China a lower and more reassuring profile so as to prolong the window of opportunity to put economic growth first, simply presumed that everything possible would be done to minimise any damage to this posture that an 'inconsistent' acceleration on the military front might cause.

## Nuclear forces

China detonated its first nuclear device in October 1964, becoming the fifth country in the world to do so. The Soviet Union initially provided decisive assistance. In particular, it transferred the gaseous diffusion technology for the enrichment of uranium—technology that the Soviet spies and sympathisers had secured from the US Manhattan Project. In the late 1950s, the Soviet Union had a change of heart and terminated its assistance, including reneging on a promise to provide China with the blueprints for a bomb. On the day of its first test, China also announced that it would never be the first to use these weapons and has retained this commitment ever since. China's nuclear forces, still innocuously located in the Second Artillery Corps, have developed very gradually over the ensuing 40 years. It has conducted just 45 tests (compared to around 1000 apiece for the United States and the Soviet Union) and most estimates place its total arsenal in the 200–400 range. At the same time, China has never been in the business of possessing token nuclear forces. China's arsenal is as diversified as its technological capacities have allowed and it remains determined to continue this process, especially in the direction of a reliable sea-based strategic nuclear



deterrent (although the formidable anti-submarine capability that the United States developed during the Cold War is likely to see China's continuing primary reliance on land-based missiles).

China's geography requires re-thinking some of the terminology that has become entrenched since the days of the Cold War. The United States and the Soviet Union each acknowledged the other as the sole strategic opponent. Their geographic relationship led to nuclear delivery systems with a range in excess of 5500 km being classified as 'strategic', with shorter range systems variously labelled as 'sub-strategic', 'theatre' or 'tactical'. China has a more complicated geography and correspondingly complicated political histories with various neighbours. Thus, Chinese nuclear systems capable of reaching important targets in Japan, Russia, and India have to be considered at least a potential strategic nuclear deterrent against these countries. Indeed, in all three cases, a persuasive case could be made that China intends this to be the case.

China deploys about 20 liquid-fuelled full-range, single-warhead intercontinental ballistic missiles (ICBMs) (DF-5), capable of targeting all of the United States. The DF-5 was first deployed in 1981 and probably initially targeted against the Soviet Union. Just two were deployed in the 1980s, with the balance following in the 1990s. As a late-comer to the business of strategic nuclear deterrence, it would be reasonable to infer that China recognised from developments in the United States and the Soviet Union that the DF-5 did not represent a technology worth investing heavily in unless it was absolutely necessary. For one thing, liquid-fuelled missiles are cumbersome and dangerous to handle as well as vulnerable since it takes so long to prepare them for launch. Further, improvements in accuracy had led both superpowers to conclude that mobility offered greater assurance of survival than heavily protected but fixed launch silos. Clearly, broader assessments of China's strategic circumstances and the diminishing risk of war with a major power (not least the de facto alliance with the United States) allowed Beijing to conclude that it could get by with a modest number of DF-5s as an interim capability.

By 2007, a prolonged development process had yielded a solid fuel, mobile ICBM (DF-31) that was nearing operational deployment. It appears that China had some difficulty achieving the range capability that it desired and that a second variant, the DF-31A (or the DF-41 in some sources), has been developed to overcome this limitation. US ballistic missile defence deployments are expected to put upward pressure on whatever force levels China is planning for in the coming years, and is likely to intensify consideration of placing multiple warheads on its longer-range systems, something considered to be within China's current capabilities.

China has also patiently pursued a sea-based strategic deterrent capability despite encountering persistent development problems. It has for many years

deployed a single submarine equipped to carry 12 JL-1 missiles (derived from the DF-21A with a range of about 1800 km), but its operational status has always been a matter of conjecture. Indeed, US intelligence asserts that it has never conducted an operational patrol. China is believed to be constructing perhaps three new missile submarines (SSBNs), the *Jin* Class, and has derived a new submarine-launched ballistic missile (SLBM) from the DF-31 program. This new missile, the JL-2, has a significantly longer range than its predecessor—possibly 8000 km against 1800 km—which will vastly increase the ocean spaces in which the launch platform can hide while still remaining within range of its targets. A great deal of uncertainty seems to surround the maturity and imminence of this new capability. Both the new SSBN and the JL-2 missile have been spoken of for a number of years, suggesting that China continues to experience serious difficulty in bringing these systems to operational status.

China possesses somewhat more numerous (over 70) intermediate and medium-range nuclear-capable missile forces able to put at risk targets in India, Japan, most of Russia, and Guam (a US possession in the Western Pacific that is undergoing a major revival as a forward military base). Roughly half of these missiles are older, liquid-fuel systems (DF-3A and DF-4), but the remainder consist of DF-21As, China's first solid-fuel, land-mobile medium range (2150 km) ballistic missile. All of China's long-range missiles carry a single high-yield warhead (around 3 megatons), except the DF-21A which is probably much more accurate and is believed to carry a 200–300 kiloton warhead. China also has a modest number (roughly 100) of aged medium bombers dedicated to the role of delivering nuclear weapons. As aircraft are the most versatile (and also the most vulnerable) nuclear delivery system, many analysts believe that the primary role of these bombers is the delivery of tactical nuclear weapons that, generally speaking, have smaller yields than those with a 'strategic' purpose. Still, these nuclear-capable aircraft are deployed at air bases within range of Japan, South Korea and Taiwan and can be armed with bombs of all yields.

China is particularly tight-lipped about its thinking on the roles and missions of its nuclear weapons. Its official documents stress its 'no first-use' pledge and the purpose of deterring both the use of nuclear weapons and the employment of coercive threats to use these weapons against China. Like other nuclear weapon states, however, China has an interest in maximising the utility of nuclear weapons in protecting and advancing its interests. This cannot be done in complete secrecy. Potential adversaries have to be given signals about capabilities and the possible roles and missions that China envisages for its

nuclear weapons. China squares this circle by authorising writings and debate about these issues that knowledgeable outsiders can assess as too likely to represent official thinking to be ignored, but which, of course, remain deniable.<sup>14</sup>

Chinese doctrinal literature suggests that China's nuclear forces have three core missions: (1) deterrence of the use or threat of use of nuclear weapons against China; (2) supporting China's conventional forces; and (3) delivering a nuclear counter-attack.

This literature also points to a priority list of effects that China's nuclear forces should seek to achieve if a conflict crosses the nuclear threshold, that is, if the adversary initiates the use of nuclear weapons. The effects are as follows:

- cause the will of the enemy (and its populace) to waver;
- destroy the enemy's command and control system;
- delay the enemy's war (or combat) operations;
- reduce the enemy's force generation and war-making potential; and
- degrade the enemy's ability to win a nuclear war.

With respect to US-China relations, China's 20 DF-5A missiles are generally considered to constitute a posture of *minimum deterrence*. Given that some of these might be lost in the enemy's initial strike with nuclear weapons, that a certain percentage are likely to malfunction, and that, looking to the future, some warheads might be intercepted by ballistic missile defences, this constitutes a modest number. These weapons carry an awesomely large warhead (3–4 megatons or over 200 times more powerful than the bombs dropped on Hiroshima and Nagasaki), and they are relatively inaccurate (which means that they can sensibly be targeted only at large cities). Whatever concerns China's leaders may have about how secure or reliable their ability to retaliate against the US mainland really is, deterrence still functions because their US counterparts can be presumed in most imaginable circumstances to require *certainty* that not a single Chinese warhead would get through.

The priority list for nuclear counter-attacks points to a more complex nuclear doctrine than the crude simplicity of a posture of minimum deterrence in respect of the United States. These objectives (especially those noted in the second, third and fourth bullet points above) clearly refer to China's nuclear capabilities that are sub-strategic in the US-China context, but which send a graphic message

---

14 The details on nuclear doctrine that follow are taken from Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning*. Strategic Studies Institute, US Army War College, Carlisle, PA, May 2007, available at <<http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB776.pdf>>, accessed 16 April 2008.

to the states in China's neighbourhood that might conceivably be involved in threatening its core interests, whether independently or in association with the United States.

Looking at the nuclear arena from the US perspective, the broad cycles in US-China relations are echoed in how China figured in US planning for the use of nuclear weapons.<sup>15</sup> During the 1950s, even though the US nuclear arsenal was expanding and diversifying at a dizzying pace, the United States was still coming to terms with this new capability. Plans for its use focused on supporting the public posture of massive retaliation against the Soviet Union in the event that it moved against Western Europe. The United States did have nuclear capabilities in the Pacific and, in the context of the Korean War and the two serious crises in the Taiwan Strait in 1954–55 and 1958, it chose to signal the availability of this option in its endeavours to shape the course of the crises in favourable directions.

In 1960, the United States consolidated its primary nuclear use plans into a Single Integrated Operational Plan (SIOP). The first iteration of this plan (which has been continually amended and remains an active document) included some targets in China as part of massive retaliation against the Soviet bloc. Two years later, China was separated from the Soviet Union and subject to more complex planning, although the presumption remained that any hostilities would involve both the Soviet Union and China as opponents. By the mid 1960s, the United States accepted the permanence of the Sino-Soviet split and, in 1967, the SIOP options had been refined to allow nuclear attacks against China that posed no threat to the Soviet Union. In 1982, a decade after re-engagement with the United States, China was dropped from the SIOP as a primary strategic nuclear target (although it remained subject to a separate and smaller nuclear war plan) on the grounds that the Soviet Union was so clearly the common enemy. Washington accepted that it made no sense for the United States to both plan to assist China in the event of Soviet aggression (which the Pentagon was directed to do) and to organise its nuclear forces to be able at all times to execute major strike options against China. Fifteen years later, in 1997, and just as the second Clinton Administration was leaning more strongly toward positive engagement of China, China was quietly re-instated in the SIOP as a primary strategic nuclear target. Clearly, one has to look beyond China's nuclear posture (which developed only marginally over this period) to explain this development, and to consider the deeper transformation in US and Chinese attitudes toward one

---

15 The material on this question is taken primarily from Hans M. Kristensen, Robert S. Norris and Matthew G. McKinzie, *Chinese Nuclear Forces and US Nuclear War Planning*, The Federation of American Scientists, and The Natural Resources Defense Council, November 2006, available at <<http://www.nukestrat.com/china/chinareport.htm>>, accessed 24 June 2009.

another after the demise of the Soviet Union and the growing certainty over the course of the 1990s that their relationship was destined to become the defining nexus in the twenty-first century.<sup>16</sup>

## Assessment

Most analysts agree that it remains almost a nonsense to assess the military balance between the United States and China; their respective 'ballparks' do not as yet intersect. Naturally enough, however, China's military capacities look more formidable when set against its immediate ambitions for a credible capacity to use, or threaten to use, force in its neighborhood, above all, of course, to deter and if necessary contest any Taiwanese move toward independence.

Stepping back from the details of relative levels of military expenditure and from the balance of military forces, China still presents as something of an enigma. It is still, in some respects, a poor and weak developing country, and its diplomats are fond of deflecting calls for more genuine transparency by saying that transparency is an indulgence that only the rich and powerful can afford. At the same time, China deploys a modestly-sized but comprehensive nuclear force with a full range of warheads and delivery systems; it has a very serious and broad space program, including manned missions, that has major spinoffs for its military capacities; it has elected to develop and demonstrate a hit-to-kill anti-satellite capability which can also be seen as a precursor to ballistic missile defence systems; and its conventional forces can already lay claim to being the largest and most diversified in East Asia.

While responsible analysts may insist that it remains silly to compare the military capabilities of the United States and China, there can be little doubt that China takes it as given (and wants this to be recognised) that the United States is its natural benchmark in this arena as in others. China will be patient and methodical. It will not, through aggressively accelerating its military programs, risk either putting its economic development off balance or introducing counter-productive dissonance into its regional and global diplomacy. But it

---

16 One specific nuclear weapon development may have contributed to China being put back into the Single Integrated Operational Plan. Assessments of US intelligence material on a Chinese weapon test conducted in September 1992 led eventually to strong suspicions that China had somehow acquired design details on one of America's most sophisticated warheads—the W-88, eight of which can be deployed on a single *Trident* II SLBM, each with a yield of 445 kilotons, making it the most powerful warhead in the US arsenal. These suspicions led eventually to the Cox enquiry on the security of US weapon designs and focused on a Chinese-American scientist at the Los Alamos Laboratories. China's acquisition and mastery of this technology—a major advance even in the US context—would have strengthened US assessments that China intended eventually to leave minimum deterrence behind in favour of a more versatile nuclear posture. See Jeffrey T. Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea*, W.W. Norton & Company, New York, 2006, pp. 414–18.

will aspire, painstakingly, to compare favourably with the United States in terms of the diversity of its military capacities and, by virtue of this, possess comprehensive denial capabilities vis-à-vis US armed forces in areas adjacent to China. China will, and indeed is, looking to asymmetric means to cope with US military strengths but, as a matter of honour and with an eye to the longer-term future, it is determined to play on the same chessboard as the United States. As one analyst put it, China is poised to demonstrate what a high-end asymmetric force posture might look like.<sup>17</sup> Desperate and demeaning shortcuts have no place in China's thinking: hence, perhaps, the demonstration of a 'hit-to-kill' anti-satellite capability and talk of using manoeuvrable ballistic missile warheads (with conventional, electro-magnetic or possibly nuclear payloads) to target aircraft carrier battle groups rather than, for example, extravagant language about waging total war by unconventional means to prevent Taiwan's independence.

Policy elites in Washington, both Republican and Democrat, have certainly recognised for some time that China's rise would become a transformational phenomenon. During the 1990s, the Clinton Administration preferred to acknowledge that China would become an influential strategic force, while characterising what it would take for this to be a positive development. US President Bill Clinton's *National Security Strategy* for 1999 spoke of China in the following terms:<sup>18</sup>

A stable, open, prosperous People's Republic of China that respects international norms and assumes its responsibilities for building a more peaceful world is clearly and profoundly in our interests. The prospects for peace and prosperity in Asia depend heavily on China's role as a responsible member of the international community.

The Clinton Administration's equivalent defence statement, the 1997 Quadrennial Defense Review (QDR), while focused on the familiar regional threats in the Middle East (Iraq and Iran) and North Asia (North Korea), did acknowledge that US capabilities had been gamed against a possible regional great power or global peer that could emerge after 2015. Separately, it notes that 'Russia and China are seen by some as having the potential to be such competitors, though their respective futures are quite uncertain'.<sup>19</sup>

---

17 Robert D. Kaplan, 'How We Would Fight China', *The Atlantic Monthly*, June 2005, available at <<http://www.theatlantic.com/doc/200506/kaplan>>, accessed 24 June 2009.

18 President William J. Clinton, *A National Security Strategy for a New Century*, White House, Washington, DC, 1999, p. 36, available at <<http://www.au.af.mil/au/awc/awcgate/nss/nssr-1098.pdf>>, accessed 24 June 2009.

19 William S. Cohen, Secretary of Defense, *Report of the Quadrennial Defense Review*, Washington, DC, May 1997, p. 3.



The 2001 QDR, the only major statement on security policy prepared by the Bush Administration before the 11 September 2001 terrorist strikes on the United States, focused more specifically on China, although without linking it directly to the language used. The report notes:<sup>20</sup>

Although the United States will not face a peer competitor in the near future, the potential exists for regional powers to develop sufficient capabilities to threaten stability in regions critical to US interests. In particular, Asia is gradually emerging as a region susceptible to large-scale military competition. The possibility exists that a military competitor with a formidable resource base will emerge in the region.

The next QDR, also prepared by the Bush Administration and released early in 2006, was more pointed and immediate, and less coy about China, noting:<sup>21</sup>

Of the major and emerging powers, China has the greatest potential to compete militarily with the United States and field disruptive military technologies that could over time offset traditional US military advantages absent US counter strategies. Chinese military modernisation has accelerated since the mid-to-late 1990s in response to leadership demands to develop military options against Taiwan scenarios. The pace and scope of China's military build-up already puts regional military balances at risk. China is likely to continue making large investments in high-end, asymmetric military capabilities, emphasizing electronic and cyber-warfare; counter-space operations; ballistic and cruise missiles; advanced integrated air defence systems; next generation torpedoes; advanced submarines; strategic nuclear strike from modern, sophisticated land and sea-based systems; and theater unmanned aerial vehicles for employment by the Chinese military and for global export. These capabilities, the vast distances of the Asian theater, China's continental depth, and the challenge of en route and in-theater US basing place a premium on forces capable of sustained operations at great distances into denied areas.<sup>22</sup>

In just five years, in the Pentagon's view, the PLA developed from a 'possibility' that 'could emerge' into a force that was already putting 'regional military balances at risk'. And, although the PLA's ability to compete with the United

---

20 Donald H. Rumsfeld, Secretary of Defense, *Quadrennial Defense Review Report*, Washington, DC, 30 September 2001, p. 4.

21 Donald H. Rumsfeld, Secretary of Defense, *Quadrennial Defense Review Report*, Washington, DC, 6 February 2006, pp. 29-30, available at <<http://www.defenselink.mil/qdr/report/Report20060203.pdf>>, accessed 24 June 2009.

22 For a focused analysis of the issues alluded to in this quotation, see Cliff, Burles, Chase, Eaton and Pollpeter, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*.



States remained a 'potential' development, when coupled with East Asia's geography and China's huge advantage in proximity, it is portrayed as presenting a quite pressing challenge to existing US military options.

It must also be pointed out that, prior to the 2006 QDR, the Bush Administration reverted to something resembling the Clinton formula. In September 2005, US Deputy Secretary of State, Robert B. Zoellick, gave a speech, identified as having been cleared with the White House, in which he invited China to consider becoming a 'responsible stakeholder' in the international system (and a co-author of future adaptations of this system), but also spelt out some of the more important ways in which China would have to change in order to qualify for this role.<sup>23</sup> The United States clearly saw this offer as a major gesture in the direction of acknowledging China's existing and prospective power and importance. The terms of the Zoellick speech have been discussed in senior US-China dialogue forums, and China's academics have enquired into the possible meaning of the terms 'international system' and 'responsible stakeholder'. China's leaders, however, have elected not to provide a substantive response to this proposal, a tactic consistent with the earlier observation that China is not yet ready to lock itself into commitments about how it proposes to fit into the international system.

---

23 Robert B. Zoellick, US Deputy Secretary of State, 'Whither China: From Membership to Responsibility?', National Committee on US-China Relations, 21 September 2005.

