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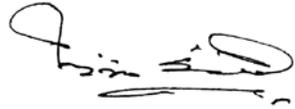
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EDITOR'S NOTE

In view of the 50th anniversary of China's War on India which was launched on 19/20th October, 1962, we decided to bring out this issue as a "Special Issue on China." As may be seen it does not go into the details of that war --- we hope to conduct the 9th Subroto Seminar scheduled for 25-26th October this year to look back at that war --- but covers a range of issues being published with the hope of arriving at a better understanding of China today and the in the years to come. China's rise to power is a major change from the period half a century ago; and with that one must expect the historical legacy of rising powers acquiring assertive and even chauvinistic postures. This was China's major problem in the late 1950s that led to the war: the belief that having fought the UN Command to a standstill in the Korean War, which led to Mao's "Superpower Programme" (to be realised in 5 or less years with millions in the country dying because of requisitioning of bulk of food production by the government!) with enormous arms and arms industry and the means and methods to build nuclear weapons and ballistic missiles supplied by the Soviet Union. Consequently Mao grandly announced to his inner circle that: "We must control the Earth!"

Like in 1962, India is also rising and is at the stage of a major world power although our natural modesty would not allow us to think on those terms and create a degree of under-confidence as a consequence of thinking narrowly. But it is clear that we must try and build a cooperative relationship with China in spite of its chauvinistic assertiveness and numerous pin pricks designed to create a reaction in India. What is equally, if not more important is that we must cater to a potential reversal in our bilateral relations and ensure credible defence capabilities to dissuade any thinking of taking advantage of

the balance of power by Beijing. This month, the Chinese Communist Party will “elect” their leaders for the future and a large turn over is expected. This makes it all the more necessary that we understand China rationally and pragmatically while building a closer relations with it and build the insurance as a hedging strategy.

A handwritten signature in black ink, appearing to be 'L. H. ...', with a horizontal line underneath.

CHINA'S NEW MISSILES POSE UNBEATABLE THREATS

JASJIT SINGH

Some remarkable changes in instruments of war in general and in ballistic missiles and their re-entry vehicles in particular are taking place. Such systems have already entered operational service in the United States and Russia. And now comes the multiple source based information that China has been working on perfecting similar systems since the early 1990s normally described as Anti-Ship Ballistic Missiles (ASBM). The Congressional Research Service (CRS) records a December 28, 2010 press report which states that: "Admiral Robert Willard, [commander of the US Pacific Command] said he believes that China's ASBM system, known as [an] "aircraft carrier killer," has achieved initial operational capability (IOC), even though "it will continue to undergo testing ... for several more years."¹ China's strategy for the use of such missiles against US Navy aircraft carrier Task Force Groups has come to be referred to as the Anti Access Strategy or Access Denial Strategy against the US Navy in the Pacific Ocean, often referred to as A2/AD Strategy.

As the current strategic literature, especially the US Pentagon's Report to the Congress and CRS reports indicate,

Air Commodore **Jasjit Singh**, AVSM VrC VM IAF (retd) awarded the Padma Bhushan for a life-time's contribution to national security and defence is DG, Centre For Air Power Studies, New Delhi.

1. Depending upon their ranges, these theatre-range ballistic missiles can be divided into short-, medium-, and intermediate-range ballistic missiles (SRBM, MRBM, and IRBM, respectively).

the United States has been increasingly worried about China's naval modernisation, because of the introduction of the ASBM especially with MaRV (Manoeuvrable Re-entry Vehicles) capabilities. A recent CRS report to the Congress summarises a large number of aspects in this connection. The main expressions of concern relevant to our current study are cited in the following paragraphs. The August 2009 the US ONI (Office of Naval Intelligence) report states: The PRC [People's Republic of China] has been conducting advanced research into an ASBM programme since the 1990s. This ASBM is believed to be a variant of the 1,700-km range DF-21 Intermediate Range Ballistic Missile (IRBM), with the capability to perform a midcourse ballistic correction manoeuvre to update the target's location, and then guide the payload as a MaRV to the target with terminal guidance as an additional element in enhancing the accuracy of the warhead impact. In the coming decades, as the new ballistic missiles with MaRV payload's long range, high re-entry speeds (Mach 10-12), radical manoeuvres, and munitions designed to attack aircraft carrier, and/or accompanying warships, sub-systems or other high value targets like air-bases all **combine to create a complex threat** which even the American Ballistic Missile Defence (BMD) system may not be able to successfully deal with the attack before it impacts the target.²

MANOEUVRABLE RE-ENTRY VEHICLES

Ballistic missile defences in US have still to reach a level of full and complete reliability to intercept the incoming of inter-continental ballistic missiles though there is somewhat better capability with regard to intermediate and short range missiles essentially because the re-entry speeds with latter missiles is lower as compared with the Injection Stretch Blow Molding (ICBM)s. On the other hand, the leading technologically advanced countries (this now includes China, regardless of the large number of its poor) have been investing in the development of MaRV's for more than three decades. These developments would have two distinct implications for future

2. 2009 ONI Report, p. 26, cited in Ronald O'Rourke, *China Naval Modernisation: Implications for U.S. Navy Capabilities --- Background and Issues for Congress*, CRS Report for Congress, RL33153, February 3, 2011, p. 9.

military-nuclear technology and strategy: (i) such capability would go a long way to (if not completely) neutralise ballistic missile defences and *restore the dominance of the offensive*. In this respect the developments are akin to the development of MIRV and its implication for missile defences that led to the Anti Ballistic Missile (ABM) Treaty in 1972 with partial coverage of each super power; and (ii), the technology and the capability flowing from its exploitation would have a far reaching impact on *conventional warfighting strategies*.

As regards the first implication, it may be recalled that President Putin after a number of exercises had formally announced in March 2004 that Russia now possessed a manoeuvrable re-entry warhead “that will defeat any type of BMD.” At the same time the US announced two weeks later that scramjet powered X-41 had been successfully tested. This would lead to operational capability to achieve a MaRV or MARV) capability. This capability, in all probability is based on operationalising rocket and scram jet hybrid technology to assist in manoeuvring (relying to some extent on aerofoil controls) below the exo-atmospheric zone. It may be recalled that technology development for what then was termed as the Tans-Atmospheric Vehicle (TAV) were going on in the 1970s and had started to show progress in early 1980s.³ This study had concluded that “The TAV would almost certainly have an important role to play in space and strategic warfare: but its role in conventional warfare may also prove to be very crucial.” In terms of impact of new designs, it was clear in the 1980s that runway-launched single-stage-to-orbit systems would fructify in two or three decades. The Defence Research Development Organisation (DRDO) in India started a programme in late 1980s but apparently did not pursue it.

In terms of the implications of manoeuvrable re-entry vehicle/warhead, it is clear that **BMD systems, particularly the less capable low tier theatre missile systems, would become almost redundant shifting the operational advantage of defence again to offence** especially since the missiles are becoming more accurate with modern technology and if accompanied with MaRV capability, their penetration of defences would be more assured. Against the combination of missile defences and manoeuvring re-entry warheads,

3. See Jasjit Singh, *Air Power in Modern Warfare* (New Delhi: Lancer International, 1985), pp. 267-268

nuclear deterrence would have to be based on similar capabilities for a credible deterrence, it will become critical to ensure that offence must remain pre-eminent if we are to ensure reliable defence though defence (through BMD) would remain relevant against Intermediate Range Ballistic Missile (IRBM) without MaRV capability.

Besides USA and Russia, China has been building a reliable BMD system. But a brief note here would be helpful in understanding the capabilities. Suffice it to state that its Project 640 had been an indigenous effort to develop anti ballistic missile capability, with Fan Ji (FJ) missile since 1969.⁴ The JF-1 missile interceptor had completed two successful flight tests during 1979 while a low altitude interceptor FJ-2 completed some successful flight tests using scaled prototypes. But the programme slowed down because of financial and political reasons seen as unnecessary after the 1972 ABM Treaty, and finally closed down in 1980 when China started its four modernisations. After a series of developments including the US withdrawal from the ABM Treaty in 2002, the programme had been renewed. In March 2006, China tested an interceptor system comparable to the US Patriot system.⁵ China acquired the Soviet S-300PMU-2/S-300PMU-1 series from Russia for licence manufacture in the country and now produces the indigenous HQ-9 SAM system which in all probability is cloned from the S-300 and has a terminal ABM capability.⁶ Like the Patriot system, S-300 has some terminal anti-ballistic capability and is unlikely to be able to undertake a mid-course interception of missiles of ranges longer than around 300-km.

The technology and experience acquired by China from the Russian systems leading to the successful ASAT (anti satellite) capability demonstrated on 11th January 2007, was believed to have been immediately applied to efforts to build a credible BMD system.⁷ On 11th January, 2010, China carried out a stunningly advanced land-based anti-ballistic missile exo-atmosphere midcourse test with

4. See <http://www.sinodefence.com/special/airdefence/project640.asp>

5. "Pentagon Received no Warning of Chinese Missile Defence Test" at http://www.globalsecuritynewswire.org/gsn/nw_20100112_1311.php

6. at <http://www.sinodefence.com/army/surfacetoairmissile/hongq9.asp>

7. "China Adds Precision Strike to Capabilities," at http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=defense&id=news/CHINA040809.xml&

a kinetic kill vehicle with a SC-19 interceptor missile.⁸ It appears that the gap between US and China has been narrowing faster than anticipated earlier.

Besides the impact of Chinese BMD on Indian nuclear strategy, we need to take note of China's MaRV capabilities. It already possesses the DF-21D (CSS-5 Mod-4) ballistic missile with range variously mentioned as 1,700-km (DF-21C) to as much as 3,000-km for the DF-21D) the last likely to be employed in an anti-ship ballistic missile (ASBM) as part of its anti-access strategies.⁹ Chinese scientific literature also has been placing great emphasis on the issue of re-entry trajectory and achieving maximum manoeuvring flexibility coupled with accurate targeting through terminal guidance. For example, a group of Chinese scientists from the Dalian Naval Academy (DNA) published a scientific paper (in English) where the Abstract stated (Text as in original Abstract of the paper):¹⁰

"A strike scheme is presented by restricting the entry velocity, flight path angle and introducing the conception of the best attack line. Based on this scheme a design method of re-entry trajectory is proposed when the earth is assumed to be non-rotating. The method

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8. *The Telegraph*, London at <http://www.telegraph.co.uk/news/wikileaks-files/china-wikileaks/8299323/DEMARCHE-FOLLOWING-CHINAS-JANUARY-2010-INTERCEPTOR-FLIGHT-TEST.html>
 9. For further discussion of China's ASBM-development effort and its potential implications for US naval forces, see Craig Hooper and Christopher Albon, "Get Off the Fainting Couch," *US Naval Institute Proceedings*, April 2010: 42-47; Andrew S. Erickson, "Ballistic Trajectory— China Develops New Anti-Ship Missile," *Jane's Intelligence Review*, January 4, 2010; Michael S. Chase, Andrew S. Erickson and Christopher Yeaw, "Chinese Theater and Strategic Missile Force Modernization and its Implications for the United States," *The Journal of Strategic Studies*, February 2009: 67-114; Andrew S. Erickson and David D. Yang, "On the Verge of a Game-Changer," *US Naval Institute Proceedings*, May 2009: 26-32; Andrew Erickson, "Facing A New Missile Threat From China, How The US Should Respond To China's Development Of Anti-Ship Ballistic Missile Systems," *CBSNews.com*, May 28, 2009; Andrew S. Erickson, "Chinese ASBM Development: Knowns and Unknowns," *China Brief*, June 24, 2009: 4-8.
 10. Kaibo Bi, Xingbao Yang, Zhou Zhou, and Chuangang, Design and Optimisation of Re-entry Trajectory of Manoeuvrable Warhead," *Proceedings of the Second Symposium International Computer Science and Computational Technology (ISCSCT '09)*, Huangshan, PRC, 26-28 December, 2009, pp. 448-452. The first, second and fourth author belong to Department of Missile and Shipborne Gun, and the third author belongs to International military exchange department, all at Dalian Naval Academy, Dalian, PRC.

is based on the re-entry with maximum left-to-drag, (lift-to-drag?) but a small attack angle flight phase and a terminal adjust flight phase are included in. A feasible re-entry trajectory with two or three skips can be get by adjust(ing) the small attack angle flight time. Based on this trajectory, a standard trajectory considering earth rotation and practical parameters on entry point (can be worked out)."

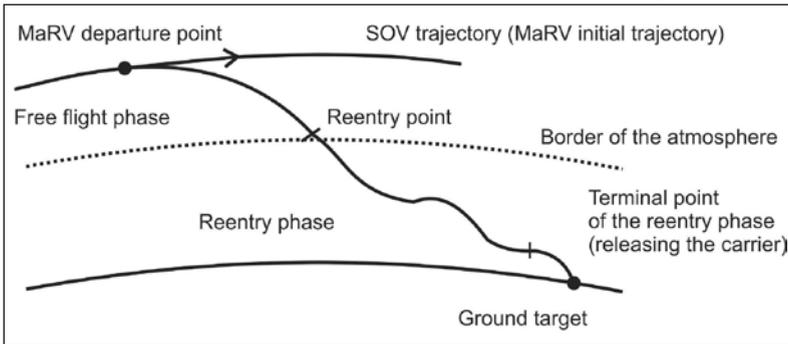
Such a system would be the world's **first hypersonic land-based ASBM capable of targeting a moving carrier strike group and its warships because of its capability of manoeuvrable re-entry warhead with some kind of terminal guidance system.**¹¹

China has launched a series of satellites (three Yaogan-IX Naval Ocean Surveillance System constellation of 3 satellites in formation) to support its ASBM efforts.¹² China has also developed and deployed at least 15 DF-31 ballistic missiles and its modified version, the DF-31A. Both types are believed to possess manoeuvrable re-entry warheads. The DF-31A carries one 1-Megaton or three 20, 90, or 150 Kt warheads, each believed to possess MaRV capability. By early 2006 the US Department of Defence had reported to Congress that these were expected to be deployed later that year. In 2009 US Air Force Intelligence reported 15 DF-13 missiles had been deployed.¹³

11. Military Power of the People's Republic of China 2008, p. 2 (p. 12 of PDF). "How China could scupper US naval power" at <http://www.scmp.com/portal/site/SCMP/menuitem.2af62ecb329d3d7733492d9253a0a0a0...> Also see "U.S. commander says China aims to be a 'global military' power" at <http://www.asahi.com/english/TKY20102270241.html> Asahi Shimbun. 28.

12. "Chinese Anti-ship Missile Could Alter U.S. Power", Wendell Minnick, *Defence News*, p 6a, 5th April, 2010.

13. The Federation of American Scientists & The Natural Resources Defence Council (DF-31A) November 2006. 73 (PDF0[3] at <http://www.fas.org/nuke/guide/china/Book2006.pdf> and US Air Force Air and Space Intelligence Centre, Ballistic and Cruise Missile Threats 2009 at <http://www.fas.org/irp/threat/missile/naic/NASIC2009.pdf>

Fig. 1: The flight process of anti ground attack by MaRV

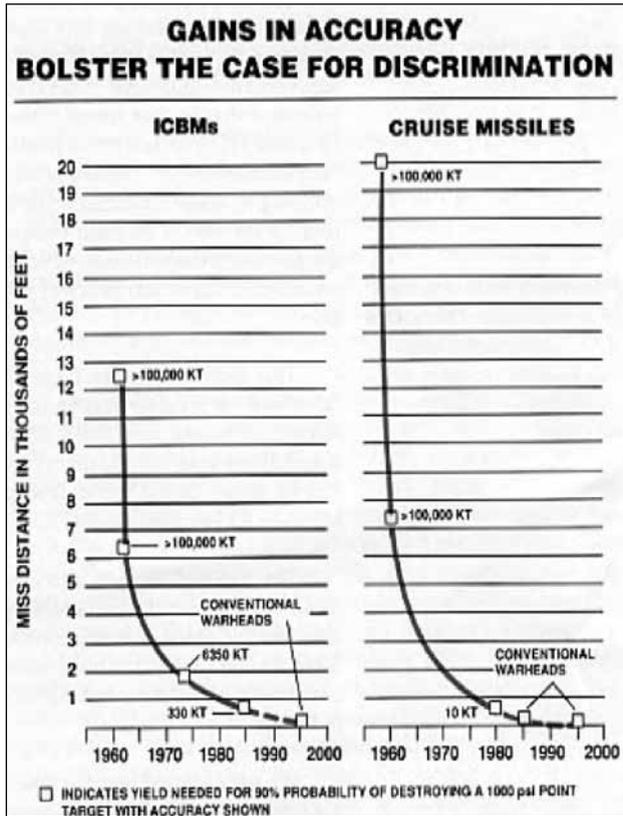
Source: Kaibo Bi, Xingbao Yang, Zhou Zhou, and Chuangang, Design and Optimisation of Re-entry Trajectory of Maneuverable Warhead," Proceedings of the Second Symposium International Computer Science and Computational Technology (ISCCT '09), Huangshan, PRC, 26-28 December, 2009.

During the 1980s, as the US GPS (Global Positioning Systems) started to become operational, one major impact was the significantly enhanced accuracy of ballistic missiles as well as that of cruise missiles due to substitution of the GPS for INS (Inertial Navigation System). The US Blue Ribbon Commission composed of the top ten strategic experts examined the implications of technological changes taking place and the result was the Wholstetter Commission's report titled *Discrete Deterrence*.¹⁴ The Commission concluded that by the turn of the century ICBM accuracies on target would touch a figure of less than 10 metres, while the cruise missiles would have achieved a near direct hit during the 20th century itself (See Figure 2). As may be seen, the ballistic missiles of even intercontinental range and the cruise missiles would become usable with conventional weapons by the last decade of the 20th century. These conclusions were dramatically different against the existing concepts which had led to thinking about ballistic missiles only with nuclear weapons to compensate for the wide area footprint which could be covered only by nuclear weapons, and preferably high yield ones. The accuracy factor would no doubt have altered the very role of nuclear weapons, except that a new role of targeting the enemy leadership with low yield nuclear weapons was promoted to take advantage

14. *Discriminate Deterrence: Report of the Commission on Integrated Long-Term Strategy*, Washington DC, January 1988, p. 49.

of the dramatically enhanced accuracies of ballistic missiles at long ranges.

Fig. 2



Source: *Discriminate Deterrence: Report of the Commission on Integrated Long-Term Strategy*, Washington DC, January 1988.

The accuracies of ballistic and cruise missiles would be particularly more useful against sea-based missile defences like the Aegis system since the number of interceptors carried on board will be finite. It appears that China seeks to adopt this strategy, in all probability with missiles armed with a conventional warhead which, as the Falkland War with Argentine Exocets demonstrated in 1982, itself could damage or destroy the destroyer if a direct hit is achieved. China is reported to have deployed nearly 1,300 IRBMs in its coastal regions

facing Taiwan. During the 1995-96 crises over Taiwan independence, China had launched a large number of missiles into the sea beyond Taiwan to deter intervention by the United States. Both sides remained restrained even after the US deployed two aircraft carrier groups closer to Taiwan but further east into the Pacific Ocean.

China's new acquisitions, especially the MaRV, are being seen by the US and its allies as the central tool in China's anti-access strategy against the US and its allies. The US, besides its concerns so very visible in its strategic policy matters, had begun to take counter-steps by articulating its strategy of "pivot" from Middle East to South-east Asia. This involves making arrangements for access to bases and facilities in the countries which are allies and friends of Washington. It also has recently articulated the future military strategy under the ambiguous title of "Air-Sea Battle" without defining its details so far. But what is clear from the very terminology is the heightened reliance on aerospace power and naval power, with land forces possibly in very small numbers more to support the security of air and naval forces rather than as the spearhead of military action a la Vietnam. The coming years would begin to clarify the strategy and force postures and would need to be studied carefully by us.

The emergence of highly accurate MaRV would inevitably have a profound effect of military capabilities and combat power in future. In terms of the offence-defence paradigm, nuclear strategy has conceptually relied for six decades much more on *nuclear deterrence promising nuclear offensive leading to unacceptable damage* (through the threat/and offence, whether by a first strike or a counter-strike after the adversary has launched its nuclear weapons) than on physical defence. This was as much due to limitation of technological capabilities as the growing belief that less than "fool proof" effective and complete defensive capability would actually tend to trigger the use of nuclear weapons rather than staying with the Mutual Assured Destruction (MAD) doctrine relying on deterrence exploiting the vulnerability of defence against incoming nuclear missiles with BMD systems for defence. This is why the process was limited by mutual consent to the ABM Treaty of 1972 between the two super powers. But now, with technological advancement, it is assumed

that a *combination of deterrence and defence* will be superior to merely relying on deterrence which relies heavily on the rationality of the antagonists. Since 90% or more ballistic missiles are theatre/tactical missiles of 1,000 or less kilometre range, and many of the so-called "rogue states" possess a large number of them, the interest and need for theatre missile defence (TMD) has been perceived to be necessary and likely to be effective.

But the big question that is now emerging is: what happens if a state (rogue or responsible) beyond the known three (USA, Russia and China) acquires MaRV capability for highly accurate ballistic missiles?

IMPLICATIONS FOR INDIA

So far all the literature and debate on these issues is related to China-US China-Japan/Philippines etc. scenarios and that too at sea in Western Pacific Ocean all the way down to Australia. But it is patently obvious that the development which is well under way would pose new range of challenges to India. The first may be seen in terms of the implications on Indian nuclear doctrine and strategy. The greatest challenge that a highly accurate missile attack with MaRV armed ballistic missile will be the likelihood of its penetration of BMD. If the missile is armed with nuclear warhead, the doctrine of no-first-use would remain applicable; and so would it in case of the attacker using conventional warhead. The defender then would only have to worry about an *assured counter-strike* assuming that it has taken adequate precautions to ensure survivability of sufficient arsenal for successful counter-strike to cause "unacceptable damage" to the aggressor so that deterrence credibility and reality must remain intact.

On the other hand, for countries that have a well established **doctrine and strategy of "first use," the degree of ambiguity would be extremely high**, increasing the risk of miscalculation and triggering a nuclear exchange. How should such countries look at the incoming missile as it is picked up on its radars? An assumption that it is likely to be armed with a conventional warhead, and the attacking missile being actually armed with conventional warhead, would only lead to a potential penetration of its BMD. Or in the case of countries like the US (or Pakistan) with their first use strategy, would/should

they launch on warning/attack and the missile actually may be only armed with conventional warhead, the actions of the defender would initiate a nuclear war for which China would no doubt be fully prepared. But if the missile is actually carrying a nuclear warhead, the defender may land up with the missile's MaRV penetrating the BMD and causing extensive destruction. The situation gets extremely complex when the attacker uses hundreds of accurate missiles with MaRV payloads. The situation would get extremely complex in case the attacker launches a mix of nuclear and conventionally armed missiles with MaRV. This is the risk, far beyond that during the Cold War that the world is already facing.

The second set of challenges pertains to asymmetry between the two countries where even one may trigger a war. We have experienced this in all the wars that we have had to fight, especially with Pakistan launching a surprise (often erroneously termed as pre-emptive) strikes against Indian Air Force bases (IAF). Pakistan has received a whole range of ballistic missiles from China and North Korea. It is reasonable to assume that all of the longer range ballistic missiles would have high levels of accuracies consistent with the assessment at Figure 2 above --- in other words, accuracies of less than 10 metres with their 2,500-km range ballistic missiles and hence usable with conventional warheads whether or not contained in MaRVs. It would be prudent to assume that China at some stage has/will transfer MaRV technology to Pakistan.¹⁵ Hence with or without nuclear warheads Pakistan's (and China's) ballistic missiles with MaRV capabilities would be able to penetrate Indian BMD and hit their designated targets.

It is logical to assume that China and/or Pakistan would in a crisis aim to neutralise Indian nuclear delivery systems to reduce Indian ability to undertake a robust counter-strike. Given the adopted Indian doctrine of "no-first-use" any hostile strike with conventional warheads may neutralise the launch platforms (like air fields and missile units, etc.) and the Indian government may remain in a dilemma how to undertake a counter-strike. China already has a large inventory of IRBMs probably outfitted with MaRV payloads

15. Recently China launched a surveillance satellite manufactured in China for Pakistan. This was reportedly the second such satellite that China gifted to Pakistan.

which may or may not carry nuclear weapons. In case it decides to launch such missiles against Indian nuclear delivery systems, they would have the advantage of lack of suitable counter-strike by India if India continues without countermeasures beyond the BMD. Hence, it is critical that (i), we build a significant inventory of MaRV for our ballistic missiles inventory, and (ii), we build a robust inventory of highly accurate ballistic missiles of varying ranges relying on GPS (or its substitute later on) for guidance and terminal guidance system for accurate targeting.

Given the dominant trends in ballistic missile capabilities, especially by China, we need to give serious thought to our options beyond the BMD programme. For such contingencies India needs to build a sufficiently large arsenal of IRBMs with MaRV capabilities that would be armed with conventional warheads to undertake a riposte (or even a first strike?) armed with conventional warheads to impose adequate damage to the attacker. This is also necessary with respect to the age old lesson of military strategy and warfare: that while defence can prevent defeat, victory in war can only evolve from offensive capability and actions.

CHINA'S EMERGING MILITARY LEADERSHIP

PARRIS H. CHANG

China-watchers in general, would agree that the growing pluralisation of the Chinese polity, with new social and policy actors in the regime's decision-making process, is one of the China's most salient developments in the 21st century.

With regard to China's foreign policy, the Foreign Ministry can no longer monopolise the primary policy-making function. Other institutions and organisations, which possess resources beyond the control of the Foreign Ministry, are in a position to advocate and advance their own interests and participate in the bureaucratic consensus-building process, thereby affecting the policy output.

This short paper will focus on the changing and enlarging role of the military (the People's Liberation Army or PLA) in China's foreign and security policy. It suffices to mention here that, in addition to the PLA, such institutions and organisations such as Ministry of Foreign Trade and Economic Cooperation (MOFTEC) and the State-Owned Enterprises (SOEs) specialising in exports of arms and the SOEs

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responsible for the acquisition of energy (which have formed the powerful "oil lobby") are also active participants in the foreign policy process, and their perspectives and interests may differ from those of the Foreign Ministry and leaders in charge of China's external relations.

At the provincial government level, the sub-national officials in the three north eastern provinces near North Korea, for example, are keenly concerned with the security and stability of their localities and could be an important factor in Beijing's resistance to the US to exert pressure on North Korea. In the wake of China's push for reform and open policies, university research centres, think-tanks, interest groups and social organisations are now capable of using the mass media and the internet to publicise and circulate their opinions and ideas which could strike at a popular responsive chord, while the central authorities can no longer ignore issues such as national dignity and sovereignty claims.

CHANGING ROLES OF THE PLA

Since the founding of the People's Republic of China (PRC) in 1949, the roles of the PLA have changed and expanded over time. During China's Civil War in the second half of the 1940s, the PLA was the instrument of the Chinese Communist Party (CCP) led by Mao Zedong to defeat, and seize power from, the Kuomintang (KMT) government. After the PRC was established, the PLA was assigned the responsibilities for national defence against potential external threats and to help safeguard law and order at home, roles that are performed by the military in other nations. In addition, upon the order of the Party leadership, PLA troops, calling themselves the People's Volunteer Army (PVA) had crossed the Yalu in November 1950 to intervene against the US troops and prevent the imminent fall of the North Korean regime. A few ranking PLA leaders and party officials did not support the PLA venture, but Mao prevailed and induced his colleagues to go along. After the Korean truce was concluded in 1953, Mao turned the attention to Taiwan, and ordered the PLA to launch attacks on several offshore islands held by the KMT regime, in pursuit of the goal of national unification.

In 1958 and 1959, when China launched the Great Leap Forward to mobilise the nation for massive and speedy economic development, PLA troops also became a work force, taking part in the productive labour in the fields and in factories, much to the dismay and bitter complaints of Defence Minister Peng Dehuai and other PLA leaders.

Whereas Mao used to preach that the Party directs the gun, and the gun should not control the Party, he has used the PLA for different purposes in the second half of the 1960s, to supplant and weaken the Party organisations. In his quest to regain control of the Party, Mao co-opted the support of Marshal Lin Biao, then Minister of Defence, and other PLA leaders to launch the Great Proletarian Cultural Revolution (GPCR), mobilise the Red Guards and seize power from his rivals Head of State Liu Shaoqi, Party General Secretary Deng Xiaoping, and other “capitalist power holders.”

Willingly or not, the PLA was thrust into the intra-Party power conflict to settle the leadership dispute in favour of Chairman Mao. During the GPCR, the PLA officials set up revolutionary committees in place of the provincial CCP committees and government institutions and enforced a direct military rule throughout China.

China was gradually restored to civilian rule after Mao’s heir, apparent-turned political rival Marshal Lin Bao died in a plane crash in Outer Mongolia in September 1971 and the PLA returned to the barracks.

Once the precedent of PLA involvement in the leadership conflict was set, further military participation in the political arena and leadership conflict resolution was inevitable. Several examples of military intervention in subsequent years can be cited:

- In October 1976, several weeks after Mao’s death, Hua Guofeng who aspired to Chairman Mao’s mantle, staged a coup to depose Mao’s widow Jiang Qing and other radical supporters in the Politburo and consolidate his leadership position. Marshal Ye Jianying, Vice Chairman of the Party’s Central Military Commission (CMC), was instrumental in this as he planned and carried out the coup with troops under his command.
- Soon after the ouster of the “Gang of Four” and the declaration that the GPCR had come to an end, Deng Xiaoping’s political rehabilitation became an issue of contention in the leadership

councils. Understandably, Chairman Hua Guofeng and other civilians who benefited from Deng's suspension, tried to block Deng's political comeback. The issue was settled in Deng's favour in the summer of 1977, as Gen Wei Guoqing and Gen Xu Shiyu, among many veteran PLA leaders who served with Deng, forcefully intervened, and compelled Hua to agree to Deng's rehabilitation.

- In May-June 1989, Deng co-opted the support of some (not all) PLA leaders to impose martial law in Beijing and open fire on the Chinese students who were engaged in peaceful sit-ins to protest against the official corruption. Not a few veteran PLA leaders demurred but were overruled by Deng who was China's paramount leader and held the position of Chairman of the CMC. The use of violence, which killed thousands of students, was highly unpopular and polarised the PLA leaders.
- In the aftermath of the violent suppression of the Tiananmen demonstrations, ironically, the political influence of the PLA grew. In spite of the austerity programme implemented by the regime, the PLA was awarded a 16 percent increase in its budgetary allocation for 1990. Since then, the PLA has obtained a double digit raise annually in its budget. The PLA's enhanced role was also evident as the PLA prevailed in plans to sell missiles to Pakistan, Iran and Saudi Arabia during 1990-92, in spite of the US concerns and reservations expressed by the Foreign Ministry.
- In early 1992, Deng undertook a journey to South China to revive the regime's reform and open programmes which had been rolled back after the Tiananmen turmoil. Deng resigned from the chairmanship of the CMC (his last official position) and appointed CCP General Secretary Jiang Zemin to it in November 1989, but he was still well connected, especially in the PLA. Jiang Zemin was the nominal Chairman of the CMC, but the real power was in the hands of the two brothers, Yang Shangkun, the first CMC Vice-Chairman who was concurrently President of the PRC, and Gen Yang Baibing, CMC Secretary-General and Director of the PLA's General Political Department. Yang Shangkung accompanied Deng in the southern tour, while Yang Baibing convened meetings of PLA cadres and called for active and earnest support

to the reform and open door policies. Consequently, the powerful PLA intervention forced the conservative Party leaders to relent their opposition to Deng's reform crusade.

- At the 17th CCP Congress in October 2007, Xi Jinping secured the support of the PLA leaders, playing the role of king-makers (many of them fellow "princelings") and became the candidate to succeed Hu Jintao as the forthcoming CCP General Secretary at the 18th Party Congress in October 2012. According to sources inside the CCP, Hu's preferred candidate was Vice-Premier Li Kejiang who shared the same Youth League background and had a long working relationship with Hu, but Xi enjoyed overwhelming PLA support and received more votes than anyone else in an unprecedented "straw vote" among the Party elite, and was, thus, "chosen" by the Party. Reportedly, Li Kejiang was the runner-up in the vote and his consolation would be a successor Wen Jiabao as China's next Prime Minister in March 2013.

THE PLA AS A POLICY GROUP

In addition to the role of "king-maker", the PLA advocates, advances and protects its "corporate" interests in the regime's deliberation and making of foreign and security policies. The PLA is not a unitary and monolithic body; there have been different old Field Army loyalties(which have become less salient in the recent decades), inter-Service rivalry(e.g. the emergent blue water navy and the ground forces), divisions between the combat-oriented Group Armies (GAs) and the more commercially-oriented garrison units between the Military Regions(MRs) with their close linkages with provincial elite and the central authorities between graduates of the National Defence University and those who are not between officers with higher education and those without and between different patronage cliques, to name only a few.

However, these and other differences do not prevent the PLA from functioning as an interest or policy group in the decision-making council to present a common "military view" to the Party leadership.

Granted that the PLA is a Party army, and the Party sets the policy and directs the army, but the army also takes part in the deliberation and making of the policy, especially foreign / security policy in post-

Deng China. Dr. Michael Pillsbury's *China Debates the Future Security Environment* (2000) provides a full view of the differences among the elite over the future world structure, future hierarchy of the major world powers (the US, Russia, India and Japan), locations and causes of future wars, and China's external security environment (with implications for China's foreign and security policies) at a time when Deng Xiaoping was China's paramount leader.

Deng's strategy, calling for caution and maintaining a low profile in foreign relations (*tao guang yang hui*) in the early 1990s, is well-known and has been cited in recent years by some Chinese officials to defend a more cautious foreign policy. Pillsbury also points out that other Chinese strategists (e.g. He Xin) advocate an opposite strategy that China "under the banner of opposing the hegemony" should align with every anti-American nation.

Although Deng did not carry an Emperor-like authority, nor did he possess the uncontested power that the late Chairman Mao used to wield, he was flexible and an adept leader skilled in the art of the possible and consensus-building, and good in persuasion and give and take. When he resigned from the Party's CMC chairmanship in November 1989 to take the blame for imposing Martial Law and ordering a violent crackdown on the students in the Tiananmen Square on June 4 that resulted in heavy casualties, he did not lose control over the PLA. The strategic moves he made included appointment of CCP General Secretary Jiang Zemin to head the CMC and, more importantly, elevation of his trusted aide Genl, Liu Huaping as the CMC first Vice-Chairman, and to the Politburo Standing Committee—the first time since 1976 that a PLA man had been placed in the elite role body.

Clearly, Deng recognises the importance of the PLA and issued instructions to induct PLA representatives into the leadership bodies of the Party and the government. In line with such a policy, Jiang Zemin announced in July 1993 that CMC Vice Chairman Zhang Zhen would attend the meetings of the Politburo and its Standing Committee as a non-voting delegate, while other CMC members would attend as non-voting delegates. According to a Hongkong source, at Deng's behest, the Party's Leadership Group for Taiwan Affairs was reorganised to add several PLA representatives, so as to

reflect the PLA viewpoints in the top-level decision-making body on Taiwan.

Coming after Deng, Chinese leaders like Jiang Zemin and Hu Jintao lack Deng's stature and authority; nor have they had a military career, or experience as a military leader, hence, their relations with the PLA elites would naturally be different from Deng's, and the PLA may be more inclined to assert its view. Between the two, Jiang's tenure as Party General Secretary lasted for 13 years from June 1989 to November 2002, and as he was the Chairman of the CMC for 15 years from November 1989 to September 2004, so he had more time and opportunities than his successor Hu to promote and coopt followers and allies and, therefore, build up a base of support in the PLA.

In contrast, when Hu Jintao was elevated to the position of Party General Secretary at the 16th CCP Congress in November 2002 to succeed Jiang, he found himself in an unenviable situation, as the Politburo was dominated more by Jiang's supporters than his own. Jiang relinquished the post of Party General Secretary, but retained the CMC chairmanship, prompting an American analyst, Joseph Fewsmith, to call the 16th Congress "the succession that did not happen". In September 2004, Jiang eventually stepped down from the CMC chairmanship and was succeeded by Hu. Overall, Hu's relations with the PLA were weaker and, unlike his predecessor, he has not been able to build up a base of support in the PLA. As the Party General Secretary and the Chairman of the CMC, Hu has officially reigned over the PLA, but does he rule and command it? Under Hu, there is a discernible tendering for the PLA to be more outspoken and assertive on issues concerning China's foreign and military policies.

These issues pertain to defending China's sovereignty and territorial integrity, and securing China's national dignity and great power status and other vaguely defined "core interests". Maj Gen Luo Yuan, a senior Researcher at the Academy of Military Science (AMS) and an outspoken hardliner, claimed that China has grown stronger relative to the US, particularly as a result of the global financial crisis and asserted that a more powerful China should more proactively pursue its national interests. Along the same lines, other

PLA spokesmen, in the summer of 2010, also called for Beijing to take a stronger stand toward South China Sea tensions and the US-South Korea joint exercise in the Yellow Sea.

It is important to note that as the PLA spokesmen call for Beijing to take a more assertive stance, they are also calling into question, Deng Xiaoping's strategy of keeping a low profile. To some PLA strategists, Deng's earlier strategy has become outdated in a changed world and they are ready to challenge the existing global order and rival the US hegemony.

Senior Col Liu Mingfu, professor at the National Defence University (NDU) and Director of the NDU's troop construction Research Institute, asserted unabashedly in his book entitled *China's Dream: The Big Power Thinking and Strategic Position in the Post-American Era* (2010) that China would eventually replace the US as the world's sole superpower, and put forth China's strategic priorities and plans to boost China's military reform and modernisation to strengthen China's military deterrence. To military strategists like Liu, the steady rise of comprehensive national power entitles China to greater international respect and deference. China's foreign and security policies have become increasingly hard line and uncompromising, apparently reflecting a greater voice for the PLA, as Liu and like-minded strategists provide a rationale and arguments for the PLA to support a more assertive stance toward China's neighbours and the US.

In a recent speech, Gen Chen Bingde, Chief of the General Staff Department (GSD) voiced China's grievances against the lack of US respect for China's "core interests" and spoke of "3 major obstacles" that hinder the improvement of Sino-US relations: (1) continued US arms sales to Taiwan; (2) close-in US military and surveillance operations and ;(3) ban on the export of US high technology goods to China. The US and China hold a semi-annual Strategic and Economic Dialogue, which has been attended by ranking military and senior government officers from both sides. The Americans have noticed that increasingly the PLA participants seem to define the major issues in the Sino-US relations. They take a much tougher stand not only on bilateral relations and the Taiwan issue, but also on regional issues such as the North Korean nuclear programme and

sanctions on Iran's suspected nuclear programme. The PLA is known to place a very high priority on the "stability" of the North Korean regime and on maintaining a strategic partnership with Iran (close military ties and supply of Iran's oil to China); hence, China would not implement the UN sanctions or do anything that could harm its allies, notwithstanding the US efforts to solicit China's cooperation.

FUTURE PLA LEADERSHIP

At the forthcoming 18th CCP Congress in the fall of 2012, Xi Jinping, Vice President and concurrently Vice Chairman of the CCP CMC, is expected to succeed President Hu Jintao as the Party's General Secretary. It is not clear if Hu will relinquish both the Party and the CMC posts at the same time, or if he will follow the precedent set by Jiang Zemin in 2002 and retains the CMC chairmanship for some time.

If I were to venture a guess, I would say that Hu would step down from both positions at the 18th Congress to complete the succession process. This has something to do with two factors: Hu's modest personality—reluctant to prolong his tenure, plus the strong desire of the PLA elite, many of them are also "princelings" like Xi, to put their "chosen man" in charge, as soon as possible.

Due to the age limit set in the past decade, two PLA veterans, Gen Guo Boxiong and Gen Xu Caihou, who are Vice Chairmen of the CMC and the PLA representatives, will retire from both organs. In addition, 7 of the 10 uniformed CMC members will likely retire based on age limits (68). The three uniformed members expected to retain their CMC posts beyond 2012 are Gen Chang Wanguan, Director of the General Armament Department (GAD), Adm Wu Shengli, the Commander of the PLA Navy, and Gen Xu Qilong, the Commander of the PLA Air Force. Adm Wu is a likely candidate for the Ministry of Defence in March 2013, while Gens Chang and Xu could be promoted to CMC Vice Chairmen and elected to the new Politburo as the PLA's representatives to the Party policy-making body.

Possible new CMC members include Gen Zhang Qinsheng, the senior Deputy Chief of the GSD, or Fang Fenghui, Commander of Beijing MR, and possible candidate for promotion to the Chief of the GSA; Gen Zhang Haiyang, Political Commissar of the 2nd Artillery

Corps, or Gen Liu Yuan (son of Liu Shaogi, purged head of state in 1966), Political Commissar of the General Logistics Department (GLD), possible candidate for promotion to Director of the General Political Department (GPD) Gen Ma Xiaotian, Deputy Chief of the GSD in charge of the air force, a possible candidate for promotion to commander of the PLA Air Force; Vice Adm Sun Jianquo, Deputy Chief of the GSD, a possible candidate for promotion to commander of the PLA , or Lt Gen. Wei Fenghe, Deputy Chief of the GSD, a possible candidate for promotion to Commander of the 2nd Artillery Corps.

What are the traits and career pattern of these new PLA leaders? They were active participants in the dramatic and immense changes that have taken place within the PLA over the past two decades. They e implemented the military policies in these changes that included downsizing and force restructuring, two transformation programmes of reform and modernisation that call for the PLA to undergo extensive changes, transforming from an army based on number to an army based on quality, and from an army preparing to fight local wars under ordinary conditions to an army preparing to fight and win local wars under modern high tech conditions, and later under conditions of informationisation.

The CMC is China's highest decision-making body on military and security affairs. In addition to the CMC Chairman, who is a civilian and the Party's General Secretary, the uniformed members of the CMC are also the ranking officers of the most important military institutions of China, namely, 4 major departments, the GSA, GPD, GLD, GAD, 3 key services (Navy, Air Force, Second Artillery Corps), Ministry of Defence, elite military academics and Military Regions (MRs). By the time, an officer is elevated to the CMC; he has already served in several MRs, one of the Service Headquarters and major departments or elite academies, and would possess broad experience from provincial and central authorities, with considerable professional accomplishments.

In as much as the CMC members are drawn from the MRs, it is useful to take a look at the leadership in the MRs. The MRs will continue to experience a great deal of turnover because most leaders there are relatively close to the upper age limits, and with diverse

GA and MR experience. Education in elite academics, e.g. Academy of Military Science, National Defence University, and National University of Defence Technology, specialised skills or talents to handle diverse portfolios will enhance an officer's career prospects.

In contrast with the old Field Army affiliation that provided a key base in building contacts for promotion, the PLA Group Army is a new organisational base to enhance an officer's career. High education, special skills, professional experience and performance become increasingly important factors for promotion as the PLA modernises.

CHINA'S NEW MILITARY COMMISSION: POST 18TH PARTY CONGRESS

JAYADEVA RANADE

China will implement large-scale personnel changes at the top leadership echelons of the Chinese Communist Party (CCP) and People's Liberation Army (PLA) at the 18th Party Congress, scheduled to be held in Beijing in October 2012. The changes coincide with rising domestic discontent and increased turbulence in China's neighbourhood.

The CCP and the PLA are both in the midst of transformational change. As in the case of the CCP, the PLA's composition is changing as it advances towards 'professionalisation' and becoming a technology-based armed force. As it recruits better educated and technically qualified personnel, the PLA has established linkages with over 100 universities to facilitate the qualitative upgrading of their calibre and technical capabilities.

The changes underway coincide with the spread of resentment against corruption and pro-Mao nostalgia in the country. At least two PLA Generals of impeccable, prestigious and 'revolutionary' lineage have spoken out strongly against corruption, namely, Mao Xinyu, Mao Zedong's grandson, who is a Major General in the PLA think-tank and Gen Liu Yuan, former Chinese President Liu Shaoyi's son.

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The CCP and the PLA have also both been buffeted by the recent factional infighting, centring on the Bo Xilai affair. By July 2012, at least five central task force teams are known to have conducted investigations in the jurisdiction of the 13th and 14th Group Armies associated with Bo Xilai. This could adversely blight the promotion prospects of some senior officers and has given prominence to the issue of the PLA's loyalty to the Party.

An article in the *Liberation Army Daily* (LAD) published on June 17, 2012, for the first time, seemed to imply there were 'sub-loyalties' in the PLA. It said "that the problem of loyalty is of special importance in the year of the 18th Congress, when 'enemy forces' are spreading rumors etc." It warns about "fake loyalty" and urges personnel to be "aware of people just pretending to be loyal, who feign loyalty, but do not really mean it." A few months earlier, at the National People's Congress (NPC) session in March 2012, Premier Wen Jiabao had, for the first time, pointedly declared, "We will run the armed forces with strict discipline."

An official campaign was simultaneously launched against the "depoliticising of the military, separating the CCP from the military, and nationalising the military." These were related directly to suggestions that the PLA should be an army of the state and not the CCP. Though initially voiced by the foreign media, the thought has been picked up by some Chinese intellectuals like the outspoken Chinese economist, Han Zhiguo, who has a following of over three and a half million on Sina Weibo. At a gathering in Beijing on January 18, 2012, he declared that "reform had come to a dead end" and advocated "universal suffrage", an "independent judiciary", and "nationalisation of the PLA." Senior Party and PLA leaders apprehend such sentiments could resonate with the better educated, younger officers now joining the PLA. The sensitivity of the topic became evident on June 3, with the summary dismissal of Yu Chen, editor of the Chinese newspaper, *Southern Metropolitan*, for allowing a comment on the paper's official micro-blog, mocking the CCP's insistence on retaining control over the PLA.

An illustrative listing of some articles and instances of demonstration of loyalty to Hu Jintao are given below.

People's Daily (June 25) carried an article by the Jinan Military Region Political Commissar, exhorting military cadres to more aggressively challenge mistaken ideas about the PLA's political role in the face of growing pluralism in Chinese society.

Liberation Army Daily (LAD June 17) urged military officers to be steadfast in their loyalty to the CCP. The implication was that many officers were insufficiently committed to the Party's continued rule. On May 23, the Beijing Military Area Command, held its 10th Party Congress, during which Hu Jintao demanded that military officers remain "absolutely obedient" and loyal to the Party. Senior PLA officers attended, including the CMC Vice Chairman Guo Boxiong, who cancelled a five-day visit to Japan and South Korea in order to be present for the same.

LAD editorial (May 15) encouraged soldiers to recognise the "conspiracy" behind efforts to separate the army from the Party, and emphasized the need to adhere to the fundamental political system that places the CCP above the army.

LAD (April 6) editorial asserted the need for the PLA to be firmly aligned with the Party to ensure political stability, because historical experience demonstrated that ideological competition had intensified, whenever the CCP faced a crucial moment of reform.

On April 6, high-ranking PLA officers publicly expressed loyalty to President Hu Jintao.

LAD (March 19) published an article declaring that the PLA must resist the "three mistaken ideas" about China's military development. It said, it is necessary to "always put ideological and political construction first" because this is essential for strengthening the PLA.

Xinhua (March 13) publicised President Hu Jintao's speech. It quoted him as saying that "every soldier in the military must be aware that development while maintaining stability is the priority. Hu stressed that the "PLA and armed police must focus on national defence and army building, and adhere to the fundamental requirement of making progress while maintaining stability."

It is against this backdrop, that the CCP Central Committee (CC) will, at the upcoming 18th Party Congress, approve new appointments to China's all-powerful Central Military Commission (CMC). Political

reliability will be the preeminent requirement. The appointments will impact on the PLA's doctrine, policies and future direction. The Party Congress will usher in a virtually new CMC, with seven of the current ten uniformed members retiring as they cross the mandated retirement age of 70 years. The two uniformed Vice Chairmen of the CMC who will retire are General Xu Caihou and Gen Guo Boxiong.

It seems unlikely that China's Vice President Xi Jinping, ranked first among the present three CMC Vice Chairmen, who in the normal course was expected to take over as the CMC Chairman from Hu Jintao, would now be able to do so. The unsettled domestic political situation emphasised by the repeated exhortations of senior military officers and the spate of official media articles urging the PLA to be "absolutely loyal" to the Party and rally "more closely" around "Chairman Hu Jintao", makes it probable that Hu Jintao will retain the position of Chairman of the CMC for at least another year. There was a spike in the number of such articles between March and May this year-coinciding with the political upheaval caused by Bo Xilai, again this June.

Equally significant will be the appointment of the two new CMC Vice Chairmen. They will be replaced by two of the three CMC members who do not retire. PLA Air Force Commander Xu Qiliang, born in 1950, is expected to be elevated as Vice Chairman. The 1945-born PLA Navy (PLAN) Commander Wu Shengli, assessed as favored by Hu Jintao, is tipped by some to be the other Vice Chairman. However, he is at the retirement age of 65 years and unless promoted, will retire in 2015. His elevation would mean that for the first time--unless the number of Vice Chairmen is increased--there would be no member of the PLA ground forces as Vice Chairman of the CMC and this can be expected to be stoutly resisted. Gen Chang Wanquan, presently Director of the Gen Armaments Department (GAD) is the other candidate for the position of CMC Vice Chairman and, given the importance attached to defence R&D and weapons indigenisation, he seems to be the stronger candidate. Vice Chairmen of the CMC, incidentally, retire at 70 years while Military Region Commanders, with whom People's Liberation Army Air Force (PLAAF) and People's Liberation Army Navy (PLAN) Commanders and heads of principal PLA departments are equated, retire at 65 years.

There is a reliable indication that Gen Chen Bingde, who is due to retire as PLA Chief of General Staff (CGS), has recommended that a symbolic generational change-over be effected in the PLA. He has proposed that only those born in 1949 or after, in other words those born after 'liberation' in the People's Republic of China, be inducted into the CMC. In case, this is accepted, then PLAN Commander Wu Shengli will retire in 2015.

While Air Force Gen Ma Xiaotian (born in 1949) is considered a front-runner for the job of PLAAF Commander, a recent reliable input suggests otherwise. It asserts that Ma Xiaotian, presently the PLA Deputy Chief of General Staff (DCGS), a 'princeling' closely connected to Hu Jintao and Xi Jinping and with a high-profile record of service, will be appointed Defence Minister and made Vice Chairman of the CMC. If this materialises, the number of Vice Chairmen in the CMC would enhance and Ma Xiaotian would benefit from a double promotion. It would also be the first time that a PLAAF officer will officially interact on behalf of the PLA with foreign militaries and, more importantly, influence formulation of defence budgets. A consequence could be that the PLAAF will then have an unprecedented three representatives in the CMC, unless Xu Qiliang is elevated as CMC Vice Chairman, but continues as PLAAF Commander.

Gen Liu Yuan (born:1951), son of China's former President Liu Shaoqi and friend of Xi Jinping, is currently Political Commissar of the PLA's General Logistics Department (GLD). He is viewed as a likely choice for CMC Vice Chairman to replace Gen Xu Caihou, who oversees political work in the PLA. Liu Shaoqi was, incidentally, Mao Zedong's key planner during the Sino-Indian conflict in 1962. Gen Liu Yuan commands prestige in the Party and the PLA and has in recent months spoken out strongly against corruption in the PLA. But for him to be appointed CMC Vice Chairman would mean that he would also have received a double promotion. He has apparently been told that he would be moving into the CMC and could probably end up being appointed the Director of the PLA's General Political Department (GPD) and consequently a CMC member.

Another contender for the post of CMC Vice Chairman, as well as GPD Director is Gen Zhang Haiyang, presently Political Commissar

of the Second Artillery and also a 'princeling'. His chances might have been adversely affected because of his association with Bo Xilai, though his father, Gen Zhang Zhen, is alive and could intercede. The promotion of 60-year old Liu Yazhou, also a 'princeling', as General on July 31, suggests that Zhang Haiyang, who reportedly could face trial for implication in a corruption scandal, might be overlooked.

Yet, another contender for the post of Director GPD is Vice Adm Liu Xiaojiang (born 1949), PLAN Political Commissar and former *mishu* to Adm Liu Huaqing. His wife is the daughter of former popular Party General Secretary Hu Yaobang, who continues to be highly respected by Hu Jintao and Premier Wen Jiabao. Liu Huaqing and Hu Yaobang were both opposed to Jiang Zemin. These connections will give him a distinct edge, in case he doesn't compete with Gen Liu Yuan.

The changes will be accompanied by a turn over of other high-ranking personnel. New Commanders will be appointed to the PLAAF, PLAN and the Second Artillery. The four principle departments of the PLA headquarters namely, the General Staff Department (GSD) - whose head is the PLA's Chief of General Staff (CGS), and equated with the head of the armed forces of other countries- General Political Department (GPD), GAD and the General Logistics Department (GLD), will all have new incumbents. All are members of the CMC. This implies that the CMC will, for the first time, consist almost entirely of operational officers with Gen Liu Yuan, son of former Chinese President Liu Shaoqi, possibly being the solitary exception.

Distinguishing the new CMC will be the increased representation of the PLAAF, and possibly even PLAN, in the CMC. Once the new PLAAF and PLAN Commanders are appointed, they will automatically assume their positions in the CMC. It was CMC Chairman Hu Jintao who, for the first time in 2004, appointed the PLAAF and PLAN Commanders as members of the CMC. Their predecessors, if still in service as in the case of the PLAAF Commander, would have been elevated as Vice Chairmen of the CMC. This will give renewed impetus to the emphasis on 'Joint Integrated Operations' (JIO), a concept that Hu Jintao has focussed on. It was to implement this that he first introduced changes in the structure of the GSD to include officers from the PLAAF and PLAN at senior

levels. Once the new incumbents are in position, it would increase, or double, the representation in the CMC for the PLAAF and PLAN, which would translate into higher budgets for the PLAAF, PLAN, defence weaponry and defence R&D.

Selections for the posts of Commanders of the PLAAF, PLAN and Second Artillery as also the four General Departments of the PLA will be made from a pool of senior officers. This includes the 7 Military Regions (MRs), 7 MRAFs, 3 PLAN fleets, and the Deputies in the PLA HQs General Departments, which comes to approximately 37 officers. This number has increased, however, since Hu Jintao took over as CMC Chairman and began promoting officers to higher grade posts without waiting for them to get the corresponding military rank. Additionally, if Political Commissars are counted, then the numbers increase. With the current emphasis on intensified ideological and political education and enhanced political control over the PLA, Political Commissars will be considered for higher rank and increased authority, but not be given operational command.

In the running for the post of PLA CGS, to replace Gen Chen Bingde, is Commander of the Shenyang Military Region, Gen Zhang Youxia (born 1950), a 'princeling' who was promoted full Gen in July 2011. He is one of the few Generals with battle experience having participated in the Sino-Vietnam War. He initially adopted a tough line against the Philippines in the recent dispute over Scarborough Reef. He is said to be close to Xi Jinping.

Another contender is Gen Fang Fenghui (born 1951) who, as Commander of the sensitive Beijing Military Region, is assessed to be trusted by Hu Jintao. He is reputedly a technocrat with command experience, including the digitalised battlefield.

Guangzhou Military Region Commander Lt Gen Xu Fenlin, could have been a contender, but he was not promoted General on July 31.

Gen Li Shiming (born 1948) and Gen Wang Guosheng (born 1947), Commanders of the Chengdu and Lanzhou Military Regions respectively and both exercising operational jurisdiction over Tibet and the areas across the border with India are also in the reckoning. Gen Wang Guosheng will, however, lose out because of age. Both were appointed full Generals by Hu Jintao in 2010. All contenders are members of the 17th CCP CC.

Vice Adm Sun Jianguo (born 1952), Deputy CGS and former *mishu* to Gen Chen Bingde and Chief of Staff of PLAN (2004-2006), is a leading candidate for the post of PLAN Commander. He is a nuclear submariner.

In case Ma Xiaotian is not appointed PLAAF Commander and Xu Qiliang is elevated as CMC Vice Chairman, then the Commandant of the Academy of Military Sciences and former PLAAF Deputy Commander, Air Force Lt Gen Liu Chengjun (born 1949) is viewed as a probable candidate.

These changes will not mean a reduction in the primacy of the PLA ground forces, or PLAA, as they are designated in China's Defence White Paper, 2010. Of 57 senior General Officers in the PLA, for example, 37 are from the PLAA. In the MRs also, it is the Military Region Commander who heads the command and the head of the PLAAF Military Region Air Force, for example, is designated a Deputy MR Commander. The PLAA which has considerably larger manpower also receives a larger proportion of the budget in real terms.

The changes in the CMC will have implications for India and China's other neighbours as the new appointees will redefine China's military doctrine, strategy and the PLA's role in safeguarding national and territorial interests. The induction of additional representatives from the PLAAF and PLAN into the CMC will mean greater emphasis on coordinated planning and conduct of JIO. This will be reinforced by the composition of the CMC which will, for the first time, be weighed heavily in favour of unquestionably, politically reliable yet professional officers with operational backgrounds.

Those tipped as the new PLAAF and PLAN Commanders have operational credentials. The South China Sea Fleet is being equipped for a large operational role, spanning the South China Sea, the Malacca Strait and the Indian Ocean. The first China-built aircraft carrier will be incorporated in this fleet. The presence of two senior PLAAF officers in the CMC guarantees that the PLAAF will receive adequate funds to pursue its modernisation programme. It is assessed that 10 per cent of the defence budget will be spent on aircraft procurement and R&D. PLAN representation in the CMC will ensure continued allocation of a larger percentage of the defence budget for

PLAN and the navy's modernisation programme will proceed apace. PLAN and PLA AF are both expected to assume a more operationally assertive posture. Meanwhile, the new PLA CGS will certainly have an operational background which would imply increased attention at high levels to the Sino-Indian border and China's other unsettled frontiers.

Finally, of the 16 identified 'princelings' in the PLA's senior echelons, for the first time, there will be three, or even four, in the CMC. Like in the CCP, they will influence national strategic policy, giving it a harder inflexible edge and, additionally, be Xi Jinping's core supporters. As in the CCP's highest bodies, officers appointed to the CMC will belong to the 'Cultural Revolution Generation' and are likely to have a tougher, more nationalistic mindset.

Overall, the PLA's political clout and representation in the Party is likely to remain unchanged with two seats in the Politburo, while in the CC, it will probably continue to retain 24 seats.

PLA'S GROWING FORCE PROJECTION CAPABILITIES

J. V. SINGH

All power comes from the barrel of a gun.

— Mao Zedong

The future and destiny of contemporary China is more and more closely linked to the future and destiny of the world. China's development cannot be done without the world, and the world's development needs China.

— Hu Jintao

INTRODUCTION

The People's Liberation Army (PLA) is developing new platforms and capabilities in order to protect China, settle the disputes on Beijing's terms, and even defend China's claims to disputed territories in the South China Sea and elsewhere, including the East and South China Seas, and possibly the Indian Ocean. China is trying to dominate the entire area militarily by occupying the chain of outposts in the South China Sea area. A stronger regional military presence might position China for force projection or even a blockade. In fact, its surveillance operations indicate that it is trying to influence the critical sea lanes in the region.

There are three important issues concerning China's power projection capabilities today. The first is the controversial South China

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Sea dispute that has gained prominence over time, especially after incidents like the Bowditch or Impeccable. China's military build-up in the South China Sea does not necessarily indicate that Beijing will use force to occupy more islands; rather, it seems that China seeks to enhance its military presence to manipulate its bargaining game for future negotiations. The second is the growing political-military strength of the PLA and China's focus on developing a blue water navy as well as air power to back it up. Beijing's actions have become a major concern for the world. The third issue shows how China is getting involved in a major military modernisation programme to project itself as the dominant power in this region. ¹ Limited transparency in China's military and security affairs has not only given birth to uncertainties, but increased the potential for misunderstanding and miscalculation.

China's assertiveness along its littoral, underscored by recent diplomatic disputes in the East China Sea and the South China Sea, has raised international concerns about how Beijing intends to project its growing military power. This region is important not only to the claimants but also to the global powers. While certainly worthy of attention, a narrow focus on Chinese activities along the periphery obscures a more profound trend, whereby the PLA is modernising in ways that will allow it to project forces farther beyond its borders. ²

ASSERTIVE CHINA: MILITARY AND SPACE

In the wake of President Hu Jintao's promulgation of the "historic missions of the armed forces in the new period in the new century" for the PLA in 2004, China has engaged in a variety of missions abroad, including counter-piracy operations in the Gulf of Aden, disaster relief in Haiti, and non-combatant evacuation operations in the Kyrgyzstan. Indeed, Beijing has invested resources in a number of platforms such as large amphibious ships, long-range transport aircraft, at-sea replenishment vessels, and hospital ships that cannot be explained in the context of preparing for a Taiwan conflict.

1. Roy Kamphausen, David Lai, and Andrew Scobell, eds., *Beyond the Strait: PLA Missions Other Than Taiwan* (Carlisle, PA: Strategic Studies Institute, 2009), p. 371.
2. *Military Power of the People's Republic of China 2009* (Washington, D.C.: Office of the Secretary of Defence), p. 56.

Meanwhile, the PLA has begun training and equipping for a wider range of activities, some of which have already been demonstrated on the international stage. Such activities are likely harbingers of Chinese force projection over the next few decades.³

Beijing appears set to project influence and perhaps even force elsewhere in the region. According to Principal Deputy Director of the US National Intelligence, Gen Michael Hayden “China is focusing its military build-up on a conflict over the Taiwan and the expansion of influence regionally.”⁴ Likewise, an editorial in the *PLA Daily*, to commemorate the paper’s 50th anniversary noted, that conceptions of national interests had already extended from the national territory, seas, and air space to include further out into the deep seas, outer space, and the electromagnetic sphere, arguing that the People’s Republic of China (PRC) needs to develop the capabilities to secure these interests. The editorial then nailed down its point: “In order to accelerate national development and safeguard national security, China has great strategic interests in the deep seas and in outer space.”⁵

As a matter of fact, the estimate that China is gradually and methodically developing or building long-range power-projection forces amounts to a new view of Chinese intentions and capabilities that flies in the face of recent conventional assessments. However, throughout the last 5-6 years, China has started exhibiting some of the needed elements of a robust power-projection capability in terms of doctrine, deployable ground and air forces, and robust deployable naval forces. It is apparent that China is working to increase its military’s reach in the Asia-Pacific region and beyond. This involves not only the acquisition of new naval and air force weapon systems and capabilities, but also greater integration of forces in the PLA to improve its coordination and extend its reach beyond green water

3 Kim Nodskov, *The Long March of: The New Historic Missions of the People’s Liberation Army* (Copenhagen: Royal Danish Defence College Publishing House, 2009), pp. 246-258.

4 “Expanded Influence Seen as Chinese Military Goal”, *The Washington Times*, March 1, 2006, <http://www.washingtontimes.com/news/2006/feb/28/2006>.

5 *Right-Sizing the People’s Liberation Army: Exploring the Contours of China’s Military*, (Carlisle, PA: Strategic Studies Institute, U S Army War College, September 2007), p. 29.

territories. Certainly, China's main ambition is still to resume its traditional role as the leading power in Asia. But, in recent years, Chinese military officials have issued statements indicating that China may be considering the development of a larger military force, able to play a role in global strategic affairs and commensurate with China's growing leadership role in global political and economic affairs.

An impressive manifestation of the growing Chinese capabilities for power projection in outer space took place on January 11, 2007. On that day, Beijing conducted its first successful direct-ascent Anti-Satellite (ASAT) weapons test to destroy an ageing, decommissioned Chinese Feng Yun-1C-type weather satellite at about 865 km up in low earth orbit in space. Although more of a "policy weapon", the test signalled Beijing's readiness to join the militarisation of space and showed that the Chinese military can threaten the imaging reconnaissance satellites operated by the US, Japan, Russia, Israel, and European countries.

The overall pattern of Chinese power projection efforts in outer space was followed by the country's successful effort on October 24, 2007, to put a Chinese-made satellite into the moon's orbit. The satellite, called Chang'e 1, was lifted into space atop a Long March 3A rocket, and entered lunar orbit on November 5, 2007. The launch of the Chang'e 1 satellite was obviously part of the ambitious Chinese national programme to send more men into space, build a space station, and eventually land Chinese astronauts on the moon.⁶ This year, China plans an unmanned lunar landing with a rover. In the third phase, around 2017-2020, another rover is to land on the moon and return to Earth with lunar soil and stone samples.

FORCE PROJECTION ACTIVITIES TO DATE

Non-combatant Evacuation Operations (NEO): As Beijing's foreign interests and holdings continue to grow, its citizens are increasingly living abroad to manage and engage in a variety of business, manufacturing, energy, and mineral extraction activities. This

6. Edward Cody, "Chinese Satellite Heading for Lunar Orbit Showcases Ambitious Space Program", *The Washington Post*, October 25, 2007, p. A16, <http://www.washingtonpost.com/wpdyn/content/article/2007/10/24/AR2007102400443.html>

trend increases the likelihood that foreign disasters, either natural or man made, could affect Chinese citizens overseas. In the wake of ethnic unrest in southern Kyrgyzstan in June 2010, China evacuated nearly 1,300 nationals using a total of nine chartered flights. Similar small-scale Chinese non-combatant evacuation operations have also occurred in Haiti (2010) and the Solomon Islands (2006). More recently, China successfully carried out large scale NEO ex-Libya in 2011.

Peacekeeping Operations (PKO): China's first foray into the United Nations peacekeeping operations occurred in 1989, when Beijing sent 20 election observers to Namibia in support of the United Nations Transition Assistance Group (UNTAG).⁷ In subsequent years, the number of Chinese deployed at any one time has swelled to over 2,000 peacekeepers.⁸ During this period, Chinese personnel have also participated in a wider range of activities well beyond their original observer duties, including peacekeeping and civil policing, as well as providing engineering, transport, and medical services. Today, Chinese peacekeeping personnel can be found in Cote D'Ivoire (UNOCI), Lebanon (UNIFIL), Liberia (UNMIL), Democratic Republic of Congo (MONUC), Sudan (UNAMID and UNAMIS), Timor-Leste (UNMIT), and Western Sahara (MINURSO). Participation in UN missions provides the PLA with a number of benefits such as training in a multinational context, experience in conducting Military Operations Other Than War (MOOTW), and operational knowledge of different political, ethnic, and geographic environments.⁹

Humanitarian Assistance/Disaster Response (HA/DR): China has contributed to at least 10 HA/DR missions since 2002. These include taking an active role in responding to Cyclone Nargis in Burma in 2007 and sending a 60-person search and rescue team to Haiti in January 2010. Meanwhile, the recent seventh revision of the PLA's Outline of Military Training and Evaluation (OMTE), which delineates specific training requirements, underscored the importance of humanitarian assistance/disaster response. Both the recently built

7. Bates Gill and Chin-Hao Huang, "China's Expanding Role in Peacekeeping," *SIPRI Policy Paper*, 25, November 2009, pp. 4-5.

8. "Factsheet: United Nations Peacekeeping," United Nations, accessed on June 13, 2012, www.un.org/en/events/peacekeepersday/2010/factsheet.pdf.

9. Bates Gill and Chin-Hao Huang, "China's Expanding Role in Peacekeeping," *SIPRI Policy Paper*, No. 25, November 2009, pp. 15-16.

Anwei-class hospital ships and multipurpose large amphibious ships, of which one was recently added to the fleet, will contribute to the deployment of emergency response personnel overseas.¹⁰

Sea Lines of Communication (SLOC) Protection: In December 2008, days after Chinese sailors were rescued from a pirate attack by Malaysian naval forces; the PLA Navy (PLAN) dispatched a flotilla of three ships. This original flotilla consisted of two destroyers, an at sea replenishment ship, included helicopters and approximately 70 naval special forces, and sailed over 4,600 nautical miles (nm) to the Gulf of Aden.¹¹ Now two years later, China has deployed its seventh flotilla and has maintained a continuous presence in the Gulf. Two Fuchi-class at-sea replenishment ships have alternated duties refuelling a pair of deployed PLAN surface ships, a combination of various destroyers, frigates, and recently a landing platform dock, as well as restocking them with drinking water and food. The at-sea replenishment ships have made extensive use of local ports to re supply.

CURRENT AND FUTURE PROJECTION CAPABILITIES

As the PLA's force projection capabilities continue to improve over time, China will have the means to participate in a wider range of operations outside of its borders, to potentially include counter insurgency, foreign internal defence, and even forcible entry operations. Listed below are five categories of key platforms that will be crucial to China's future force projection capabilities: transport aircraft, aerial refuelling, large amphibious ships, aircraft carriers, and satellites. The PLA will undoubtedly have to develop associated doctrine as well as Tactics, Techniques, and Procedures (TTP) to effectively employ these platforms, but the actual development of the platforms is an important and necessary ingredient for force projection.

Transport Aircraft: Transport aircraft are the quickest means to move troops and most material long distances and to send forces far inland, often necessary when infrastructure such as road and rail are

10. Jane's Information Group, "Anwei (Type 920) class," *Jane's Fighting Ships*, February 2010 and Jane's Information Group, "Procurement, China," *Jane's Sentinel Security Assessment*, April 2009.

11. Peter Kammerer, "Shot Across the Bow," *South China Morning Post*, January 9, 2009, p. 13.

lacking. Provided a friendly airfield or at least permissive skies for airborne insertion or drop, transport aircraft are essential for force projection as they can deliver mission critical material to overseas units in hours or days, rather than weeks typically required by cargo ships. While only the United States and Russia possess numbers of transport aircraft ranging in hundreds, China currently has a small but effective fleet of approximately 47 large and medium transport aircraft (the Il-76M and Y-8, respectively).¹² Augmenting China's military airlift capability is a growing civil aviation fleet that consists of two dozen large transport aircraft and is composed of Boeing 747F, McDonnell Douglas MD-11F, and Airbus A-300F aircraft.¹³

Aerial Refuelling: Aerial refuelling presents another vital component for the projection of military force, without which many expeditionary capabilities are severely hampered. China currently possesses approximately 13 aerial refuelling aircraft that can deliver total refuelling capacity at a range of approximately 1,000 nm.¹⁴ Cognisant of the need to improve capabilities in this realm, China has sought to purchase tankers abroad, as well as indigenously producing more aircraft capable of carrying out this task. China demonstrated its aerial refuelling capability in support of simulated long-range operations during the Peace Mission 2010 multilateral exercise in Kazakhstan.

Large Amphibious Ships: More than any other platform, large amphibious ships embody force projection because they allow a country to place forces ashore almost anywhere. Based on sealift capability alone, China can currently transport a theoretical maximum of nearly 12,000 PLAN marines and PLA amphibious infantry for relatively short distances to potential hot spots in the East and South China Seas with its fleet of 50+ medium and tank landing ships (LSM and LST, respectively).¹⁵ With the recent acquisition

12. Jane's Information Group; "Air Force, China," *Jane's Sentinel Security Assessment*, August 3, 2010.

13. "Jade Cargo International – Details and Fleet History," Planespotters.net, accessed: June 14, 2012, www.planespotters.net/airline/jade-cargo-international.

14. *The Military Balance 2010* (London: IISS, 2010: 129; Jane's Information Group); "XAC H-6", *Jane's All the World's Aircraft*, May 25, 2010; Air Force Pamphlet 10-1403:

15. *The Military Balance 2010* (London: IISS, 2010; 402; Jane's Information Group); "Sea Lift," *Jane's Amphibious and Special Forces*, August 27, 2009.

of a Landing Platform Dock (LPD), Beijing has begun to develop amphibious capabilities that can achieve extended reach. As a result of its single Type-071 LPD, an amphibious battalion of up to 800 PLAN marines can potentially be placed on nearly any undefended or lightly defended shore without the need to secure basing rights or over-flight permission. This ability of the Type-071 LPD to operate worldwide was demonstrated recently in the SLOC protection operations in the Gulf of Aden and could also be used to support other types of operations in the future such as an out of area HA/DR or NEO.

Though its goals are currently unknown, China is likely to develop more large amphibious ships in the future. For example, the theoretical acquisition of an additional two Type-071 Landing Platform Dock (LPD) would provide enough sealift for a Marine Expeditionary Unit (MEU)-sized force, a unit that is arguably the United States' most flexible tool for force projection. However, to achieve true MEU-like ability, China would still need to develop or acquire a helicopter carrier such as a Landing Helicopter Assault (LHA) or Landing Helicopter Dock (LHD) to provide air support.

Aircraft Carriers: The launch of an aircraft carrier, a prestigious military asset essential to effective power projection is one of the most visible aspects of China's ambitious military modernisation and power projection. China recently launched its first aircraft carrier by refurbishing the Soviet-built, Ukrainian-supplied carrier, *Varyag*. Reportedly, the PLAN is in the process of constructing two new carriers of a completely indigenous design potentially entering service as early as 2015. PLAN is likely to purchase Russian built aircraft such as the SU-33 besides developing an aircraft carrier capable version of the J-10, tentatively named the J-15. A future Chinese aircraft carrier would provide defensive air cover and a platform for strike aircraft, a capability that would vastly enhance force projection capabilities and flexibility.

Satellites: China is developing satellites for Intelligence, Surveillance, and Reconnaissance (ISR) and navigation purposes. The Jianbing/Haiyang series of electro-optical and Synthetic Aperture Radar (SAR) reconnaissance satellites has grown over the past decade and is currently supplemented by one Tianlian data relay satellite.

China is expected to eventually develop a future network of six data relay satellites that will provide near real-time feeds of its various ISR satellites. Not willing to fully rely on unimpeded access to the US maintained Global Positioning System (GPS) network in the future, a system that Washington can turn off, China sees its Beidou-2 series of satellites as an important means of navigation. That said, Beijing has yet to expand the system for extra-regional use.

POWER PROJECTION AND CHINA'S GRAND STRATEGY

Chinese military leaders have explained the deployment of Chinese military power in and around the region as a component of the overall Chinese grand strategy, taking a fairly modest and balanced approach to pushing for Chinese interests and to showcase Chinese military power. On the one hand, China can be aggressive in areas it deems to be in its core interest, such as dealing with Taiwan and increasingly pushing against interference with Chinese sovereignty, like intrusions by US espionage or surveillance and reconnaissance activity around the perimeter of Chinese territory. On the other hand, the Chinese military has been fairly cooperative in a number of international forums in anti-piracy efforts, supplying the UN with peacekeeping troops, and trying to mediate tensions in various areas and also developing multilateral military cooperation organisations such as the Shanghai Cooperation Organisation (SCO) with Russia and other Asian states. What, thus, emerges is a parallel approach of assertiveness and also an effort to be seen as a cooperative stakeholder in the global military order.

In terms of core missions and the importance of maritime power, one can begin to sketch out what the Chinese Navy will look like over the long term. Of key importance is the ability to gain control and to deny threats close to its shores and to gain control of Exclusive Economic Zones (EEZ) and project power within the first island chain, a couple hundred miles offshore. It needs to have both sea control capabilities, especially when dealing with smaller powers like Taiwan, Japan, and other neighbouring countries, besides having sea denial capabilities when dealing with its principal concern, the US Navy, which has a very dominant maritime presence in the Asia Pacific region.

But more broadly, China is increasingly dependent on trade and its resources from the rest of the world. Since more than 80 percent of overall trade is seaborne trade, sea lanes and communications are critical to China's national and economic health. Though sea denial around its shores remains an important component, even more important is the ability to protect critical sea lanes of communications and the ability to deal with potential blockades in these areas which can lead to choke points in the Sea of Malacca and elsewhere in South Asia. The goal of the Chinese Navy, especially with aircraft carriers, therefore, is the ability to project power, and to defend the SLOCs and its maritime global interest.

CONCLUSION

Although still relatively nascent compared to the Western countries that regularly send forces abroad, Chinese force projection capabilities are growing and expanding under the broad rubric of President Hu's "new historic missions." The development witnessed in these growing operational capabilities, along with an expanded strategic-level focus potentially is a double-edged sword, likely to have profound implications for countries in the neighbourhood of China and international politics more broadly.

The Chinese are doing this very much as an incremental approach: first, securing and protecting their first island chain, then, to the second island chain, and then, beginning to project power over a much further distance for economic and trading interests. On the one hand, China is keen to become a "responsible stakeholder" in the international system that implies burden sharing in the maintenance of international peace and security. In this regard, a more active and capable PLA will enable China to contribute to multilateral efforts seeking to provide global public goods. On the other hand, even in the defence of the global commons of the policing of sea lanes, for instance, Chinese force projection capabilities have the potential to erode or displace the present balance. A more active PLA and its growing force projection capabilities, even of a non-combative nature, will further improve the war-fighting capabilities of the PLA, a point clearly not lost on Chinese strategists.

INFORMATION WARFARE: ARE WE READY?

DHIRAJ KUKREJA

“ . . . attaining one hundred victories in one hundred battles is not the pinnacle of excellence.

Subjugating the enemy’s army without fighting is the true pinnacle of excellence.”

— **Sun Tzu, The Art of War**

Information warfare is the offensive and defensive use of information and information systems to deny, exploit, corrupt, or destroy, an adversary’s information, information-based processes, information systems, and computer-based networks while protecting one’s own.

Such actions are designed to achieve advantages over military or business adversaries.

— **Dr. Ivan Goldberg**

Director of the

Institute for the Advanced Study of Information Warfare

(IASIW)

INTRODUCTION

India may not have faced an enemy along its international borders after 1971 – Kargil conflict is considered a limited conflict– but an

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information war has been raging for some time now, especially ever since we entered the 21st century. Due to the rapid advances in technology in the information arena, the world has 'shrunk', and hence the geo-strategic setting has become more complex and will continue to become, even more so, with every passing day. Global communications enhance awareness on issues and events which earlier were considered of no consequence; passions are ignited, perceptions change to misperceptions, thus compelling nations to act or react to the circumstances, at times in conflict to own interests.

The Information Age is here to stay and grow, and it should be so accepted, as the emerging technology has thrust information to centre-stage, not just in society or government, but, also in warfare. Information, by itself, is all pervasive and has become a strategic resource, vital to national security. The armed forces are embracing a new era that is characterised by the accelerating growth of information, information systems, information sources and information dissemination capabilities; all of which are supported by information technology, also known as *IT*. If IT has ushered in the new era, it has presented new opportunities, while throwing up new challenges. The commanders and soldiers have to adapt to the new era, the so-called *Information Age*, by transforming the way they train, by responding to the opportunities and challenges that have been presented to them. The knowledge that flows out of the information presented, empowers the commander and soldier alike; timely, accurate and relevant information has become an absolute essential to operations because while the nature of war has remained a constant, there is a transition in the conduct of war.

Information gathering and dissemination systems have already permeated our armed forces and other agencies that are tasked for the job, and hence, into the military and civilian lives. If the Information Age is here to stay, it has and it will continue to influence all arenas, as individuals and as an organisation, be it the corporate or the Armed Forces. Information Warfare (IW) has already become central to the conduct of war; the two wars in Iraq and the one continuing in Afghanistan, have amply highlighted the increasing dependence on IT and the advantage that accrues from it. Military operations are highly dependent on many simultaneous and integrated tasks, which,

in turn, depend upon information. The dependence of our war-fighting capabilities on information has, therefore, multiplied many times over, as the information environment has no fixed boundaries.

FUNDAMENTALS

Before proceeding further, it is important to define 'Information'. The Concise Oxford Dictionary gives a simple definition: *something told; knowledge*. Facts or occurrences (data) are what we observe around us; these, however, need to be perceived and interpreted to become information. It can therefore be defined as, "*Data collected from the environment and processed into a usable form*" (US Army Manual FM 100-6, August 1996). A single piece of data is meaningless, unless it is processed and placed into context, when it becomes information, and gives knowledge to the user.

Conflicts initiated due to varied perceptions or understanding of the information gathered, can extend beyond the traditional battlefield, to areas that are normally not covered in military manuals; industrial sabotage, economic competition, terrorism and influencing public perception thorough the spread of misinformation, are just to name a few. Developments in IT have changed the way how nations, organisations and their people interact with each other. The infrastructure that assists rapid dispersion of information, civil or military, has greatly influenced the way the armed forces conduct their business of training, fighting or resolving a conflict.

Information impacts the entire range of military operations, tactical and strategic. The successful conduct of warfare in the Information Age requires the command and control infrastructure to have ready access to information, not just within the area of operations but also outside the theatre of operations. Existing and emerging technologies permit any aspect of any conflict, to be made available to an international audience, in near real-time, without any censorship. With the omnipresent internet now available to all and sundry, it is not feasible to suppress or censor the global information network. On the contrary, the commanders, even at the front, should be sustained through the expanding reach of the global infrastructure and technology, by the use of commercial telecommunication networks.

Providing secure and reliable information during operations is different from providing the same during peacetime. The information environment has, therefore, to be kept secure at all times with the identification of its vital areas (VAs), more so for military information. A secure military information network consists of secure systems and implies new ways of deploying and managing forces, thus compressing the traditional levels of war in time and space. In an out-of-area contingency, a commander could have global connectivity, as a result of which, even tactical military actions can have political and social implications. The key word, however, is a 'safe and secure network'.

THREATS TO INFORMATION INFRASTRUCTURE

The threats to the information networks are multifarious- technically and otherwise, worldwide in origin, growing and cannot be wished away. The threats can originate from individuals or groups who have been encouraged by personal, military, political, social, cultural, ethnic or religious gains, wanting to demonstrate their capabilities or seeking vengeance or just for the thrill of it. What a nation and its military needs to be cautious about is the fact that the threat exists on a continuing basis, during peace, periods of relative peace or war.

Information has never been more powerful and at the same time so vulnerable. The threats are real and exist now. The Indian public at large and even the man in uniform, continues to be unaware of the extent to which an attack can endanger our daily lives. We must, therefore, understand the extent of the threat, identify the VAs and vulnerabilities, develop our defences and organise our civil and military organisations to counter the threats.

The threats can come from varied sources – from unidentified individuals to groups, unnamed government organisations (intelligence units), opposing militaries and political opponents. It is difficult to immediately identify the origin of an attack. The threat can manifest as an attack in wide-ranging appearances with a design to delay the effect or have an instant result; some examples include – unauthorised access to information for personal gains; insertion of malicious software for an immediate or delayed effect; use of misinformation to influence the public opinion; a physical

attack to destroy, degrade or disrupt the flow of information. Be the threat from an insider or a non-state group, the effectiveness of military operations can be degraded if the confidence in the quality of information being provided can be eroded.

CHALLENGES

The Information Age is both a blessing and a curse. Due to the rapid and constantly evolving technologies, which are relatively inexpensive and in some cases available off-the-shelf, the originating points and perpetrators of an attack are not easy to locate and identify, with the inflicted damage often tricky to detect. Commanders of the military and national leaders face significant and interrelated challenges in dealing with and anticipating the effects of an intrusion into the information systems. Information system security is, therefore, a major challenge to be addressed and is easier said than done for two recognised reasons: first, a majority of the communication originating from the Ministry of Defence (MoD) is outside the direct control of the armed forces, and second, a significant amount of open-source intelligence is carried out by using commercial networks; this does not absolve the three Services of any breaches of security as they too do not possess an integrated and fully secure information system as yet.

Global visibility and dramatic presentations on the all-pervasive television networks, accompanied with 'expert' analysis, influence public opinion and, at times, policy decisions too. The audience, apart from the general public, includes decision makers, advisers and other nations, which could be potential or actual adversaries; inaccurate information to such an audience can have an adverse effect with even the military commander being susceptible to it to make an inappropriate choice, inconsistent with the real situation. Understanding of how an adversary can manipulate news media is, therefore, essential for a commander. Deliberate misinformation or disinformation campaigns with misinterpretations can also affect the morale of the fighting force at large through an impact on their families or communities.

Relatively, few international rules and laws governing the subject, lead to open-ended Rules Of Engagement (ROE), especially

in peacetime, when gathering information is done from non-military systems. What are the ROE then for such operations in peace or in war? The military commanders and national leaders have to be in close coordination with their respective legal and diplomatic experts to avoid confrontations and embarrassments.

THE WAY OUT

Just as air dominance has come to be recognised as an essential requisite for success in a military operation, *information dominance* has taken on a comparable importance and can be defined similarly. Achieving dominance through knowledge advantage is crucial for the success of a military operation; a commander must be able to sense what information is required, discern between the useful and useless and disseminate the knowledge to the right place, at the right time and for the right purpose. This can be achieved through a combination of technical and human capabilities.

A key step in achieving information dominance is reached when a military commander achieves a higher level of battlefield visualisation than that of the opponent; in other words his level of situational awareness is high. This aspect includes: a better understanding of the situation, the intent- political or military, and the concept of operations, with a clear picture of own and enemy forces disposition. Technology now makes it relatively easier to share the political intent or the senior commander's intent and concept of operations throughout the command, giving clarity of focus and optimising combat power.

Certain activities need to be factored in operations to ensure that they are perceived by different audiences, global or national, as the leader or the commander would like it to be. With new technologies evolving, this aspect is gaining major significance. 'Manipulation' of the media, through an effective public relations organisation and dissemination of information, is an effective tool which has not really been utilised by the armed forces. Commanders need to be trained and they, in turn, need to pass the message to the last individual that the presence of the media provides useful source to communicate with the general public, thus strengthening the morale and cohesion of the organisation. This, in no manner, is a suggestion to control the

media environment; rather, the media should be used as a tool to keep the general public informed to the greatest possible degree.

Conversion of data to knowledge, giving knowledge to the right place, at the right time, is fundamental to meet the challenge posed by all-inclusive visibility, rapid advances in information technology and its impact on the environment. This is a part of information management that requires dynamic and multi-dimensional decision making that, in turn, must match the pace with which situations change.

STRATEGY

The capability to conduct war through information is one of the many components of national power. Information Warfare (IW) can support the grand strategy during peace, crisis, conflict and post-conflict through exerting influence on perceptions and decision-making of others. If carefully conceived, coordinated and executed, IW can defuse a crisis even before it builds up, reduce the period of confrontation and through diplomatic or economic efforts, maybe, pre-empt the use of military forces.

The objective of IW is to attain a higher degree of information advantage that would enable dominance and control of the adversary through exploitation, denial and influence of his environment, while protecting own information systems. It focuses on the vulnerabilities and opportunities presented by an increasing dependence on information and information systems. IW can be waged, both during peace and war; in wartime, IW can be waged within and beyond the traditional combat area; it thus, has a defensive and an offensive element. The integrated use of security, deception, psychological operations, electronic warfare and physical destruction, mutually supported by civil and military intelligence, to deny the adversary the use of his information systems while protecting own systems, applies across the entire spectrum of warfare and at all levels.

With both offensive and defensive aspects of IW, there is a need to articulate the strategy to counter the threat to military and commercial information infrastructure. Recent developments in the government and subsequent indications in the media show that the issue is being addressed; however, the process is slow and needs to be accelerated

to meet the challenges posed by rapidly evolving technology. Threat knowledge is an indicator to planning the defensive action, and once identified, an offensive against the threat. The threat, therefore, must be coherently stated, taking care neither to overstate the threat nor understate it. Comprehensive indications would then require in place a structure, with established roles and responsibilities across national, state, police and military agencies, to ensure a timely and an effective response.

IMPLEMENTING THE STRATEGY

An attack does not necessarily indicate the motives and actors behind it. The different implications for national security can best be appreciated if IW targets of leadership, civil and military infrastructure, recognise the vulnerabilities and prepare an adequate response strategy; the various agencies, civil and military, also need to realise that an effective response requires close collaboration and mutual aid.

A common focus is essential to ensure that a credible strategy becomes an actionable plan. While efforts are on to include IW into all aspects of warfare, we need implementation in many areas through sustained cooperation and teamwork between all agencies – civil and military. The necessary relationships, within the Government and military, are essential to secure the information of all constituencies and need to be implemented through an act of the government, rather than a few policy statements.

Education, training and exercises provide the best returns on investment; sadly, this investment is found wanting. High level military education and professional military courses should include concepts of IW, not only for the man in uniform, but also for those out of it, who are involved in national decision making. Training for network and information system administrators is another investment that can yield high dividends.

CONCLUDING THOUGHTS

Throughout history, leaders and commanders have struggled with how best to capitalise on available information. The situation has become even more confusing with the explosive advancement of

technology, providing the commander with an overabundance of opportunities for access and manipulation of information. Notwithstanding the synergy possible with the power of information and IT, fog and friction will remain and also the challenges posed by a surplus to sort the data to extract knowledge.

Many solutions available to the dilemma of uncertainty are primarily technical. No revolution, more so an information revolution, can take place without the human influence and understanding the human mind; the commanders and other leaders have to link and integrate information, technology and action. Perfect knowledge, though desirable, is neither practical nor affordable nor is it the objective. The intention is to enter a crisis or a combat zone with a capability of superior power against an adversary to establish dominance. IW, per se, does not offer any panaceas; however, when converted into capabilities, information can be the currency of victory.

National leadership is able to choose from a broad spectrum of options that are normally flexible and combinable. A sound IW strategy - defensive and offensive- does not necessarily demonstrate invulnerability, but rather it is an indicator of a nation that is vigilant and ready to respond to any threat, foreign or domestic.

We have entered an information age where nations and military organisations have opportunities to gain decisive advantage through timely access to accurate and relevant information. Information has fast become another national strategic resource that has permeated every facet of warfare. IW is a reality, and the sooner it is recognised the better it would generate far-reaching benefits. IW impacts societies, and nations; IW also impacts military and all levels of war. The implementation of the IW strategy is a difficult task, but needs to be implemented if we have to survive and fight. Information warfare is here – are we ready?

CHINA – THE FUTURE CRADLE FOR SCIENCE & TECHNOLOGY

VISHAL NIGAM

China of 2012 is decades away from carrying-out path-breaking discoveries in the field of natural science and engineering. However, despite lagging behind most of the technologically advanced nations, China is investing all its resources to narrow this gap by strategising to embrace innovation, if not by first quarter then at least by the first half of this century. Innovation is the new pivot in China's soul for modernisation and reforms in the 21st century which beyond doubt is witnessing a gradual shift away from imitation. The challenge would be to move up in the technology ladder by enforcing fundamental changes in the socio-economic structure and then develop imaginative and future technology across the entire width of the spectrum. Though, upgrading knowledge in natural science and engineering is critical, transforming the organisation and management structure has also been extremely vital for China to step-up in the technology domain. Over the years, China has been extremely diligent in persisting to develop a modern state of the art, indigenous defence industry backed by robust infrastructure and advanced research and development through globalisation and access to capital markets.

The Chinese leaders acknowledge the limitations of inherent dependence on technology residing in the West. They accept that

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high-end technology cannot be acquired off the shelf and therefore has to be indigenously nurtured and developed over a period of time. Chinese concepts of innovation range from assimilating to nurturing domestic and foreign technology through civil and military integration. Hence, scientific Research and Development (R&D) has become the cornerstone in China's defence economy and Medium and Long Term Science and Technology Development Plan (MLP), 2006-20, along with access to capital markets is the tipping point in China's quest for Science and Technology (S&T). An outcome – increase in arms exports by 95% since 2002 (majority of arms exported to Pakistan) and China ranked as the sixth largest arms supplier in the world trailing behind UK in 2011¹.

Though, the Chinese have not fought any major war for more than three decades, but one thing they have assiduously followed are the wars in the 20th century; where technology not only revolutionised modern warfare but its application became the most critical instrument in contemporary war fighting. While military research resulted in advent of tanks, missiles, UAV's, stealth and advanced weapon systems which altered the approach towards fighting modern wars, however, the last couple of decades have demonstrated the clout of Information Technology (IT) and its impact on altering the philosophy of war fighting in the 21st century. Wen Jiabao speaking to the fifth session of the 11th National People's Congress (NPC), reiterated the requirement to enhance PLA's capability to "*win local wars under information age condition*", raising larger questions –Who are China's potential adversaries? What are the types of wars China is likely to encounter and the level of technology available for force application by the first half of 21st century? Today, China is in the midst of a revolution in S&T, not only for the purpose of modernisation but also as a counter to the growing threat perception in the region. The revolution is being driven by an increasingly assertive Chinese leadership and a growing sense of nationalism, both essential to prop up innovation and technological breakthroughs in S&T. They are aware that every great revolution in the past was linked with transformative breakthroughs in science

1. *India World's Largest arms Importer Outguns China in Weapons Purchase Due to Lack of Indigenous Industry*", *The Times of India*, Delhi, March 20, 2012

and technology and if the '*Chinese Revolution*' has to see the light of the day, it will have to be reinforced with disruptive breakthrough in S&T.

The Chinese Academy of Sciences has drawn-out a road map to 2050 for S&T in China. The document pointedly looks at different types of technologies to address diverse layers in socio-economic development. It also refers to other areas where technology is perceived as an elixir with potential to make significant difference to the outcome of a result². China's challenges mainly stem from the contradiction in the supply and demand of energy and other overseas resources and therefore safeguarding supply and transport has become a grueling task. To aggravate China's misery, Obama's rebalancing Asia's strategy has also generated a great deal of debate inside China, further adding to Beijing's jitteriness of offshore control and the security of the resources transiting through the South China Sea which could literally cripple its maritime trade and the economy³.

China in the 21st century was not only emerging as a powerful but also as an influential nation. Therefore, apart from aggressively increasing its year on year expenditure on defence, it also started to gaze at technology as panacea and guarantor for security and ensuring sovereignty which would eventually guide the country from its present status to that of a developed nation. China formulated a programme to develop a range of technology in advanced manufacturing, new materials, lasers, intellectual broadband wireless networking, network supercomputing, sensors & displays, information technology, nano-science and technology, aerospace, ocean exploration, agriculture, renewable, green systems and biotechnology. Through the programme, China aimed to bankroll a coherent S&T development strategy for the coming decade and transform from its earlier stereotypical image of a technology imitator to an innovator. Thus, China's modernisation process has been a consequence of innovation and breakthroughs in S&T and these technological changes have had a profound impact on productivity, wealth creation, society, economy and also the military.

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2. Y.Lu, " Science& Technology in China: A Roadmap to 2050", Strategic General report on the Chinese Academy of Sciences, , Science Press Beijing and Springer Heidelberg Dordrecht London, New York, 2010
 3. TX Hammes, "Strategy for an Unthinkable Conflict", *The Diplomat*, July 27,2012

Hu Jintao in January 2006 put forth a tenacious argument to state that *'By the end of 2020... China will achieve more science and technological breakthroughs of great world influence, qualifying it to join the ranks of the world's most innovative countries.'* China's tenacity to step-up as the next power of new technologies is backed by scientists, engineers and world's largest technocracy. Chinese leadership acknowledges that, while growth in the past was propelled by a combination of low cost manufacturing, imported technology and substantial flows of foreign investment; however, the future has many more challenges and those alone would not be sufficient to carry China to the next stage in its development cycle unless propped up with path-breaking innovation. If China wants to carve a niche for itself in the global framework, it would have to create new technologies with capacity to support future waves of economic growth. China's momentous stride in S&T has been evident from the scale of investments and priorities set by MLP. China targets to increase R&D expenditure to 2.5% of GDP by 2020. It is finding methods to coordinate and integrate military and civil research organisations, provide fiscal incentives to support innovative startups and encouraging larger investments in R&D by the established firms (Table 1). China's innovation system is almost reaching a tipping point – though there are a few who continue to question China's capability, at the same time there are many more who believe that China is ready to step-up to the next level in the innovation cycle but in a calibrated manner with greater degree of coherence between the industry, educational institution and the state.

Table 1: R&D Spending Targets in the Medium to Long Term Plan

Year	R&D Spending	% OF GDP	% CGE ¹
2004	\$24.6billion	1.23	8.7
2010	\$45 billion	2	18.0
2020	\$113 billion	2.50	–

Source: China: Data obtained from *'The next Science Superpower'*

However, as science and innovation capabilities grow rapidly relying largely on imported technology, the central question would be

-Whether China in the next decade will witness a shift towards autarky and global collaboration? However, this remains unanswered⁴. Will science follow the same trajectory like the Olympics? Do the trends indicate that a similar story could replicate in laboratories and help China evolve as a disruptive innovator to become the global technological hub before the dawn of 2032 Olympics? Will the combination of diffusion, adaptation and innovation of new technology transform China into the next technological hub of the world by the middle of this century?

China in early years realised that it was futile to reinvent the wheel when technology available elsewhere could be transferred. Also in 1980s, Central Military Commission (CMC), COSTIND (Commission of Science and Technology and Industry for National Defence), Second Artillery and the space and missile industry brainstormed to analyse the serious implications of the US and Soviet Ballistic Missile Defence (BMD) programme on China's nuclear deterrence and the credibility of its second strike capability. They unanimously concluded that without adequate technological adroitness, China would not be able to meet its laid down military objectives. Hence, Strategic Defence Initiative (SDI) in 1983 was China's unyielding response to developing a sound technological base and, COSTIND played a key role in working out strategies to counter challenges posed by technologically advanced nations.

In March 1986, four of China's most prominent defence engineers, Wang Daheng, Wang Ganchang, Yang Jiachi and Chen Fangyun formulated the 863 programme to further device methods and reap benefits from dual use technology for upgrading China's military arsenal. The 863 programme operated in conjunction with COSTIND's long term S&T plan 2000 in combination with both civilian and defence programmes. The programme established a mechanism to focus on China's S&T by broadly laying out a future roadmap. Large numbers of R&D incubators were set-up to focus on high end technology like space systems, high powered lasers, microelectronics, automation, biotechnology, information system, new materials and energy to establish a strong technological foundation for the 21st century.

4. James Wilson and James Keeley, China: "The next science superpower", *The Atlas of ideas: Mapping the new geography of science*, Demos Publication, 2007 at http://www.naider.com/upload/82_china_final.pdf accessed on March 22, 2012

COSTIND and State Science and Technology Commission (SSTC) together worked on over a dozen projects budgeted by the PLA and, 863 finally became a vehicle for technology development in China with the larger intent to spin-in technology into the military through civil military integration⁵. The dual-use technology framework was one such method employed by the Chinese to spin-in technology from the civil sector for military build-up.

China was also smart to take advantage of the changing geopolitics as a consequence of the end of cold war and break-up of the Soviet Union. They studied contemporary wars to extract lessons for application of technology in future wars. China defined technology transfer as the process by which technology due to circumstances would transit from one geographical location to another and then it was the responsibility of the recipient country to create a favourable environment for investments and innovation. While they attached immense importance to the tacit absorption of new technology by effective participation of local workers, they also believed that the recipient country was obliged to not only create a healthy environment for innovation and investment but also a favourable milieu for the supporting infrastructure, if it had to take advantage of the entire spectrum of technology. Other channel for effective transfer included license production and foreign investments into the aviation sector, which automatically became a vehicle for transfer of technology. While China in the new millennium started deriving benefits from technology with a long term aim to become the cradle for all forms of innovation, concurrently it also initiated key changes in the organisation structure through better management practices thereby improving efficiency. Since technology was not a commodity and could not literally be picked off the shelf, hence China was willing to travel the extra mile by initiating changes in its structure and accepting mechanisms that would help bring technology to its doorstep.

It is now inevitable that future growth story in the defence economy will have to lie in the realm of the two great emerging economies; China and India; expected to represent major source of demand and likely to grow exponentially in the coming decade. The

5. Mark Stokes, "China's Strategic Modernisation: Implication for the United States", September 1999, at www.fas.org/nuke/guide/china/doctrine/chinamod.pdf accessed on August 13, 2012

Indian defence aviation sector is also poised at a point of inflection in its expansion cycle driven by modernisation plans; and India is being perceived not only as an attractive but a preferred market and a future defence sourcing hub. However, unlike China, where R&D and innovation were the primary pathways driving its defence economy; the Indian defence economy continues to be founded on acquisitions.

The Achilles' heel for India, since independence has been its progress in the field of S&T and hence, the capability to carry out path breaking R&D. Many of our graduates, who blossom in India, have had to travel to the more liberal environment of West and transform as innovators and pioneers of path-breaking technology. Unfortunately, the Indian system, plagued by its inherent limitation has not been able to absorb this extremely vital human resource essential to energise modern S&T. As a result, trajectory of our economic growth has been dwarfed by the lack of technological prowess; reflected in the inadequacy to optimally utilise modern S&T to enhance the defence capability essential to guarantee national security. Also in the field of social sciences; our institutions have not focused adequately in the areas of strategic studies; which could have enabled us to enlarge our understanding of the regional and global security architecture because of the continuous changing weight of geopolitics. This in turn, would have helped in better understanding of defence requirements through the process of debates and discussions in establishing relationship between defence sciences; military strategy and the industrial policy.⁶

India, today being the 10th largest defence spender, continues to procure over 70% of its equipment needs from abroad and therefore is unable to extract the maximum benefit for its economy from the expansion cycle driven by the modernisation plan of its defence economy. The Self Reliance Index (SRI), estimated at 0.3 in the early 1990s was envisaged to grow to 0.7 by 2005 but has remained unchanged⁷. Nevertheless, if India at all wants to reverse

6. Air Cmde Jasjit Singh AVSM VrC VM, IAF (Retd), *Indian Aircraft Industry* (New Delhi: KW Publishers Pvt Ltd 2011), Ch3, p.81

7. SRI is the ratio of indigenous content of defence procurement to total expenditure on defence procurement in a given financial year. According to G Balachandran, "In Defence of our Defence R&D", *Indian Express*, May 21, 2010.

this imbalance and indigenously manufacture 70% of its defence equipments, it would have to bring in innovative and creative reforms by increasing focus on R&D, both by Defence Public Sector Undertaking (DPSUs) and private contractors. While on the one hand, DPSUs cannot be privileged to enjoy monopoly, on the other hand, private contractors too will have to look at business from a long term perspective without being risk averse. Also the focus of our defence economy must shift from acquisitions to developing capabilities by becoming an active part of the global supply chain. The sector must strategise through effective synergy between both government and private players to focus on R&D on components in denial list rather than investing on R&D on developing capabilities across spectrum.

India, today, is at a major crossroad with opportunities beckoning at its doorsteps. While, the government has put in place certain processes to incentivise the industry; it is also an opportunity for the industry to strategise and effectively leverage off the defence procurement cycle. The approach will necessarily have to be multi-pronged by utilising both the inherent skills and capabilities of the DPSUs and synergising it with the capacity of the private contractors. The private contractors on the other hand will have to participate from 'Cradle to the grave' and develop a culture to support the equipment through its life cycle.

While private contractors would expect macro economics reforms through tax holidays; financial assistance, better procurement procedures and transparent defence industrial strategy; at the same time contractors will have to aspire for financial independence through better management ethics, financial practices and integration with the global supply chain. As a strategy, the private contractors entering the domain of defence production could consider the '*civil route*' through joint ventures by first becoming '*home markets*' for the civil aviation sector and subsequently, few of these contractors could step into the defence aviation industry. The civil aircraft industry in India is expected to generate capacity to absorb more than 1300 aircrafts in the next two decades. The experience of private contractors in civil aircraft production would help them leapfrog as 'Raksha Udhog Ratnas' (RUR) and compete with existing DPSUs. The bottom line is that the opportunity is up for the grabs; capacity

for growth is humongous. Whilst private contractors cannot afford to be risk averse at this juncture, they would have to show greater character; interest and concerns pertaining to matters of national and international security to win the confidence of the government. Like in the past, the private sector was an integral part of India's economic growth story; in the same way, it has to show the same grit and determination to become an inseparable part of the Indian defence industrialisation process. Innovation and technology will become major factors affecting India's security dilemma and therefore India will have to enhance expenditure on R&D from the present 0.9% of GDP to at least a level of 2-3% of GDP.

Sports are a reflection of culture and quality of institutions prevalent in the country. India has shown a level of consistency since 1980 Olympics, where it won a solitary gold in hockey and 10 metres air rifle in 2008; whilst China during the same period stepped up to 51 top podium finishes. India must upgrade the quality of institutions, also evident from the gap in technology competitiveness between India and China which has widened six folds over the past five years. The Indian system is and continues to be plagued with poor infrastructure, inefficient bureaucracy and absence of tax and regulatory incentives; which have been identified as major impediments in attracting business in India. As a result, India has slipped to 56th rank while China has jumped to 26th according to the Global Competiveness Report (GCR)⁸. Hence, the story emerging is that opportunities in the defence sector are knocking at India's doorsteps in midst of '*western disturbance*'. However, if India fails to capitalise, then they would blow away with the wind to be swallowed by the dragon, which is well prepared to absorb and integrate it into its own system.

China's defence industry is on an upward trajectory and since the turn of the century there has been a perceptible fall in arms imports along with substantial rise in exports to countries like Pakistan, Iran, Egypt, Myanmar, Sudan and North Korea. While China continues to rely heavily on the more advanced countries for designs and technologies; donor countries in future will have to tread extremely

8. Sheila Mathrani, "*Switzerland tops, India, US slide in competitiveness*", *The Times Of India*, September 8, 2011.

carefully before China not only catches up but also starts to draw out large share of the market from the European and Russian arms market. China's defence capabilities continue to grow, the pace of growth is accelerating by the decade and they appear to be well on track to elevate the status of being the world's leading exporter. The balance of arms trade in all probability appears to be shifting in favour of China, which in a decade or two could not only emerge as leading arms exporter but also as a cradle for future S&T.

1. CGE: Central Government Expenditure

CHINA'S MILITARY SPACE CAPABILITIES

K.K. NAIR

Antiquity and modernity are generally perceived to be partners in opposing camps; apparently antithetical, but enormously potent when fused together. China's military space programme is a classic example of the above blend; it mixes traditional military wisdom with the advantages of modern science, enabling it to forge way, ahead of regional rivals and also bridge the technology divide vis-à-vis superpowers like the US. China, as of now, fully comprehends the enormous advantage space capabilities confer onto traditional military missions and hence earnestly pursues the acquisition of space based capabilities for military prowess and national development. It harnesses space for both the afore-mentioned purposes, but the accent evidently is on military space capabilities. This is evidenced by the number of military satellites launched in the new millennium, its Anti Satellite (ASAT) endeavours (established and speculated), its budgetary allocations and a host of other factors discussed in detail later in the paper. Its military space programme is modest compared to those of the US and Russia, nonetheless, within Asia it is the undisputed leader.

Overall, it attempts to harness space, not in isolation but as an essential appendage to its larger aim of enabling a modern military

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transformation; *“Revolution in Military Affairs (RMA) with Chinese characteristic.”* The above is an essential component of its national strategy of beefing up its Comprehensive National Power (CNP). Efficacious wielding of CNP for national advancement would demand a modern military apparatus in addition to economic power. The above rationale drives the quest for acquisition of long range air, space and maritime capabilities, which would enable containment of trans-continental super-powers and also consolidation of continental military prowess.

China is in the process of fulfilling its aim in a very studied, systematic and deliberate manner and has already forged way, ahead of India. The above scenario is perhaps not ominously or immediately threatening; cooperation rather than conflict is the mantra of the new millennium. Nevertheless, it surely is enough cause for concern. Even after divesting oneself of the historical baggage of China's wanton aggression in 1962, and dismissing such a possibility as paranoia in the new millennium; it goes without saying that the impact of China's military modernisation needs to be studied and understood in our national context. The strategic challenges, needs and future courses of action in our case would be different from those of the US, Taiwan etc. and hence need to be dwelt and deliberated upon accordingly. The need is to prepare ourselves to mitigate the challenges and harness the opportunities. Prevention is always better than cure, by extension, deterrence is always better than war, and hence a semblance of deterrence would be essential to maintain peace and this paper attempts to comprehensively assess the extent of malaise so as to enable measures for containing the malaise well in time rather than expending disproportionate efforts later for curing or preventing the malaise.

MILITARY ORIGINS OF CHINA'S SPACE PROGRAMME

As in the case of India, the seeds of China's national space competencies were sown by expatriates returning from scientifically advanced Western nations in the late fifties. International assistance, in those times, was critical to initial development. However, the similarity ends there.

The Indian government isolated space and placed it under

the aegis of the Indian National Committee for Space Research (INCOSPAR) with the aim of targeting economic, social welfare and other civil needs. Four decades hence, the targets and aims continue largely unchanged. The military, then and now, has no role in the national space programme.

By contrast, the Chinese space programme was initiated at the behest of the Central Military Commission (CMC) for fulfilling national defence needs. The potential military utility of space was the central reason for China embarking on its national space programme since 1956. The programme was aimed at developing China's aviation, guided missiles, rockets and missile defence needs. Accordingly, the highly classified Fifth Research Academy, under the Ministry of National Defence (MND) was established to develop the space effort.¹ The Chinese perceived the initial utility of space for military ordinance delivery by Ballistic Missiles (BM) followed by high level observation. Hence, though Earth observation satellites were on the agenda since 1958, offensive military needs took priority and the focus was on the development of BMs rather than satellites. The next priority was accorded to missile defences, and passive application satellites took last priority. Thus from its very beginning, the conceptualisation, design, and evolution of China's space programme has always had a pronouncedly military orientation and consequently its overall control has always rested with the CMC. The organisational set-up has been placed as Appendix-'A'².

DUAL-USE PROGRAMME

The common nature of technology enabled adaptation of BMs into Satellite Launch Vehicles (SLVs). Thus, China's medium range DF-4 missile was adapted into its first SLV-the *Chang Zheng-1* (CZ-1) or Long March-1. Similarly, the DF-5 Inter Continental Ballistic Missile (ICBM) became the CZ-2. By the late sixties, efforts had been put in for a national space tracking and control system. Thereafter, while China's first satellite; the *Dong Fang Hong* (DFH) launched in April 1970 and experimental *Shi Jian-1* (SJ-1) had no military overtones,

1. For details, ref Brian Harvey, "China's Space Programme – From Conception to Manned Spaceflight." *Praxis Publishing*, Chichester, UK, 2004. Ch-2, p.22.
2. The organisational set-up has been sourced from the US *DOD Annual Report-2011*, "Military and Security developments involving the PRC", p. 21.

its next endeavour, the *Ji Shu Shiyan Weixing* (JSSW) were highly classified and for declared military purposes.³ The recoverable satellite programme, *Fanhui Shi Weixing* (FSW) which followed thereafter was also for military observation. Many more similar launches followed.

China's civil and military space programmes are strongly intertwined. China's space programme continues to have a military bias; apart from dedicated military satellites, it also derives military capabilities from existing civil satellites. The overwhelmingly 'dual-use' character of the programme ensures that opinion on the Chinese space programme is strongly divided; some see it as an increasingly threatening enterprise and some dismiss it as militarily inconsequential. However, most such perceptions and misperceptions on the subject are largely American or Western in character and do not necessarily apply in a regional or continental context.

THE REGIONAL CONTEXT

In a regional context, the fact prevails that the Chinese space programme especially in military terms is evolving at an extremely rapid pace. Apart from out-racing every other worth-while space power in the Asian region, it has now out-distanced them to the extent that it has decisively altered the 'balance of power', overwhelmingly in its favour and is likely to tilt the scales further in the next few years. Secondly, owing to its common origins and common industrial infrastructure, its aviation, space and BM ('aerospace') development programmes are also intertwined⁴, overlapping each other and are also evolving and driving each other at an equally rapid pace. It is known to be making earnest attempts to operationally integrate

3. The official announcement stated that the satellite was part of "preparations for war". See Brian Harvey, Ch-4, p-70.
4. China apparently interprets 'aerospace' to include aircrafts, space and BMs as evidenced by the common origin of the programme and the common defence industrial base for developing aerospace capabilities. For example, the Fifth academy, which pioneered China's early space programme was largely a product of China's attempt to establish a national defence aeronautics industry, as a consequence, it was staffed largely by aviation and rocket engineers. China further reorganised its military industrial complexes in the late eighties and combined the Ministry of Aviation Industry and Ministry of Space Industry (BM and Space) to form the Ministry of Aerospace, thereby putting all three under a common development umbrella. By the mid-nineties, it again reorganised to focus individual attention onto aviation and space development, nevertheless, enormous overlap continues and developments in one generally affect the other and as a consequence operational integration is easier.

the above into its conventional military and nuclear apparatus. The homogenous origins and nature of its aerospace, nuclear and mammoth conventional military apparatus would endow it enormous military dividends. Lastly, China's growing ambition, economy and populace would ensure that the imbalance only accentuates further until the scales touch the Earth. In view of the foregoing, an examination of the Chinese military space programme is undertaken as below.

The Secrecy, Opacity, Chaos & Confusion of China's Space Effort Before comprehensively examining China's space programme, it would be essential to appreciate the fact that the Chinese space programme has always been enormously secretive, complicated and opaque. Numerous examples of the chaos prevailing due to the above causes exist. To cite a case in point, the discordant figures on China's BM inventory are placed as below.

Figure-1

Ballistic Missile		Type	Estimated Numbers ¹			
Chinese Designation	Western Desig		SIPRI (2004)	Mil Balance (2003-04)	SIPRI (2006)	Mil Balance (2005-06)
DF-31	CSS-9	ICBM	00	08	00	06
DF-4	CSS-3	ICBM	12	20	22	20
DF-5/5A	CSS-4	ICBM	20	24	20	20
DF-21A	CSS-5	IRBM	48	60	21	33
DF-3A	CSS-2	IRBM	40	32	16	02

Notwithstanding the numerical confusion, a brief overview of their strategic and doctrinal drivers as well as their prevailing space apparatus would give a fair idea of their present and future trajectory and the same are examined below.

STRATEGIC & DOCTRINAL DRIVERS OF SPACE EFFORT

While the potential military utility of space systems was at the heart of China's decision to undertake its own space programme, the centrality of modern air and space technology in bolstering the Revolution in Military Affairs (RMA) and by extension of overall military force capabilities was comprehended significantly only after 1991 Gulf War. Driven largely by the Chinese Academy of Military

Sciences (CAMS/AMS), the Chinese studied the “effects” enabled by the US aircrafts and satellites during the 1991 Gulf War as also the later conflicts in Kosovo, Afghanistan and Iraq etc., reaching upon the conclusion that modern air and space capabilities were essential elements of effective military action. Consequently, a strategic re-think of military concepts and doctrines was carried out leading to traditional concepts being replaced with modern warfare strategies as also operational concepts of air and space.

Realms of literature have been written on China’s military space concepts and doctrines, strategy etc. Notwithstanding Chinese and Western perspectives on the subject, the bottom line is best summed up by the People’s Liberation Army Air Force (PLAAF) chief Xu Quilang, *“China’s strategy lies in effecting air and space integration, possessing capabilities for both offensive and defensive operation⁵.”* Consequently, its primary space missions are:

- Integration of air and space operations.
- Control of the environment of space.

China certainly appears to be putting its theories into practice as witnessed by its burgeoning military space apparatus and the fast pace at which its air and space capabilities are growing in the new millennium. China’s prevailing space apparatus and forecast capabilities are also indicative of the same.

CHINA’S PREVAILING MILITARY SPACE APPARATUS

A judicious review of what China builds; launches and other quantifiable and observable data would be indicative of its prevailing capabilities and suggestive of its likely course of action. The same would form the bedrock on which implications in our context would rest and hence are discussed below in some detail.

LAUNCH CAPABILITIES:

Launch capabilities are the bedrock of a nation’s indigenous space capabilities and normally are a good reflection of a nation’s technological prowess and progress. Historically, China’s launch rates were miniscule. They never crossed unitary figures and rarely

5. Richard Fisher Jr, “China’s Scary Space Ambitions”, *Wall Street Journal*, January 20, 2010.

came close to even four or five until 1996. However, budgetary allocations since its 9th Five Year Plan (FYP) of 1996 kept rising to support its space endeavours. The following FYP-10 (2000-2005) as also FYP-11 continued the trend and with budgetary allocations of \$ 518 Bn in 2010 and 583 Bn in 2011, the prevailing FYP-12 apparently continues to perpetuate the trend. Consequently, post-1996, China's launch rates increased dramatically and touched an all time high of 10 in 2004. By 2010, China equalled the US at 15 launches and in 2011 surpassed the US. While the launch rates of the Americans progressively fall, China registers an upsurge. The figures may not be unduly alarming to the US, since China is yet to match the US in terms of overall space capabilities. However, it is unrivalled in Asia and certainly registers the fastest growth in launch rates in the world as evidenced from the chart below.

Figure-2

China's Growing Launch Rate											
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2010	2011
USA	37	34	27	28	21	17	27	17	19	15	17
Russia	26	24	26	20	25	25	24	15	15	30	30
China	06	06	04	06	02	08	09	10	06	15	18
India	01	00	01	00	02	01	02	01	02	1/3	03

As China's 12th FYP progresses, the upswing would register higher growth rates considering that it plans to blast off 100 more satellites into space by 2020.⁶ It would be reasonable to assume that the plans would be consummated. China reportedly pursues the development of Expendable Launch Vehicles (ELVs) etc. and has undertaken the task of developing a single stage to orbit space plane⁷.

SPACE SYSTEMS

China had 86 satellites in orbit as of December 11 and by July 2012 has added another 13 satellites to its inventory. Of these, 40 are dedicated military satellites. The above numbers appear miniscule

6. As revealed by Xu Guanhua, the Chinese Minister of Science and Technology at the 18th plenary session of the International Committee on earth observation satellites. See website of Ministry of Science and Technology's *Newsletter 385*, Nov 20, 2004 at http://www.most.gov.cn/eng/newsletters/2004/t20050202_19006.htm

7. Richard Fisher, Jr. "China's Manned Military Space Ambitions" *International Assessment and Strategy Centre*, October 10, 2005. pg10.

as compared to that of the US, however, western analysts aver that when measured in terms of national Gross Domestic Product (GDP), the significance of China's satellite base increases dramatically and when compared in terms of GDP per capita, it actually rises to levels on par to that of the US⁸. The above analysis reinforces the fact that in the context of China's overall development, its current interests in space are already substantial and rising dramatically.

As a matter of fact, while the major military space system efforts prior to the millennium were sporadic and largely in terms of primitive recoverable observation satellites like the Fanhui Shi Weixing (FSW) or Ji Shu Shiyan Weixing (JSSW), post-1996, the efforts are apparently systematic, studied and deliberate, as a consequence, availability of on-station military satellites has registered a dramatic upswing⁹. Development and deployment of a viable architecture of space-based observation, communication, navigation satellites, as also BMs and modern aircrafts etc is a fundamental requirement for expanding battle-space awareness, enabling stand-off attacks from great distances and also defending against attacks from great distances. Thus, the People's Liberation Army (PLA)'s efforts have expanded beyond episodic fourteen day photo-reconnaissance missions of the FSW to dedicated Imagery Intelligence (IMINT) satellite constellations, navigational satellite constellations, military communication satellite constellations etc.

ASATS

The surge in the afore-mentioned application satellites are aimed at fulfilling the Chinese doctrine of '*informationalisation*' by fusing together the potent capabilities of air and space platforms for force enhancement. The other aspect of control of the environment translates into the military mission of counter space operations. This

8. Eric Hagt "Vulnerabilities in Space", *China Security* -2006, 2, p. 91.

9. The above contention is validated when considering the fact that until the first three-year long duration FH-1 dedicated military communications satellite debuted in Jan 2000, China's military endeavours were largely confined to crude, primitive Electronic Intelligence (ELINT) payloads like the short duration JSSW of the seventies or recoverable satellite programmes like the FSW-0 series for Imagery Intelligence (IMINT) which had enormously limited military advantage and duration. Its duration of flight was barely five days in the 1980s and gradually advanced to 16 days duration by the late 1990s. Since its transmission was not real time and subject to its recovery on earth and subsequent analysis, its military utility was limited.

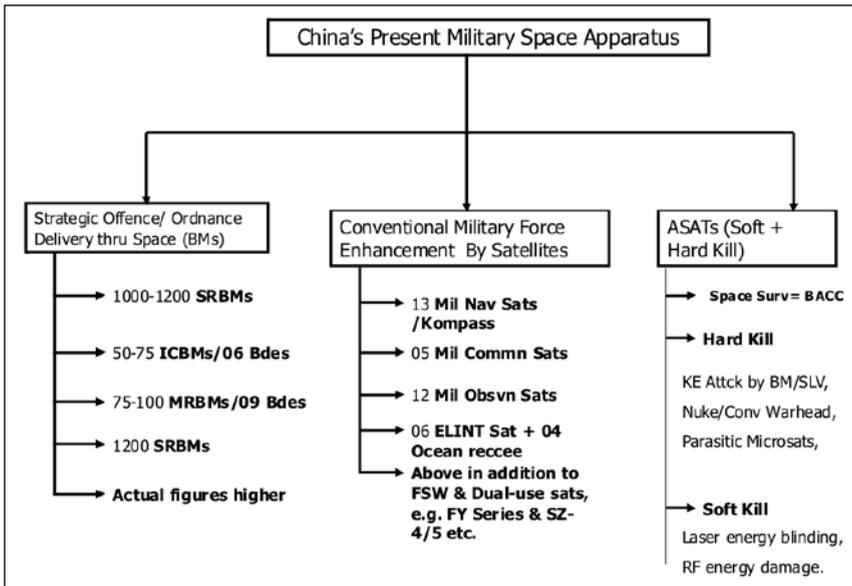
aims at controlling the realm of space for own use and denying it to the adversaries.

The essential precursor to any counter space capability is the ability to detect, identify and track objects in space. As of date, China has a reasonably mature space surveillance and Technology Training Corporation (TTC) system. It earnestly pursues the acquisition of better technologies related to spacecraft navigation, attitude control, simulation, integrated rocket measuring and launching control. The above are essential for any credible space faring nation and are not directly indicative of military aims but certainly endow enormous incidental military capabilities essential for counter space ops. For example, the ability to track objects is essential for keeping a track of own satellites as also for detecting and identifying foreign satellites to conduct ASAT ops, like putting objects in the orbital path or aiming ground-based lasers for destroying sensors during overpass timings or taking deception, camouflage and concealment measures to deceive space based surveillance etc. The Chinese ASAT test of January 2007 followed by the US test of 2008 have conclusively demonstrated their ASAT capabilities. A comparative overview has been placed as Appendix-'B'.

TIPPING THE AEROSPACE BALANCE

China's composite military space capabilities are the most powerful in Asia and evidently globally formidable, considering its military space apparatus. To comprehend the Chinese space programme, it would be essential to view it in frames of reference, typical to the Chinese. The Chinese do not view space in isolation, but as an essential appendage of their overall air and space capabilities. Their space apparatus is as below.

Fig. 3



THE COMPLEMENTARY SURGE IN AIRPOWER

To complement space, Chinese airpower is also rapidly expanding and modernising. China's comprehensive pursuit of air and space power is evidenced by the fact that as in case of space, China laid the foundations for building modern airpower capabilities during the 9th FYP (1996-2000). Later FYP's perpetuated the trend and Chinese airpower grew rapidly. With regards to PLAAF, in sheer quantitative (numerical) terms, it has for most of its history maintained its position as the largest Air Force in Asia and the third largest in the world. Nevertheless, in qualitative terms, it has lagged behind many nations, including India, at times. Corrective actions began around the period of the 9th FYP and its airpower capabilities progressively shrink quantitatively and grow qualitatively. Its antiquated tactical aircraft inventory is being replaced by modern third and fourth generation strategic fighter aircrafts like the SU-30, long range transport aircrafts like IL-76s, Air-to-Air refuellers, Airborne Warning and Control System (AWACS) etc. which would enable it to complement its expanding global influence and interests. Military fighter aircraft are the most visible manifestation of a nation's long range military force

projection capability and strongly impact national power and security dynamics. Hence a qualitative audit in numerical terms of modern fighter aircraft of the two leading Air forces of Asia; the PLAAF and Indian Air Force (IAF) has been undertaken below. It is evident that while the IAF was qualitatively superior to the PLAAF till the 1990s; the situation began changing since the period of China's 9th FYP. Ever since, PLAAF has not only closed in, it has actually overtaken the IAF in qualitative terms. Most modern air forces aspire to a 'lean and mean' capability; PLAAF is evidently getting meaner though not necessarily leaner. By contrast, the IAF has depleted from its force levels of as much as 64 squadrons (50 combat and 14 transport) in 1961 to around 33 at present and is likely to stay at that or even lesser in the following years.¹⁰

Fig. 4

Comparing Periodical Modern Fighters of PLAAF & IAF Inventory						
Period	PLAAF			Indian Air Force		
	2 nd gen	3 rd gen	4 th gen	2 nd gen	3 rd gen	4 th gen
1979	80 J-7/ Mig-21.	Nil	Nil	200 Mig-21	Nil	Nil
1989	300J-7 + 200 J-8	Nil	Nil	320 Mig-21 +267 Others.	49 Mig-29 + 52 Mir-2000.	Nil
1999	700 J-7 +J-8.	48Su-27	Nil	632 Mig-21,etc.	99 M-29+ Mir	08 Su-30s.
2000	950 J-7 + J-8.	50 Su-27	10 Su-30	618Mig-21, etc.	99 M-29+ Mir	08 Su-30s.
2001	950 J-7 + J-8.	65 Su-27	38 Su-30.	618 Mig-21, etc.	99 M-29+ Mir	18 Su-30s.
2002	794 J-7 + J-8.	70 Su-27	57 Su-30.	557 Mig-21, etc.	103M-29+Mir	16 Su-30s.
2003	854 J-7 +J-8.	90 Su-27	58 Su-30.	534 Mig-21, etc.	103M-29+Mir	30 Su-30s
2004	858 J-7 + J-8.	100 Su-27	100 Su-30	533 Mig-21, etc.	103M-29+Mir	40 Su-30s
2005	858 J-7 + J-8.	116 Su-27	76 Su-30	466 Mig-21, etc.	105M-29+Mir	40 Su-30s

In view of the foregoing, it is conclusively evident that, China's aerospace capabilities have transformed as never before and the

10. Numbers sourced from Air Commodore Jasjit Singh "Modernising the IAF, Why and How?" *India Strategic*, February 2006.

transformation would only gather further momentum as it progresses more into the 12th FYP. The aerospace balance has conclusively in qualitative and quantitative terms shifted entirely in its favour.

RECOMMENDATIONS

The Chinese space programme is formidable and comparisons with India would certainly be made. However, it should be borne in mind that significant differences exist in the origin, role, and finally the organisational structure of the Chinese and Indian space programme. China's space programme is military in origin, its prime role is military support and it is run primarily by the military General Armaments Department (GAD). In our case, it's the opposite – its origins are civil, its primary role is civil development and it is entirely run by civilians Indian Space Research Organisation (ISRO). At the same time, the need to match capabilities or enter into a rat-race is neither affordable nor required. The Chinese build-up is for their purposes and ours should be for our own. Secondly, China's build-up affects us more by default rather than design. Hence, it is recommended-

- To look at the Chinese space programmes dispassionately and draws inferences and lessons to take action accordingly. To begin with, in operational terms, the need is to look at the Chinese Space programme not simply in number of satellites, launches etc. but to look at it as they do – An integrated air and space apparatus.
- We need to look at it critically and take steps accordingly. We may consider asymmetric solutions just as the Chinese seek asymmetry with the US. Asymmetry within the ambit of the prevailing legislation in space and also available technologies is strongly recommended. For instance, our existing strengths in communication and observation satellites could be gainfully leveraged. The quantitative advantages of the Chinese, particularly in observation satellites could be offset by our qualitative edge.
- In the Chinese context and indeed in most cases, communication satellites serve both civil and military purposes. A reallocation of our superfluous civilian space capabilities to critical military uses is the need of the hour. For instance, certain satellite communication capabilities dedicated to uses like telemedicine,

tele-education etc. are no longer utilised, since hospitals and educational institutes are increasingly turning to commercial applications like Skype, Google Chat etc.¹¹. These could be considered for reallocation.

- The need for a refined ASAT test within the ambit of prevailing legislation in space and at altitudes where debris would burn off, may be considered to ensure our deterrence capabilities prevail.
- We may consider increased interaction with the Photographic Resource Centre (PRC), especially in view of the critical role of PLAAF in leading their space programme. There is much to gain and little to lose, since our military space capabilities are miniscule and theirs' are formidable.
- The organisational lessons of China's space programme may also be considered with suitable modifications in our context. While aspiring for an organisational apparatus like the Central Military Commission (CMC), which includes representation from the service chiefs as also the chief of the GAD, may be considered too ambitious in our typical context. It would certainly be judicious to consider service representation in ISRO as in case of the French Centre National d'Etudes Spatiales (CNES), America's National Aeronautics and Space Administration (NASA), and Russia's Roscosmos etc.

NOTES

1. Estimated numbers contained in Indian military publications like SP's and Indian Defence Year Book for the year 2005 are identical to Mil Balance (2003-04) and hence are not mentioned separately.

11. For details, see Nandita Vijay, "Narayana Hrudyalaya moves out of ISRO satellite for telemedicine, switches to Skype", *PharmaBiz.Com*, July 13, 2012.

ROLE OF CHINA IN PAKISTAN'S CONVENTIONAL MILITARY BUILD-UP

SHALINI CHAWLA

China has been Pakistan's single most trusted ally and has supplied Pakistan not only with massive amount of conventional military equipment but has also provided vital nuclear assistance, which Pakistan desired eagerly to neutralise India's conventional military superiority. China-Pakistan strategic partnership, which started as early as 1951, has continued to grow and both the nations have enjoyed the mutually beneficial relationship. Pakistan and China share common strategic interests Pakistan's military needs, attributed to its perceived threat from India have been by and large fulfilled by China. On the one hand, Pakistan turned towards Beijing as a trusted 'all weather friend' in dealing with its 'implacable' enemy-India. China, on the other hand, found a feasible option in Pakistan to contain India and also expand the US dominance in the region.

THE EARLY YEARS

The 1965 India-Pakistan war marked an important landmark in the Sino-Pakistan relations, providing it a new dimension. China demonstrated support for Pakistan which was a member of Southeast

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Asia Treaty Organisation (SEATO), basically constructed to counter communist expansion. On the other hand, US-Pakistan ties were undermined and Pakistan faced the suspension of military assistance from the West after the 1965 India-Pakistan war. This obviously created tremendous confusion in Pakistan's defence planning and added to Pakistan's desperation to look for options in order to acquire the high technology weapons which Pakistan was receiving being a member of SEATO and Central Treaty Organisation (CENTO). Pakistan did manage to acquire significant western sophisticated equipment during the late 1950s and early 1960s, this being one of the major factors motivating Pakistan to launch an aggression against India in 1965.

China is today, Pakistan's largest defence supplier. Pakistan has not only imported the maximum types and number of defence equipments from China, but managed to build up its indigenous defence capability with the Chinese assistance.

Chinese Defence Supplies to Pakistan

Even as the 1965 War was getting underway, Pakistan sent its recently retired Air Chief, Air Marshal Asghar Khan, to China, to seek aircraft and weapon systems to meet Pakistan's "dire needs". Bhutto's diplomatic policy brought Pakistan closer to China and away from the US. He encouraged Pakistan to enter into several economic and cooperation arrangements with China and the Soviet Union.¹ Although, Pakistan finalised deals with France for defence acquisitions, but over time, China began to secure a much larger share in Pakistan's imports due to the number of factors.² Chinese equipment was much cheaper as compared to the West and credit from China was available on easy repayment terms. Moreover, over the years Pakistan viewed China as a more reliable partner as compared to the US.

Weapon supply in the 1960s and 1970s

In the late 1960s and later in the 1970s, Pakistan received interest free economic aid and also a significant amount of free weapons from

1. Shahid Javed Burki, *Fifty Years of Nationhood*, (Lahore: Vanguard, 1999), p.202.
2. Pakistan's weapon systems sourced from China now account for nearly 75 per cent of the total inventory.

China and became the only non-Communist third World country to receive generous assistance from it.³ The Chinese F-6 entered the Pakistan Air Force (PAF) inventory in 1966 followed by other systems. In the late 1960s, Pakistan received MiG-19 fighters from China, apart from the substantive infantry equipment. China supplied 115 F-6 fighters between 1971 and 1981. Chinese military assistance came in not only in the form of arms but also development of infrastructure for repair and overhaul.

On the naval front, after the 1971 war, the Pakistan Navy opted for a modest acquisition programme in the form of new Chinese built missile/torpedo attack craft. Between 1972 and 1980, 12 Slaughter class attack FPBs, 4 Hunaim class attack craft and 4 Huchwan class hydrofoil craft were delivered to Pakistan.⁴ Pakistan's naval acquisitions in the late 1970s, focussed on building surveillance and targeting capability and, thus, the deal for French Atlantiques was finalised.

Supply since 1980s

In the 1980s, although the American arms pipeline reopened for Pakistan and it received massive aid from the US, Chinese weapons continued to hold a significant share in the Pakistani inventory. Although arms from China were technologically not as superior as from the West, however they were capable systems, were affordable and provided quantity to boost Pakistan's military powers. China (besides France) continued to be a major supplier of PAF weapons. About 90 A-5s were obtained in 1983-84 for the price of \$1 million per aircraft. Acquisitions of 95 F-7 series aircraft was started, adding to the quantitative element in the PAF.⁵ In fact, by the early 1980s, China had provided Pakistan with roughly about 65 per cent of its aircraft and roughly 75 per cent of its tanks.⁶

In the 1980s, Army inventory included significant numbers of Chinese equipment including the T-59 Main Battle Tank (MBTs), T-60 Light Tanks and T-63 Light Tank and Type 531 APC. The Naval

3. Ayesha Siddiq-Agha, *Pakistan's Arms Procurement and Military buildup, 1979-99: In Search of a Policy* (London: Palgrave, 2001), p. 105.

4. "Pakistan Navy" at <http://www.globalsecurity.org/military/world/pakistan/navy-intro.htm>

5. Ayesha Siddiq Agha, n.3, p. 161.

6. Pervez Iqbal Cheema, *The Armed Forces of Pakistan*, p. 164.

acquisitions included four Huangfen Class missile attack crafts for approximately \$20 million per piece in 1984.

The decade of 1990s was a setback for Pakistan's military modernisation due to the American sanctions and also Pakistan's crippled economy. The US sanctions in the 1990s were particularly damaging, as the supply of essential spare parts was also blocked. On the other hand, Pakistan's economic growth recorded a steep decline and Pakistan was under severe pressure from the international financial institutions to reduce fiscal deficit and hence, cut down the spending on defence. Despite the US sanctions, low Gross Domestic Product (GDP) and a collapsed democratic structure, Pakistan tried hard to acquire the defence equipment.⁷

Pakistan's overt nuclearisation in 1998, followed by its aggression in Kargil in 1999 and once again the military coup in Pakistan under General Musharraf led to imposition of additional US sanctions which further restricted the defence acquisitions from the West. The result was China's pre-eminence in Pakistan's arms import (Table 1).

Sino-Pakistan defence collaboration flourished under the umbrella of the US sanctions and, in the process, the two nations entered into deals for the co-development of a fourth generation fighter aircraft, the JF-17 (earlier called the FC-1). The K-8 jet trainer had earlier been jointly produced. The JF-17 is designated to be a low cost, high multirole combat aircraft to meet the tactical and strategic requirements of the Pakistan Air force with the reduced reliance of Pakistan on imports. The JF-17 is co-developed by Pakistan and China and is being built by China's Chengdu Aircraft Industry Corporation (CAC) and Pakistan Aeronautical Complex (PAC) Kamra. There have been reports that the design was developed by the MiG complex in Russia and transferred to China after the Russian Air Force cancelled procurements. Pakistan has also increased its initial target of buying 150 JF-17s to acquiring up to 250 aircrafts.⁸ This represents a quantum jump in Pakistan's aircraft industry. Pakistan is also positioning itself to buy up to two squadrons of Chinese J-10 which, along with the JF 17, would form the backbone of the PAF, according to the former

7. In 1990, fifty Mirage 3 (as indicated in the Table 2) were acquired from Australia for a paltry sum of \$28 million along with engines and spares.

8. Interview, Air Chief Marshal, Tanvir Mahmood Ahmed, Pakistan's Chief of Air Staff, 4 April, 2007, *Janes Defence Weekly*, p.34

Pakistan Air Force Chief.⁹ China has also confirmed the sale of six ship-based medium sized Z 9C helicopters to the Pakistan Navy.¹⁰

In 2008, Pakistan has also signed a deal for the purchase of Chinese Airborne Warning and Control System (AWACS) ZDK 03. Pakistan would be the first country to buy the Chinese AWACS system which China started to produce in 2004. Pakistan has been focused on the acquisitions of force multipliers and this deal with China is in addition to the Saab turboprop platform equipped with Erieye, from Sweden.

On the naval front, Chinese assistance was towards the build up of the indigenous capability. In 1994, a collaborative venture was initiated with the Chinese for the manufacture of gun and missile boats. Construction of the boats was carried out at the Pakistan Naval (PN) Dockyard and Karachi Shipyard and Engineering Works (KSEW); while the technology came from the Chinese, the boats were fitted with components from the West.¹¹ Pakistan had also started the construction of small craft like coastal tankers, missile boats, Agosta 90-B submarines and mine hunters with the transfer of technology from China and France.

Pakistan's naval acquisitions from China, in the current decade, include 24 C-802/CSS-N-8 anti-ship missiles and 4 Jiangwei II class frigates. In 2006, Pakistan Navy ordered four F-22P type frigates from China with the value of the deal at \$600 million.¹² The first destroyer, Pakistan Naval Station (PNS) Zulfiqar, has been delivered in 2009, the second destroyer, PNS Shamsheer was delivered in early 2010 and the other two are scheduled to be delivered by 2013. The F-22P, which is a modification of a Chinese frigate that uses a Russian-designed main gun rather than a Chinese model, is armed with eight C-802 anti-ship warfare missiles, eight FM-90 surface-to-air missiles (SAM), one AK-176M main gun and two Chinese 30 mm Close in Weapon Systems (CIWS). The frigates can be loaded with one Z-9EC helicopter.¹³ Fourth F-22P will be manufactured in Pakistan at a Karachi shipyard in 2013, to fulfil a pledge to transfer Chinese

9. Ibid.

10. *The Military Balance 2005-2006, IISS* (London, Taylor and Francis, 2005) p.230

11. Siddiqua Agha, n.3, p.165.

12. Bilal H. Khan, "Pakistan Navy Modernization Program", Pakistan Military consortium, at http://www.pakdef.info/pakmilitary/navy/pn_oderization.html

13. Ibid.

shipbuilding technology that was part of the April 2005 agreement to build the frigates.

Other defence production plans on the naval front include 4 modern corvettes which are planned to be built alongside with F-22P in Karachi Shipyard & Engineering Works (KS&EW). The Navy also plans to manufacture and procure additional mine hunters, tankers, missile and patrol boats.¹⁴

Table 1: Pakistan's major arms acquisitions during 1990-2011

Supplier/ Licensor	No. ordered / delivered	Weapon designation	Weapon description	Year(s) of delivery
China	250+	Technology for the licensed production of T-69-II	MBTs	1991-99
	80+	M-11	Short-range ballistic missiles	1991-98
	264, 3 & 1	T-85II, T-85IIAP & Type 85III	MBTs	1992-97
	40	F-7P	Combat aircraft	1993
	6	K-8	Trainer aircraft	1994
	20	Armoured combat vehicles		1995
	3	Type-347G	Fire control Radar	1997-2001
	27	130mm guns	Large calibre artillery systems	1998
	75-100	K-8	Fighter/trainer aircraft	2000-08
	60	130 mm Guns of Type 59-1	Large calibre artillery systems	2000
	2	Technology transfer for the construction of Jalalat-class FAC	Missile- armed	2000-2001
	24	C-802/CSS-N-8	Anti-ship missiles	2000-2001
	4	Jiangwei	II class frigates	2002-2006
	40	F-7 MG	Fighter aircraft	2001
	44	F-7 PG Aircraft	Combat Aircraft	2001-02
	3	Type-347G	Fire control Radar	1997-2001

14. "Pakistan Navy" *Pakistan Defence*, at, <http://www.defence.pk/pakistan-navy/>

	150 + 100 = 250	FC-1/JF-17	Multirole Combat Aircraft	China-Pakistan joint venture, delivery possibly starting 2006
	6	A-5	Combat aircraft	2003
	143	122 mm D-30 (Howitzer)	Large calibre artillery systems	2003-04
	2	Type-347G	Fire Control Radar	2004
	10	Type 85	Main Battle Tanks	2004
	16	C-802/CSS-N-8 Saccade	Anti-ship missile	2004
		PL-12/SD-10	BVR AAM	Year of order-2004
	64	FM-80/HQ-7	SAM	Year of order – 2005
		PL-12/SD-10	BVR AAM	Year of order - 2004
	4 (delivery 2009-2013)	F-22P type	Frigates	Year of order -2006
	4-6	Z 9EC	Helicopter	Year of order-2006
	4	ZDK-03	AWACS	Year of order-2008
	40	J-10	Multi-role Combat Aircraft	Delivery starting 2014-2015

Source: Based on, *Stockholm International Peace Research Institute, Yearbook* (issues of various years) (New York, Oxford University Press) and Pakistan's major arms imports, as cited in Jasjit Singh, "Trends in Defence Expenditure," *Asian Strategic Review*, 1998-99, (New Delhi, Institute for Defence Studies and Analyses, 1999), *SIPRI 2002, 2004, 2005, United Nations Register of Conventional Arms* for various years and Defence Security Cooperation Agency at, <http://www.dsca.mil/>; "Update on Pakistan C-130E Acquisitions," *Air Forces*, January 2006, p.22, *The Military Balance 2007*, IISS (London, Routledge, 2007) *The Military Balance 2010*, IISS (London: Routledge, 2010), *The Military Balance 2011*, IISS (London: Routledge, 2011)

China and Pakistan's Arms Industry

General Zia-ul-Haq accorded high priority to building up of defence capability. Defence expenditure increased substantially during

his tenure and stood at an average rate of 6.5 per cent of the Gross Domestic Product (GDP). He believed in building self-reliance and, thus several indigenous projects were promoted. Later, the American arms embargo added to Pakistan's quest for self sustenance in defence equipment. Domestic defence production capability was boosted primarily with the Chinese support and soon the nation's defence industry increasingly became the "training post" for technology.¹⁵ The 1980's and the 1990's saw a wide expansion of defence production activities and a large number of varied projects were undertaken in this period. China has been the main support in establishment of defence production units in Pakistan, often provided free of cost.

Heavy Industries Taxila (HIT)

This facility is located near Taxila, set up with the help of China. Until mid-1960s Pakistan was receiving imported tanks, initially from the US (the M-47 and M-48 Patton class in the 1950s and the 1960s) and then from the Chinese (the T-59, which was produced in China from the Soviet T-54 design built under licence).¹⁶ In 1971, a HRF Project (P-711) was conceived with Chinese assistance and technology to rebuild T-59 tanks.¹⁷ Currently, it is, claimed that out of 11,000 components used in the overhaul of the T-59, approximately 8,000 are now manufactured locally.¹⁸ The Heavy Rebuilt Factory (HRF) at Taxila was renamed HIT.

HIT, which employs over 7,000 workers, and is basically devoted to land combat systems, witnessed a rapid growth in 1980s when it started to produce the T-69 MBT with Chinese help. The T-69 11MP tank is fitted with a special engine and also special armour to enhance armour protection¹⁹. The current and future planned production of the HIT includes various products, some of which are with the Chinese assistance:

- *Tank 'Al-Khalid'* – outcome of a decade long Sino-Pakistan efforts.

15. Aabha Dixit, "Defence Production in Pakistan", *Asian Strategic Review 1991-92*, (IDSA, New Delhi, 1992), p.287.

16. John Kaniyalil, "Defence Industries in Pakistan", *Strategic Analysis*, May 1993, pp 229-247

17. Internet site, FAS, Taxila, <http://www.fas.org/nuke/guide/pakistan/facility/taxila.htm>

18. John Kaniyalil, n.16, pp 229-247

19. Aabha Dixit, n.15, pp 293-94

In 1988, the announcement for manufacture of a new MBT (MBT 2000- Al Khalid) with the assistance of China was followed by the agreement signed in 1990 with China North Industries Corporation (NORINCO).²⁰

The first prototype of MBT-2000 also referred as P-90, was completed in 1991 and subsequently the trials were carried out in 1992. In many respects the MBT 2000 appears to be almost identical to the Chinese NORINCO Type 90-II MBT. During the development phase of Al Khalid, a number of prototypes of the vehicles were built and tested in various configurations. The first 15 pre-production, Al Khalid MBTs were handed over to the Pakistan Army in July 2001.²¹

- *Tank 'Al-Zarrar* – Tank Al-Zarrar, again a product of Chinese assistance, came into being to keep the fleet of T-59 and T-69 tanks technologically and operationally compatible with modern tanks. The Al Zarrar configurations were built to give the user the maximum possible flexibility in making a decision on which systems to install in production vehicles. ²²Al Zarrar carried the upgrades which not only are an improvement on the combat capabilities of the Type 59 but also an improvement on overall reliability of the vehicle and reduced maintenance.²³
- *Infantry Fighting Vehicle 'Al-Hamza'*- has been developed with a Chinese made one-man turret and 25 mm cannon.
- *WZ 653 series ARV* – In 1995, NORINCO (from China) supplied 20 WZ 653 series armoured recovery vehicles to Pakistan. According to reliable sources, Pakistan obtained the licence to manufacture these and initial batch of 45 vehicles which in Pakistan is also referred to as the Armoured Recovery Vehicles (ARV) -W653 has completed at HIT.²⁴

The F-6 Rebuilt Factory (F-6RF)

Pakistan Aeronautical Complex (PAC), established in 1973 is

20. *Jane's Armour and Artillery 2005-2006*, " MBT 2000 (Al Khalid)", p. 74.

21. Ibid

22. The first batch of 80 indigenously modernised and upgraded Al-Zarrar tanks were handed over to the Pakistan Army at the Heavy Industries Taxila in February, 2004.

23. *Jane's Armour and Artillery 2005-2006*, p 77

24. Ibid, p 77

dedicated to the overhaul and rebuild of Chinese and French aircraft in the PAF inventory. The F-6 Rebuilt Factory i.e.; the F-6RF, in the PAC, is an important facility at Kamra, established with Chinese assistance in 1980. The primary purpose of F-6RF has been the overhaul of PAF's Shenyang F-6 aircraft and their accessories. (Soviet Mig-17 built under licence in China and sold to Pakistan). Apart from the machine tools, this establishment possesses modern technical capabilities for several engineering processes employed in aircraft manufacture, such as surface treatment, heat treatment and casting.²⁵ It also manufactures metallic/rubber parts required during overhaul of aircrafts.²⁶

Heavy Mechanical Complex LTD. (HMC)

HMC, located in Taxila is not officially part of defence production establishment, since it is a major heavy engineering subsidiary of the State Engineering Corporation (SEC), controlled by the Ministry of Industries and Production, Government of Pakistan. This was established in 1979 with Chinese assistance and is the largest undertaking of this type in Pakistan.²⁷ HMC is capable of undertaking the designing, engineering and manufacturing of industrial plants and machinery.

DEVELOPMENT OF THE GWADAR PORT

Gwadar has been developed with the Chinese assistance and the primary project has been the construction of deep sea port expanding its maritime role and to allow the trade to and from the land locked Central Asia. More importantly, the port would have the conversion facilities to allow the movement of the natural gas for the Turkmenistan-Afghanistan-Pakistan-India natural gas pipeline when constructed. Gwadar offers the geo-economic and geo-strategic pivot to China and Pakistan. It is strategically located on the south-western coast of Pakistan between three increasingly important regions of the world; South Asia, Central Asia and oil-rich

25. "Indigenisation of Pakistan Air Force's Weapon Systems", at internet site, http://www.geocities.com/CapitolHill/3023/defence_production.html

26. Ibid.

27. Internet site, FAS, Taxila, <http://www.fas.org/nuke/guide/pakistan/facility/taxila.htm>

Middle East. Gwadar, which is overlooking the Gulf of Oman and the entrance to the Persian Gulf region, is just 180 nautical miles (nm) from the Strait of Hormuz. Thus, Gwadar would eventually emerge as the key shipping hub providing mass trade to Central Asian Republics through Pakistan and China, and important naval base. China's involvement in Gwadar is undoubtedly a response to its emerging energy requirements, China being world's second largest oil importer. Approximately 70% of Chinese oil supply comes from the Middle East and Africa through the sea. China is expanding its energy procurement efforts and the strategy of series of ports along the oil shipment routes which would allow China to safeguard and monitor energy flows.

From the military point of view, Gwadar is a decongestion point to the Pakistan Navy and it will provide it a berthing point for its submarines and surface warships. Gwadar port area has been designated as the "sensitive defence zone" by the Government of Pakistan.²⁸ The port would invariably enable Pakistan to take control over the world energy jugular and interdiction of Indian tankers.

CONCLUSION

Pakistan's military modernisation and its evolving military muscle owes mainly to the Chinese assistance, apart from the US support which has been inconsistent. China supported Pakistan during and after the India-Pakistan wars in 1965 and later in 1971. Pakistan's reliance on China has remained unaffected with the multiple changes in the regimes in Pakistan, and both military and civilian leadership have been equally enthusiastic about Chinese assistance in various fields. Consistent economic downslide and stressed economy has not affected the modernisation adversely; primarily due to the Chinese support mechanism for Pakistan. Although, China's contribution in assisting Pakistan's economy has been minimal but its support for the military (and nuclear) build-up has continued to intensify. China has also been actively involved in the Pakistan-occupied Kashmir (POK) with more than 100 projects employing about 10,000 Chinese soldiers.

28. "PNS Gwadar" at, <http://www.globalsecurity.org/military/world/pakistan/pns-gwadar.htm>

Sino-Pak strategic nexus and Chinese continued support to Pakistan in various fields has multiple implications for India. For the last six decades, Pakistan has been following the strategy of covert war against India. The reason why Pakistan adopted the route for covert war has been India's conventional military superiority which has deterred Pakistan in its illegitimate claim for Jammu and Kashmir (J&K). China has contributed significantly in building up Pakistan's conventional military capability in the previous three decades, which undoubtedly, implies that it would further enhance not only Pakistan's capability, but also the will to carry on covert war through terrorism in India, without the fear of being defeated in the retaliatory Indian aggression.

Owing to the Chinese support, Pakistan no more feels threatened with any future US arms suspension. Chinese equipment, which now carries Russian technology also, is no more inferior to the weapons from the West, and thus is adding not only the quantity but also quality to Pakistan's inventory.

China's assistance in the development of the Gwadar port has varied strategic implications, but what is perhaps of greater significance for India is the implication of a much expanded and technologically advanced Pakistan Navy (and its aerial capability) deployment at the port, abeam the major trade and oil transportation routes, besides its proximity to the Strait of Hormuz, through which passes more than 50 per cent of the world's crude oil. The bulk of India's oil supplies coming from the Persian Gulf, through this choke point, would then pose a new challenge of vulnerability that would have to be addressed on priority. Similarly, more than four million Indian expatriates work in the Arab states of the gulf region. The political implications of potential influence/control by Pakistan on the sea routes between India and the Gulf ports would have to be carefully examined.

Pakistan with full knowledge of the reality that India had superior military capability launched a number of covert and overt wars against India since 1947. China played a crucial role in holding out threats to India during the 1965 war (including deploying military forces on the border and opening fire at Indian troops) launched by Pakistan on 1st September 1965, after three weeks of covert war in

Kashmir. Although, China did not provide direct support to Pakistan in 1971 war and maintained a neutral posture during the Kargil War in 1999, there are no definite answers to China's role in any future Pakistan aggression against India.

Even though China's emerging posture as a major power and its accelerated economic growth, might abstain it from overtly supporting Pakistan in any future India-Pakistan conflict yet, Chinese support in Pakistan's defence modernisation would certainly enhance Pakistan's capability and will to continue its covert war strategy and also explore options for overt aggression.

WATER: THE NEXT FLASHPOINT IN SINO-INDIA RELATIONS

SANA HASHMI

The struggle to control depleting resources, specifically water, has become the critical aspect of today's world politics. Water is one of the most important resources for development as well as sustenance of a country and its preservation is indeed vital for national security. It is argued that 21st century is dominated by scarcity of natural resources and the next war, if any, would be fought due to non-traditional security threats, particularly over water. Securing natural resources and balancing the ecology have become distinct phenomena in the world order now.

China's rise has been seen as one of the cavillous and discerning developments of the contemporary world. The emergence of China, as an economic and political power, has numerous far-flung ramifications on the strategic outlook and economic prosperity of many regions, notably Asia. India, which too is rapidly developing as a strong economic and military power, will be greatly impacted by these developments, particularly, as both countries share common strategic space in Asia.¹ The drastic augmentation of this Asian giant and global power-in-the-making has enormous implications on China itself. Due to its remarkable growth and expansion, its natural resources particularly water, which is vital for the survival of the mankind, have

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1. "Implications of China's Rise," July 10, 2011 at <http://www.indiandefencereview.com/news/implications-of-chinas-rise/> accessed on January 25, 2012

been impoverishing at an accelerated rate. China's environmental and water crisis has its origin in the policies that were initiated by Mao Zedong and carried forward by succeeding leaders who promoted the steady depletion of underground water resources. With the ground water saturation dropping sharply, northern China, which is home to nearly half of the country's population, will be at the risk of an encounter ecological disaster², all the more because its water resources account to less than one-fifth of the world's water resources.

The two fastest growing nations of the world, India and China are no strangers to the struggle for water. They are the two most densely populated nations of the world and their water demand is growing day by day, since both are on the path of economic and overall development. A dispute over water or rivers originating from Tibet can lead to a major crisis, predominantly for India which is a lower riparian country. With the juggernaut of Chinese growth not showing any signs of slowing down, the depletion of natural resources, including water, is inevitable. With the a population of 1.3 billion and its silt-ridden and polluted rivers, China is on the verge of becoming water scarced. An official Chinese study predicts a 37 per cent drop in precipitation in the Huai, Liao and Hai rivers in the near future. The report also mentions glacier melt overflow, leading to floods and then a drying up of the Yangtze and Yellow rivers.³ To cater to the ever growing need of water in the Chinese mainland, China has its eyes on the vast reserves of water in Tibet to rejuvenate life in its drought-hit regions, which is considered to be the 'water tower' of Asia and has been under China's control since 1950. The existing water resources in Tibet- 104,500 cubic metres per year- are estimated to be 40,000 times higher than in China.⁴ The need and thirst of water in China is evident by the number of hydro-power projects initiated in the Tibetan plateau. The number of rivers which flow into India through Tibet clearly indicates that India's water security is highly dependent on the water of Tibet. There is a serious threat that

2. Brahma Chellaney, *Water: Asia's New Battleground* (India: Harper Collins Publishers, 2011), p. 59.
3. Elizabeth C. Economy, "China's Coming Environmental Crass," *Foreign Affairs*, September–October 2007, 85(5), pp. 38–57.
4. Tibet 2000 Environment and Development Issues, Water Resources, at <http://tibet.net/wpcontent/uploads/2011/08/EnviromentAndDevelopmentIssues.pdf> accessed on September 26, 2011.

China can choke India and cut off its water supply. Tibet has one of the greatest water systems in the world, and its rivers supply fresh water to 65 per cent of Asia's population and to approximately 30 per cent of world's population.⁵ With such an extensive network of rivers, the water of Tibet is crucial not only for China and India but also for other nations in South Asia and Southeast Asia. The Indian subcontinent is fed by rivers originating from the Tibetan plateau, like the Brahmaputra (Yarlung Tsangpo in Tibet) which flows through India and Bangladesh, the Sutlej and Indus, flowing through India and Pakistan. Similarly the other rivers like Drichu (Yangtze), Machu (Yellow), Zachu (Mekong) originate from Tibet and sustain lives of millions in China, Myanmar, Laos, Cambodia, Thailand and Vietnam.⁶With Tibet under its control, China has unlimited and unquestionable access to the waters of all the important rivers in the Southeast Asian region and the Indian subcontinent originating from the Tibetan plateau. This can, and as a matter of fact, has led to problems for the nations which are downstream with regards to water supply, and other ecological problems. Before the Chinese occupation of Tibet, there were no such issues as there were no such projects on the rivers originating from the Tibetan plateau. The Chinese, since their occupation of Tibet, have undertaken massive projects in the name of development, with no consideration for the other nations through which the rivers originating from Tibet flow. Over the next few years, the 'Roof of the World', where most of Asia's great rivers find their headwaters, could well deliver an ecological crisis to Asia's billions of people.⁷

China has ambitious plans to construct dams and other projects on the rivers originating from Tibet, the most vital debated project being the Brahmaputra diversion project. China is building a number of dams on the Brahmaputra River, just before it enters India, which are part of the alleged South-to-North water diversion project. Such projects, when completed, will cause immense water scarcity in India. India will be in grave danger as it is not possible to quantify the repercussions of water scarcity on the growing Indian economy.

5. V. P. Malhotra, *Tibetan Conundrum* (New Delhi: Knowledge World, 2006), p 89.

6. *ibid*

7. Michael Zhao and Orville Schell, "Tibet: Plateau in Peril," *World Policy Journal*, 25 (3), Fall 2008, pp. 171-180.

These projects can stifle the growth of India, as India is already facing the problem of water scarcity, with a growing population and with development at a fast pace. As mentioned before, in the event of estranged relations between India and China, China can possibly choke off India's water supply which is highly dependent on the waters of the Tibetan plateau, and apply brakes on India's growth. If not dealt with clarity, the water controversy between India and China can become a flashpoint in India-China relations, which already are precarious. According to the Union Ministry of Water Resources, India's water demand is projected to be around 1,093 billion cubic metres (BCM) for the year 2025 and 1,447 BCM for the year 2050. It puts India's total utilisable water at 1,123 BCM with current usage of 643 BCM.⁸ In 1951, the annual per capita availability of water was 5,177 cubic metres, which reduced to 1,342 cubic metres in 2000 and with the ever growing population and increasing demand of water, it can be said that India will become 'water stressed' by 2025 and 'water scarce' by 2050.⁹

The Chinese are planning to construct several dams on the Yarlung Tsangpo, of which at least two will have severe consequences for northeastern India's water supply. The first is 540 MegaWatts (MWs) run-of--the-river dam on the great bend on the Tsangpo (the river takes a u-turn while in the Tibetan region to enter India) near Mount Namcha Barwa, where the Tsangpo turns south to enter India, (this is expected to have twice the capacity of the Three Gorges Dam). This dam is expected to be the world's biggest hydroelectric dam generating 38,000 MWs of energy. The second major project is the one east of Lhasa at Shoumatan.¹⁰ Besides producing electricity, the dam would also be capable of diverting water to China's southwest region. Upon completion by 2050, a total of 44.8 billion cubic metres of water (equal to the water flowing down the great Yellow river each year) would be transferred by this man-made river.¹¹

8. IDSA Task Force Report, *Water Security for India: The External Dynamics* (New Delhi: IDSA, 2010), p. 9.

9. *Ibid.*, p. 22.

10. "Beijing's Threat to India's Water Security," November 15, 2010 at <http://yaleglobal.yale.edu/content/beijings-threat-indias-water-security> accessed on December 15, 2011.

11. P. K. Gautam, "Sino-Indian Water Issues", *Strategic Analysis*, 32(6), November 2008, pp. 969 -974.

Apart from the Brahmaputra, China is constructing out massive hydro-power projects over the Sutlej river, which would have farther adverse effects on India. The June 9, 2000 flood in Arunachal Pradesh was the upshot of such projects on the Sutlej river. Exacerbating these fears is the outcome of adverse climate change, which may lead to abnormal melting of Himalayan ice and glaciers, thereby affecting the flows of many major rivers.¹²

Lately, China has denied that it has embarked on any diversion project on the river Brahmaputra. China has, time and again, claimed that all these projects are run-of-the-river projects which are meant for the development of Tibet and for fulfilling the requirements of the Chinese people. It also rejects the claims that these projects will have adverse effects on the lower riparian countries like India, Cambodia, Vietnam and Bangladesh.¹³ However, the reality is different. While it may seem to allay fears India has regarding the diversion of the river, from the history of India-China relations, it is not difficult to fathom the fact that trusting China can prove to be catastrophic. One such example can be gauged by analysing the brief but bloody war of 1962 between India and China. India, like the rest of the world, is apprehensive of China's so-called peaceful development. China might be surreptitiously continuing with its diversion plans. The Chinese iron curtain of secrecy has shrouded many projects taken up by the Communist nation and the diversion of the Brahmaputra could be one such project. Both countries already have estranged relations over the border disputes and without clarity on water issue, the situation can impede the ongoing dialogue process at the diplomatic level between India and China.

Media reports and satellite imagery confirm that India faces grave danger in regard to water security despite China's constant denial of constructing any major dams on the river. Recently, it was reported by the media and local people of Arunachal Pradesh that the Siang (Brahmaputra in Arunachal Pradesh) is drying up due to the alleged project. Tako Dabi, spokesperson of the state government, stated, "In March 2012, People of the century-old Pasighat town in East Siang district found that the water level of the river had receded so much

12. Ibid.

13. <http://www.china.org.cn/e-white/20011108/3.htm> accessed on March 25, 2011.

that it almost dried.”¹⁴ He also had claimed that on June 9, 2000, the water level of the Siang rose suddenly by 30 metres due to a collapse in hydropower in Tibet and inundated almost the entire township, causing widespread destruction to property and lives. The state government urged the central government to an inquiry into the matter.¹⁵ However, eventually, the Ministry of Water Resources rejecting the allegation, that has proclaimed that “the apprehensions expressed by the state government regarding possible diversion of the Brahmaputra by China are not correct and devoid of facts.”¹⁶ However, after a series of problems that India had to face because of China’s hydrological projects, China finally agreed to share flood related hydrological data, particularly in relation to the Sutlej and Brahmaputra.

China’s 12th Five-Year Plan, released in March 2011, includes improving the movement of water resources between north and south and east and west, and between rivers and reservoirs, building cross-basin water-diversion projects and improving access to water both in the north and the south.¹⁷ All this is an indication of the fact that China is very much concerned about its water security, given that water generation and water allocation have been prearranged in a special manner in the 12th Five-Year Plan. There have been numerous accounts showing that such hydrological projects have full support and are backed by the government. It is interesting to note that China’s current leaders, President Hu Jintao and Vice Premier Wen Jiabao, are hydrologists which will give a boost to China’s hydrological programmes. Furthermore, it was always China’s intention to include water in its foreign policy. For instance, the Great South-to-North Water Diversion Project was visualised by Mao when he reportedly said in 1952: “The south has a lot of water, the north little; it is okay to lend a little water.”¹⁸

The fact that needs to be understood is that Tibet’s water is for the entire humanity and not for China alone, as almost two billion people in South Asia and Southeast Asia are dependent on the water

14. “Brahmaputra Dries Up in Arunachal Pradesh town. Is China Responsible?”, March 1, 2012 at http://articles.economictimes.indiatimes.com/2012-03-01/news/31113629_1_east-siang-district-brahmaputra-arunachal-pradesh, accessed on April 20, 2012.

15. *ibid*

16. <http://pib.nic.in/newsite/erelease.aspx?relid=80680> accessed on May 19, 2012.

17. “Diversion Debate,” June 13, 2011, at <http://www.chinadialogue.net/article/show/single/en/4349-Diversion-debate>, accessed on April 20, 2012.

18. Chellaney n.2, p. 60.

originating from Tibet. It is ironical that despite the fact that all the projects are aimed to divert a large amount of water from the Tibetan plateau to the north of China which has almost dried up, there are few international guidelines to monitor a water usage policy and even the existing guidelines are not only contradictory and quite complex in nature but are difficult to implement.¹⁹

While the Chinese may not actually divert the Brahmaputra, even a series of hydro-electric dams could reduce the main Siang base channel to a trickle.²⁰ Going by the speed at which China is embarking on its projects, it won't be long before all the downstream countries start to face multiple problems. The immense rail and road network that China has in place in Tibet gives it an upper hand in the construction of dams and other hydro-electric projects. Through its giant projects in Tibet, China is actually set to acquire the capability to use water as a political weapon against India. Such a weapon can be put to overt use in war or employed subtly in peace time so that the level of cross-border water flows becomes a function of political concession.²¹ Hence, it won't be wrong to say that water is becoming a weapon of China's future war. Moreover, it is seen as tactic to put pressure on its neighbours. Owing to China's increasing influence in world politics and economy, no nation would dare to defy China. Furthermore, there is no international pressure on China despite the long list of countries that would be affected by China's plans of diversion or building dams on rivers originating in Tibet. It is significant to note that half of the world's total of dams are in China. Moreover, the possession and control of water resources can result in aggressive tendencies and can readily translate into power and dominance; water, thus, can assume hegemonic attributes. China's upper riparian position gives it the hydrological advantage to use and control the waters from a nationalist perspective to pursue self-preserving policies.²²

19. IDSA Task Force Report (2010), p. 10.

20. Maj. Gen. (Retd.) G. D. Bakshi, "Water Wars? India, China and Tibet: Serious Potential for Conflict," *Defence and Security Alert*, 3 (7), pp. 34-29.

21. "Ties and Troubled Water", *The Times of India*, June 29, 2010 at http://articles.timesofindia.indiatimes.com/2010-06-29/edit-page/28285958_1_three-gorges-dam-brahmaputra-water-shortages, accessed on November 28, 2011

22. Uttam Kumar Sinha, "China's Hydro-Behaviour: Peaceful or Assertive?," *Strategic Analysis*, 36(1), January 2012, pp. 41-56.

Keeping all these aspects and the already unstable Sino-Indian relations in mind, the need of the hour is a more transparent approach towards coordination among the two nations. An information sharing mechanism has to be established to share data and information about critical projects like the Brahmaputra dam project. Another important facet of the hydrological situation is the lack of a water sharing treaty between India and China. Like India, water sharing treaties with Pakistan and Nepal, it also needs to have a similar treaty with China. A treaty based on international water sharing laws will certainly ensure that both nations get an equal share of the common water resources. A water sharing treaty will also make sure that any country planning to start a hydro-electric project will have to share information regarding it with all the other countries.

Since the time of Pandit Jawaharlal Nehru, India has been following appeasement policy with regard to China and denying that there is any threat from China's side. Although cooperation between China and India particularly in terms of water, seems to be, wishful thinking now, any act of diverting the Brahmaputra waters away from reaching towards India should, therefore, rightly be considered an act of war.²³ It would not be wise for India not give requisite attention to the problem of water. China's litigious and fragile relations with other co-riparian countries makes it apparent that despite denials by China, there is something majorly wrong and these lower riparian countries should take up the question of water more seriously. The alleged Brahmaputra diversion project is one endeavour which can have serious consequences for India as Brahmaputra is the life-line of not only the entire northeastern region but for Bangladesh as well.

It is beyond doubt that China's dominance over the water tower of Asia will certainly strengthen its regional dynamism and without Tibet under its control, it would lose the status of upper riparian and become water-dependent. Thus, exercising its leadership in Beijing, China has decided that the Tibetan plateau are the answer to its water crisis. Since the Brahmaputra and Mekong are in the list of world's endangered rivers, China's concern with Tibet cannot remain internal matter because of its greater implications on almost

23. Bakshi, n.20, pp. 34-29.

all riparian countries. With this perspective, the matter should be dealt with caution and vigilance.

POLICY RECOMMENDATIONS:

- Water security is a matter of grave concern and addressing the issue is the need of the hour before it results into a full blown problem for India.
- A looming water crisis can become the cause of a grave impediment to peaceful coexistence of the countries in the region, especially India and China. A complete overhaul of the current approach is needed so that the issue can be resolved or at least a more transparent and flexible methodology can be adopted.
- A separate working group should be established to discuss the issue of water in regard to China.
- India should urge China to sign a Memorandum of Understanding (MoU), to share flood related hydrological data with more transparency in order to avoid any disaster .
- India should cooperate with Bangladesh, which is another lower riparian country in relation to the Brahmaputra, to discuss the prospects.
- India needs to bring this issue to the international fora and spread global awareness about the water of Tibet, given that this water is the basis of survival of two billion people.
- India needs to join hands with other lower riparian countries and form regional fora to discuss issues related to water. The Mekong-Ganga Cooperation (MGC) is one example.
- India requires to be vigilant and keep a track of China's actions on the river with the constant help of satellite imageries.
- India will have to be very cautious in this regard and should work towards more transparent interactions with China to make it aware of its apprehensions on the water issue.
- India should stop acknowledging Tibet as part of China, unless and until China resolves the matter, given that India's affirmation of Tibet as China's territory would make China the legitimate owner of Tibet's resources.

“THE DRAGON AWAKENS: CHINA AND ITS SOFT POWER”

STUTI BANERJEE

China's long and rich history as the world's oldest continuous civilisation has affected Chinese foreign relations in various ways. For centuries, the Chinese empire enjoyed unchallenged greatness and self-sufficiency. China saw itself as the cultural centre of the universe, a view reflected in the concept of the Middle Kingdom.¹ Until the past decade, China exerted minimal soft power. Beijing still pursued a defensive foreign policy, and the Chinese public lacked confidence that Beijing could project power. However, one finds that there was a shift in Chinese policy during the financial crisis in Asia in the late 1990's when the economies of most South Asian countries collapsed and the United States was unable to provide assistance. China emerged as the strongest contender for the position occupied by the Americans. Today, as America concentrates its resources on the war against terrorism and Europe conserves her resources to tide an economic slowdown, China is once again deepening its relations with the nations of South Asia, Africa and Latin America. With the onset of twenty first century, China is showing its global presence at a rapid pace. Assessing the implications of its growing economic, political and security influence, is a difficult yet critical endeavour

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1. Robert L. Worden, Andrea Matles Savada and Ronald E. Dolan, (eds). "China: A Country Study". Washington: GPO for the Library of Congress, 1987. URL- <http://countrystudies.us/china/>, accessed on July 29, 2012

because of the potentially serious consequences of misjudging China's intentions and the true scope of its power.²

Over the past decade, the growth that China has been experiencing, not just in the economic sphere but also its active participation at the diplomatic levels is indicative of the role that it wants to and will play in the future. It has given rise to two views: one that China would use its new position to change the international arena to better suit its interests and two; this development would mean that other, especially smaller states would feel threatened by a powerful China. It is to counter this image of a future security threat, a regional hegemony that China has repeatedly stated, that its growth is for development and not a threat to its neighbours.

The Chinese understanding of soft power stems from an effort to try, to be able to clear the misconceptions and generalisations that the world has formed about them. For China, soft power is to internationalise the voice of China so that it penetrates into popular consciousness and influences political communities debating the consequences of China's rise. It is an attempt to promote a preferred Chinese idea of what China is and what it stands for, including an emphasis on the historical roots of current thinking, identity-formation and policy designed to correct misconceptions among overseas audience about Chinese motivations and intentions. By bringing more people across the world into contact with Chinese understandings and preferences and by explaining their source, the hope is that people will become more accepting of them and not find them worrying and offensive.³

Nonetheless, the concerns for the United States and the rest of the world emanate out of a contest for the United States' status in world politics and the ideological incompatibility of China with the Western value system. China is neither a Westminster model of democracy nor does it have the American capitalist system of economy. It is

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2. Riordan Roett and Guadalupe Paz, "Introduction: Assessing the Implications of China's Growing Presence in the Western Hemisphere", in Riordan Roett and Guadalupe Paz (ed), *China's Expansion into the Western Hemisphere: Implications for Latin America and the United States* (Washington: The Brookings Institute Press, 2008), p. 01
 3. Shaun Breslin, *The Soft Notion of China's 'Soft Power'*, Asia Program Paper: ASP PP2011/03, (London: Chatham House, 2011), p.07 http://www.chathamhouse.org/sites/default/files/public/Research/Asia/0211pp_breslin.pdf, accessed on August 16, 2012.

an anomaly- that despite being a relatively poor country, China is poised to become powerful in the international arena in the future.

CHINA'S SOFT POWER

China has always had an attractive traditional culture, but now it is entering the realm of global popular culture as well. It is using the opportunity to reclaim its position as a global power. China has time and again made use of its soft power capabilities. The Chinese style emphasises high-profile gestures, such as rebuilding the Cambodian Parliament or Mozambique's Foreign Affairs Ministry. The elaborately staged 2008 Beijing Olympics enhanced China's reputation, Chinese novelist Gao Xingjian won China's first Nobel prize for literature, generating worldwide interest in Chinese literature. The 2010 Shanghai Expo attracted more than 70 million visitors. The Boao Forum for Asia on Hainan Island attracted nearly 2,000 Asian politicians and business leaders to what is billed as an "Asian Davos." Chinese aid programs to Africa and Latin America are not limited by the institutional or human rights concerns that constrain Western aid. However, Beijing has also raised defences. It has limited foreign films to only 20 per year, subsidised Chinese companies creating cultural products, and has restricted Chinese television shows that are imitations of Western entertainment programs.⁴

Over the past few years, China has increased its cultural exchange programmes with other states, by sending doctors and teachers to work abroad, welcoming students from other nations to study in China, and paying for language programmes abroad. The Chinese government is actively promoting the setting up of Confucius Institutes around the world. By the end of 2010, there were 322 Confucius Institutes and 369 Confucius Classrooms established in 96 countries, amongst them some of the world's top universities. They adopt flexible teaching patterns and adapt to suit local conditions when teaching Chinese language and promoting culture in foreign primary schools, secondary schools, communities and enterprises.⁵

4. Joseph S. Nye, "Why China Is Weak on Soft Power", *International Herald Tribune*, January 17, 2012, <http://www.nytimes.com/2012/01/18/opinion/why-china-is-weak-on-soft-power.html>, accessed on July 10, 2012.

5. Confucius Institute Online, http://college.chinese.cn/en/article/2009-08/29/content_22308.html, accessed on July 29, 2012.

China is actively promoting the use of English among its populace, to make them more competitive and to overcome the disadvantage that they face in the global market where the language of business is English.

While the Confucius Institutes are taking China to the world's classroom, international students are also coming to Chinese classrooms. Official figures for 2011 revealed that there were 31 million higher education students in China - a 35% increase in five years. Currently, the largest number of international students in China is from Korea, followed by America and Japan.⁶ Chinese students are also a part of universities world wide. In America alone, there are 157,558 Chinese students, (22 percent of all international students). They represent China not just in culture, language, food habits but also the views as expressed by China on issues such as Chinese views on Taiwan and Tibet, by taking part in demonstrations, campaigns and debates.

Apart from international students, international tourists visiting the country have also increased dramatically. In 2009, China declared tourism, a strategic pillar of its national economy and policy. In 2011, the country once again demonstrated its commitment by putting tourism at the centre of economic growth and development. China received 56 million international tourists in 2010 generating US\$ 46 billion in international tourism receipts. China is also the world's third biggest source markets, with Chinese outbound tourists spending around US\$ 55 billion in 2010.⁷ This is a clear indication of the visibility that China is currently enjoying.

In terms of political principles, the era of Maoism (and Mao jackets) is long past. China has relegated Mao to a figure head whose portrait adorns the walls of the government but whose policies and ideas no longer govern the government. Although, China remains authoritarian, the success of its political economy in tripling gross domestic product over the past three decades has made it attractive to many developing countries. What further enhances the charm of

6. Yojana Sharma, "China: Ambitious Plans to Attract Foreign Students", *University World News*, <http://www.universityworldnews.com/article.php?story=20110312092008324>, accessed on July 30, 2012.

7. World Tourism Organisation UNWTO, "Joining UNWTO/WTTC Global Campaign, China Reaffirms Commitment to Tourism", September 06, 2011 UNWTO, <http://media.unwto.org/en/press-release/2011-09-06/joining-unwtowttc-global-campaign-china-reaffirms-commitment-tourism>, Accessed on July 20, 2012.

China is the fact that Beijing has been able to achieve this growth without giving into Western pressures to open its economy. It has not only ignored the ideas on economic reform but has also brought about political change on its own terms. In parts of Asia, Africa and Latin America, the so-called “Beijing consensus” of authoritarian government plus a market economy has become more popular than the previously dominant “Washington consensus” of market economics with democratic government. China has reinforced this attraction by economic aid and access to its growing market.⁸ China is also preferred because it provides the aid without interfering in the internal matters of the sovereign states and because it requires very little collateral in return for the aid. Given its active role at the global economic stage, China called for the creation of a new currency to eventually replace the dollar as the world’s standard, proposing a sweeping overhaul of global finance. It is part of Beijing’s increasingly assertive approach in shaping the global response to the financial crisis.⁹ This is also evident from the suggestions it has made at the BRICS (Brazil, Russia, India, China, South Africa) Summit in New Delhi (2012), to offer renminbi loans to the other BRICS members. There are clear lessons for the world to learn, especially countries like India and Brazil, who are projected to play an important role in the international arena in the future, on how China is engaging with the various centres of political and economic powers.

China has also adjusted its diplomacy in several ways. It has come to the conclusion that, soft power needs to be promoted by the State rather than assume that it would be achieved as a result of its cultural attraction, which is yet to be developed. To achieve this aim, the state is aggressively trying to expand its global media presence. China’s state run media organisations are being used to increase the country’s soft power abroad. This was done for two reasons. The idea was to promote an alternative media perspective to challenge the hegemony of the western international broadcasters like Al Jazeera had done in the Middle East. The other was closely related to the use of soft

8. Joseph Nye, “The Rise of China’s Soft Power”, *The Wall Street Journal Asia*, 29 December 2005, URL- http://belfercenter.ksg.harvard.edu/publication/1499/rise_of_chinas_soft_power.html, accessed on July 21, 2012

9. Andrew Baston, “China Takes Aim at the Dollar”, *Wall Street Journal*, 24 March 2009, at <http://online.wsj.com/article/SB123780272456212885.html>, accessed on July 27, 2012.

power of the media to promote the Chinese communist party's views and influence abroad as well as have a canvas to portray Chinese culture. It was also to inform the larger international audience, the reason for acting the way it did. However, despite the spending of the government for setting up of such an international network, they still lack global credibility and world class technical standards. The government's control of the contents of the programmes and the views broadcasted are quite visible.¹⁰

To further ensure that its influence extends beyond its boundaries, China has become more active in cooperation on regional matters. It has joined the World Trade Organization (WTO), contributed more than 3,000 troops to serve in the United Nations peacekeeping operations, is settling territorial disputes with its neighbours, has become more helpful on nonproliferation issues (including, hosting the six-party talks on North Korea), and also become a party to a variety of regional organisations.

China's much-noted economic progress has been accompanied by a steady expansion in its cultural and diplomatic influence globally, especially in the developing world. This growth, in this so-called soft power, has been apparent in Southeast Asia for a number of years. But it is also evident in Beijing's economic partnerships in Latin America, and in its surge of business deals and development projects in Africa.

China has been more skillful and has started to use its diplomacy and soft power judiciously in South Asia. It's growing use of "soft power" in Southeast Asia- non-military inducements including culture, diplomacy, foreign aid, trade and investment has presented new challenges to American foreign policy. By downplaying many conflicting interests and working collaboratively with countries and regional organisations on such issues as territorial disputes and trade, Beijing has largely allayed Southeast Asian fears concerning China's military or economic threat.

The 1990s witnessed not only parallel economic liberalisation programs in China and Latin America but stronger economic ties as well, between the two regions. Since then, Chinese investments in

10. Takashi Kitazume, "China seeks Soft Power's reach via Media", *Japan Times*, at www.japantimes.co.jp/print/nn20110314d2.html, accessed on March 22, 2012.

Latin America and bilateral trade have been growing significantly. Latin America's significance for China, of course, also extends beyond the economic realm. Latin America is a potential partner in China's ongoing quest to establish a 'just and harmonious' world order.¹¹ What has further helped to strengthen this relationship between the two countries is the fact that there is socialist leaning of the majority of the political parties of the region, with whom China has developed party to party based collaborations and diplomacy. Building on simple commercial agreements, China has advanced to economic assistance, direct investment, a few joint ventures, and military ties, a kind of commitment that Latin America has been looking for long.

China-Africa relations combine pragmatic, economic and political means to achieve China's objective of establishing a world order that is peaceful and conducive to continued economic growth and stability at home. During the 1970's and late 80's, China was supporting the political liberation movements in Africa. Today, China is supporting the economic liberation of Africa. The continent has natural resources, particularly oil and natural gas that China needs in order to develop. Chinese officials travel to Africa accompanied by delegations of bankers and business people, promoting political and economic commerce that expands China-Africa ties in a sustainable way. Both Chinese and African governments have partly welcomed new trade relations because there is no colonial past or difficult history to complicate the matter and also the business is booming.¹² While trade and diplomacy are driven by China's newfound economic strength and subsequent demand for raw materials, China continues to support longstanding programmes that deliver aid to underserved African citizens, such as sending teams of doctors and providing medicines. Following the framework set out by the first China-Africa Cooperation Forum in 2000, President Hu Jintao held a summit on Sino African relations, which was the largest African summit outside the continent. China has pledged to continue to provide aid and assistance to African nations. China has also cancelled much of the debt that was owed to her by the nations of the continent. It has

11. Jiang Shixue, "The Chinese Foreign Policy Perspective", in Riordan Roett and Guadalupe Paz (ed) *China's Expansion into the Western Hemisphere: Implications for Latin America and the United States*, (Washington: Brooking Institution Press, 2008), pp.34-35

12. Fareed Zakaria, *The Post American World*, (New Delhi: Penguin, 2008), p. 116

extensive relations with Sudan, Zimbabwe, among other nations. It maintains relations with these countries despite the UN restrictions and sanctions. China-Africa relations are set to advance through a combination of traditional financial aid and technical support programs, along with rapidly growing bilateral trade and investment.

China is developing relations with the nations of the African continent as well as Latin America for their natural resources as also for the fact that most of these nations have been supportive of Taiwan at various international forums. China is trying to wean away this support in her larger bid to achieve her goal of Taiwan that is part of China. Induced by the generous aid that is being given by the Chinese government, a few have switched allegiance from Taipei to Beijing.

Space has become another area where China is trying to exert its soft power. It is positioning itself as a space benefactor to the developing world—the same countries in some cases, whose natural resources China covets. It developed and launched satellites for Brazil. China not only designed, built and launched a satellite for oil rich Nigeria but also combined it with a major loan to help pay the costs. It has signed a similar contract with Venezuela and is developing an earth observation satellite system with Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Peru and Thailand.¹³

All these developments have meant that there is a possible re-evolution of the world order. The opinion is that, the rise of China will inevitably set up a “China Wing’ of the new world order. China is seen as the rising dragon that is breathing fire and consuming all things that are coming in its way. This may be a metaphor for the rapid growth that the Chinese economy is experiencing and in the processes devouring the ingredients of economic development like steel, coal, iron etc. The Chinese hunger for these products is driving the prices of these commodities in the international market. The world perceives China as the ancient dragon, rising from its slumber because of the fact that China has achieved to build the Lassa – Beijing Railway, the Three Gorges Project and has massive plans to make its country side more industrial, its active participation in

13. “Chinese Government White Paper”, at <http://www.china.org.cn/english/features/book/183709.htm>, accessed on August 06, 2012, and Jim Yardley, ‘China uses space Technology as Diplomatic Trump Card’, *International Herald Tribune*, May 24, 2007 <http://www.thetrumpet.com/?q=3698.1982.0.0>, accessed on July 21, 2012

the negotiations with North Korea on the nuclear issues. Napoleon famously and probably apocryphally has said, "Let China sleep, for when China wakes, it will snake the world." And for almost two hundred years, China seemed to have followed its instructions, staying dormant and serving as little more than an arena in which the other great powers acted out their ambitions. China is awakening and this awakening is not only reshaping the economic and political landscape, but it is also getting shaped by the world into which it is rising.¹⁴

CONCLUSION

The transformation of China's image and influence is due to a range of factors. China has benefited from missteps made by the United States, including its slow reaction to the Asian financial crisis and post-9/11 counter-terrorism myopia. But the transformation is also due to a growth in China's soft power. The concept of soft power has made a strong impression in China. According to Peng Fuchun, National People's Congress (NPC) deputy "We should never underestimate the importance of building soft power, as economic miracle is only one side of China's rising in the world area."¹⁵ In light of this statement, China is expanding its use of cultural, educational and diplomatic tools to increase its appeal across the world.

Ultimately, is the Chinese soft power working? The answer is 'Yes. The popularity of 'Beijing Consensus' of an authoritarian government plus a market economy, a decline in Southeast Asian leaders questioning China's rise, and the increasing popularity of Chinese language and cultural studies are some examples of a working Chinese soft power.

However, there are limits to soft power. While States are trying to attract Chinese investments and deepen cultural ties, they are also suspicious of China and its policies. There is a negative impact of the growing influence of China. Because of its increased military budget and rapid defence modernisation programmes, it is feared that there would be imminent growth in its military. China is promoting the setting up of Chinese study programmes abroad; nonetheless,

14. Fareed Zakaria, n.12, p.88

15. "Soft Power: A New Focus" at China's Two Sessions, National People's Congress, People's Republic of China, at www.npc.gov.cn, accessed on July 29, 2012.

its desire to control the appointment of educationalists, its study material is not appreciated and is counterproductive. Similarly, financial assistance to States with dubious Human Rights record or authoritarian regimes, tarnish the image of a responsible power that China wishes to cultivate. China's reaction to Norway, conferring the Nobel Peace Prize to Liu Xiaobo, French President Sarkozy meeting the Dalai Lama, are but a few examples of Chinese authoritarian approach and is a hindrance to enhancing its soft power. However, the relative flexibility demonstrated by Beijing in handling the issue of Chen Guangcheng has definitely improved the image of China.

As has been pointed out before, China does not follow the Western value system. However, it would seem that China is taking advantage of this difference. It is projecting an image of being different from the United States, Britain, and Germany, the other great powers of the past. Its contention is that since it is different, its rise should also be viewed differently. Western theories have been developed by studying Western experiences and are based on Western liberal traditions. Because of its unique historical roots, culture(s) and philosophies, China will not act/ behave like the previous great powers. Rather, it will be a 'responsible great power' based on a cultural predilection for peace and harmony.¹⁶

China cannot or rather, should be framed with either malevolent or benevolent imaging or character. Both of China's hard as well as soft power must not be either demonised or exaggerated.¹⁷ It can be safely stated that for the foreseeable future, China would remain preoccupied with the process of building its 'comprehensive national power' and hence would seek cooperation with other countries while avoiding a direct conflict.¹⁸ The question that all are seeking an answer to, is, what will happen thereafter and how they can stop or control or manage the rise of China? What is worrying the world is not the rise of China in the economic sphere but it facilitating the political and the military development.

16. Shaun Breslin, n.3, p.12

17. Mammo Muchie and Li Xing, "The Myths and Realities of the Rising Powers: Is China a Threat to the Existing World Order?", in Li Xing (edited), *The Rise of China and the Capitalist World Order*, (Surrey, Ash gate, 2010), p. 65

18. Jasjit Singh, "Security Concerns and China's Military Capabilities: The Eagle, the Dragon and the Elephant", in Alyssa Ayres and C. Raja Mohan (ed), *Power Realignment in Asia: China, India and the United States*, (New Delhi: Sage Publication, 2009), p.123

The role that China plans to play in the future is one of a frontier nation that has all the best assets of the world at its call. Thus, one comes to the conclusion that China will continue to invest in soft power by increasing its diplomatic spending while endeavoring to safeguard its own interests by seeking to establish a more responsible position for itself at the international arena.

EARLY CHINESE FOREIGN POLICY: FROM TRIBUTE TO TREATIES

ARJUN SUBRAMANIAN P

It is essential to understand the history of the behaviour of a country as past behaviour reflects, to a certain degree, on the present. Particularly, the external behaviour of a nation, to some extent, is influenced by the behavioural tradition of the nation. The past behaviour is a result of the country's long cultural, societal and political influences that had shaped the way that country interacts with other players in the region and the larger world. The East Asian order in the past had been a unique system, which at present appears strange. The regional order was defined by China and it acted as the pivot in managing and sustaining that order. Various factors influenced the survival of the order until the arrival of the Western powers. The order established by China was principally based on the tributary system and this, largely formed the mode of relation between the countries (kingdom) of the region and China. By the middle of the 19th century, the system was shattered by the Western powers. Within a span of nearly half a century, the order that had existed for thousands of years was completely changed. The region started to adapt to the emerging new order through which East Asia was brought into the larger and

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modern world order. This paper looks at the Chinese world order from the tributary to the emergence of treaty system.

TRIBUTARY SYSTEM

The Chinese for a long time considered themselves to be the centre of the universe, the only civilised people in the world, while others were looked upon as barbarians. There were two kinds of barbarians for the Chinese. One group was the barbarian who was living at the periphery of China (e.g. Korea, Tibet and Vietnam) and the other, about whom the Chinese didn't bother much. The Chinese used a unique system to manage relations with the immediate and outer barbarians and this system was called the 'Tributary System'. In a tributary system, the barbarians, in order to have a relationship with the Middle Kingdom had to pay tributes to the 'Heavenly Emperor', at specified intervals as a symbol of subservience to the Chinese crown.

The tributary system was the traditional Chinese system for managing foreign relations. By establishing the rules, controlling the means and symbolic forms by which foreign countries entered into and conducted their relations with China, the Chinese found in the tributary system an effective mechanism for exacting compliance from neighbouring states and people on important matters of political, defence, economic and diplomatic concerns to China.¹

However, just a look at the history of the Chinese tributary system will leave many questions unanswered. The tributary system has to be studied along with the reasons. While studying the tributary system, it is pertinent to ask certain questions such as- What was the basis of the system, the reason that led to the establishment of the system, the basis of survival of such a system, and above all what made the system acceptable to the other countries of the region?

One main reason attributed to be the basis of the system was 'the Confucian tradition'. However, it was not the fundamental reason. The fundamental reason was the hegemonic intention and the need for survival. The system was based on sheer realism and the main intention of the ruler was survival in power. To ensure survival, the

1. Roland L. Higgins, "The Tributary System," EAH. at, <http://www.olemiss.edu/courses/pol337/tributar.pdf>, accessed on May 29, 2012.

ruler needed legitimacy and, hence, the ruler used various means to legitimise his rule. The 'Son of Heaven' and the Confucian principles were tools that helped establish legitimacy for his rule. To understand it better, let us look at the evolution of Confucianism.

The Confucian principles which are known now, are not entirely the thoughts of the sage named Confucius. Thoughts of various schools were added and manipulated to serve the interests of the monarchs. The central figure who gave the present shape to Confucianism was Tung Chung-Shu, the first Minister to the great Han Emperor Wu-Ti. He did three things to enrich and promote Confucianism. One, he interpreted the Annals in such a way as to make Confucius an infallible prophet, an advocate of the doctrine of the Great Unified Empire, and a believer in the theory that the Son of Heaven is the representative of heaven in will and in virtues. Thus, Confucianism and the divine right of kings became inseparable. Second, he included in Confucianism many of the pre-Chin schools as they then stood, and at the same time vehemently proclaimed himself to be a faithful Confucianist, disdaining all the other schools. While stretching and distorting the old Confucian doctrines of virtues and rites to act as bulwarks of monarchy, he included a Taoist version of the book of changes, the cyclic doctrines of the yin-yang school, and the legalist school. From then on, Confucianism was really nothing but a grand mixture of elements from many philosophies adapted to give dignity to and serve the needs of the monarchy.² Hence Confucianism was used as a model through which the rule could be legitimised. This Confucianism emphasised, hierarchy (non-egalitarianism) and supported the concept that the Emperor was the 'Son of Heaven', above everything and the centre of the universe. All major dynasties supported Confucianism because it required everyone to bear allegiance to the ruler. Confucianism spread to other countries on the fringes of China. The extension of the practice of Confucianism to the bordering countries formed the foundation of the Chinese foreign policy towards neighbours. The practice of Confucianism by these bordering countries made them to fit into the Chinese way of foreign policy.

2. Chien Tuan-Sheng, *The Government and Politics of China*, (Harvard University Press, 1950), Ch 2.

Another factor which influenced the Chinese foreign policy was the sense of supremacy. This sense of supremacy was based on the cultural dominance of the region by China and the belief that China was at the centre of the universe (Sino-centrism). The concept of the centre of the universe originated during the early period of the formation of the Chinese world which was the result of a historical process. The Chinese world originated as an agrarian-based cultural island. It spread outward from North China by the gradual absorption of the surrounding territories, mainly southward. It remained the centre of the world known to it, only vaguely aware of the other ancient centres of the West.³ The sheer size of the country also added to the sense of supremacy. This sense of supremacy which was established since ancient times might also have been the reason for the formation of the hierarchical Confucian based practice of its foreign policy.

Both the spread of Confucian practice in the region and the sense of supremacy that formed as a result of the historical process enabled the Chinese rulers to establish a world order (regional order) that would ensure the survival of their regime. This order was based on presenting tributes to the Chinese Emperor, which was a ritual appropriate, to acknowledging the world order⁴ established by China.

The tributary model was the primary policy to ensure compliance of the other countries in the region. This tributary system extended even beyond the periphery of China into even Southeast Asia, South Asia, Central Asia and also some Western countries (however loosely connected). Nonetheless, this tributary policy was not rigid. It was flexible enough to include coercion and threat. The tributary policy was a soft policy that was adopted by the Chinese rulers, but when the policy failed to ensure the compliance of its neighbours, China resorted to a hard policy like coercion and punitive military expeditions. For example, between 1369 and 1371, Hongwu tried to persuade the Koreans by dispatching envoys, evoking historical precedents and bestowing gifts to submit to his authority. After the Korean campaigns between 1370 and 1371 in Liaodong, however, the Ming Emperor began to perceive his neighbour as a security

3. John King Fairbank, ed. "*The Chinese World Order: Traditional China's Foreign Relations*" (Harvard University Press), ch 1, p. 5.

4. *Ibid*, ch 4, p. 64.

threat and adopted more decisive measures to compel Koryo court compliance, including blackmail. In 1374, for example, Hongwu reduced the frequency of Korean missions to China to once every three years, perhaps in an attempt to gain Korean concessions and cooperation in maintaining its security in the Northeast. He also withheld the investiture of Yi Song-gye (King T'aejo, r. 1392-98), founder of the new Choson Dynasty in Korea in an attempt to exact his guarantee of Ming security on the Northeast border. He, in effect demanded proof of total fealty from Korea. The Hongwu Emperor, thus, employed the strategies of persuasion and blackmail in his dealings with Korea. Almost three decades later, the Yongle Emperor tried similar inducements. He allowed Korean envoys detained in Nanjing during the Hongwu reign to return, bestowed lavish gifts and even proposed intermarriage between the two dynastic houses. As regards relations with the Mongols, both Ming Emperors waged frequent military campaigns against them, notably Yongle, who personally led five expeditions on the Mongolian steppe.⁵ At times, the concept of the balance of power could also be found in the East Asian history⁶.

The combination of various tactics, both hard and soft, ensured the survival of the system for a long time. But what made this unequal system acceptable to the neighbouring countries? There are a few fundamental reasons: China was the source of the Confucian tradition which was adopted by some of these countries, particularly Korea, and together with its enormous size and economic might, China was seen as a big power to which the small countries, on the periphery, could look for help in maintaining their security and territorial integrity. Moreover, it was logical and safe to submit to a powerful neighbour. Submitting to the authority of China brought some major benefits. One, as seen above, was security. Second, the tributary system was a way to establish trade, as commerce was one of the main motives for the foreign rulers⁷. But beyond this, the third and most important reason could have been that, the foreign rulers

5. Zhang Feng, "Rethinking the 'Tribute System': Broadening the Conceptual Horizon of Historical East Asian Politics", *Chinese Journal of International Politics*, 2, 2009, pp.597-626.

6. *Ibid*, p. 605.

7. *Ibid*, p. 602.

could strengthen their legitimacy by conforming to the authority of the 'Son of Heaven'. Recognition by the Son of Heaven was an important symbol of legitimacy. The Son of Heaven, on occasions, bestowed titles to the barbarian king which further acted as symbols of legitimacy. But the most important basis for the acceptance of the system beyond all these was the dominance and influence of Chinese ideas in the region. For any country to maintain dominance, it has to spread its ideas to increase its influence in the region it wants to control.

However, not all the countries around China espoused Confucian principles. As a result, it led to friction with the Middle Kingdom. The Mongols and to some extent the Central Asian countries fit into this category. When we look at China's relations with the Central Asian people, we see that no dynasty based on the sedentary bureaucratic society of China could tolerate the molestation of its frontier by nomadic raiders. They not only disturbed the stability of the bureaucratic process but also challenged the legitimacy of the dynasty in Confucian terms by suggesting that the Emperor had lost the mandate of heaven because of his inability to control the barbarians. Consequently, Central Asia, and not sedentary Southeast Asia, was the primary focus of dynastic foreign policy, at least until the early 19th century. China constantly sought to dominate the Central Asian steppes and deserts by demonstrating its military strength and trying to force the barbarians to recognise it by performing the prescribed Confucian rituals.⁸ The Mongols, for example, directly challenged the Ming dynasty by competing with it politically and militarily. Strengthened after exploiting the benefits of paying tribute to the Ming, the Mongols tried to expand their power at Ming expense. Mahmud began to challenge the Ming in 1413 and Arughtai allowed raids on the Ming frontier from 1422 to 1424. These leaders thus challenged Ming dominance of the region because it presented an obstacle to their intended Mongol hegemony over the steppe.⁹

8. Mark Mancall, "The Ching Tribute System: An interpretive Essay" in *The Chinese World Order: Traditional China's Foreign Relations*, (Harvard University Press), pp. 70-71.

9. Zhang Feng, "Rethinking the 'Tribute System': Broadening the Conceptual Horizon of Historical East Asian Politics", *Chinese Journal of International Politics*, 2, 2009, pp. 597-626, p. 617.

Not only these two regions, but at various points of time, the other countries in the region including Korea (the ideal example for the tributary system), went against the Emperor during times of relative weakness within China. Thus, above all the ideals on which the relations were claimed to be based, it was the power reality and self interest that played a central role in the foreign policy of the region.

Another important player in the region was Japan. But Japan was a little loosely connected with this system when compared to other countries around China. Japan also at times had accepted and conformed to the tributary relation with China. However, it had also been one of the countries most reluctant to participate in the Sino-centric world order. Japan did not identify itself as a vassal state of China during most of its history, no matter how China saw it. In this traditional setting of international relations in East Asia, it was quite natural that the Tokugawa bakufu also had concerns about Japan's international status when seeking to restore diplomatic and commercial ties with China.¹⁰ But, though the Japanese did not accept the superiority of China most of the times, the latter could not impose its will on the Japanese. This could have been because, the sea between China and Japan was rough in nature, often affected by storms and was also infested with piracy which made it difficult to navigate. Thus, it was nearly impossible for China to undertake any punitive naval expedition to Japan. Though, there was an alternate sea route, it was long and the Chinese rulers did not emphasise on building a strong navy. Hence, the relationship status depended on the will of the Japanese rulers.

The early order (tributary) was partially isolationist, in the sense that China did not endeavour to reach out to the distant Europeans but neither closed the door to them. Again, the reason for not exploring outside East Asia was the lack of interest of the Chinese officials in building a strong navy. This was understandable as the Chinese officials earned their positions not through display of martial valour but by way of mastery of the Confucian classics and refined arts such as calligraphy and poetry.¹¹ With the remote barbarians such as the Europeans, about whom they knew little, the Chinese maintained a

10. Mizuno Norihito, *China in Tokugawa Foreign Relations: The Tokugawa Bakufu's Perception of and Attitudes Towards Ming-Qing China*, p. 109.

11. Henry Kissinger, *On China*, (Penguin Groups), 2011, Ch 1, p. 19.

friendly, if condescending, aloofness. The founding Emperor of the Ming Dynasty expressed this view in 1372: "Countries of the Western ocean are rightly called distant regions. They come [to us] across the seas. And it is difficult for them to calculate the year and month [of arrival]. Regardless of their numbers, we treat them [on the principle of] 'those who come modestly are sent off generously.'"¹²

TRANSITION TO TREATY SYSTEM

Even though the Chinese also used other means to maintain the established East Asian order, the tributary system formed the pillar of the order. Only when this method failed did the Chinese Emperor resort to other means. But this unique order was replaced completely by the end of the 19th century by the modern Western treaty system. The defeat of the Chinese in the Opium Wars initiated the start of the replacement of the tributary system with the Western treaty system. In the 19th Century, for the first time in its history, China faced "barbarians" who no longer sought to displace the Chinese dynasty and claim the Mandate of Heaven for themselves; instead, they proposed to replace the Sino-centric system with an entirely new vision of world order—with free trade rather than tributes, resident embassies in the Chinese capital, and a system of diplomatic exchange that did not refer to non-Chinese heads of state as "honourable barbarians" pledging fealty to their Emperor in Beijing.¹³ The principles of barbarian management became so ingrained in the Chinese official thought process that when the European "barbarians" arrived on China's shores in force in the 19th century, Chinese officials described their challenge with the same phrases used by their dynastic predecessors: they would "use barbarians against barbarians" until they could be soothed and subdued. And they applied a traditional strategy to answer the initial British attack. They invited other European countries for the purpose of first stimulating and then manipulating their rivalry.¹⁴

In pursuit of these aims, the Chinese court was remarkably pragmatic about the means it employed. The Chinese bribed the barbarians, or used Han demographic superiority to dilute them; when defeated, they submitted to them, as in the beginning of the

12. Ibid, p. 17.

13. Ibid, Ch 2, p. 33.

14. Ibid, Ch 1, pp. 20-21.

Yuan and Qing Dynasties, as a prelude to sinicising them. The Chinese court regularly practised what in other contexts would be considered appeasement, albeit through an elaborate filter of protocol that allowed the Chinese elites to claim it was an assertion of benevolent superiority.¹⁵ With the aim of subduing the Europeans with the traditional tactics, the residential and trading areas to which Westerners, like other foreigners in earlier times, had been restricted, like at Macco and outside the walls of Canton, were simply extended to four more ports.¹⁶ The Chinese also considered the treaties as a charter of limitations that set boundaries which the foreigners could not overstep without endangering their commercial profits.¹⁷ These methods of restraining the foreigners only worked for some time. After 1840, it just took another 40 years to bring China under the new system. But the treaty system continued till the early 1890s. If we begin counting in 1840, we find tributary missions recorded from Korea in 46 different years down to 1894- that is missing in only nine years, mainly toward the end of the period. Missions from Liu-chiu are recorded in 22 years ending in 1877; from Vietnam in nine years ending in 1883; from Siam in five years ending in 1853; from Nepal in five years to 1880 plus a final mission in 1908; from Burma in three years to 1875; from Laos in two years to 1853; and from Japan once (1871). This rate of activity is about the same as in the 17th and 18th centuries. In the 41 years from 1840 to 1880 inclusive, 83 missions were recorded.¹⁸ Finally, by the end of the 19th century, the centuries old Chinese world order was replaced with the modern international order. Moreover, the later half of the 19th century was marked by various intra-regional and extra-regional geopolitical convulsions influencing the region like the aggressive and ambitious policies of Japan and the power politics of Russia, Britain and Japan. These power politics were the reasons for the final end of the tributary system. In this, the final mark of the end of the old Chinese system was the signing of the Treaty of Commerce with Korea, the country which stood out as a perfect model of tributary relationship with China.

15. Ibid, p. 21.

16. John K. Fairbank, *The Early Treaty System in the Chinese World Order The Chinese World Order: Traditional China's Foreign Relations*, (Harvard University Press), p. 260.

17. Ibid.

18. Ibid, p.266.

CONCLUSION

The Chinese rulers were as practical as they were before in protecting their rule. But the traditional methods did not work beyond a point as the Westerners could not be fitted into the Chinese defined order which appeared completely strange to the Europeans compared to their system of world order. One of the major reasons for the failure of the Chinese to preserve and protect their system of world order was their culture and mindset itself. The Chinese considered themselves as superior beings compared to others. Because of this mindset, they never ventured out of their territory to explore the larger world and missed the technological progress that was underway in the West, particularly in the military technology. This ignorance led to the continuance of the false belief of supremacy and security. As a result, the superior military strength of the Europeans and their own sense of supremacy overwhelmed the Chinese dominance of the region. From then on, China had to slowly adopt the larger international order, established by the Western powers based on the legal treaty system.

CHINA'S ENERGY SECURITY ISSUES

INDRANI TALUKDAR

Securing access to energy resources from both historical and geopolitical perspectives has meant militarisation and belligerent policies among great powers as they compete for control of resource-rich and strategic real estate. Securing scarce energy resources is the single most important challenge that a country faces today. The insecurities of the US, China, Europe, Japan, India and most of the developing world, which rely on energy imports, make them all vulnerable to supply disruptions in a time of increasing uncertainty in the global energy supply. In fact, increasing insecurity of supply today, accompanied by a growing demand potentially leads to a dangerous security dilemma. The scarcity of energy seems to be a case of classic zero-sum competition but the growing interdependence and strong inter-linkages on economic cooperation with each other has also brought out the vulnerability of affecting one's own as well as each other's growth. This situation actually douses off the fire on "resource wars", therefore leading to a stage for shared challenges in the need to diversify the energy mix, to shift to alternate energy supplies, and to improve energy efficiencies.¹ But at the same time, countries, including China, should be on alert regarding their policies

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1. Jean A.Garrison, *China and the Energy Equation in Asia: The Determinants of Policy Choice* (London: First Forum Press, 2009), pp.1-2.

and not revert to a zero sum policy because of the growing domestic demand, as the foremost interest of every country is its people's well being and comfort.

China has been in the focus for not only its military development and economic growth but also for its spreading over all the strategic countries, be it in its own area or Central Asia or the recent interest in the Arctic region. With its unstoppable development and growth that has been complimented with the changes in the world, it has increasingly become the focus, be it in academia or the policy making arena. This growth has actually catapulted China to a high peak and has changed its position in geopolitical power, at both regional and global levels. This development has corresponded with China's energy security policy over the past several decades. In fact, China is leaving no stone unturned in its ambition to enhance and secure its position in the global market of the energy sector. To stem out future problems within the circle of domestic policies of energy, influenced by the bureaucracy², with its growing power in the energy sector, China is trying to bridge the fissure by its proposal of creating an energy "super ministry". Recently, there has been a round of contemplation in China. The Cabinet may be reshuffled in 2013 to create an energy "super ministry" that would take control of China's now scattered energy policies.³

China has been trying to draw up a long-term strategy on the security of its overseas oil and gas supplies, rationalise pricing and taxing policies, boost nuclear and renewable energy sources, and cut greenhouse gas emissions. The ministry will be focused on policy setting. In fact, the absence of a single voice for the energy sector has stymied China's efforts

2. A new ministry with centralised powers may enable Beijing to overcome bureaucratic hurdles that have prevented it from creating important energy policies that conflict with bureaucratic interests, such as establishing a strategic petroleum reserve or developing streamlined policy to reduce greenhouse gas emissions. This ministry can also help Beijing keep its state-owned energy companies in check. In fact, a new energy ministry may strengthen Beijing's hand in developing and directing energy policies that avoid foreign policy pitfalls and bolster its long-term energy strategy. Onlookers – including U.S. policymakers – will need to keep a watchful eye on how this cabinet restructuring pans out. Will Rogers (2012), "In China, Streamlining Energy Policy", 9 January, *Centre for a New American Security*, at <http://www.cnas.org/blogs/naturalsecurity/2012/01/weekend-s-news-china-streamlining-energy-policy.html> accessed on February 28, 2012.
3. Will Rogers, "In China, Streamlining Energy Policy", 9 January, *Centre for a New American Security*, at <http://www.cnas.org/blogs/naturalsecurity/2012/01/weekend-s-news-china-streamlining-energy-policy.html> accessed on March 8, 2012.

to improve its energy security⁴, hence the need for urgency. This urgency is felt because China is a developing country, with a large population but deficient resources. This deficiency has led China to make constant endeavours in prospecting for energy resources, and conducting several resources assessments. China's energy resources are scattered widely across the country, with uneven distribution. Its energy development is based on the principle of relying on domestic resources and the basic state policy of opening up to the outside world. The country is striving to ensure a stable supply of energy with a steady increase in domestic energy production and promotion of common development of energy around the world. In fact, the basic themes of China's energy strategy are- placing priority on thrift, relying on domestic resources, encouraging diverse patterns of development, relying on science and technology, protecting the environment, and increasing international cooperation for mutual benefit.⁵ Therefore, there has been a shift in China's policies wherein diversification is apparent.

CHINA'S CHANGING POLICIES

China's energy security policy has transformed from "self-reliance, self-sufficiency" to "resource diplomacy" or "oil diplomacy," and, finally, to a more pragmatic yet more complicated policy as China's economic power and geopolitical power expands. In fact, this transformation has also seen a shift from energy security policy being a part of the domestic policy to a part of the foreign policy. From the growing demands domestically, China's focus has shifted from "oil independence" towards diversification and energy mix.⁶

China has seen a four- phase set-up in regards to its oil development industry. The first phase from 1978-92 when self-

4 David Stanway and Benjamin Kang Lim, "Exclusive: China Mulls New Energy 'Super Ministry'", 6 January 2012, at http://www.reuters.com/article/2012/01/06/us-china-energy-ministry-idUSTRE8050AE20120106?feedType=RSS&feedName=environmentNews&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+reuters%2Fenvironment+%28News+%2F+US+%2F+Environment%29 accessed on March 8, 2012.

5. *China's White Paper on Energy*, 2007, at <http://www.china.org.cn/english/environment/236955.htm> accessed on March 8, 2012.

6. Dr. Zhang Jian, "China's Energy Security: Prospects, Challenges and Opportunities" (Published by *CNAP Visiting Fellow Working Paper*) July 2011, The Brookings Institution, at http://www.brookings.edu/~media/Files/tc/papers/2011/07_china_energy_zhang/07_china_energy_zhang_paper.pdf, p.31 and p.3 accessed on February 29, 2012.

reliance and self-sufficiency were the key objectives of energy policies. The second phase from 1993-99 when production of oil could not be met at the domestic level and, therefore, enterprises sought foreign markets. The third phase from 2000-08 when the slogan "go global" was adopted. Firms were encouraged by the government to go abroad. In the last phase, from 2008 to the present is "go abroad and buy" one, in response to the financial turmoil that began in 2008, and hastened China's investment expansion at the global level. In the current stage of industrialisation, especially in China, energy security is essential for economic security. Economic security, in turn, is a critical element of national security and an objective of foreign policy. Toward this realisation of energy security, China has diversified its oil supply sources and routes since the late 1990s. In fact, one of the major strategies of China had been to reduce its dependency over the volatile West Asian region, towards which it has started to increase imports from Central Asia and Russia.⁷ Another factor that can be observed in this diversification is towards strategies and tactics to lessen China's dependency over Malacca Strait.

Since China became an energy importer in 1993, it has adopted a "go out" strategy to procure energy assets abroad. Because China became increasingly dependent on external energy supplies to feed its economic development and thereby preserve the Chinese Communist Party (CCP) regime's legitimacy, Beijing formulated the top-down "go out" (*zouchuqu zhanlue*) energy-based foreign policy in 1999, aimed at procuring energy equity abroad. In 2002, both the top leaders, Hu Jintao and Wen Jiabao decided that the security of petroleum and other scarce resources was crucial not only to sustained economic development, but also to China's national security. In 2005 changes and developments were seen. The State Council established a National Leading Energy Group headed by Wen and at the same time, the three major state-owned energy corporations began to step up domestic exploration activities, build strategic reserves, and take a "neo-mercantilist approach to acquiring direct control of overseas energy production and supplies."⁸

7. Ibid., p.6 and pp.10-12.

8. Christina Lin, "The New Silk Road: China's Energy Strategy in the Greater Middle East", *The Cutting Edge*, May 8, 2011, at <http://www.thecuttingedgenews.com/index.php?article=51980&pageid=21&pagename=Energy> accessed on March 4, 2012.

On January 27, 2010, the State Council reorganised the Leading Energy Group and announced the establishment of a National Energy Commission (NEC) under Wen's leadership, with twenty-three members from the Ministry of Foreign Affairs (MFA), Ministry of State Security (MSS) and People's Liberation Army (PLA) General Staff Department (GSD), headed by Gen Zhang Qinsheng, former chief of military intelligence. Beijing's inclusion of the foreign affairs, security, and military intelligence apparatus in the NEC reflects the regime's deep concerns about energy security.⁹ Therefore, the seriousness in the Chinese circle can be seen in its policies abroad.

CHINA'S EXPANSIVE POLICY

One of the major reasons for China's westward expansion for energy, especially through pipelines apart from growing demand and also being a part of its "Grand Strategy" has been the concern regarding the maritime energy sea routes. It seems China feels insecure about these routes. The root cause of this insecurity could be found in the not-so comfortable relationship between China and the US. The discomfort has become apparent to the Chinese because of the large-scale presence of the US naval patrols along these routes. In particular, Beijing feared that a potential military clash in the Taiwan Strait could result in a naval embargo on energy supplies. China also faces a "Malacca Dilemma"¹⁰, a chokepoint that is vulnerable to both piracy and any US blockade efforts in the event of any conflict with Taiwan.¹¹

In 2004, a Chinese newspaper had stated that "It is no exaggeration to say that whosoever controls the Straits of Malacca will have a stranglehold on the energy route to China." In case, the Straits were ever to be blocked, it would mean a detour of at least three to four days

9. Ibid.

10. The Malacca Straits, a shallow and a narrow waterway linking Indian Ocean with South China Sea is significant for China's survival. Nearly 80 percent of China's oil imports pass through this route. China relies heavily on imported oil, gas and other natural resources to feed its growing economy and these are mainly transported by sea. It is expected that China's imports of crude oil may exceed 300m tons by 2012 and by 2030 nearly 75 per cent of its oil consumption would be based on imported oil. In fact, nearly 10 per cent of China's total energy consumption is based on imported oil. R.S. Kalha, "The Straits of Malacca and China's Strategic Vulnerability" *Journal of the United Service Institution of India (USI)* vol.161, no.585, July-September 2011, p.339.

11. Christina Lin, 8.

extra navigation by ships and that also not through the safe waters. Moreover, the hard-core Chinese realist are skeptical of the attitude of the US and India.¹² One Chinese official who is the president of a state-owned energy company said that China is concerned about the strait being “an area of American influence.”¹³

In response to these risks, Beijing has been increasingly militarising its energy security policy and building up naval capabilities to protect its global interests,¹⁴ though Chinese officials state that China’s foreign policy rests on a concept of “peaceful rise and development.”¹⁵ In line with President Hu Jintao’s New Historic Mission strategy, China is expanding its naval presence throughout the Gulf of Aden and Southeast Asia. Also the regime has hedged against maritime risks by building overland pipelines, railways and roads to carry energy supplies from the West Asia.¹⁶ Along with the up gradation of military power and capabilities, China not to be contained by any other power through its ‘strategic deception’ has tried to strike a ‘strategic advantage’ through diversifying its energy policies.

One question that needs attention is -Why is China boldly expanding its energy related relations with the regions which are volatile? The answer can be manifolds. One reason could be because of the lack of opportunities in the already controlled areas by exporting countries or Western nationals. Chinese companies have struggled to acquire oil fields elsewhere. Closing down of the most attractive operations, which are already controlled by exporting countries or Western multinationals, Chinese companies have ventured into some of the world’s most volatile countries, notably Sudan and Iran, to a certain extent Iraq and now with Turkey¹⁷ also. Another

12. R.S. Kalha, .10, p.339.

13. Keith Bradsher, “Security Tops the Environment in China’s Energy Plans”, 17 June 2010, at <http://www.nytimes.com/2010/06/18/business/global/18yuan.html> accessed on February 26, 2012.

14. Christina Lin, .8.

15. Garrison, 1, p.8

16 Lin, .8.

17. Bradsher, 12. This shift towards volatile countries do give the Chinese officials jittery which might be justified with the upgradation of its military capabilities as well as their strategy of “delay and weaken” which it had taken towards Iran during the UN sanctions. Major Shailender Arya, “China—The Western Shift” (*Journal of the United Service Institution of India (USI)*) .CXLI(585), July-September 2011, p.318.

reason, to which one can agree to a larger extent, is- Robert Sutter's characterisation about China's policy, as an attempt to help restrain the US hegemonies, to facilitate the move toward a multipolar world and to foster stability for its continued peaceful development.¹⁸ But, seeing the growing interest of China in the Arctic region, the above observation doesn't hold strong.

ARCTIC REGION

The Arctic region consists of a vast, ice-covered ocean, surrounded by abundant treeless permafrost. It is therefore natural to find the presence of gas hydrates, which is an unconventional natural gas.¹⁹ Because of the mad race to grab a piece of energy reservoir for posterity, it would not be surprising to see a change in China's growing interest in this region, from subtle to now being assertive.

On March 5, 2010 the official China News Service relayed comments made by Rear Adm Yin Zhuo, with respect to the Arctic at the Third Session of the Eleventh Chinese People's Political Consultative Conference (CPPCC) where he advised Chinese leaders not to fall behind on Arctic Ocean exploration. Adm Zhin stated "The United Nations Convention on the Law of the Sea (UNCLOS), the North Pole and the surrounding area are the common wealth of the world's people and do not belong to any one country." He went on to say "China must play an indispensable role in the Arctic exploration as we have one-fifth of the world's population." He went on to criticise some countries for contesting sovereignty over the region, which impacts other nations. According to the *Stockholm International Peace Research Institute (SIPRI)* report, Chinese officials reject any kind of Arctic policy towards which it has a clear stand. Therefore, not to raise an alarm,²⁰ China is playing safe.

The main theme of the report is that, despite the fact that China

18. Jean A. Garrison, .1, p.9.

19. Gas hydrates is a crystal hydrate of water and methane that resembles ice and has strong absorption capacity due to its supramolecular structure. Distributed mainly in continental shelf areas and in permafrost regions under certain high-pressure and low-temperature conditions, it is highly flammable because it has high methane or other hydrocarbon content, called as "combustible ice". Jiang Zemin, *Research on Energy Issues in China*, (London: Elsevier 2008), p.16.

20. Joseph Spears, "China's Snow Dragon Sweeps Into Arctic Ocean", 28 January 2011, <http://www.arcticprogress.com/2011/02/chinas-snow-dragon-sweeps-into-arctic-ocean> accessed on 10 March 2012.

has no official Arctic policy “the country does appear to have a clear agenda regarding the Arctic.” Until now, China has mainly concentrated on the melting sea ice in the Arctic and its impact on China from the environmental point of view, but many Chinese academicians are pointing out that China must broaden its focus from environmental issues to cover commercial and political issues as well. China points out that despite those large areas of the Arctic that are under jurisdiction of coastal Arctic states, the Arctic cannot be seen as a regional matter only, due to the many international implications the emerging shipping routes and possible energy exploitation will have in future.²¹ Here, strategies and policy makers, all over the world, need to be cautious in this particular statement of China, which clearly shows its ambitious policy, which won't be able to be contained through any international law or such, given China's attitude.

The SIPRI report held that China was in a weak position, *for the time being*²², because it was not a littoral state having no arctic coastline or any sovereign rights to the continental shelf in the Arctic Ocean. The report held: “To date, China has adopted a wait and watch approach to Arctic developments, wary that active overtures would cause alarm in other countries due to China's size and status as a rising global power. However, in recent years, Chinese officials and researchers have started to assess the commercial, political and security implications for China for a seasonally ice-free Arctic region.”²³

These increasing Chinese interests in the effects of global climate change and the melting of the Arctic ice cap, is especially due to the fact that they pertain to emergent sea routes, natural resources, and geopolitical advantage. China seems to see the overall effect of Arctic climate change as more of a beckoning economic opportunity than a looming environmental crisis. Even though it is not an Arctic country, China wants to be among the first states to exploit the region's natural resource wealth and to ply ships through its sea routes, especially the Northwest Passage. There seems

21. Chinese Arctic Policy, at <http://arcticportal.org/features/features-of-2010/chinese-arctic-policy>

22. Author's own emphasis based on China's “strategic deception” and “strategic advantage” policies.

23. Joseph Spears, .20.

to have a current consensus within Arctic policy debate, discussion, and deliberation in China that the Arctic belongs to all humankind and not to any one country or group of countries.²⁴ Apart from this region, Central Asian regions are another forte of China, where its long-term strategies could be seen. In fact, given the fact that China has gone ahead and solved its boundary issues with this region, it speaks volumes of China's goal on geo-strategy of energy policies because of the fact that China has gone ahead and solved its boundary issues with this region.

CENTRAL ASIA

To address these concerns, Beijing has turned to the Shanghai Cooperation Organization (SCO), as a means of transforming the traditional portion of the Silk Road across the Greater Middle East into an “energy road.” Established in 2001, the SCO consists of China, Russia, and the four Central Asian republics of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan, along with four observer states (Iran, Pakistan, India, and Mongolia). Over the years, China has used the SCO to achieve economic integration with the Central Asia/Caspian region. In doing so, it has sought to meet three main goals: (1) pacifying the restive Xinjiang province, home to significant Muslim-Uyghur separatist forces (who call the area “East Turkestan”); (2) diversifying energy sources from the Persian Gulf and hedging against any maritime energy embargoes; and (3) projecting Chinese hegemony across Eurasia.²⁵

Lin quoted Chinese scholar Guo Xuetang who echoed this view, arguing that the SCO must be further strengthened in order to promote economic integration and cooperation on energy, military, and security matters, as well as stability against extremism, terrorism, and separatism (the latter three elements referring primarily to the Muslim-Uyghur issue in Xinjiang). Towards these ends, he suggested working with Russia to bring Afghanistan and Turkmenistan into the organisation, and using SCO coordination to build an oil pipeline from Kazakhstan to Iran via Turkmenistan. In particular, China's strategy

24. David Curtis Wright, “The Dragon Eyes the Top of the World: Arctic Policy Debate and Discussion in China”, *China Maritime Study*, Naval War College, August 8, 2011, <http://www.andrewerickson.com/2011/10/the-dragon-eyes-the-top-of-the-world-arctic-policy-debate-and-discussion-in-china/> accessed on March 10, 2012.

25. Christina Lin, 8.

toward Central Asia has centered on using financial means to create dependency, building on increased oil/gas and politico-military cooperation. Beijing has already signed several military agreements with Central Asian states and, in doing so, moved into Russia's sphere of influence. Further, Lin gives the observation of Thrassy Marketos, an official with the Ministry of Foreign Affairs, Greece, who says that Russia has neither the resources nor the will to meet China's challenge in that region. He also argued that China's next goal would be to see the US troop's move out of the region, creating a favorable vacuum for China to fill without significant challenges from Russia. Similarly, Robert Manning, director of long-range energy and regional/global affairs at the US National Intelligence Council (NIC), predicted that Central Asia would become China's space by 2030, rather than remaining a post-Soviet space.²⁶

These growing tentacles of China have become a cause of concern for all the major powers, both directly and indirectly. The reason could be attributed to the fact that China with time has become a major energy-and-resource consuming nation because of its rapidly rising economy and large population which play a substantial role in the future global energy markets and also occupy an important position in the energy supply security plans of all nations.²⁷

CONCLUSION

China with its spreading tentacles all over the rich-energy places has put the world in concern. China's policies are directed towards catering to its people's growing demands for which it is diversifying its policies to even places which are volatile in nature like Sudan and Iran. Most of the world holds similar opinion about China that it is indestructible. Shrugging off the crises multiplying elsewhere, China seems to surge from strength to strength, its spectacular growth marching on, no matter what headwinds may come. It appears inevitable that China will overtake the US mired in debt and division to become the world's indispensable economy. Even according to Michael Schuman, China would be a major economic superpower

26. Ibid.

27. Steven W. Lewis, "China and Energy Security in Asia," May 6, 2008 (Washington, DC: Korea Economic Institute Policy Forum), at <http://bakerinstitute.org/publications/ASIA-EnergySecurity-050608.pdf> accessed on February 29, 2012.

with an increasingly influential role in the global economy.²⁸ Given all the above observations and winds of caution on spreading energy policies and China's ambitions, one cannot ignore China's Achilles heel in its policy making especially its energy policies. China in order to meet the growing demands and to have an unshakable economic growth is outreaching to all those countries which are rich in its energy, countries which are a transit hub of energy but at the same time situated in volatile locations. If these volatile regions are not stabilised, then no matter how strong policies or strategies of China are, it might fail in long term. Another caution which Keith has brought up is that China in its concern towards economic growth is somewhere ignoring the signs of global warming.²⁹ It is because securing the sources of energy to fuel that growth has been the focus of the Chinese leadership, leaving aside the implications for world energy markets and the global environment.³⁰ Although, it is trying to focus on renewable energies and trying to reduce gas emissions but the rapid growth in population and environment-related issues might become a state of conflict in the near future which in turn will hinder its rising status of power.

28 Michael Schuman, "Why China will have an Economic Crisis", 27 February 2012, at <http://business.time.com/2012/02/27/why-china-will-have-an-economic-crisis/> accessed on March 9, 2012.

29. Bradsher, .12.

30. Jean A. Garrison, 1, p.9

THE TURNING POINT IN CHINA'S BALLISTIC MISSILE DEVELOPMENT PROGRAMME: THE DONGFENG-21

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China's white paper on National Defence, 2008 says that "The Second Artillery is a strategic force under the direct command and control of the Central Military Commission (CMC) and the core force of China for strategic deterrence. It is mainly responsible for deterring other countries from using nuclear weapons against China and for conducting nuclear counterattacks and precision strikes with conventional missiles."¹ From its inception, the Second Artillery was made responsible for the country's nuclear deterrence. However, according to *Zhanyixue*, after the Cold War, the utility and importance of nuclear missiles were seen to have decreased. At the same time, especially with the development of precision-guided munitions, the utility and strategic importance of conventional missiles has increased greatly². In the later decades of the twentieth century, China indigenously developed ballistic missiles which were accurate enough to be used for conventional roles. The Second Artillery's conventional

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1. White Paper on China's National defence, 2008. at www.china.org.cn/government/central_government/2009-01/20/content_17155577.htm
2. Kenneth Allen and Maryanne Kivlehan-Wise, "Implementing PLA Second Artillery Doctrinal Reforms."

missile force was not established until the early 1990s. According to Zhanyixue, it was not until 1998 that the Second Artillery developed the 'Conventional missile attack campaign' concept and compiled in its first instructional textbook, entitled *Second Artillery Conventional Missile Attack Campaign*.³ Now the Second Artillery Corps controls both the nuclear and conventional missiles.

The conventional role for ballistic missiles was realised in China mainly because of the technological breakthrough which was achieved as a result of the efforts to strengthen China's nuclear deterrence. Before that, short range conventional ballistic missiles were manufactured for exports as China became aware of the export potential of conventional missile. Chinese land based nuclear ballistic missiles, before those technological breakthroughs, were more vulnerable to enemy airstrikes because all the missiles were liquid fuelled, so their mobility was limited, required large launch pads, remained exposed for a long period, while preparing for its launch. Therefore, China initiated a program to design and develop solid rocket motor for its ballistic missile propulsion. The aim was to make the nuclear missiles small enough, so that it can be put in a submarine to increase its survivability and to achieve successful second strike capability. Solid rocket motor had certain advantages, it reduces the size of the missile, could be made more mobile, required less maintenance compared to liquid fuelled missiles, the launch preparation time could be reduced greatly and it made missile operation less complex. The first successful test of the 1.4m diameter solid-rocket engine for the JL-1 came in early 1978⁴. As a result of the successful development of the solid rocket motor, China developed its first Submarine-Launched Ballistic Missile (SLBM), the JL-1. This missile is a two stage solid fuelled system deployed on the Type-092 Xia class submarine⁵. This breakthrough in solid motor technology and the improvement in missile guidance enabled a shift in the use of ballistic missiles. At times, technology overtakes formulation of strategy. At present, the availability of capability mostly drives the formulation of doctrine. After the success of the JL-1, China decided

3. Kenneth Allen and Maryanne Kivlehan-Wise, "Implementing PLA Second Artillery Doctrinal Reforms."

4. www.fas.org/nuke/guide/china/slbn/jl-1.htm, accessed on March 23, 2012.

5. www.fas.org/nuke/guide/china/slbn/jl-1.htm

to develop a land based variant of the JL-1 which would be more mobile and thus more survivable. The DF-21 was successfully tested in May 1985.⁶ This missile represents a shift in the People's Republic of China (PRC) missile programme from liquid fuelled missiles to solid fuelled missiles. The DF-21 is road mobile; canister launched using a Transporter Erector Launcher (TEL). At the start, the DF-21 was also conceived for use only as a nuclear delivery vehicle. But with the development of the later variants with increased accuracy, it was assigned conventional roles also.

At present, there is no hard evidence available on the exact number of DF-21 variants. Some reports claim the number of variants to be four (DF-21, DF-21A, DF-21C, and DF-21 D). Other than the first variant of the DF-21, the Jane's Strategic Weapon Systems issue reports that "An improved version DF-21A, known in North Atlantic Treaty Organisation (NATO) as CSS-5 Mod2, has been developed with an increased range and several different warhead options. Reports in 1996 indicated that DF-21A had improved accuracy; using both Global Positioning System (GPS) and a radar-based terminal guidance system. In 2006 it was reported that a second upgrade was in development, known as DF-21B, and that this version has an improved terminal guidance system capable of achieving Central Military Commission (CEP) of 10m or less. The DF-21B is believed to use an active radar seeker for terminal guidance, similar to that developed for the DF-15, and that these seekers are for use against large ships targets."⁷ The DF-21B should actually be the widely talked DF-21D Anti Ship Ballistic Missile (ASBM). While some other sources report a new variant called the DF-21C. It is claimed that this is the conventional variant provided with terminal guidance for improved accuracy⁸.

DF-21

The DF-21 (CSS-5) can deploy its 600 kg warhead with a minimum range of 500 km (311 miles) and a maximum range of 2,150 km (1,336 miles). Its payload carries a single warhead that can be equipped with

6. www.globalsecurity.org/wmd/world/china/df-21.htm, accessed on 23, 2012.

7. *Jane's Strategic Weapons Systems, Issue 55*, ed. Duncan Lennox.

8. <http://www.ausairpower.net/APA-PLA-Ballistic-Missiles.html#mozTocId8319>, accessed on Mar 24, 2012.

a 250 or 500 KT yield nuclear device, conventional high explosive, sub-munitions, and chemical agents. It uses an inertial guidance system that is capable of striking with an accuracy of 700 m CEP. It has a length of 10.7 m, a diameter of 1.4 m and a launch weight of 14,700 kg. The missile uses a two-stage solid propellant engine.⁹

DF-21- A/B (DF-21C)

The DF-21A/B is an improved variant of the DF-21. Its range was increased to 2500km, the CEP is reduced from 700m to 50m using GPS and a radar correlation terminal guidance system in the missiles navigation system, though the payload is reduced from 600 kg to 500 kg, the newer missile can be outfitted with a greater variety of warheads. It can hold three different nuclear warheads of varying yields (20, 90, and 150 Kiloton (KT), an Electromagnetic Pulse (EMP) only warhead, and the conventional and chemical warheads used in the earlier model.¹⁰

DF-21D

The much talked about DF-21(ASBM) variant, the DF-21D, is an ambitious project undertaken by the PRC which is being designed as part of its anti-access strategy, primarily for a Taiwan and South China Sea contingency. This is a complex weapon system in which the missile is one part of the system. Hitting a moving target in the sea is not an easy task, the missile's onboard guidance, however accurate, will not be sufficient to hit a moving target in the sea. The missile would need constant target position updates even in mid flight, as the target will be constantly moving. For this, the attacking nation should have an extensive array of surveillance and efficient data relay architecture in place to provide cueing to the missile. Unlike the other DF-21 variants, of which the highly accurate ones would be provided with terminal guidance for minimising the CEP, the DF-21D would have to be provided mid-course target updates as the target ship would be at constant move. China, reportedly, has deployed an extensive array of surveillance systems which includes earth

9. http://www.missilethreat.com/missiles-of-the-world/id.26/missile_detail.asp, accessed on Mar 24, 2012.

10. http://www.missilethreat.com/missiles-of-the-world/id.25/missile_detail.asp, accessed on Mar 27, 2012

observation satellites, Over the Horizon radar (OTH) surveillance drones to gather the mid-course target position updates. All these surveillance systems should be networked with each other and with the ground control station. These systems acts as reconnaissance and target locating system before launch and for mid course target updates respectively.

During the terminal phase of the missile, the missile homing seeker takes over. The type of homing sensor could be either optical or radar or both. The Chinese have already demonstrated their capability to manufacture millimetre wave radar for target acquisition by shooting down a satellite in January 2007. The terminal seeker of the missile that destroyed the satellite used Millimetre wave radar ¹¹(MMW). The missile achieved a direct hit which means that the MMW seeker was highly effective. So the MMW radar could be used to acquire targets in the terminal phase of the Anti Ship Ballistic Missile (ASBM) terminal phase. But the problem with the MM wave frequency range is its high attenuation caused by the atmospheric gases¹². It is not clear at what altitude the MMW seeker will take over. So, if it has to be used for long range applications then the transmitted waves should have enormous power for which a bigger power amplifier needs to be used and it should be provided with a larger cooling system. But even if China is able to overcome this technological challenge, manoeuvring a ballistic missile in its terminal phase to hit a moving target is little challenging as the missile would be travelling at hyper-sonic speed. However, even if the missile does not achieve a direct hit, the missile could be armed with sub-munitions (bomb lets) to be dispersed over a wide area where some of the bomb lets would hit the carrier, there by damaging the carrier's deck to hamper flight operations. To defeat Ballistic Missile Defence (BMD) systems, some Chinese researchers have suggested the use of a wave or a glide trajectory during the mid-course phase of the missile. The missile could also be equipped with other conventional BMD counter-measures.

11. Mark Stokes, "China's Evolving Conventional Strategic Strike Capability, The anti-ship ballistic missile challenge to U.S. maritime operations in the western pacific and beyond", Project 2049 Institute, September 14, 2009, p. 24.

12. Merrill I. Skolnik, *Radar Handbook*, Second Edition, McGraw-Hill, 1990, pp. 1.17-1.18.

DEPLOYMENT

Second Artillery Corps has six organisational levels—Second Artillery Headquarters, army-level missile bases, missile brigades, launch battalions, launch companies and launch platoons. Company and platoon launch entities are sometimes referred to as launch elements. To facilitate command and logistics, these key operational strike organisations are likely assigned only one type of missile. The structure differs below the launch battalion level for the strategic nuclear force and the conventional missile force. For the strategic nuclear force, each launch battalion has several subordinate launch companies, which are the smallest nuclear force launch organisations.¹³

A typical conventional missile brigade includes a mobile command post, a central depot, a transfer point, and an assigned set of pre-surveyed launch sites, as well as a set of reserve launch sites. Conventional missile brigades have at least three launch battalions, with each battalion assigned at least three launch companies. Depending on the type of missile system, each launch company may have at least three subordinate launch platoons. Each launch company or platoon is likely be assigned at least one launcher, an electric power generation vehicle, a surveying vehicle, a communications command vehicle, and a missile transport vehicle. Battalions and companies would be assigned a zone within which to operate. The basic firepower unit for Second Artillery's nuclear and conventional forces are different. The launch battalion is the basic firepower unit for the nuclear force. Although the conventional force has launch companies and launch platoons, the launch platoon is the conventional force's basic firepower unit.¹⁴ Though, the exact number of the brigades is not available, it can be safely assumed that there are around 30 brigades based on the available information in the public domain.

Some open sources speculate that the DF-21, DF-21A (with large CEP) is assigned for nuclear role while the DF-21C (highly accurate variant) is assigned for conventional role. This might be because the DF-21C has been given terminal guidance which has improved its accuracy. Again based on the information available on the public domain, the brigades that operate the DF-21 are given here.

13. Kenneth Allen and Maryanne Kivlehan-Wise, n.2

14. Ibid.

DF-21 Base and Brigade

S.No	Base	Brigades	Location
1	51	806 , 822,810, 828	Huanglong/Hancheng, Laiwu, Dengshahe, Tonghua, Qingzhou
2	52	807, 811, 827	Chizhou, Qimen, Shaoguan
3	53	802 , 808, 826	Jianshui and Kunming, Chuxiong, Qin, Qingyuan
3	56	809, 823, U/I	Datong, Korla, Delingha, Liyqingkou, Xining

Source: Air Power Australia and I&A, Volume 1, Number 11, December, 2011.

Based on the location of the bases, it could be deduced that majority of the bases with DF-21s are assigned to defend against the threat from the north and the east. To be more specific, these bases might be used against the US air bases in Japan and the base in Guam (if in future the range of DF-21 is increased). While these are for conventional strikes, the brigades around Da Qaidam and Delingha which is also thought to be nuclear weapon storage base would primarily be for nuclear role against the Russians as three Intercontinental Ballistic Missile (ICBM) fields and a bomber base are within reach of the DF-21 missiles from Da Qaidam. From Da Qaidam, the entire northern India is also within reach of the DF-21. But whether the brigades would be used against India would depend on the number of the high precision DF-21s (Whatever the variant they might be, DF-21C, DF-21B...) they deploy. The location of DF-21 brigades around Kunming is also within reach of a larger part of India and other South East Asian countries. According to Janes Strategic systems, the DF-21A has a range of 2500km and a CEP of 50m.¹⁵ This makes it an ideal choice for use in conventional role.

The DF-21s are carried in canisters which are transported in road mobile TELs. It is also said to have limited off road capability. The DF-21 needs a flat hardened surface to be launched. And based on some commercially available satellite photographs, it is evident that the launch platform is just 15 meters¹⁶ in length which could be built at any place within a short time. As the DF-21 is canister launched and road mobile, it can also be launched from the road itself. But,

15. *Jane's Strategic Weapons Systems, Issue 55*, ed. Duncan Lennox.

16. <http://www.fas.org/blog/ssp/2008/05/extensive-nuclear-deployment-area-discovered-in-central-china.php>, accessed on Mar 27, 2012.

since known geographical, atmospheric and altitude details are necessary for any Immigration and Naturalisation Service (INS), it could only be launched only from pre-surveyed locations even on the road. This along with its mobility, enhances the survivability and the ability to transport it to launch location, at a short time, which is closer to the adversary's territory, so as to increase its reach into the enemy territory.

EMPLOYMENT DOCTRINE

The use of long range conventional missiles can be expected to be intense during the early hours of the war. The People's Liberation Army (PLA) might use it to strike critical targets like political centres, economic and military assets. Among military assets, airfields, command centres, harbours and radar sites are potential targets. The primary motive for this kind of attack is to degrade the morale of the political leadership and the armed forces and to soften the targets creating gaps in the air defence network, so that the People's Liberation Army Air Force (PLAAF) could carry out, follow on counter air operations.

Guided missiles are selected based on the target that will be hit. For a hard, point target, a high-accuracy guided missile is used. To attack an area target, the guided missile does not have to be as accurate. When attacking enemy guided-missile positions, a blast fragmentation warhead or fléchette submunition warhead is recommended; if the missile is protected, then a penetrating submunition warhead is recommended. One can also use multiple warhead types at a time. For example, when attacking an airfield, one can use both a penetrating submunition warhead and a fléchette submunition warhead to damage the airfield and destroy ground-based aircraft.¹⁷ Hence, the PLA might choose the highly accurate DF_21 (50m-10m) variant for attacks on the airfields and the early variants for other targets. Some sources estimate the number of DF-21s deployed to be around 100 to 130. Particularly the DF-21C (Highly accurate variant) is estimated to be less than 30.¹⁸ If this is the case, then China has to judiciously use its DF-21 missiles. So, this missile

17. Roger Cliff, et. al, " *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century,*" Project Air Force, Rand Corporation, p . 185.

18. I&A, 1 (11), December 2011.

could be used only for high value targets, mostly military. However, the number of this missile could be increased in future.

LIMITATIONS

Though the DF-21 is a potent missile, there are still some limitations. First, the launch units are large with a considerable footprint that covers an area of approximately 300×300 meters. They are manpower-intensive, requiring large numbers of support equipment. This makes them harder to move quickly and relatively easy to detect by satellite images.¹⁹ Second, all the missile sites (including DF-21 sites) appear to be surface based (though few have underground structure), and a mobile missile launcher is vulnerable to attack once it has been discovered.²⁰ But, to take advantage of this vulnerability, one should have continuous real time surveillance and the capability to deliver a strike within the available small strike window before the missiles disperse. The DF-21D is dependent on a wide array of surveillance systems for detection and cueing. So disabling or destroying some of those surveillance systems before any aircraft carrier comes within striking range, will make the missile useless.

CONCLUSION

It is well known that the Second Artillery controls both the nuclear missiles and the conventional missiles during peace time. But during war time, there are speculations that the conventional missile force may come under the control of the theatre command (Military Region).²¹ If this is the case, it is unclear on how this transfer of command works. It is also unclear on whether the Second Artillery maintains two separate command structures for nuclear and conventional missiles during peace time so that the transfer of command to the theatre command during war would not interfere with the operations of the nuclear missile command structure. As seen earlier in this article, the earlier variants of DF-21 (with large CEP) might have been assigned nuclear role while the latest land attack variant would be assigned

19. Hans M. Kristensen, "DF-21C deploys to Central China," FAS Strategic Security Blog, September 28, 2010.

20. Hans M. Kristensen, "China Reorganizes Northern Nuclear Missile Launch Sites," FAS Strategic Security Blog, July 12, 2007.

21. Roger Cliff, et. Al., "Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century," Project Air Force, RAND Corporation, pp .23.

conventional role. In this case, it is difficult to ascertain on which DF-21 brigade controls nuclear DF-21s and which brigades controls the conventional missiles. It is also difficult to ascertain the Over the Target Requirements for the conventional DF-21s as the CEP of the missile is not accurately known. But what is obvious is that, this missile would be the weapon of choice for China for long range conventional strategic strike. Any ballistic missile is highly vulnerable at its boost phase. But the launch location should be known before hand to position the intercept platform (either aircraft or space based assets) to intercept the missile at this phase. Since the DF-21 is a mobile system, it is difficult to know the exact launch location and hence it is difficult to use this small window of opportunity. The best defence against this missile is to destroy it at the missile base in a preemptive strike before it could disperse out.

CHINA'S NUCLEAR MODERNISATION – TRENDS AND IMPLICATIONS

MANPREET SETHI

On October 16, 2012, China would be completing 48 years since it first demonstrated its nuclear capability. In 1964, at the time of the test, a statement issued by the Chinese government had defined the rationale for the act and the purpose of the nuclear weapons as conceived by the national leadership of the time. It stated that in developing nuclear weapons, "China's aim is to break the nuclear monopoly of the nuclear powers.... China is developing nuclear weapons for defence and for protecting the Chinese people from US threats to launch a nuclear war." The statement also categorically declared that "China will never at any time or under any circumstances be the first to use nuclear weapons."

Marshal Nie Rongzhen, the PLA officer in charge of the nuclear weapons programme in the 1950s-60s, in his memoirs, has described China's nuclear weapons as the "minimum means of reprisal." This could be interpreted as having a capability that is considered sufficient to wreak revenge or cause unacceptable punishment and this has essentially remained the guiding principle for China's nuclear weapons build up. In fact, Chinese Premier Mao Tse Tung is

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recorded to have given the dictum in 1964 that China should “build a few, keep the number small, and make the quality high.”¹ He even put the number of weapons necessary at a figure as low as six. As is evident then, in its search for security through nuclear weapons, Beijing weighed in for a *defensive second-strike role* for its small nuclear forces, their size being just enough to cause “unacceptable damage” to the adversary. In fact, most Chinese writings describe nuclear weapons as a political tool of deterrence, which obviates the need for nuclear superiority, or even parity.

Indeed, minimum deterrence and no first use of nuclear weapons have since remained the basic tenets of China’s nuclear doctrine. From the announcements made in 1964 to those in the most recent White Paper on National Defence (WPND) issued by China in 2010, the above mentioned two basics of nuclear doctrine remain unchanged. In fact, the WPND categorically reiterates, “China consistently upholds the policy of no first use of nuclear weapons, adheres to a self-defensive nuclear strategy, and will never enter into a nuclear arms race with any other country.”²

While China maintains that it is not engaged in an arms race with anyone, there is no denying the fact that the country has been steadily modernising its strategic capabilities. In fact, while the doctrinal precepts might have remained unchanged, much has changed from 1964 to now in the Chinese nuclear hardware – its nuclear weapons and its delivery capabilities. This is not really surprising given that with technological advancements capabilities do change. Moreover, in the case of China, the upgradation has been enabled by the country’s sustained economic growth which has supported liberal spending on military modernization, including in the nuclear dimension. At the same time, some significant external factors that have provided the context for this modernization are the prospects of deployment of missile defence by the USA that would degrade the Chinese nuclear deterrent, especially a Theatre Missile Defence (TMD) over Taiwan that could jeopardize China’s reunification policy, and the possibility

1 Litai Xue, “Evolution of China’s Nuclear Strategy” in John Hopkins and Weixing Hu (eds.), *Strategic Views from the Second Tier: The Nuclear Weapons Policies of France, Britain and China*, La Jolla, CA: University of California, 1994, p. 163, p. 171.

2. China’s National Defence in 2010, Information Office of the State Council of the People’s Republic of China, at http://www.china.org.cn/government/whitepaper/node_7114675.htm

of American-Russian collaboration on Ballistic Missile Defence (BMD) against China.

As a result of these domestic and external factors, China is engaged in rapid nuclear modernisation, an exercise that gives rise to many questions since there is so much ambiguity on how China intends to employ this capability. Despite its colossal intelligence capabilities and umpteen bilateral dialogues, the US continues to rue China's lack of nuclear transparency. It may be recalled that Dennis Wilder, Senior Director for East Asian Affairs on US National Security Council had said in January 2009 that the, "Chinese nuclear strategy and doctrine is really a black box".³

It is against this background that this paper examines three essential questions. One, what are the major trends in China's nuclear modernisation? Secondly, how is the transformation in China's nuclear arsenal likely to impact the country's nuclear doctrine and strategy? Thirdly, what would be the implications of this for India's nuclear deterrence?

TRENDS IN CHINESE STRATEGIC MODERNISATION

It is apparent that China is undertaking an intelligent process of modernisation based on a well considered selection of capabilities keeping the vulnerabilities of the enemy in the mind. In this context, four areas of specific focus can be identified in China's nuclear transformation.

Focus on Delivery Systems rather than Nuclear Warhead Numbers

China remains absolutely opaque on the number of warheads in its nuclear arsenal except to state that it has the smallest arsenal among all the five Nuclear Weapon States (NWS). Estimates about its nuclear numbers vary from 200 to 450. Though American Defence Intelligence Assessments or other Pentagon studies have long predicted a sharp rise in number of China's nuclear warheads, these are not known to have materialised. In fact, the *Bulletin of Atomic Scientists* which periodically publishes the Nuclear Notebook prepared by the Natural Resources Defence Council, and which assesses the national nuclear capabilities of all states with nuclear weapons, has consistently placed

3. "China's Nuclear Policy Worries US", *Daily Times*, January 16, 2009.

the numbers in China's nuclear arsenal at a conservative figure of 240.⁴

While these figures can only be guesstimates in the absence of any official confirmation, which is certainly not forthcoming, one can see the logic in China's approach to place less emphasis on warhead accumulation. Given that it derives nuclear deterrence from its ability to cause 'unacceptable damage', the focus of the nuclear strategy has been to build capabilities that can assure the infliction of such damage. Accordingly, the spotlight has been on missile build up. In fact, this has provided the country with a dual advantage of enhancing its conventional and nuclear deterrence, something that mere addition to the nuclear stockpile would not have done. As stated in the Science of Second Artillery Campaigns, "During future joint combat operations, Second Artillery Corps (SAC) will not merely act as the main force in providing nuclear deterrence and nuclear counter-strike power, but will also act as the backbone force in conventional firepower assaults." This role of the SAC is significantly premised on the development and deployment of missiles of varied ranges and capabilities.

Moreover, the increase in the missile inventory, as also the need to equip them with capabilities that assure their survivability, has also been dictated by the prospect of American national and theatre missile defence. Having to recalculate its ability to cause 'unacceptable damage', China has placed greater emphasis on increasing the numbers, range and reliability of its delivery systems.

Improvements in Mobility and Survivability of Delivery Systems

In order to enhance the survivability, accuracy and mobility of its strategic forces, China has been engaged in building more solid fuelled, rail and road mobile missiles. It realises the vulnerability of land-based missiles despite the best survivability measures. As was stated by Admiral Liu Huaqing, "In the face of a large scale nuclear attack, only less than 10 per cent of the coastal launching silos will survive, whereas submarines armed with ballistic missiles can use the surface of the sea to protect and cover themselves, preserve the nuclear offensive force and play a deterrent and containment role."

4. R.S Norris and H. Kristensen, "Chinese Nuclear Forces, 2011", *Bulletin of Atomic Scientists*, 67(6), June 2011, pp 81-87

Hence, the focus on sea based deterrence for greater survivability.⁵

The sea based leg of the Chinese nuclear triad is expected to rest on Julang 2 (JL- 2), a second generation Submarine Launched Ballistic Missile (SLBM) that would be deployed on an indigenous Type 094 submarine that is likely to become operational by the end of this decade. One Xia class SSBN with 12 JL-1 missiles of 2150 kms range has been operational since 1988. But given its problems of high noise levels, radiation leaks and the ability to carry only Short Range Ballistic Missiles (SRBMs) with a single warhead, it has never been considered a viable second strike deterrent.⁶ New inductions are, therefore, considered critical for deterrence based on China's counterstrike doctrine.

Meanwhile, 100 H-6 bombers capable of carrying three bombs over 3,100 km and about 30 Q-5 aircraft that could carry one bomb over 400 km make the third leg of the Chinese triad. Though air delivery capability was the first one to be available with China once it developed nuclear weapons, this has been considered the weakest, given the short-range of aircrafts and their inability to penetrate enemy air defenses. But, China has begun inducting H-6K bombers in an effort to improve aerial nuclear deterrence. Now fitted with D-30-P2 engines of greater thrust power and reinforced fuselage structure, the H-6K is claimed to have greater range and combat payload. Armed with long-range cruise missiles with range of 2,500 kms, and modeled on KH-55 of Russian origin, the H-6K, even though a subsonic bomber, is now believed to have the operational capability to effectively project nuclear deterrence.⁷

Development of MIRV and MARV Technology

The Second Artillery Corps, tasked with the threefold mission of deterrence, supporting conventional war with ballistic missile attacks, and nuclear counterattack, has adopted the principle of "first resist and then penetrate", implying that Chinese nuclear forces must be able to survive a first strike and then use countermeasures

5. As cited in J You, *The Armed forces of China* (Canberra: Allen & Unwin, 1999), pp. 96-97.

6. For more on this see Lin Changsheng, "The Combat Power of China's Nuclear Submarine", as quoted in Andrew S Erickson, "China's Future Nuclear Submarine Force: Insights from Chinese Writings", *Naval War College Review*, Winter, 2007.

7. Andrei Chang, "China attains aerial nuclear strategic strike capability," <http://www.spacewar.com>, September 7, 2007.

to penetrate the BMD. Accordingly, China is known to have invested considerably in developing technical countermeasures to BMD. These include the use of chaff, decoys, balloons, stealth technologies with use of special materials etc. in order to defeat the adversary's BMD.

But even more significantly, China has been working on two other relevant capabilities. The first of these is to equip its missiles with Multiple Independently Retargetable Vehicles/Warheads (MIRVs). While it is widely assumed that China presently does not deploy multiple warheads on a single missile, it reportedly has had the capability to do so for several years. A report in December 2002, announced the test of DF 21 Medium Range Ballistic Missile (MRBM) with multiple warheads, a capability necessary to enhance China's nuclear deterrence against BMD.⁸ China is known to have been miniaturising warheads to make them lighter and easier to deploy in multiple numbers atop delivery systems.

A second capability involves making the re-entry warhead maneuverable thereby making it difficult to intercept. China has been engaged in the development and testing of maneuvering warheads to evade interception even in terminal stages. While MIRVing and MARVing of missiles may be justified as countermeasures against BMD, these nevertheless are also offensive capabilities that have a role as first strike weapons. The implication of this for China's no first use doctrine is discussed in a later section of this paper.

Rapid Enhancement of Space Based Capabilities

While repeatedly professing support for Prevention of Arms Race in Outer Space (PAROS) in the Conference on Disarmament, it is evident that China is rapidly modernising its space-based capabilities to directly attack enemy's space based infrastructure with Anti Satellite (ASAT) weapons, and to attack enemy's ground based radars or other electronic components of the C4ISR structure. Beijing has determined that a robust ASAT capability could counter the United States by disabling the "complex, exposed network of command, control, communications, and computer-based systems that provide intelligence [and] reconnaissance" to American

8. "China Successfully Tests Multi-warhead Missiles", *Yomiuri Shimbum*, February 8, 2003.

forces.⁹ Indeed, Chinese defence planners see the networked nature of American forces as their principal vulnerability, envisage space warfare in the future, and are developing apt capabilities to meet the challenges. China's endeavour is to develop capabilities that could blind the US sensory and networking organs (surveillance, reconnaissance and intelligence assets in space). And it appears to be pursuing this in a determined fashion through the development of a range of technologies including directed energy weapons and electronic attacks through sophisticated jamming technologies.

Three White Papers on "China's Space Activities" place China's space programme within the overall national development strategy and stress investments in basic research, advance planning for frontier technologies and leapfrogging development.¹⁰ Expansion of space capabilities for reconnaissance, navigation, communications, targeting etc are seen as equally important as counter-space, ASAT ones. As Ashley Tellis has aptly concluded, "China's counter space efforts are diverse, comprehensive, rapidly improving, and deadly serious—exceeding even those of the Soviet Union at its peak. Taken together, Beijing's space denial programs leave no doubt that it is determined to negate the operational advantages accruing to Washington's space-enabled conventional military dominance."¹¹ He therefore, argues that China will continue to invest in space-denial technology rather than subscribe to any arms control agreement that eliminates its chance of asymmetrically defeating superior American military power. One PLA analyst, Wang Hucheng articulated the same, "For countries that can never win a war with the United States by using the method of tanks and planes, attacking the U.S. space system may be an irresistible and most tempting choice."¹² All of this has implications on nuclear deterrence too.

9. According to a report prepared by Michael Pillsbury for the US bipartisan China Economic and Security Review Commission that is based on writings of 20 Chinese military strategists, there are three books and several dozen articles going back a decade that advocate development of ASAT to covertly shoot down satellites to send a deterrent message. As cited by Vago Muradian, "China's Mystery Satellites: US Gauges Beijing's ASAT Strategy", *Defence News*, May 02, 2007.

10. *China's Space Activities in 2006* (Beijing: Information Office of the State Council of PRC, 12 Oct 2006).

11. Ashley Tellis, "Punching the US Military's 'Soft Ribs': China's Antisatellite Weapons Test in Strategic Perspective", *Carnegie Policy Brief*, 51, June 2007

12. *Ibid.*

IMPLICATIONS OF CHINA'S NUCLEAR MODERNISATION ON ITS NUCLEAR DOCTRINE

It was only to be expected that with economic and techno-scientific development, and change in threat perceptions, the nature of China's nuclear deterrence too would transform. Consequently, the Chinese development or acquisition of newer strategic capabilities is driven as much by the new threats (such as BMD), as by the logical progression of its economic prowess and techno-scientific expertise.

Some Western Sinologists have described the nuclear modernisation of China as its graduation from minimum to *limited nuclear deterrence*. The essential difference in these two kinds of deterrences lies in the fact that while *minimum* only required China to maintain a credible second strike capability based on survivable nuclear forces, *limited* deterrence entails the possession of more sophisticated nuclear forces capable of controlling escalation during a conflict to enforce intra-war deterrence.¹³ This includes the ability to maintain a flexible nuclear response, including counterforce targeting, instead of basing deterrence on only counter-value punitive strikes. The emphasis, therefore, shifts to acquisition of "Limited war-fighting capabilities, improved command and control and early warning systems, smaller, survivable, mobile, more accurate and diverse cruise and ballistic missile nuclear delivery systems, possible abandonment of the NFU policy, and missile defence."¹⁴

While China's official nuclear pronouncements provide no indication of any such shift, the trends in modernisation seem to suggest that such a capability is certainly on the anvil. In fact, it is rather interesting to note that the last few White Papers on National Defence (WPND) have indicated a greater emphasis on operational issues. For instance, WPND 2008 underlined the need to, "build a streamlined and effective strategic force by raising the informationisation of weaponry and equipment systems, build an agile and efficient operational C2 and increase capability of land-based strategic nuclear

13. For more on this see Alastair Iain Johnston, "Prospects for Chinese Nuclear Force Modernisation: Limited Deterrence Versus Multilateral Arms Control," *China Quarterly*, June 1996, pp. 552-558; Alastair Iain Johnston, "China's New 'Old Thinking': The Concept of Limited Deterrence", *International Security*, . 20(3), Winter 1995/96.

14. Bates Gill, James Mulvenon, Mark Stokes, "The Chinese Second Artillery Corps: Transition to Credible Deterrence," in Mulvenon, Andrew N.D. Yang, eds. *The People's Liberation Army as an Organisation: Reference V* 2001. pp. 548-9

counterstrike and precision strikes with conventional missiles". The 2010 WPND emphasised, "capabilities in rapid reaction, penetration, precision strike, damage infliction, protection and survivability." Such mandates point to a focus on building a force sized and scaled to resist enemy efforts to coerce China by threatening retaliation. But in case that fails, having the ability to survive the adversary's first strike, to penetrate whatever defences the enemy may employ, and to execute one or more counter-attacks to inflict unacceptable damage.

As China moves to MIRVed missiles, will there be a tendency to jettison no first use in favor of first use? MIRVing certainly creates a temptation for pre-emption. Together with greater accuracy of these missiles, MIRVed missiles hold the promise of being able to carry out a disarming counterforce strike. The propensity to use them first is also born out of the fear that they are attractive targets for the adversary too since he can wipe out a large retaliatory capability by knocking them out in the first strike. This obviously heightens the 'use or lose' dilemma tempting countries to launch first in the hope of gaining a war winning advantage. But, it is still unclear how China's no first use doctrine will be mated with MIRVed missiles.

It is apparent that China is certainly graduating to a higher level of strategic capability. In fact, while earlier its nuclear deterrence was largely existential deterrence based on ambiguity and secrecy in numbers and capability, it is now being more credibly derived from mobility, invulnerability and penetrability of its nuclear forces. The fact that these capabilities could enable nuclear war fighting to impose intra war escalation control is a dimension that Beijing will use to further the deterrent value of its nuclear weapons.

IMPLICATIONS FOR INDIA'S NUCLEAR DETERRENCE

There is no doubt that China has a clear lead over India in nuclear and missile capability in terms of the number of nuclear warheads, the fissile material stockpile, the number of missiles, their range, accuracy and their being equipped with countermeasures against missile defence. Therefore, it is already in a situation of limited nuclear deterrence with India.

While this should not automatically lead to a conclusion that China could consider engaging in a nuclear war with India (many

factors would need to be considered on this issue), it nevertheless could certainly raise the prospect of India having to face a more assertive China in the coming years. In fact, with a general rise in its own perception of its Comprehensive National Power (CNP) (nuclear capability being one component of this), China does believe that it carries more weight today. This gives it the confidence to actively participate in international rule making or rule breaking with impunity, both aspects that India must watch out for.

However, with a synergistic approach that combines its own economic, diplomatic, military and soft power attributes, India can well contend with an emergent China. Given the focus of this paper, it is constrained to offer suggestions only on the trajectory that India should follow to modernise its own military capability to enhance its own deterrence.

While on the one hand, India must undertake conventional modernisation to raise the nuclear threshold, on the other, it needs to enhance the credibility of its own nuclear deterrence through a sustained programme aimed at increasing the survivability of its nuclear forces. Just as China sows doubt in the American mind that its nuclear forces are invulnerable to a disarming first strike, and willing and capable of mounting a punishing second strike, India too has to underline that a nuclear attack by China would result in assured retaliation to cause unacceptable damage. Simultaneously, further improvements in the range and reliability of missiles, redundancy of the command and control systems and a clear articulation of a chain of command and succession to indicate resolve for retaliation are imperative. In fact, ironically enough, India has to follow pretty much the same path as China towards enhancing the credibility of its nuclear deterrence.

CONCLUSION

A measured nuclear modernisation currently under way in China's nuclear capabilities has been enabled by China's economic growth over the last two decades. However, China is engaging in this process in an intelligent manner based on a considered selection of the capabilities to enhance keeping the vulnerabilities of the enemy in mind. It is for this reason that the trajectory of China's strategic

modernisation is so much at variance with the American predictions of what they think a 'rich' China should be doing. China appears to have made the judgment that it should maintain a defensive orientation of overall nuclear policy while preserving the flexibility for offence. The capability build-up clearly points in this direction.

Over the next decade or so, as it derives greater confidence from a secure and survivable nuclear arsenal, China will likely display more nuclear assertiveness. Some incidences of this are already visible. The conduct of the ASAT in Jan 2007 and the BMD test in January 2009 illustrated Beijing's confidence to demonstrate capability without fear of international criticism. The continuing Sino-Pak nuclear cooperation is a demonstration of its defiance to the US in particular and international norms in general. Meanwhile, its continuing policies of appeasement towards North Korea and Iran, with whom it holds some leverages to shape their behavior, demonstrate its increasing diplomatic clout.

China's nuclear force, which is likely to remain small by Cold War standards, but become modern enough to enforce deterrence by display of its war fighting capability, will be increasingly used as a tool to influence the security environment to better safeguard national interests. Interestingly, what Mao had dismissed as a 'Paper Tiger' in 1946 when China did not have the nuclear weapon, has ended up becoming an important ingredient in the country's security strategy and in its rise to great power status.

GAZE CHINA – THE MOST FAVOURED NUCLEAR GUEST

SITAKANTA MISHRA

While India's nuclear energy programme seems to be 'shackled within', China – a relatively late-comer to the civil nuclear industry – is gluing to the edge of a frontline nuclear energy nation. Following a two-pronged strategy, comprising both outbound activities and domestic capacity building, Beijing is fast becoming the 'favoured nuclear partner' for nuclear developments across the world.

The four major policy decisions by China, aftermath the Fukushima nuclear disaster, certainly stretch its nuclear clout far beyond its borders. First, it has released the long awaited safety plan that will result in the lifting of a moratorium on new nuclear reactor projects. Second, the approval of Initial Public Offering (IPO) by China National Nuclear Power (CNNP) to raise the equivalent of US \$27.3 billion is a first of kind's financial offering. Third, building of new nuclear power plants has been listed as part of the 'seven strategic industry initiatives' by the central government to counter down-turn in economic growth.¹ Lastly, Chinese companies' compete for the Horizon Reactor Programme in UK indicates Beijing's long-term outbound nuclear plans.

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1. Dan Yurman, "An IPO for China's Nuclear Energy Triple Play", <http://theenergycollective.com/dan-yurman/87636/ipo-china-s-nuclear-energy-triple-play>, June 22, 2012.

DESPITE THE HITCHES

Undoubtedly, China's tryst with civil nuclear energy is not without hitches. It started construction of its first commercial reactor only in 1985. But within only two and half decades, it has 16 reactors in operation which provides around 2 per cent of its electricity. However, after the Fukushima nuclear disaster, 48 per cent of the Chinese public oppose nuclear power and 42 per cent are supportive.² In March, China has seen stark public resentment over the proposed Pengze power plant in Jiangxi. In the technology domain, even the indigenously designed Centre for Policy Research (CPR)-1000 reactor could not meet the national safety standards issued in 2004,³ though it was efficiently addressed later.

Despite these drawbacks, currently 28 reactors are under construction in China, representing 39 per cent of global new build. Beijing plans to have 100 operational reactors by 2020 with the capacity to produce 70-80 GW⁴ (which may not be realised for the delay in construction owing to public opposition and environmental concerns). Major international reactor vendors, like AREVA and Westinghouse, have sought to construct their most advanced designs in China. The 1,150 MW Westinghouse AP1000 is the third-generation plus design, and China is its only sale; four such units are under construction and another 15 are planned.

At the same time, China is struggling to balance the concern for the higher costs of the international design and greater safety standards. In fact, the recent slowdown of its reactor construction has been partly owing to its consideration whether the future construction would be dominated by its second-generation CPR-1000 design or move towards greater deployment of third generation designs from overseas.⁵ At present, China seems, relying on both overseas sources with additional domestic designs with enhanced safety features. For example, the CPR-1000 is a Gen II+ PWR with a digital control

2. Antony Froggatt, "Chinese Nuclear Goes Global", <http://www.chinadialogue.net/article/show/single/en/4957>, June 06, 2012.

3. Tange Zede, a member of China's State Nuclear Power Technology Corporation was reported in *Nuclear Intelligence Weekly*.

4. Elisabeth Fischer, "The Atomic Dragon: China's Growing Nuclear Capabilities", <http://www.power-technology.com/features/featurechina-nuclear-energy-expansion-rise-fukushima/>, May 10, 2012.

5. "China Supports Nuclear Power IPO", *The Wall Street Journal*, August 20, 2012.

room. The Ling Ao II is one of the first plants to be built with safety enhancements with ability to ride out seismic events and sufficient emergency power to deal with station blackouts. Around 15 such units are under construction and 13 more are planned to be built.⁶

Reportedly, a domestic CAP1400 design based on the AP1000 is due to start construction in April 2013 with a scheduled start of 2017. Once the CAP1400 design has been proven, work is scheduled for a CAP1700 design with a target construction cost of \$1000/kW.⁷ It is also found that China's nuclear plants are 2.5 times cheaper than the US\$10 billion price quoted and could become four times cheaper. This would certainly bolster the demand for Chinese reactors and nuclear expertise in the international market in the years ahead.

As a strategy to raise capital for the nuclear projects with more accountability and transparency, the Cisco Certified Network Professional (CNNP) has developed the IPO. Reportedly, \$5.4 billion of the money from the IPO will pay the 20 per cent upfront money needed to start five multi-reactor power projects previously approved in 2008–2010 for Fujian, Zhejiang, Jiangsu and Hainan provinces.⁸ According to Andy Mulkerin, the Managing Partner at the Nicobar Group, the IPO may be a way *to demonstrate that they are on par* with State Nuclear Power Technology Corporation (SNPTC) and China Guangdong Nuclear Power Group (CGNPG) “in terms of their international prowess, as they have lagged behind both, since the introduction of 3G plants in China.” Also, the IPO will help China to ease the financing of the plants under construction as it is experiencing cost escalation owing to the 14 month construction suspension.

THE FAVOURED NUCLEAR GUEST

While refurbishing its domestic nuclear industrial capacity, China has enhanced its outbound activities in recent years. Though it has limited nuclear resources to cater to the current global nuclear industry demand, its ambition to become a potential partner in nuclear

6. Dan Yurman, “An IPO for China’s Nuclear Energy Triple Play”, <http://theenergycollective.com/dan-yurman/87636/ipo-china-s-nuclear-energy-triple-play>, June 22, 2012.

7. Brain Wang, “Guardian Analysis of Nuclear Power has the Typical Bias”, <http://nextbigfuture.com>, August 22, 2012.

8. Yurman, n. 6.

developments globally is pragmatic. Especially in the post-Fukushima phase, the global clout of China's nuclear sector is ascending more as the "favoured guest"⁹ both as an investor in international projects and as a customer for its own domestic demands.

In its neighbourhood, China has enormously aided Pakistan's nuclear weapons as well as energy programme. It has supplied with equipment for two reactors at Chashma. The Zhongyuan Engineering is the general contractor and China Nuclear Industry No.5 Construction Company as the installer for the project.

In the Middle East, China has become a favoured nuclear energy partner of Saudi Arabia among other nuclear technology giants like France, Argentina and South Korea. Saudi Arabia has inked an agreement with China to enhance cooperation between the two countries in the development and use of atomic energy for peaceful purposes. The deal, signed in January 2012, sets a legal framework that strengthens scientific, technological and economic cooperation between Riyadh and Beijing.¹⁰

China has emerged ahead in the international contest to build a new nuclear power station in Turkey. In contrast to the South Korean terms, Beijing did not demand state guarantees for the Turkish projects, therefore was preferred by Turkish authorities.¹¹ During the visit to China in April 2012, the Turkish Prime Minister Recep Tayyip Erdogan discussed about Chinese assistance for a proposed nuclear-power station at Sinop. Both countries have signed two nuclear agreements: one is a letter of intent between China's National Energy Administration (NEA) and the Turkish Energy Ministry for further nuclear cooperation; the second one is the declaration of "Cooperation Agreement on the Peaceful Use of Nuclear Power."¹²

China has set its foot in the European nuclear market with much confidence. Last year, the China Dongfang Electric Corporation, one of China's top component manufacturers, has signed its first nuclear export contract in a deal to supply France's Electricite de

9. Froggatt, n. 2.

10. Summer Said, "Saudi Arabia, China Sign Nuclear Cooperation Pact", *The Wall Street Journal*, January 16, 2012.

11. Leslie Hook and Daniel Dombey, "China Edges Ahead in Turkey Nuclear Race", *Financial Times*, April 08, 2012

12. "Turkey, China Sign Two Nuclear Agreements During PM's Visit", *Daily News*, April 10, 2012.

France (EDF) with low-pressure heaters.¹³ In the Horizon reactor programme of UK, Chinese nuclear industrial houses could be the minority investors in the final bids due by the end of September. But restricting Chinese companies' stakes could be equally difficult on the part of UK as billions of pounds needed to build the plant will most probably come from China-backed lenders.¹⁴ Reportedly, UK Ministers have recently denied any plan to limit the size of any Chinese stake. Apparently, the present UK Government has no fixed view on the final shareholding mix in the nuclear projects on the basis of security apprehensions.¹⁵

In the African continent, China has signed a Memorandum of Understanding (MoU) with South Africa to enable cooperation between the two countries to develop the pebble bed nuclear reactor technology.¹⁶ China's Institute of Nuclear and New Energy Technology of Tsinghua University is working in collaboration with Pebble Bed Modular Reactor Pty Ltd. of South Africa with the commitment to develop efficient and clean nuclear power. Reportedly, the State Nuclear Power Technology Cooperation (SNPTC) has approached recently the South African government over financing of its planned 9GW tender which is to be released later this year.

All these show that China does want to go out and it is "going to be aggressive in providing the financing so that some countries accept the offer," says Guo Shou, power analyst at Barclays in Hong Kong.¹⁷ According to him, China's indigenous reactor designs are quickly catching up. Designs for the latest "third generation" models are expected to be finalised by next year, but it could take years to market them abroad. The problem right now seems to be 'acceptance of the Chinese technology.' China's performance in UK's Horizon nuclear project will certainly provide it a high ground to showcase its nuclear industrial prowess while competing with other global consortiums like AREVA, Toshiba, Westinghouse, GE Hitachi, etc.

13. Hook and Dombey, n. 11.

14. Anousha Sakoui and Jim Pickard, "Call to Limit China's UK Nuclear Stake", *CNN.com*, August 20, 2012.

15. "No Limit to Chinese Stake in Reactor", <http://www.thisissomerset.co.uk/8216-limit-Chinese-stake-reactor-8217/story-16746278-detail/story.html>, August 22, 2012

16. "China South Africa: Nuclear Reactor Technology", <http://www.chinafrica.asia/nuclear-reactor-technology-south-africa-china/>

17. Quoted in Hook and Dombey, n. 11.

On the demand side, China is expected to account for 20 percent (the largest share) of global uranium demand. In this respect, China is also found to be a favoured guest across the globe. It seems to have calibrated a sound strategy to deal with corruption, political instability and other problems in the source countries, many of which are in Central Asia and Africa. It has increased its engagement with its suppliers creatively in exchange for access to uranium reserves. For example, Beijing has granted Kazakhstan's Kazatomprom equity in Chinese nuclear fuel processing facilities, researched alternative nuclear power production methods with Atomic Energy of Canada Limited (AECL) and provided interest-free soft loans to the governments of Uzbekistan, Niger and other uranium-rich countries.¹⁸

China at present buys 95 per cent of the uranium from Kazakhstan, Uzbekistan, Namibia and Australia. In a strategy to diversify its uranium import, China has spread out to all major uranium producing corners of the globe: Central Asia (Kazakhstan, Uzbekistan and Kyrgyzstan), Africa (Namibia, Niger, Nigeria, South Africa and Mongolia), Canada, and Australia.¹⁹ Canada has "agreed to cooperate" for more uranium trade with China. The CGNPG has signed a uranium trade contract with Canada's Cameco Corp. in November last year for supply of 29 million pounds of uranium concentrate through 2025.²⁰ The CNNP has also signed an agreement in June with Cameco involving approximately 23 million pounds of uranium concentrate supplies through 2020.²¹ The GNP GC was offered to buy 261.9 million shares from Kalahari Minerals Plc, a global resource company owning uranium reserves in Namibia, and the deal was approved in February this year.

THE INDIAN WAY

Unlike China's two-pronged proactive strategy, India seems to have

18. *World Nuclear News*, June 10, 2010

19. Richard Weitz, "China's Uranium Quest Part 2: The Turn to Foreign Markets", *China Brief*, Vol. 11, Issue 16, September 2, 2011, http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews%5Btt_news%5D=38363&cHash=bc603b403d4967dd357139d3c75e128

20. Simon Hall, Robb M. Stewart, Michael Haddon, "China Hunts for Uranium", *The Wall Street Journal*, March 09, 2011.

21. *Ibid.*

embarked on a one-way road – the import side of the programme only. New Delhi has signed civil nuclear cooperation agreements with around a dozen countries and deals with three dozen industrial houses. Of course, New Delhi is handicapped in the global nuclear energy market without the National Security Guard (NSG) and Non-Proliferation Treaty (NPT) membership even though it has the ability to contribute in many ways to the global nuclear trade. However, there seems the lack of an upbeat trading plan and domestic capacity building initiative to project India's credentials as a powerful stakeholder in global nuclear energy discourse.

India's current nuclear energy development framework though aims to mobilise both public and private, domestic and international industrial houses, suitable technical, legal and trading modalities have not been laid down clearly yet. While India's nuclear liability law is unacceptable to some foreign entities, no initiative is undertaken so far to transfer technology and capabilities to the domestic private industrial houses to shoulder the responsibilities in future. Today, only one Indian private industrial house- Larsen and Toubro (L&T) – is nuclear accreditation certified.

The two state-owned entities – Nuclear Power Corporation of India (NPCIL) and Bharitiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI) – are certainly over burdened. Though India plans to diversify its nuclear sector by sharing responsibilities with other domestic Public Sector Undertakings (PSUs) like National Aluminium Company (NALCO), Indian Oil, Oil and Natural Gas Corporation (ONGC), etc., no major step has been undertaken yet.

The Indo-US Civil Nuclear deal opened a window of opportunity, thereby, unshackling India from the global technology denial regimes. Unfortunately, without capitalising on the call for a global stakeholder role, India's nuclear energy programme seems to be 'shackled-within' the spiral domestic quagmire over regulatory, political, and local acceptance issues. The CAG report on India's nuclear safety has raised concerns over a weak regulatory body.²² The

AERB is alleged to have neither the authority for framing or revising rules relating to radiation safety, nor can it decide on the

22. Sabyasachi Dasgupta, "India's Nuclear Safety Report Warns of Fukushima-like Disaster", *NDTV*, August 23, 2012.

quantum of penalties, leave alone imposing them. The Nuclear Safety Regulatory Authority Bill introduced in the Parliament in 2011 with the proposal to bestow statutory status on the regulatory body has been delayed; even it is alleged that the proposed authority will be no way different than the AERB.

The Kudankulam plant operation was delayed for almost a year for the local resentment that cost a revenue loss of five crore rupees per day.²³ Though the protest has been pacified with much difficulty, there persisting vested-interests, firstly, at the regional political level, and secondly, among the global nuclear industrial houses in seeing the hostage of new nuclear initiatives in India. Reportedly, Tamil Nadu Chief Minister Jayalalitha is urging to allocate the entire 1000 (MW) to be generated from the first unit of Kudankulam plant to Tamil Nadu.²⁴ As the union government will continue to bank on coalition partners in the foreseeable future, state governments would play decisive roles in nuclear projects planned in respective states. Reported funding of anti-nuclear protest movements in Kudankulam by foreign vested interests also gives an impression that India would be vulnerable to the vagaries of global commercial competitions.

Though India has been spread out to different continents for uranium, it has not been able to convince the largest uranium exporter, Australia. Also at home, India faces stiff resistance from local population and anti-nuclear activists for exploring the new found uranium deposits.

Above all, the (UPA) government marred with corruption charges and national economic downturn seems to have relatively shifted its focus away from the nuclear energy agenda. There seem now, less vigour at the governmental level to push India's credentials for NSG membership. For not adhering to an aggressive diplomatic and trading nuclear policy, the way China follows; India will loose the race for a bigger share in the global nuclear market which it is suppose to acquire.

A POST-FUKUSHIMA POLICY

The Fukushima nuclear disaster will be oft-emphasised by the anti-

23. "NPCIL Incurs Rs 5-cr Loss/Day", *The Pioneer*, December 17, 2011.

24. "Jaya Writes to PM Again on K'kulam", *Deccan Herald*, August 23, 2012.

nuclear groups and the public in general during the years ahead. If positively interpreted, this in fact has created an opportunity for the nuclear establishment to provide correct and abundant information to the sceptic public who are keenly looking for answers. India has undertaken a safety review of the nuclear plants keeping the Fukushima disaster in perspective. However, a part of the public seems not persuaded by the assurances from the government and the nuclear establishment.

What needed, therefore, is to devise a specific post-Fukushima strategy taking into account all apprehensions to rebuild public confidence. India is also needed to readjust its medium- and long-term nuclear energy development plan, with a massive nuclear information management drive to streamline public acceptance of nuclear energy in the immediate term.

First, wide dissemination of information on the uniqueness and specificities of India's nuclear energy projects should be undertaken. To increase public acceptance of nuclear energy in India, the public must be made to understand the fact that nuclear disaster is technology-, and location-specific. Their idea that 'nuclear anywhere is a threat to humanity everywhere', and thereby drawing baseless parallels to India's programme, is unreasonable.

Second, a national framework, specifically for rehabilitation of nuclear project-induced displaced people, should be formulated to address grievances adequately. Moreover, how the people around the operational nuclear facilities have made lifetime assets and continue to manage their livelihood with ease should be brought to the notice of communities who oppose nuclear projects for the fear of being uprooted.

Third, a perspective plan must be prepared for smooth sharing of high-technological expertise with the private sector to gradually develop their capabilities to shoulder the needs and responsibilities of domestic nuclear energy industry.

Fourth, the amount of time consumed between the signing of a Memorandum of Understanding (MoU) and translating it into a formal cooperation agreement with a country is enormous. India must make smart moves in procedural matters, otherwise it will be outbid by competitors.

Fifth, as a long-term strategy (provided India gets the NSG membership), India must identify and project its core competencies to become an effective stakeholder in nuclear projects in different parts of the world.

Sixth, while engaging all major nuclear energy players, India should not ignore China. In 1993, China had supplied fuel for Tarapur nuclear plant. Today, despite contentious bilateral issues, cooperation in nuclear energy area as a component of Sino-Indian trade basket may be attempted.

Lastly and more importantly, personality of the incumbent government matters the most to win public trust and confidence on nuclear energy projects. People will not believe in the utility of nuclear option and safety-related assurances from a government which is marred with serious corruption charges and price hikes. What is needed therefore is a populist measure by the government, in the short-term, may be on corruption or black money issue, to win hearts of the public which will shape their perception on nuclear energy initiatives.

PLA DELEGATES TO THE 18TH PARTY CONGRESS: A BRIEF ANALYSIS

JAYADEVA RANADE

The release on August 9, 2012, of the list of People's Liberation Army (PLA) Delegates to the 18th Party Congress indicates that preparations are firmly on the track. Reports emanating from Beijing suggest that the 18th Party Congress would be held around October 18. These appear to be substantiated by a Reuters report, which quoted organisers of the '11th China International Exhibition on Public Safety and Security' from October 22-25 to December 3-6, as saying "we have received notice from the Big Events Management Office of the Beijing Public Security Bureau that the Communist Party's 18th Congress will be held in the middle of October 2012." The Beijing authorities additionally "requested that all big public events in Beijing scheduled for October be rescheduled in order to fully safeguard security in the capital before, during and after the 18th Party Congress."

Reflecting the Chinese Communist Party's (CCP) current increased membership of 82 million, the number of delegates to this Congress will be larger than on previous occasions. The 18th Party Congress will have 2,270 delegates in contrast to the 2,213 at

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the 17th Party Congress in 2007.

Analysis of the list of the PLA's list of 251 delegates to the 18th Congress yields, some interesting information, including that there has been a slight increase in the number of PLA delegates from 249 at the 17th Party Congress in 2007, to 251 on this occasion. In 2007, the strength of PLA Delegates was 10 per cent of the total number of 2,250 Delegates to the Party Congress. The People's Armed Police Force (PAPF) has issued a list of 49 Delegates.

The PLA was buffeted by the political upheaval involving ex-Politburo (PB) member Bo Xilai and, the 14th Group Army (GA) and Chengdu Military Region (MR) were particularly investigated till July by at least four or five teams of the Central Party Discipline Inspection Committee. The PLA has additionally been subjected to at least three successive year-long political and ideological education campaigns. The release of the list of 251 PLA delegates to the 18th Party Congress confirms that these investigations have largely been completed. The list includes 1 person from the 14th GA and 6 from Chengdu MR. There are also some notable inclusions of prominent PLA officers associated with Bo Xilai namely, Gen Zhang Haiyang, Gen Liu Yuan and Gen Zhang Youxia.

Some promotions were effected just before the 17th Party Congress in which three officers, namely Wang Guosheng, Fang Fenghui and Zhao Keshi were beneficiaries of double promotions. Wang Guosheng and Zhao Keshi, who were then Chiefs of Staff in the Lanzhou and Nanjing MR, were promoted as Commanders of the Lanzhou and

Nanjing MR, Fang Fenghui, who was Chief of Staff in the Guangzhou MR, was appointed Commander of the prestigious and sensitive Beijing MR. At the time of his appointment he was the youngest Commander of a Military Region. Interestingly, while Wang Guosheng (DoB: 1947) does not figure in the current list of PLA delegates to the 18th Party Congress, the list includes Zhou Keshi (DoB: 1947) and Fang Fenghui (DoB: 1951). The Commander of the Shenyang Military Region, Zhang Youxia (DoB:1950) is also a delegate and, along with the Commander of the Beijing MR, Fang Fenghui, assessed to be in the running for a Central Military Commission (CMC)-level appointment at the upcoming Party Congress.

There has been steadily increasing emphasis on political reliability

in the PLA in the past few years. This has included posting Political Commissars from Platoon/Company level upwards; enlarging the role and powers of Political Commissars; increasing the Party's presence in the PLA by encouraging growth of the

CCP and Communist Youth League (CYL); and, inducting the Party's discipline and security apparatus into the PLA. Over the past year there have been a spate of articles and commentaries in China's official media, exhorting the PLA to "absolutely obey" the CCP and be "unswervingly" guided by it.

As anticipated (Issue Brief No: 71/12, dated 26 July 2012), political reliability is the pre-eminent criteria for the PLA officers and this was recently reiterated. The PLA's powerful General Political Department (GPD) issued a set of guidelines late in August entitled: 'The Opinion on Strengthening the Assessment of Leading Cadres at and above the Regimental level'. These unequivocally stipulate that "to assess a cadre's political character, it is necessary to put the political standard in the top position...". Political reliability, it asserted, would be the determining criteria for promotions. This was underscored with the inclusion of 81 Political Commissars in the list of PLA delegates to the 18th Party Congress.

The PLA's delegates include at least 9 identified 'princelings'. All 10 current members of the CMC are included, while 16 delegates are among those assessed as likely to be promoted to the CMC either as members or vice Chairmen. Proportional numerical balance appears to have been maintained with the majority of delegates belonging to the PLA ground forces. There are 20 from the PLA Air Force (PLAAF) and 13 from the PLA Navy (PLAN). The Second Artillery accounts for 8 delegates.

Despite the PLA's publicised efforts to recruit ethnic minorities, especially in Tibet and Xinjiang, there is a decline in the number of PLA Delegates representing ethnic minorities. Only a few ethnic minority nationalities are represented. This year's list of delegates includes only 1 Tibetan, 2 Manchus, 2 of the Hui nationality and 1 Tong nationality. Among the 249 PLA delegates to the 17th Party Congress, there were seven representatives of ethnic minority nationalities, or 2.8 per cent. Included in this list of PLA Delegates are 19 female PLA personnel.

The list, identifying virtually all the PLA delegates, is appended.

APPENDIX

List of PLA's 251 Delegates to 18th Party Congress'

1. Lt Gen Ai Husheng - recently promoted to Dep Comd Chengdu MR
2. Maj Gen Bai Lu - Pol Commissar of Unit 73061
3. Bai Nianfa - Deputy Political Commissar PLA Guangxi Military Area Command
4. Bai Yangming [Tibetan ethnic minority] A staff officer who lost many relatives in the Sichuan Earthquake
5. Prof Cai Jinyan (F) - PLA Ordnance Engineering College
6. Lt Gen Cai Yingting – Deputy Chief of General Staff
7. Cao Zhubing - Director Pol Dept of the East Sea Fleet
8. Maj Gen Chai Shaoliang - Dir Pol Dept of Chengdu MR
9. Gen Chang Wangquan – Director of General Armament Department
10. Maj Gen Chang Yue - Pol Commissar of Jilin MAC
11. Gen Chen Bingde - Chief of General Staff
12. Maj Gen Chen Damin - Pol Commissar of Hubei MAC?
13. Chen Ge - a senior engineering officer in Shanghai, under the GLD.
14. Maj Gen Cheng Yong – Assistant Chief of General Staff
15. Cheng Xiaojian(F) - a pilot with 49 Div of the PLAAF air transport
16. Maj Chu Kewei - Coy Comd in Jinan MAC.
17. Maj Gen Cui Changjun - Dir Pol Dept Of Beijing MAC
18. Dai Yong - Deputy Political Commissar PLA Jiangxi Provincial Command
19. Maj Gen Deng Ruihua - Pol Commissar of the Joint Logistic Supply Dept of Lanzhou MAC
20. Diao Guoxin
21. Maj Gen Ding Yi - Dep COS of North Sea Fleet
22. R Adm Dong Fengchun - Pol Commissar of the PLAN Submarine Academy
23. Lt Gen Dong Mingxiang - Dir of the Joint Logistic Supply Dept of Beijing MAC
24. Dou Shujun - A Master sergeant in the PLAAF
25. Gen Du Hengyan - Political Commissar Jinan Military Region [promoted 2012]
26. Gen Du Jincai - Deputy Director - GPD [promoted 2012]
27. RAdm Du Jingchen - Comd East Sea Fleet
28. Gen Fan Changlong - Commander Jinan Military Region
29. Maj Gen Fan Changmi - Dir Pol Dept Lanzhou MR
30. Fan Xiaojun
31. Gen Fang Fenghui - Commander Beijing Military Region
32. Lt Gen Fang Jianguo - recently appointed Dep Pol Commissar of the PLAAF
33. Maj[?] Fang Ping (F) - Pol Instr at coy level
34. Maj Gen Fu Yi - Commander PLA Zhejiang Provincial Command
35. Lt Gen Gao Donglu - Political Commissar PLA Beijing Garrison
36. Maj Gen Gao Jianguo - Dir Pol Dept Shenyang MR
37. Maj Gen Gao Jin - COS 2nd Artillery
38. Sen Col Gao Kang - Director, Armament Dept, Lanzhou MR
39. Maj Gen Geng Liaoyuan - Dir, Pol Dept of the GSD.
40. Guan Xiaofang(F)
41. Gen Guo Boxing - Vice Chairman of the CMC
42. Guo Ruobing - President Information Warfare Research institute, NDU
43. He Hongtao [Man nationality] - Senior engineer in radio frequency experimental technology

44. He Min(F) [Man nationality] - Doctor specialising in high altitude medicine
45. Maj Gen He Qingcheng - Comd 21st Group Army in Lanzhou MR
46. He Xiangmei - Soldier. Top sniper in the PLA
47. He Zhenghai
48. Hou Haitao
49. Gen Hou Shusen – Deputy Chief of General Staff
50. Hu Yan (F) - Teacher at Kunming Army College
51. Hu Yuhao - Director of the Armament Dept of the PLAN
52. Huang Changqiang - Professor in the PLAAF Engineering University
53. Lt Gen Huang Jianguo - Dep Pol Commissar Beijing MR
54. Maj Gen Huang Jiexiang - Pol Commissar 14th Group Army [Chengdu MR]
55. Huang Riqian - professor, PLAAF Engineering University
56. Maj Gen Huang Shanchun - Pol Commissar Guangdong MAC
57. Huang Song - Coy instr in an armd regt in Yunnan MAC
58. Huang Zhiyong - Military vet [animal doctor]
59. Ji Wenming
60. Gen Jia Tingan - Deputy Director - General Political Department
61. Jia Yuanyou - Soldier in a mech Inf regt in Beijing MR. 'One of the best soldiers in the PLA'
62. Maj Gen Jiang Weilie - Deputy Commander Guangzhou MR
63. Jiao Liuyang (F) Major. Winner of the 200m Butterfly Gold Medal at London Olympics
64. Jin Xia (F) - Vice President, 4th Military Medical university
65. Maj Gen Jin Xinhua - Pol Commissar, Jiuquan PLAAF Experimental Base, Lanzhou MR
66. Gen Jing Zhiyuan – Commander 2nd Artillery Corps
67. Lt Gen Lang Youliang - Pol Commissar Tibet MAC
68. Lt Gen Li Andong - Deputy Director - General Armament Department
69. Gen Li Changcai - Pol Commissar Lanzhou MR
70. Maj Gen Li Duxin - Pol Commissar Jiangsu MAC
71. Pol Commissar, Nanchang Army College
72. Li Jian - Doctor
73. Gen Li Jinai – Director General of the PLA General Political Department
74. Maj Gen Li Jingwen - Pol Commissar 26th Group Army
75. Maj Gen Li Shangfu - Comd Xichang Satellite Launch Centre
76. Li Shuzhang - President, General Hospital of the PLA
77. Gen Li Shiming - Commander Chengdu Military Region
78. Li Xiaoyu - Coy instr, Armoured Coy, Jinan MR
79. Maj Gen Li Youxin - Pol Commissar PLA Hunan Garrison
80. Gen Liang Guanglie - Defence Minister
81. Maj Gen Liao Keduo - Pol Commissar PLA Tianjin Garrison
82. Liao Ping
83. Gen Liao Xilong - Director General Logistics Department
84. Gen Liu Chengjun - Commandant - Academy of Military Sciences
85. Liu Doweii - Master Sergeant, AD Bde, Shenyang MR
86. Liu Donghong (F) - Director, Software Research centre within the GSD
87. Lt Gen Liu Fulian - Pol Commissar Beijing Military Region
88. Liu Gui - Coy Comd, Guangzhou MR [a model company commander]
89. Liu Guosheng - Pol Commissar, Chemical Defence College
90. Lt Gen Liu Guozhi - Deputy Director - General Armaments Department
91. Liu Jian - Soldier. Best at firing missiles in his unit
92. Maj Gen Liu Jinguo - Dep Dir of an armament department
93. Liu Jing (F) – Dep Comd of a Chemical Weapon Destruction Unit

94. Liu Jinpeng - Coy Comd, Shenyang MR
95. Maj Gen Liu Nianguang - Pol Commissar, 40th Group Army, Shenyang MR
96. Lt General Liu Sheng - Deputy Director - General Armament Department
97. Liu Shengjie - Dir Pol dept, Gen Log Supply Dept
98. Sen Col Liu Weixing - Dir Ordnance Armament Office, Jinan MR
99. Maj Gen Liu Xiaobei - Dir, Technical Research Dept, GSD
100. Lt Gen Liu Xiaojiang - Political Commissar PLAN
101. Liu Xiaoming
102. Lt Gen Liu Xiaorong - Deputy Political Commissar General Logistics Department
103. Liu Xiaowu - Coy Instr, Jinan MR
104. Gen Liu Yazhou - Political Commissar - PLA NDU [promoted 2012]
105. Gen Liu Yuan - Political Commissar - General Logistics Department
106. Liu Yuejun
107. Lt Gen Liu Zhenlai (Hui nationality) - Pol Commissar of the PLAAF, Beijing MR
108. Maj Gen Liu Zhiming - DCOS Shenyang MR
109. Long Haitao
110. Lt Gen Lu Fuen - Dep Comd 2nd Artillery
111. Sen Col Lu Xiao - Dep Dir, Organisation Dept, GPD
112. Ma Chengxiao [Hui nationality] - Comd Unit 73111, 31st Group Army
113. RAdm Ma Faxiang - Dir Pol Dept PLAN
114. Ma Jinyong - Master Sergeant at Taiyuan Satellite Launch Centre
115. Gen Ma Xiaotian - Deputy Chief of General Staff
116. Maj Gen Ma Xueyi - Pol Commissar Heilongjiang MAC
117. Maj Gen Mao Xinyu - Grandson of Mao Zedong, Dep Dir War Theory, AMS
118. Mei Wen
119. Meng Zhaobin - Dep Comd, 31st Group Army
120. Miao Hua - A Dep Pol Commissar, Lanzhou MR
121. Lt Gen Nian Fuchun - Assistant Chief of General Staff - General Political Department
122. RAdm Nie Shouli - Comd Guangzhou PLAN Support Base
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143. Maj Gen Sun Huangtian - Dep Comd GLD responsible for Infrastructure
144. Gen Sun Jianguo - Deputy Chief of General Staff
145. Gen Sun Sijing - Political Commissar - Academy of Military Sciences

146. Sun Yan (F) - Doctor, rehabilitation unit, Chengdu MAC
147. Maj Gen Tan Benhong - Commander PLA Hainan MAC
148. Tan Yanmei (F) - Dep Coy Comd, PLAAF comms unit
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150. Gen Tian Xiusi - Pol Commissar Chengdu Military Region [promoted 2012]
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152. Wang Baocheng - NCO. Famous for telling stories in support of political work
153. Wang Changjiang - DCOS PLAN
154. VAdm Wang Dengping - Dep Comd Guangzhou MR and Comd SSF.
155. Lt gen Wang Guanzhong - Dir of the General Office of the CMC
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157. Lt Gen Wang Hongyao - Political Commissar - General Armament Department
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161. Maj Gen Wang Jiasheng - Deputy Political Commissar - General Armament Department
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164. Wang Ning - Doctor, Military Hospital
165. Wang Ping - Doctor, No. 254 Military Hospital
166. Wang Qun - an officer in Jilin MAC
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168. Wang Xiangfu - Pol Commissar PLAAF, Chengdu MAC
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170. Lt Gen Wang Xiaolong - Deputy Political Commissar PLAAF
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