PLAAF IN TRANSITION: 1979-93

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To learn knowledge and truth from the West in order to save China.
— Deng Xiaoping (1919)

The singular challenge not only for Asia, but the entire international community in the third quarter of the 20th century has been "the rise of China". Ashley J. Tellis and Michael D. Swaine have eloquently stated that "*this process is significant not only because it promises the internal transformation of one of the world's oldest civilizations, but also because, if concluded successfully, it could result in a dramatic power transition within the international system*"[1]. Beyond doubt, the future growth of China's national power as well as its military capabilities will greatly impact not only Asia but the world at large. China is well aware that its military inventory suffers from a major technological lag when compared to its neighbours and its adversaries, and it is whole-heartedly committed to the modernisation of its conventional forces in order to match up with its adversaries' military might, though not in a hurry but in a gradual and with a well thought out strategy.

The transition of the 'Middle Kingdom' to an economic power centre has also been acknowledged by contemporary political commentators like Robert Fogel, who predicted that the Chinese megacity dweller will be

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1. Michael D. Swaine and Ashley Tellis, *Interpreting China's Grand Strategy: Past, Present and Future* (RAND: Santa Monica, CA, 2000), p. 1.

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living twice as well the average Frenchman when China transits from being a poor country in 2000 to a superich country in 2040.[2] He also predicted that the Chinese economy will reach $123 trillion in the same year, all great fodder for it to grow not only as an economic superpower, but also modernise its obsolete military arsenal.

The most fundamental strategic interest of China since the late 1970s has been modernisation. The Chinese leadership had adopted a pragmatic approach to many political and socio-economic problems and sharply reduced the role of ideology in its economic policy. In fact, when we look at Deng's assessment that China's military modernisation could take place after its economy begins to grow, it was, indeed, spot on. He believed that modernisation of national defence could only be founded on development of agriculture and industry, which, in fact, was the Chinese perspective of security, dependent on its comprehensive development. The transition of the political leadership, economy, doctrine and strategy in the 1980s, leading to the process of modernisation of its defence, are all romantically intertwined and, therefore, a good case study to be analysed in that perspective.

TRANSITION

Deng Xiaoping's tryst with capitalism as well as China's process of a makeover dates back to Deng's early days in France, where he travelled as part of a work study programme.[3] The early exposure to the new kind of economic system in France had an overbearing influence, which transformed him into a more confident individual, who, in the future, would go on to lead China and transform its economy with a vision vastly different from his predecessors. In France, Deng studied Marxism and became a member of the Chinese Communist Youth League in Europe as well as the Chinese

2. Robert Fogel, Director of the Centre for Population Economics at the University of Chicago Booth School of Business and winner of 1993 Nobel Memorial Prize in Economics. The article was printed in the January/February 2010 issue of *Foreign Policy Journal*.
3. http://www.cbw.com/asm/xpdeng/life.html

Communist Party (CCP)[4]; on his return to China, he actively participated in the "Long March" and "Great Leap Forward". During the course, he was elevated to the post of General Secretary of the Secretariat and ran the country's daily affairs, along with President Liu Shaoqi, until both went barking up the wrong tree, by moving away from an ultra-leftist approach to a more pragmatic, right opportunist approach.

Deng, more pragmatic and a less defensive realist, fell out of Mao's favour during the Cultural Revolution and was purged from all his offices in the late 1960s. When Zhou fell ill with cancer, he was able to convince Mao to reinstate Deng in mainstream politics by appointing him as the first Vice Premier to run the daily affairs in 1974.[5] Zhou Enlai and Deng Xiaoping were both moderates favouring modernisation of all sectors of the economy. In January 1975, Zhou Enlai, speaking before the Fourth National People's Congress, outlined a programme of what came to be known as the "*Four Modernisations*"[6] for the four sectors of *agriculture, industry, science and technology and national defence.* In January 1975, Deng Xiaoping's position was solidified by his election as a Vice Chairman of the CCP, member of the Political Bureau and its Standing Committee as well as China's first civilian chief of the People's Liberation Army (PLA) General Staff Department. The year 1976 saw the death of three seniormost officials in the CCP and the state apparatus: Zhou Enlai in January, Zhu De in July, and Mao Zedong in September. After Zhou's death, demonstrations at the Tiananmen Square memorialising Zhou, however, did not go down well with Mao's supporters, putting China in a state of serious political uncertainty. Deng Xiaoping, who should have been the logical successor as Premier, received a temporary setback after Zhou's death for the second time, when radicals launched a major counter-assault against him. In April 1976, Deng was once again removed from all his public posts in favour of a relatively unknown, Hua Guofeng, who was named as acting Premier and the Party's first Vice Chairman. After Mao's death, the Central Committee exonerated Deng Xiaoping from responsibility for the Tiananmen Square incident and he

4. http://www-chaos.umd.edu/history/prc3.html#end_of_mao
5. http://www.cbw.com/asm/xpdeng/contents.html
6. http://www-chaos.umd.edu/history/prc3.html#end_of_mao

was reinstated to all the posts from which he had been removed in 1976. The Congress proclaimed the formal end of the Cultural Revolution, blamed it entirely on the Gang of Four, and reiterated that "*the fundamental task of the Party in the new historical period will be to build China into a modern, powerful, socialist country by the end of the twentieth century*."

THIRD PLENUM: POLITICAL TRANSITION

The culmination of Deng's reascent to power and the start in earnest of political, economic, social, and cultural reforms were achieved at the Third Plenum of the Eleventh National Party Congress Central Committee in December, 1978. The *Third Plenum* is considered a major turning point in modern Chinese political history. "Left" mistakes committed before and during the Cultural Revolution were corrected and the *"two whatevers"* policy (support whatever policy decisions Mao made and follow whatever instructions Mao gave) was repudiated. The classic Party line calling for a protracted class struggle was officially exchanged for one promoting the "Four Modernisations". It was also highlighted that in the future, attainment of economic goals would be a measure of success or failure of policies and individual leadership.

Subsequently, a major brainstorming session was carried out at the Fourth Plenum of the Eleventh National Party Congress Central Committee, giving a "preliminary assessment" of the entire thirty-year period of Communist rule. The plenum also marked the official acceptance of a new ideological line that called for "seeking truth from facts" rather than the "two whatevers". The new Party hierarchy sought to assess, and close the books on the Maoist era and move on to the era of the "*Four Modernisations"*. The culmination of Deng's drive to consolidate his power and ensure the continuity of his reformist policies among his successors was the calling of the Twelfth National Party Congress in September 1982 and the Fifth Plenum of the Fifth National People's Congress in December 1982.[7]

7. http://www-chaos.umd.edu/history/toc.html

DOCTRINE AND STRATEGY

'Doctrine 'is the fundamental principle guiding those who use military force and 'strategy', on the other hand, is the way in which the military forces are to be utilised to achieve a desired outcome of an actual or potential conflict. Doctrine became a guide to new technology and weapons acquisition and China witnessed a paradigm shift from the concept that the "fight depends on the kind of arms" to a new axiom which is "build weapons to fight whatever kind of war"[8].

Active defence is a concept of deterrence through decisive engagement, which prescribes strategic defence and tactical offensive.

Although China did not have a formal public document stating its military strategy, military analysts have described it as "Active Defence". Active defence or offensive defence is a concept of deterrence through decisive engagement, which prescribes strategic defence and tactical offensive. What it implies is that though China does not fight or initiate wars of aggression, it engages in war only to defend its national sovereignty and territorial integrity to attack only after being attacked. The old concept of luring the enemy deep inside was changed to forward defence.[9] However, China's definition of initial attack as well as its perception of a perceived security threat has always been ambiguous.

The Chinese adopted a "weak-strong" strategy that used force and diplomacy selectively. It was a "calculative strategy" to protect China from external threats as it pursued its geo-political ascent, hence, allowed China to continue to reform its economy and evolve Comprehensive National Power (CNP) without having to deal with impediments and distractions of security competition.[10] Post Mao, the Chinese tried to develop a strategy to build CNP, and evaluate China's standing in relation to other nations. Hence, the Chinese have described their national

8. David Shambaugh, *Modernising China's Military, Progress, Problems and Prospects* (New Delhi: Bookmart Publishers, 2004), ch. 3, p. 60.
9. Lt. Gen. C.K. Kapur, *China's Military Modernisation* (New Delhi: Manas Publication, 2005), ch. 4, p. 57.
10. Swaine and Tellis, n. 1.

development *strategy* as a quest to increase China's *Comprehensive National Power*.[11]

DOCTRINAL TRANSITION

David Shambaugh in his writings has fluently explained the Chinese concept of "doctrine" which is "*military thought*" that translates to "*military guiding principles*".[12] As China's polity was transforming in the Seventies, it was also witnessing a silent doctrinal shift from "people's war" (1935-79) to "people's war under modern conditions" (1979-85). The doctrine further evolved to "limited war" (1985-91) and finally to "limited war under high-tech conditions". Richard D. Fisher has systematically evaluated the evolution of the PLA's operational doctrine in terms of its posture, dynamics, manpower and arms. The transition from engaging in a protracted war to a local war as well as from a defensive posture to an offensive one has been highlighted in Table 1. During this period, doctrine had been fundamental to military modernisation; at the same time, it had also been a catalyst for a vast range of PLA reforms: reconfiguring the force structure, professionalism, personnel recruitment, training, research and development, weapons procurements and operational strategy.[13]

Table 1: Evolution of PLA Operational Doctrine

Period	Nomenclature	Length	Posture	Dynamics	Manpower/Arms
Pre-1979	People's War	Protracted	Defence Dominant	Mobile Lure Enemy In Deep	Manpower Intensive/ Combination Of Regular And Local Militia
Post 1979	Local War Under Modern Conditions	Less Protracted	Defence Dominant	Positional Defence Of Borders And Cities	Less Manpower Intensive/ Combined Arms Mainly Ground Forces

11. Office of Secretary of Defence, *Annual Report to Congress, Military Power of PRC, 2009*, ch. 2, p. 11.
12. Shambaugh, n. 8, ch. 3, p. 58.
13. Ibid., p.56.

Post 1985	Local War Under Modern Conditions	Quick Battle Quick Resolution	Offensive: Gain Initiative By Striking First	Mobile Forward Deployment	Elite Forces And Sharp Arms/ Combined Arms Mainly Ground
Post 1996	Local Wars Under High-Tech Conditions	Quick Battle Quick Resolution	Offensive Dominant	Mobile Forward Deployment	Mechanised "Elite Forces And Sharp Arms" Local And Temporary Superiority/ Joint Service Operations

Source: Richard D Fisher Jr., *China's Military Modernisation: Building for Regional and Global* (UK: Praeger Security International, 2008).

VIETNAM WAR, 1979

Richard D. Fisher Jr articulately explains the Chinese psyche to engage in offensive wars to achieve victory in geo-strategic as well as operational results. Zbigniew Brzezinski, Carter's National Security Adviser (NSA), also described this particular trait of the Chinese with specific reference to the 1979 Sino-Vietnam conflict as the "*single most impressive demonstration of raw power politics*". To substantiate his argument, Fisher cites examples from the second Sino-Japanese War, where Mao waged a lacklustre war against the Japanese, hoping to exhaust his greater foe, the Kuomintang. Similarly, in the Korean War, he committed troops to impress Stalin, defeat the Americans, and assert authority over Korea, in the bargain, sacrificing 2,50,000 troops[14]. Also, when Vietnam signed the Treaty of Friendship and Cooperation with the Soviet Union in 1978, the Chinese not only described it as a military alliance, but went a step further to dub Vietnam as the "Cuba of the East" and ended up fighting a limited offensive war. Brzezinski's description of

14. Richard D. Fisher, *China's Military Modernisation Building for Regional and Global Reach* (UK: Praeger Security International, 2008), ch. 1, p. 8.

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raw power politics comprised China's geo-political[15] insecurity and "teach a lesson model"[16], which by now was entrenched in its psyche.

Historically, the Chinese have always lived under a constant veil of insecurity. As long as Vietnam was divided, it posed no threat to China, and Beijing continued to support Vietnamese Communists with millions of dollars of aid along with rifles and guns free of charge. The unification of Vietnam, the souring of Sino-Soviet relations and the greater role of Russia in a unified Vietnam made China itchy—it wanted Vietnam to cut all relations with Russia, which was refused outright. Deng, profoundly hurt by what he considered Vietnamese ingratitude, stopped aid and started withdrawing all support extended to Vietnam. Simultaneously, he also initiated a fierce diplomatic campaign denigrating Vietnam and projecting it as an instrument of Soviet hegemony. Deng visited America and Japan to lobby against Vietnam, where he openly expressed the intention of teaching Vietnam a lesson. Deng, however, assured that the war would be a limited offensive, and the Americans in their own way were delighted by China's doggedness to take a tough stand against the Vietnamese[17]. The Chinese started financing the Khmer Rouge in Cambodia to open up a second front for Vietnam and, as a result, the Khmer Rouge launched ferocious attacks on Vietnam from 1975-78. Vietnam responded by invading Cambodia and toppling the regime, which finally ended up in the 1979 Sino-Vietnam conflict.

As against the common perception, the PLA Air Force (PLAAF) was substantially mobilised during the 1979 Vietnam War. The campaign,

15. 'Geo-politics' is the art of using political power over a given territory. The term was coined by Rudolf Kjellen, a Swedish political scientist, at the beginning of the 20th century. Henry Kissinger, defining 'geo-politics', stated that "one characteristics of geo-politics is inter-changeability of actors, that is, it really makes no intrinsic difference, whether the United States is in alliance with China against Japan or with Japan against China. What matters is all are playing the game of power politics."
16. British military analyst, Maj Gen Shelford Bidwell has credited China with enunciating a new form of war, which he called "Teach a Lesson Model".
17. G. D. Bakshi, "The Sino-Soviet War: Case Studies in Limited Wars", www.bharatrakshak monitorvolume 3(3).htm

however, was not planned with the broader aim of the PLAAF complementing the ground forces in terms of interceptors, providing close air support, battlefield air interdiction or, for that matter, offensive counter-air operations. The ground forces were happy to depend on the Surface-to-Air Missile (SAM)-2s to provide cover and defend against any air attack; thus, restricting the PLA's advance into the enemy territory to 30 miles, which was the range limitation of the SAM-2s. The role of the PLAAF, once again like in the Korean War, was mainly cosmetic, as it did not provide any air support to the ground forces. There is also one school of thought that sees the Vietnam campaign as a deliberate strategy on the part of Deng to make the PLA leadership rethink their tactics and evaluate the importance of air power in the overall strategy, when it comes to future high-tech wars, both total and limited[18].

Political considerations as well as lack of confidence in the PLAAF's ability to operate in a high threat environment restricted the use of air power in the conflict.

The PLAAF had a substantial number of aircraft and manpower to take on the leaner Vietnamese Air Force. Rear Admiral James B. Linger and Dr A. James Gregor have mentioned in their writings that around 450 aircraft were deployed when Beijing decided to undertake the attack, which later increased to 950 at the peak of the conflict. The deployment consisted mainly of MiG-19s, along with few MiG-17s, MiG-21s, Q-5 and H-5, capable of carrying a 6,000 lb bomb load. These aircraft were deployed along the Vietnamese border, skirting a perimeter of a 250-mile radius from Hanoi. The political considerations as well as lack of confidence in the PLAAF's ability to operate in a high threat environment restricted the use of air power in the conflict. Notwithstanding, a few Chinese aircraft like the MiG-17/19, the Q-5 did manage to penetrate Vietnam's air space, making brief appearances near Lang Son and Lao Cai (Fig 1), though without firing a single shot. All in all, 5,500 were sorties flown by the PLAAF which included 600 penetrations in northern Vietnam.[19]

18. Discussion with Jayadeva Ranade, Distinguished Fellow, Centre for Air Power Studies, New Delhi.
19. RAdm James B. Linder (Retd) and Dr A. James Gregor , "The Chinese Communist Air Force in 'Punitive' War Against Vietnam," *Air University Review*, September-October 1981.

Fig 1

Source: Wikipedia

The ignominious defeat of the Chinese in at hands of the Vietnamese Army was indeed a "wake up call" for the Chinese. Gerald Segal, in his book *Defending China*, has mentioned that China's 1979 War against Vietnam was a complete failure: "China failed to force a Vietnamese withdrawal from Cambodia, end border clashes, failed to cast doubt on the strength of the Soviet power, failed to dispel the image of China as a paper tiger, and failed to draw the United States into an anti-Soviet coalition", hence, unable to meet any of its objective, it was nothing more than China's demonstration of "raw power politics". The Chinese military until now believed in an air defence strategy and invested in a large force of relatively cheap and technologically unsophisticated aircraft. While the defensive capability of the PLAAF had been recognised, the absence of the air combat role was conspicuous. Deng, aware of this limitation, strongly believed that in the future, air power would play a decisive role in any conflict and that there was an urgent need for it to be modernised.[20] It was, in fact, the Vietnam

20. Air Cmde R. V. Phadke , *People's Liberation Army Air Force: Shifting Air Power Balance and Challenges to India's Security* (2002), ch. 1, p. 3.

War which fundamentally changed the thinking of the Chinese political and military leadership guided by Deng, thus, defining the process of modernisation for China's defence in the years to come.

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SOFT AND HARD TRANSITION

The PLAAF was in transition from an obsolete to a more advanced force structure in the coming decades. This transition involved upgrade of not only its hardware consisting of aircraft, missiles and weapon systems but also refurbishing of its systems like organisation, personnel, training, doctrine, logistics and maintenance which are referred to as 'software'. Both the hardware and software aspects are interdependant and play a vital role; however, at times, there is a tendency to overstate the importance of hardware and ignore the software aspect while looking at modernisation of the armed forces. During the course of this transition, various aspects of software like organisation, leadership, training and doctrine as well as the hardware aspects can be analysed to understand the process of transition.

ORGANISATIONAL TRANSITION

The PLAAF is traditionally divided into five branches which are aviation, Anti-Aircraft Artillery (AAA), Surface-to-Air-Missiles (SAMs), radar and airborne troops, listed in the order of protocol. There is a clear distinction between 'aviation', which includes aircraft and 'air defence' which includes AAA, SAMs and radars.

The PLAAF's chain of command flows from Headquarters Air Force down to Military Region Air Force (MRAF), air corps, command posts, bases and operational units. The MRAFs were organised to control large geographic areas, aligned with the ground forces' Military Region (MR) to provide air defence to strategic areas and support to ground and naval forces. They were also responsible to provide logistics and maintenance support to lower formations. Realignment of MRAFs had taken place on

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a number of occasions since the formation of the PLAAF, but the reduction from eleven to seven took place in 1985 and since then, has been more or less static.

The air corps was established to control more than one division within the MRAF and command posts were established to control aircraft and air defence assets deployed to, or operating in, a special area. As the PLAAF reorganised itself, eight of the thirteen air corps[21] were either abolished or downgraded to command posts. This was done with the intention of making the organisation more operational by eliminating the unnecessary administrative functions. Finally, by 1993, all command posts[22] with the exception of Lhasa were further reorganised as bases, in response to the PLA's plan of overall reduction in forces in the 1980s.[23]

The Air Defence Forces (ADF) command post was merged with the PLAAF in 1957. Out of the seven deputy commanders in the hierarchy of the PLAAF, two were nominated from the erstwhile ADF. The PLAAF's organisation structure changed from three core first level departments consisting of headquarters, political and logistics in the 1970s to four first level departments, by adding aeronautical engineering in 1976 to its structure. This was later changed to equipment–technical department in 1992 and once again in 1998 to the General Armament Department (GAD). Since then, the structure has, by and large, remained the same.

TRAINING

PLAAF training suffered during the Cultural Revolution, adversely affecting its institutions. Pilot training was reduced from 30 months to 12 months, theory classes stopped, literally crippling the growth of the PLAAF. The

21. The five active air corps were 1st/Changchun, 7th/Nanning, 8th/Fuzhou, 9th/Wulumuqi and 10th/Datong
22. The seven existing command posts were Dalian, Tangshan, Xian, Shanghai, Wuhan, Kunming and Lhasa.
23. This section on organisational transition is adapted from the writings of Kenneth Allen, senior analyst at the CNA corporation, who has descriptively analysed the organisation structure of the PLAAF during this period.

entire training system had to be revamped to get the PLAAF once again back on track. The operational pilot training was the biggest challenge due to the ageing fleet, limited flying and rudimentary simulator systems.

The PLAAF was, thus, training hard to adapt to combat situations in future high-tech conflicts.

The philosophy for selection and training too required a change as the PLAAF had started recruiting high school and graduate students to undergo pilot training. The training was spread over three phases, consisting of 20 months at the basic flight school, followed by 28 months at the flying academy and finally four to five years of operational flying in a unit. However, by the middle of the 1980s, the PLAAF began to experiment with an additional fourth phase, wherein the third phase for fighter and ground attack pilots was restricted to one year conversion at a transition training base followed by the fourth phase of a slightly truncated version of old operational flying training at units. The programme was finalised in July 1988, when the Central Military Commission (CMC) authorised each MRAF to establish a transition training base.[24]

The PLAAF during this period of transition placed great emphasis on training at several levels for officers as well as for soldiers. In the case of officers, basic training at the academy was followed by a stint at the Command College for mid-level/senior level commanders, followed by training at the National Defence University. Operationally, however, they were being continuously trained towards understanding the importance of intra-Service and joint-Service exercises.

Much has been said about the PLAAF training, quality of pilots and awareness of air combat strategy. Since the late 1980s, the PLAAF started making concerted efforts to focus on realistic training. In 1987, the PLAAF established a Flight Test and Training Centre at Cangzhou airfield near Tianjin (Hebei province), to test new aircraft under development, train pilots on new types of aircraft and devise new air combat tactics. Since then, it

24. Kenneth W. Allen,Glenn Krumel, Jonathan D. Pollack, *China's Air Force Enters the 21st Century* (RAND), ch. 7, p. 130.

has been carrying out interesting studies on combat, such as manoeuvrable combat, air attack, fighting for air supremacy as well as night attack and defence. The PLAAF was, thus, training hard to adapt to combat situations in future high-tech conflicts. These tactics were tested and thereafter disseminated to units, where they were incorporated in live exercises. However, the PLAAF's inhibition to employ multi-mission tasking because of its orientation towards single missions, irrespective of the capability of the aircraft, has been a challenge which it needs to overcome through continued training. The PLAAF's tactical training and simulator flying has helped make up for the limitations and it effectively conducts more than 90 percent of its tactical training on simulators.

In 1958, the PLAAF also constructed a large centre for testing its Air-to-Air Missiles (AAMs) and SAMs in the Gobi Desert near Dingxin in Gansu province. In the late Eighties and early Nineties, the PLAAF upgraded the facilities at Dingxin, created a separate range and set up a tactical training centre in association with the one set up at Cangzhou. The Jiuquan Space Centre was established with a sophisticated command and control centre, air and ground tactical training ranges, simulated runways built to scale, radar, simulated enemy command posts, ammunition and oil depots, along with a large number of simulated tanks deployed in combat position as well as a mock Taiwanese air base, Chingchuankang. The PLAAF units could converge at the Gobi Desert and practise tactics developed at Cangzhou in a close to a real combat environment.[25]

As a result of these changes in training, PLAAF pilots have been noted flying in more sophisticated simulated air-to-air combat with the aggressor units, training in an Electronic Counter-Measures (ECM) environment, flying over the Taiwan Strait and East China Sea, conducting live missile firings beyond the coast, dropping live bombs at ranges, and flying at low altitudes, by day and night, under different weather conditions. They have also practised emergency mobility deployments to permanent and auxiliary airfields within and outside their assigned MRs. All these changes in the

25. "PLA Air Force Organisation and Modernisation," http/www.china-defense.com/aviation/plaaf-ops/plaaf-ops_10.html

training pattern will show up positively when the PLAAF pilots have to engage in future combat.

WANG HAI EFFECT

Although the PLAAF has been described as "an independent Service", it continues to work in the shadow of the army. The fundamental question that remains is whether the PLAAF will free itself from the clutches of the PLA and also exercise the necessary clout, responsibilities and autonomy in the future. One reason for the PLAAF to be kept subservient to the PLA could have been the Lin Biao and Wu Faxian nexus towards an abortive coup against Mao in 1971. Deng too, sceptical, after he gained control of the Chinese Communist Party (CCP) in 1978, wanted to go slow and assert some kind of authority over the so-called 'metaphorically' dangerous Service and, hence, planted a number of political heavyweights into the PLAAF.

All PLAAF commanders until 1985 were army officers, transferred into air force command positions. Wang Hai, became the first aviator to take over as commander of the PLAAF. His experience in the Korean War, having shot down nine US aircraft and being awarded a 'war hero' title, helped him to understand air power better than his earlier non-aviator commanders. He had risen from the ranks, and had worked at various levels as a flight commander, deputy division commander, division commander and deputy commander before being appointed the commander of Guangzhou MRAF in 1975. He saw the 1979 Sino-Vietnam conflict from close quarters, which helped him draw a roadmap for the future PLAAF. In 1985, Wang Hai was appointed as the PLAAF Commander and Deputy Party Secretary in the Chinese People's Political Consultative Conference (CPPCC)[26]. This was also the first time that a PLAAF Commander was appointed as a member of the CPPCC. Earlier, Liu Yalou, Wu Faxian, Zhang Tingfa and Gao Houliang were PLAAF Commanders or Political Commissars, who were appointed as members of the Politburo or the Central Military Commission (CMC), but none prior to Wang Hai became members of the CPCC.

26. http://www.sd.xinhuanet.com/sdsq/2006-03/02/content_6366248.htm

Wang Hai identified three parameters in air power: manoeuvrability, firepower and use of electronic warfare.

Wang Hai defined the roadmap for the PLAAF's transition and demonstrated how modern technology could change the role of air power and revolutionise the concept of future wars. He identified three parameters in air power: manoeuvrability, firepower and use of electronic warfare. He also emphasised the tremendous impact that airlift capability could have on quick mobility of troops which, in turn, would have an adverse impact on the enemy. Use of aerial platforms for information, intelligence gathering and electronic warfare too would be important tools to expose the enemy's strategic intention along with its deployment and movement of troops. Hence, the PLA, without effective use of air power and its applications, would become deaf and mute.[27]. The importance of contact with foreign air forces was also overtly emphasised and a number of delegations were sent and received during this period. Zhu Guang became the first political commissar to ever travel abroad when he visited America in 1988, thus, setting a trend for the later political commissars, who visited Cuba, Portugal and Turkey. The exposure to the world air forces influenced the thinking of not only the present leaders but also exposed the future leadership in their thought process which would show effects in the years to come.

It was Wang Hai who formally laid out a plan in 1987 that the PLAAF could simultaneously have both offensive and defensive capability. He emphasised that the combined arms combat environment required a force that could move quickly over long distance, fight in an electronic environment, possess the capability to attack an enemy and, at the same time, secure the PLAAF from sustaining damage from an enemy air attack. However, it was in 1996 that the CMC, along with PLAAF leadership, started reemphasising publicly about the PLAAF's capability to fight an offensive air battle.

27. You Ji, *The Armed Forces of China* (UK: IB Taurus Publishers), ch. 5, p. 126.

PLAAF TRANSITION

The PLAAF's role was expanded to include the dual responsibility of defending the Chinese air space and supporting the ground forces.

The Air-Land Battle doctrine that reviewed US Army tactical doctrine in the post-Vietnam War era, was carried out by the US Army Training and Doctrine Command (TRADOC) in the 1970s and published in 1981. The concept was to involve close interaction between all air and ground capabilities in future conflicts. The PLAAF's literature concentrated on strategy and campaigns, but did not explicitly discuss any specific doctrine. In the 1980s, after the Sino-Vietnam conflict, the PLAAF may have been influenced by the American Air-Land Battle doctrine, since there appeared to be an apparent shift in Chinese air power strategy and concepts, where the PLAAF's role was expanded to include the dual responsibility of defending the Chinese air space and supporting the ground forces. However, during this period, there existed a stark gap between its aspirations and capabilities and it was this gap that the PLAAF was seeking to narrow during the period of transition.

Historically, the defensive nature of the people's war doctrine which had been prevalent for many years could have also dampened the PLAAF's resolve to redefine the role of air power. It may be observed that through the 1950s to the later part of the 1970s, the PLAAF lacked the vision with regard to different kinds of air combat missions like offensive counter-air operations, close air support, battlefield interdiction and state-of-the-art command and control systems, never a part of the PLAAF's calculus. This was not only evident in the Korean War but also during the 1979 Sino-Vietnam conflict. However, post the Sino-Vietnam conflict, there was an apparent shift from the traditional defensive posture to an offensive one, where the PLAAF appeared to have started thinking on the lines of incorporating such mission statements in its combat strategy.

The other objective of the PLAAF in this period of transition was to improve its deterrent capability by strengthening its airborne forces, increasing its strategic reach and enhancing its quick mobility capabilities. It saw itself more likely to be engaged in local wars, hence, possessing the

The PLAAF's main focus was on modernising six core combat capabilities: air superiority, ground attack, transporting troops, reconnaissance, AEW, and logistics and maintenance.

capability to end the war quickly and also at the same time, attaining the political objectives. To meet this objective, the PLAAF established a rapid reaction force within each theatre of operation, to include at least one fighter division in every battle area. Each division would then have a force package of three fighter regiments, one ground attack, one Airborne Early Warning (AEW), one ECM regiment, one reconnaissance aircraft along with a reliable intelligence network comprising one Electronic Warfare (EW) aircraft.

In terms of air power, the PLAAF's main focus was on modernising six core combat capabilities: air superiority, ground attack, transporting troops, reconnaissance, AEW, and logistics and maintenance. It started to believe that air superiority, development of technology, firepower, manoeuvrability and control of electronic means were all critical, without which strategic objectives could not be achieved. Hence, the PLAAF, in its combat strategy, initiated considerable reforms in force structure, training, and weapon systems. It defined its role with greater clarity, listing out areas of responsibility in terms of its offensive capability, control of the air, air strike as well as air defence. Use of specific weapon systems to accomplish special missions was also adequately discussed. Concepts like air deterrence and Beyond Visual Range (BVR) weapons are examples of some concepts which influenced the strategic thinkers of the PLAAF.[28] Also, the realisation that any future war would have to be multi-dimensional, involving land, sea, air and space had an overbearing influence on the Chinese psyche. The period of transition witnessed the PLAAF breaking away from the shackles of being subservient and evolving as an independent force with laid down objectives.

TRANSITION FROM DEFENSIVE TO OFFENSIVE AIR CAMPAIGN

An 'offensive campaign' has been articulately explained by R. McCabe of the US Air Force (USAF), as one which seeks to maximise the enemy's

28. Ibid., ch. 5, p.125.

weaknesses by "moving the battlefield as far as possible toward the enemy's side" and forcing the enemy to fight on the defensive at China's initiative. It intends to exploit air and space power's advantages of initiative, versatility, and suddenness. The campaign can either stand alone as an independent air force effort or, far more likely, become part of an integrated joint campaign of surface-to-surface missiles, special operations forces, electronic and information strikes, and attacks by aircraft.[29]

It took the PLA thirty years to realise, *"that the largest obstacle for any ground force or a united campaign came from the air".*

Historically, the PLAAF had never been an offensive air force, probably because of its own limitation in terms of capability. The PLAAF's inventory of its frontline aircraft in the 1980s was obsolete, with limited capability to operate at night, in bad weather or in an ECM environment. The strategic bombers like the H-5/H-6 were far inferior to the bomber force possessed by its adversaries and neighbours, as they were incapable of launching an air-to-air campaign, airfield attacks and Suppression of Enemy Air Defence (SEAD). The PLAAF's participation in close air support, battlefield air interdiction, and interdiction had also been limited. Its force of attack aircraft was ill-equipped and the crews not adequately trained to provide direct support to ground units. Hence, the PLAAF, over the years, had been a defensive force, merely supporting the role in any offensive campaign, with the major burden carried by the missiles.

It took the PLA thirty years to realise, "*that the largest obstacle for any ground force or a united campaign came from the air"*. The impact of air power was evident from multiple payloads, pinpoint targeting, strategic bombing and troop mobilisation, which could frustrate any adversary. Given the condition of the antiquated PLAAF, the ground forces had started acknowledging that air attack by a potential enemy would be the greatest challenge in future high-tech wars. This major shift could have been a basis for a transition, where the PLAAF was literally pushed into developing

29. Lt. Col. R. McCabe, USAF , "Chinese Air Force and Air and Space Power", *Air and Space Power Journal*, Fall, September 2003.

offensive capabilities in terms of control of air, air strike and air defence, to be able to participate in joint operations.

The transition from a 'defensive air force' to an 'offensive air force' also coincided with the process of modernisation, which included restructuring, enhanced training and hardware upgrades. The Chinese had noticed and absorbed these changes taking place in other air forces around the world. They carefully studied the American Air-Land doctrine, analysed the force structure of the US Air Force (USAF) and the Russian Air Force in the late 1980s and early 1990s and observed that the USSR had reduced its fighter jets by 55 percent and the Americans by 24 percent[30], because in high-tech conditions, simple function fighters could not establish air superiority or a level of deterrence and, hence, had to be replaced by multi-role aircraft. In the late 1980s, the PLAAF tabled a proposal to reduce the fighter jets from 70 to 55 percent and strengthen itself with specialised function aircraft like Airborne Warning and Control System (AWACS), aerial refuelling, large transport aircraft, electronic warfare and reconnaissance aircraft.[31]

The PLAAF was transforming to conduct major air battles far away from home, thereby, enhancing the size of its air war zone so that the distinction between the air defence front line and in depth strike zone becomes fuzzy. As an offensive force, the PLAAF required to prepare itself not only for strategic targets in the enemy's rear but also for defence against the opponent's aircraft and long distance missile strikes. Future wars would be a product of information and high technology, weaponry and air power. Acceptance of air power being a part of the decision-making apparatus, and an independent instrument for application of state interest and integration in the context of a joint campaign[32] can be seen in the context of transition from a historically defensive force air force to an offensive one.

30. You ji, n. 27, ch. 5, p. 133.
31. Ibid., p. 137.
32. Ashley J. Tellis, Senior Associate, Carnegie Endowment for International Peace, Washington, Talk at CAPS on the PLAAF on April 28, 2010.

HARD TRANSITION

It has been a long journey for the PLAAF since 1949, born out of a cocktail of a few hundred obsolescent aircraft. The Chinese had consolidated brilliantly and by 1954, set up 28 divisions consisting of more than 3,000 aircraft. It was further expanded to 50 divisions, which remained pretty static until the mid-1980s; thereafter, they were reduced to 32 divisions. The PLAAF inventory, for a considerable time, consisted of aircraft of the 1950s and 1960s technology, like the J-5, J-6, Yakovlev, Lavochkin and the IL-10. Though these aircraft were world class in their times, they were now no more than a 'junkyard'.

The workhorses of the PLAAF during this period were the J-6, second generation fighter and Q-5 ground attack aircraft, both variants of the MiG-19. The J-6 made up the bulk in the PLAAF inventory through the 1960s till the turn of the century, with more than 3,000 aircraft. The Q-5 was a close air support aircraft with ground attack and air-to-air combat capabilities. Although, the Q-5 was capable of carrying a nuclear payload, it was limited by its relatively short range (about 800 km radius of action) and primitive avionics. The H-5 was the Chinese version of the Soviet IL-28, medium bomber which served as the PLAAF's primary dedicated bomber. The H-5's effectiveness in a traditional bombing role was once again limited by its range and slow speed, which made it highly vulnerable to modern air defence systems.[33] These aircraft were far inferior in technology, avionics and radar systems to many aircraft possessed by countries in the neighbourhood[34] as is evident from the capability tabulated in Table 2.

33. The Chinese use standard designators for their military aircraft. "J" (Jian) is a designator for fighters, "Q" (Qiang) for ground attack, "H"(Hongzha) for bombers,"Y"(Yun) for transport and "Z" (Zhi)for helicopters.
34. Roy Kamphausen and Andrew Scobell "Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military", in Philip C. Saunders and Erik Quam, *Future Force Structure of Chinese Air Force*, ch. 8, p. 387.

Table 2: Role and Capability of PLAAF Aircraft in the 1980s

Type	Derivative	Role	Combat Radius	Payload
J-6	MiG-19	Fighter	600 km	Pl2/Pl5 AAM, 250 kg bomb
Q-5	MiG-19	Ground Attack	600 km	Pl2, Pl5,Pl7 AAM, Bl 755 Cluster Bombs, Durandal Anti-Runway Bombs
J-7	MiG-21	3rd Gen Fighter	800 km	Pl2,Pl5,Pl7, Pl8,Pl9 AAM, R 550 Magic,[35] 500 kg Bomb
J-8	-	3rd Gen Fighter	800 km	Pl2, Pl5, Pl8, Pl12 AAM, 1,500 kg Bombs
H-5	Il-28	Med Bomber	1,000 km	3,000 kg Internal Bombs
H-6	Tu-16	Bomber	2,000 km	9,000 kg

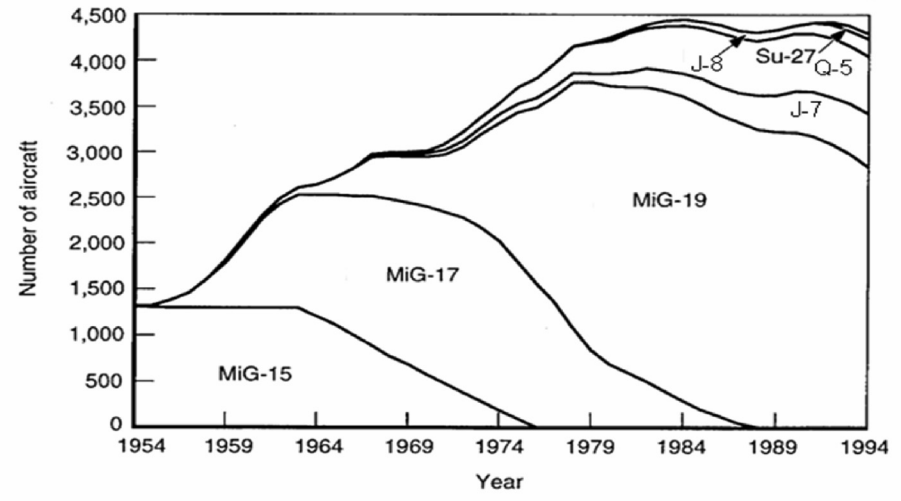
Source: Compiled from Wikipedia, FAS and Jane's.

The J-5 and J-6, which had reached the end of their service life, were being gradually phased out. Dr You Ji mentions that the PLAAF scrapped over 6,000 old aircraft in the 1980s, of which J-5 and J-6 constituted a large chunk, profoundly affecting the PLAAF's overall size in the later part of 1980.[36] The force structure of the PLAAF increased linearly until the mid-1980s except for a brief period during the Cultural Revolution. It peaked in the mid-1980s and thereafter showed signs of decline as the bulk of the aircraft had reached the end of their service life. Fig 2 illustrates that the J-6, which had been the workhorse for the PLAAF, was being gradually replaced with variants of the J-7, J-8 and future fourth generation aircraft. Since the replacement of the combat aircraft was not on a one-to-one basis, as was evident from the production line in the 1980s (Table 3), the force structure of the fighters in the PLAAF declined in the 1990s, though a majority of its fighter aircraft still consisted of the J-6. Analysis of Fig 2 and Table 3 gives a fairly good picture of the dynamics of the force structure from 1954-93 and also draws out an excellent sketch of the combat capability of the PLAAF. Induction of the

35. Paul Jackson, ed., "J-7B Version with R550 Capability was Supplied to Egypt and Iraq in 1982-83," *Jane's All the World's Aircraft 2006-07.*
36. n. 27, ch. 5, p. 134.

J-7 and J-8 was a logical step to augment the depleting force structure of the PLAAF in the 1980s and 1990s.

Fig 2: China's Combat Aircraft



Chinese Jet Fighter Inventory, 1954–1994

Source: Kenneth W. Allen, Glenn Krumel, Jonathan D. Pollack, *China's Air Force Enters the 21st Century* (RAND).

Table 3: China's Annual Combat Aircraft Production For Domestic Use (1980-1992)

	1980	1981	1982	1983	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**
J 6	150	-	-	-	-	-	-	-	-	-	-	-	-
J7 I	-	40	50	50	50	50	50	50	50	50	50		
J7 III												24	24
J8		10	18	18	18	18	18	18					
J8II												12	12
H5	20	20	20										
H6	6	6	6	6	6	66	6	6	6	6	6		
Q 5 Production Stopped in 1975													

Source: Srikanth Kondapalli, *China's Military* (New Delhi: Knowledge World, 1999).

To fill the void created by the existing technological gap and the force structure, the Chinese produced variants of the J-7 and J-8 in the 1980s as replacement for the obsolete second generation J-6. Ironically, both the J-7 and J-8 were aircraft of 1960s vintage and nothing more than marginally 'advanced' obsolete aircraft in the 1980s,[37] far behind the capabilities of the fourth generation aircraft deployed by Russia, America and China's neighbours.

TRANSITION TO J-7

In the 1960s, the Chinese started the development programme of the J-7 at the Shenyang Aircraft Factory based on incomplete technical data of the MiG-21F received from the Soviets. The static test on the J-7 was carried out in November 1965 and the first flight test was conducted in January 1966 with the WP-7 (WoPen)[38], the Chinese copy of the Soviet Tumansky R 11F -300 turbojet engine. The fighter was certified for production in 1967.

The J-7 production was reassigned to a newly built Chengdu Aircraft Industry Corporation (CAC) in Sichuan province. The production of the WP-7 was also handed over to the Liyang Aero Engine Company at Guizhou province in 1968. From 1969-75, Chengdu modified the J-7 design to roll out the J-7-I version in 1976. The programme was severely hampered by the Cultural Revolution, and when the first aircraft rolled out in 1976, it had already become obsolete. The J-7-I modernisation continued with upgrades in the avionics suite, airframe, weapon system and engine. The result was an upgraded version with the WP-7B engine, certified for production in 1979 and called the J-7-II.

The J-7 II upgrade was assisted by British GEC-Marconi. It included the 956 HUDWAC (Head-Up Display and Weapon Aiming Computer), Skyranger air-to-air ranging radar with anti-jamming capability, Air Data Computer (ADC), radar altimeter, IFF (Identification of Friend or Foe), and a secured radio communication. After the 1989 Tiananmen incident, the GEC-Marconi Skyranger radar was replaced by the Italian Grifo 7 fire

37. Lt. Col. Patricia M. Fornes, "Modernising China's Air Force: It's Strategy, Budget and Capabilities", Research report submitted at the Air War College.
38. Chinese nomenclature for engines: HS(HuoSai: Piston engine), WJ (WoJiang: Turboprop), WP (Wopen: Turbojet), WS (WoShan: Turbofan), WZ (WoZhou: Turboshaft)

control radar with a range of more than 55 km[39]. Indigenous modifications of the weapon system, and airframe structure through computer aided design continued on the J-7-II. A rear view mirror, more fuel tanks under the dorsal fairing and an enlarged vertical fin were incorporated to improve the performance of the platform. The aircraft was fitted with pylons capable of carrying the PL7 AAM, Magic R 550, PL-2, PL-5 short-range AAM. The J-7 EB version was used for the aerobatic team fitted with smoke canisters.

However, the J-7-II lacked the capability for combat in all weather day/night conditions. The Chinese were eyeing the multi-role capability of the MiG-21 MF, which they were able to acquire from the Egyptians in 1979[40]. The CAC reverse engineered the MiG-21 MF with the help of computer aid design to roll out the first version of the J-7-III in 1984. The aircraft was fitted with the JL-7 (J band) multi-purpose pulse-Doppler fire control radar, target tracking using optical gun sight, IFF, HUD (Head Up Display), autopilot, ADC, radio altimeter, HF/VHF communication system, RWR along with chaff and flare dispensers. It was powered by the WP 13 turbojet engine, developed by Guizhou Liyang Aero Engine Company. The J-7-III lacked the 'punch' as its JL-7 fire control radar was unreliable, without BVR and 'look-down/shoot-down' capabilities, which by now were available on all major Western aircraft. The J-7D incorporated minor improvements over the J-7-III: an upgraded avionics suite, fire control radar and the engine replaced with a slightly more powerful WP-13 F1. The weapon capabilities were marginally enhanced to carry the PL-7 and PL-8, however, it was still lacking in BVR capabilities. Chengdu's attempt to reverse engineer the MiG-21 MF was not entirely successful and, hence, it reverted to the J-7-II design to develop an improved version, the J-7 E, for the PLA. This aircraft was first flown in 1992 and inducted in the PLAAF in 1995.

Improvements on the J-7E mainly focussed on aerodynamic performance and avionics. The original delta wing plan-form was replaced by the new "double-delta" design similar to that of the Russian Su-15 and Swedish Saab J-35 Draken and the engine changed with the WP-7F[41]. Avionics included the JT-1

39. http://www.sinodefence.com/airforce/fighter/j7.asp
40. http://www.sinodefence.com/airforce/fighter/j7.asp
41. Jackson, n. 35.

HUD, KW8602 RWR, 8430 ADC, JD-3 Tactical Aircraft Navigation (TACAN), KG-8605 internal radar noise jammer, and 941-4AC chaff/flare dispenser.

The J-7MG was an export variant developed by CAC based on the J-7E, with the WP 13F engine. The fighter was fitted with X-band British Marconi Electronic Systems and Super Sky Ranger pulse-Doppler fire-control radar. It had the 'look-down/shoot-down' capability and five working modes that could track up to eight targets simultaneously. The Marconi HUD, along with fire-control computer and a HOTAS (Hands On Throttle-and-Stick) improved the cockpit design and ergonomics to allow the pilot to fly the aircraft without taking his eyes off the horizon and HUD, thus, improving his situational awareness. The system could also be integrated with the Helmet-Mounted Display (HMS). It also featured a coloured Electronic Flight Control System (EFCS), Automatic Direction Finder (ADF), VHF Omni-directional Range (VOR), TACAN and Instrument Landing System (ILS).

The J-7 PG had been in service with the Pakistan Air Force (PAF) and was almost similar in configuration to the J-7MG. The J-7MG/PG series export fighter had been the most successful amongst the J-7 and, hence, Chengdu developed its domestic equivalent, the J-7G. The J-7G was equipped with an I/J-band KLJ-6E pulse-Doppler fire-control radar based on the Israeli EL/M2001, helmet mounted sighted AAM, new one-piece front windscreen for better cockpit visibility, Type III IFF, indigenous zero-height, zero-speed ejection seat and an improved ECM suite. The J-7G aircraft first flew in June 2002, and finally entered the PLAAF in 2004.

The CAC was also developing an updated version of the J-7 M under the Super-7 programme. The programme was a trilateral agreement among the US, China and Pakistan to replace the WP-7B/WP-13 engines with GE F-404. The project had to be shelved because of the sanctions imposed on China in 1989. The CAC, however, continued with the wind tunnel experiments of a completely configured Super 7 and rebranded the design as FC-1, a future fourth generation aircraft.[42]

42. http://www.sinodefence.com/airforce/fighter/fc1.asp

PEACE PEARL

The J-8 was the first indigenously designed aircraft in the PLAAF. The aircraft was built at Shenyang Aircraft Corporation (SAC) and designed at the 601 Aircraft Design Institute. It was an enlarged version of the J-7, with two WP-7 engines. The work on theoretical evaluation commenced in May 1964 at the Research Academy of the Chinese Military of Defence to produce a Mach 2 aircraft capable of intercepting the US B-58 and F-105. Within a year, the J-8 entered the engineering development phase with the first mock-up ready for inspection in December 1965, and the prototype production commenced in 1966. The first two prototypes rolled out in July 1968, and were flown on July 5, 1969. This programme was also interrupted because of the Cultural Revolution, and the test flights could not be completed until 1979. The J-8, mounted with delta shaped wings and two Liyang WP-7 aero-engines, finally entered service in 1981.[43]

Though the aircraft achieved more or less all the design targets, lack of modern avionics and armament capabilities did not give the J-8 any distinctive advantage over the J-7. Slow progress in developing the fire control radar and the unsuccessful trial of the PL-4, left the aircraft capable of carrying only a PL-2 IR homing short range AAM for air combat. Around 50 such aircraft were produced, and remained in service until 1990. The J-8-I was an improvement over the J-8, which included JL-7 monopulse fire control radar, SM-8A aeronautical gun sight, onboard computer, improvised cockpit panel along with a new ejection seat and an oxygen system. This aircraft went through its mid-life modernisation upgrade in 1990s, with an ECM suite and RWR, and was called the J-8 E.

The J-8-II was a redesigned J-8 developed once again by SAC. Thereafter, various versions of the upgraded J-8-II were alphabetically classified. The original nose air inlet of the J-8 was moved to the sides to provide space for a larger size radar. The two underpowered WP-7Bs were replaced by the more powerful WP-13 A II engines. The J-8B was the first variant of the upgraded J-8-I which flew its first flight in 1989.

43. "Sino-Defence," http://www.sinodefence.com/airforce/fighter/j8.asp

The upgrade included a Type 208A mono-pulse fire control radar with extended range coupled with an interception fire control computer, HK 13 E HUD, JD-3II TACAN. The later version of the J-8B was upgraded with the KLJ-1 pulse-Doppler fire control radar and KJ-8602A RWR. Capability to carry the semi-active radar homing MRAAM and air-to-ground rockets, along with an auto pilot, were added to the J-8,[44] but the J-8B still lacked the BVR combat capability, mainly because of its ineffective fire control radar.

To address various limitations in the J-8-II, China decided to get into a military alliance with the US. This was the largest $550 million Foreign Military Sales (FMS) agreement between the US and China to upgrade the J-8-II interceptor aircraft by Grumman under the "Peace Pearl" project. This involved 42 Chinese military officers working on the joint arms project with the United States at Grumman Corp in Bethage, NY and Wright–Patterson AFB near Dayton, Ohio.[45] The upgrade package for the 50 aircraft included the Westinghouse APG-66V radar (also fitted on the F-16), 1553B MIL-STD data bus, fire control computer, HUD, cockpit Multi-Functional Display (MFD), navigation system and ejection seat. The urgency to grab the deal, coupled with the PLAAF's obsession with secrecy, prevented Grumman from understanding the cockpit of each of the 50 Chinese aircraft, which were unique and, hence, required individual adjustment, leading to cost overruns.[46] However, the project was short-lived and cancelled post-1989 Tiananmen Square incident, as part of the sanctions imposed by America and the West on China.

Following the cancellation of the "Peace Pearl" project, the SAC continued to upgrade the J-8II, possibly with the assistance of Israel or Russia. In the early 1990s, Shenyang proposed a radically upgraded variant, the J-8C (also known as the J-8III) featuring new avionics and power plant, which would eventually bring the fighter into the same league as modern

44. Ibid.
45. "US Allows Chinese Military Back Into Joint Arms Project," *The Washington Post*, October 29, 1989.
46. Thomas L. Wilborn, "Security Cooperation With China: Analysis and a Proposal", November 25, 1994, Strategic Studies Institute.

Russian and Western combat aircraft like the MiG-29 and Mirage 2000-V. The J-8C programme entered full scale development around 1991 and the aircraft first flew successfully in 1993.

The J-8C was an upgraded J-8-II, which included a new multi-mode pulse-Doppler radar based on the Israeli Elta EL/M 2035 radar technology. It was also equipped with a digital fire-control system and a new glass cockpit with Multi-Functional Displays (MFD). The aircraft's original WP-13 A II turbojet engine was replaced by the more powerful WP-14 turbojet then being developed by Shenyang Liming Aero-Engine Company[47]. The J-8C project in the late 1990s had to be shelved in favour of the SU 27/J11, but the same technology was later used in developing the J-8F.

The J-8D was a modified J-8, with a fixed refuelling probe on the starboard side of the cockpit. The first hook-on with the H-6 tanker took place in the early 1990s; however, the PLAAF demonstrated its capability of air-to-air refuelling to the world on October 01, 1999. The air-to-air refuelling was a big boost, as it increased the combat radius of the J-8 from 800 km to 1,200 km.

The J-8F was an improved variant of the J-8C with a stiffened nose and two wing fences on each wing. It was also regarded as the first true 'multi-role' fighter, hence, the most capable variant in the J-8II family. New features in the J-8F included a glass cockpit, a more powerful WP-13 B II engine, new fire-control radar (JL-10) with the capability of a radio command transmitter to provide mid-course correction to its PL 12 MRAAM during a BVR attack. It was also capable of guiding the R-27 and R-77 along with an enhanced air-to-air and air-to-sea modes of firing precision guided armaments, including laser or satellite guided bombs. The J-8F could also be fitted with a fixed in-flight refuelling probe.

The SAC was now able to upgrade the J-8II with Russian technology because of the turnaround in the Sino-Russian relations in the early 1990s. The J-8IIM, intended primarily for the export market, featured with the Russian Phazotron Zhuk-8II pulse-Doppler fire-control radar specially tailored for the J-8II fighter, coupled with the Vympel R-27R1 (NATO

47. n. 43.

codenamed AA10), semi-active radar-homing MRAAM. The package provided the J-8IIM with 'real' BVR combat capability and the aircraft was flown successfully on March 31, 1996.

The J-8II ACT (Active Control Technology) was a technology demonstrator, designed for studying and testing the 'Fly-By-Wire' (FBW) technology. The aircraft, was based on the J-8II airframe, with a shorter fuselage and a pair of front canards just behind the air inlets. The J-8II ACT was introduced in the 1990s to replace the older FBW demonstrators based on the J-6(J-6 ACT) and J-8 (J-8 ACT). The J-8II ACT played an important role in the future development of the PRC's third generation fighter programme.

TRANSPORT AND HELICOPTERS

Other than combat operations and aggressively modernising its fighter fleet, the PLAAF's other mission was also to provide airlift in support of its ground forces. Its capacity to augment the PLA's airlift requirement was restricted because of its antiquated aircraft. The PLAAF's transport fleet mainly consisted of the Y-5 (An-2), Y-7 (An-24), Y-8 (An-12), IL 18, indigenously manufactured Y-11 and Y-12 along with a few old Lisunov (Li-2) and IL-14 (Table 5). The 15th Airborne Corp was also a part of the PLAAF and utilised the An-2, IL-14, IL-18 and Y-7s for its missions. The transport element of the PLAAF had participated in a few combat operations in past campaigns, which included airborne assault landing and attack on the enemy's lines of communication. Hence, the 15th Airborne Corp was envisaged to play an important role and was, thus, elevated to a strategic force, directly controlled by the CMC. During a crisis, the PLAAF was empowered to utilise civil aircraft to transport troops, as was demonstrated in the 1989 Tiananmen incident. Until the mid-1990s, due to limited airlift capabilities, only one of the 15th Airborne Corps' three divisions consisting of around 11,000 troops, along with light tanks and self-propelled artillery could be rapidly deployed within 48 hours. The airlift capability was, however, enhanced with the induction of 10 IL-76 heavy lift aircraft in 1993.

The transport aircraft were also utilised in maintaining the Signals Intelligence (SIGINT) in the Asia-Pacific region. The principle Chinese airborne Electronic Intelligence (ELINT) platform was the EY-8, indigenously developed as a derivative of the An-12. The system was designed to detect, identify, analyse and locate land-based or shipborne radar emitters with a high probability of intercept. It was more than established that Israel was actively involved in assisting the development of China's airborne ELINT/ EW capability.

China also produced the French Super Frelons (SA 321) Anti-Submarine Warfare (ASW) and Search and Rescue (SAR) variants for the navy. The Super Frelons were called the Z-8—the first helicopter in the PLA capable of operating from the deck of surface vessels.[48] It also developed the JH-7, primarily for the navy at the Xian Aircraft Company (XAC); the test programme commenced in 1988 and the prototype flew in 1993. The aircraft was powered by the Rolls Royce Spey Mk 202. As we look at the development programmes in the aviation industry through the 1980s and 1990s, it is evident that the 'geo-politics' of the region had influenced the process of modernisation in the PLAAF. China in the 1980s was in alliance with America, and after Tiananmen and the end of the Cold War, aligned with the Russians. The inter-changeability of actors and them guiding the process of military modernisation was quite evident during this period.

GEO-POLITICAL TRANSITION

From the US' standpoint, rapprochement with China was a geo-political convenience needed to contain Soviet expansion in the Cold War era. However, following the Soviet disintegration and with the Japanese power contained within the US-Japan framework, China became a key concern for the Americans and the only alternative centre of power and influence in the strategically important Asia-Pacific region. In US foreign policy, the only common ground between the 'doves' and the 'hawks' with reference to China, was that both saw China as a potential threat to

48. http://www.sinodefence.com/airforce/helicopters /sa321.asp

US interests in Asia and both were in agreement to destablise China as a potential power.[49]

The heyday of China-US rapprochement, was ironically during the hawkish 'Reagan Administration'. The US planners believed that China needed the US more than the US needed China and, therefore, concessions to China were unnecessary. China during this period was virtually hooked on to the US capitalist ideology and culture and was more than eager for assistance in the fields of dual use technology, high speed computers, weapon systems, military hardware, and access to US doctrine and training. China's effort also to produce frontline fighters and match up with the capability of the West was assisted by the Americans as was seen in the "Peace Pearl' project. By the mid-1980s, the Reagan Administration had relaxed control of high-tech exports to China, resulting in over $5 billion arms sales to China. The private sector made handsome profits through military sales to China as a result of trade relaxation, ironically, a golden era for US-China relations under the hawkish anti-Communist US President. It was not only China which was buying arms from the US, but surprisingly the US through the Central Intelligence Agency (CIA) was also purchasing arms from China for the Mujahideen in their war against the Soviet Union in Afghanistan. This continued until the sale of the Silkworm anti-ship missile to Iran,[50] which led to the first of a series of restrictions on high-tech exports to China by the Reagan Administration in 1987, prior to Tiananmen.

TRANSITIONAL VACUUM

You Ji explains 'transitional vacuum' as the partial solution of Russian support to modernise the PLAAF's zero stock of sophisticated aircraft against the background of its potential opponents in the region[51]. The 1992 agreement with the Russian Federation to buy 48 SU-27, all-weather night fighters, to be delivered by 2000, was a great example of the 'transitional

49. Henry C. K. Liu, Chairman of New York based Liu Investment Group, "US, China : The Politics of Ambiguity," article in *Asia Times* on April 24, 2002.
50. Ibid.
51. You ji, 27, ch. 5, p. 156.

vacuum'. Also, in the same year, China and Israel normalised diplomatic relations and legalised the transfer of "electronic technology".[52]

Tiananmen, the end of the Cold War and the collapse of Russia resulted in China's geo-political realignment with Russia. For China, the implications were profound, because of its need to modernise the PLAAF. The development of the J- 8-IIM with Russian support, a high level team led by the Vice Chairman of the CMC, Liu Huaqing visiting Russia, and the SU-27 deal were indicators of this 'geo-political shift'. A former enemy had now became a source of supply of modern military technology, reaffirming Henry Kissinger's definition of 'geo-politics': "One characteristics of geo-politics is inter-changeability of actors". Ashley Tellis had aptly described that "during the period of transition, the PLAAF was evolving with a vision far more sophisticated and impressive than its past".[53]

BUDGET TRANSITION

Chinese philosophy as well as Mao's paradoxical dictum states that the "option of force enhances the prospect of peaceful reunification". Hence, military modernisation forms an important part of the overall calculus of the Chinese "Grand Strategy". However, defence was made subordinate to the country's economic development by Deng in the late 1970s and defence expenditure was, therefore, kept in check.

Certain glaring contradictions surface while analysing defence expenditure in China from the mid-1960s to the early 1990s. It is a well known fact that the official estimates of Chinese defence expenditure are not computed as per the international norms and there is a strong belief amongst analyst that the official defence expenditure represents a small portion of the estimated defence expenditure which mainly includes the net manpower cost of the armed forces in China.[54] The defence expenditure had remained constant at around Yuan 13-15 billion from 1971-78, though

52. n. 37.
53. Tellis, n. 32.
54. Air Cmde Jasjit Singh, *Asian Defence Review 2008-2009* (New Delhi: KW Publisher), ch. 1, p. 26.

the force level increased from 2.8 million to 4.5 million. Sixty percent increase in manpower without any change in budget allocation was 'mumbo jumbo'; however, one could partly attribute it to the Cultural Revolution, low quality military and poor quality manpower. A reverse trend of reduction in manpower and an increase in the budget allocation were seen after 1981, when the process of "Four Modernisations" was institutionalised. The spikes in the military expenditure in 1969-70 as well as 1979-80 can be ascribed to the Sino-Soviet conflict and the 1979 Sino-Vietnam War.

In the period from 1978-87, China concentrated on economic development and defence was kept low on priority. The annual increase in defence expenditure was 3.5 percent while the Gross Domestic Product (GDP) increased by 14 percent. Also, the share of annual defence expenditure in the GDP dropped from 4.6 percent in 1978 to 1.78 percent in 1987[55]. The focus was more on economic development than on military modernisation. Though the nominal military expenditure increased from 1981-92, the real expenditure fell to a maximum of 25 percent during the same period (Table 4).

The production of combat aircraft dropped from 450 aircraft per year in mid-1970 to around 70 aircraft in the 1980s (Fig 3). The factories stopped production of the J-6, Q-5, H-6 and started producing variants of the J-7, J-8 with assistance from the West. Though production of these aircraft was in relatively small numbers, it helped them develop indigenous capacity to produce more advanced aircraft in the future. Hence, the PLAAF was transiting from a huge force pivoted on the J-6 until 1980 to a force structure with relatively modern J-7/J-8 aircraft, but in small numbers. The strength of aircraft in the inventory of the PLAAF during the period of transition gives a fairly good picture of the type and capability of its force structure (Table 5).

55. Ministry of National Defence, "The Peoples Republic of China," http://eng.mod.gov.cn/Database/Expenditure/index.htm

Table 4: Chinese Military Budget (Billion Yuan) 1978-93

Year	Price Index 1978=1.00	Nominal Expenditure	Real Expenditure	Military Budget Expenditure 1978=1.00
1978	1.00	16.784	16.784	1.00
1979	1.02	22.266	21.829	1.30
1980	1.08	19.384	17. 932	1.07
1981	1.11	16.797	15.173	0.90
1982	1.13	17.635	15.634	0.93
1983	1.15	17.713	15.470	0.92
1984	1.18	18.076	15.358	0.92
1985	1.28	19.153	14.952	0.89
1986	1.36	20.075	14.783	0.88
1987	1.46	20.962	14.387	0.86
1988	1.73	21.800	12.630	0.75
1989	2.03	25.147	12.363	0.74
1990	2.08	29.031	13.977	0.83
1991	2.14	33.031	15.457	0.92
1992	2.25	37.790	16.781	1.00
1993	2.55	42.580	16.698	0.99

Source: State Statistics Bureau, Chinese Statistics Yearbook, 1997, p. 267.

Fig 3: Chinese Jet Fighter Production, 1960-1995

Source: Kenneth W. Allen, Glenn Krumel, Jonathan D. Pollack, *China's Air Force Enters the 21st Century* (RAND)

Table 5: PLAAF Aircraft from 1981-92

	1981	1983	1985	1987	1989	1991	1992
J-5 (MiG-17)	300	300	400	400	400	400	400
J-6 (MiG-19)	3,000	3,000	3,000	3,000	3,000	3,000	3,000
J-7 (MiG-21)	250	300	200	200	300	500	500
J-8	50	30	30	30	100	100	100
Q-5 (MiG-19)	500	500	500	500	500	500	500
H-5 (TU-16)	450	450	500	500	250-300	350	350
H-6 (IL-28)	100	120	120	120	120	120	120
TU-2	100	-	-	-	-	-	-
SU-27	-	-	-	-	-	-	24
Y-5 (An-2)	300	300	300	300	300	300	300
Y-7 (An-24)		FEW	10	20	20	25	25
Y-8 (An-12)	FEW	FEW	10	12	25	25	25
IL-18	-	-	-	-	10	10	10
LI-2	100	75	75	75	50	50	50

IL-14	50	FEW	FEW	FEW	-	-	-
BAE Trident1E/2E	-	-	-	-	18	18	18
Y-11	-	-	-	-	FEW	15	15
Y-12	-	-	-	-	FEW	2	2

Source: *Military Balance*, published by IISS for the years shown in the table.

The developing countries were the major arms market for the Soviet, Americans and Western suppliers. However, of late, some of these developing countries too have built a substantial market in the domestic arms industry, especially China. At one point in time, 10 percent of total industrial output in China was contributed by the armament sector and export of arms was seen as a solution to revive the huge number of loss-making defence industries. China offered its combat aircraft and weapon systems to many Third World countries (Table 6). Though it had been a late entrant in the arms trade, from 1985-89, Beijing exported nearly $7 billion worth of arms, becoming among the top ten arms suppliers to Third World countries.

Table 6: China's Export of Combat Aircraft

Country	Variants	Qty	Delivery
Egypt	J-7A	90	Delivered in the Early 1980s
Pakistan	J-7P J-7PG	95 66	Delivered in 1988-90 Delivered in 2001-02
Tanzania	J-7A	16	Delivered in the Early 1980s
Iraq	J-7B	90	Delivered in the Mid-1980s
North Korea	J-7B	40	Delivered in the Early 1980s
Sri Lanka	J-7BS JT-7	4 2	Delivered in the 1990s
Sudan	J-7B	22	Delivered in the 1990s
Bangladesh	J-7M JJ-7 J-7BG JJ-7BG	14 2 12 4	 JJ-7 Delivered in 1989 J-7BG and JJ-7BG Delivered in 2006

Iran	J-7M	18	Delivered in the Mid-1980s
Albania Burma	J-7A J-7M	12 24	

Source: www.sindefence.com/airforce/fighter/j7.asp (updated as on December 25, 2008)

Other than exports of its combat aircraft to the Third World countries, 'defence conversion', which is the use of the military industrial complex for civilian production, became another source to finance the process of modernisation and bridge the budgetary shortfalls in the early 1980s.

START OF MODERNISATION

The PLAAF's leadership had taken a holistic approach that looked at every aspect of activity in the air force during this period of transition. The PLAAF started understanding that modernisation was not just about modern aircraft, weapons and technology but also about institutions, people, leadership, doctrine and a host of other issues. The rationalisation of the organisational structure and elevation of the PLAAF Commander to the rank of General and his inclusion in the CPC indicated that the PLAAF was no longer an accessory of the ground forces; which by itself was an important indicator of the elevation of air power in the role it plays as well as an integral element of the joint force.

The transition from the obsolete J-6 class of aircraft to the J-7 and J-8 was in fact, the foundation being laid for future modernisation of the PLAAF. The 2006 Defence White Paper describes the modernisation goals as follows:

> The first step is to lay a solid foundation by 2010; the second is to make major progress around 2020; and the third is to basically reach the strategic goal of building informationised armed forces and being capable of winning informationised war by mid-21st century.

China has been doggedly working toward these goals from the 1990s, to achieve sustained military modernisation of the PLAAF as well as its armed forces. Jiang Zemin, Secretary General, CCP, and Chairman, CMC, while delivering a speech on January 13, 1993, at a meeting of the CMC, had promulgated a new military strategy for the PLA to guide its future modernisation efforts, which focussed on sustained modernisation. This was the roadmap for the military modernisation of China for the next millennium.