China's Search for a Modern Air Force

John Wilson Lewis and Xue Litai

For more than forty-eight years, the People's Republic of China (PRC) has sought to build a combat-ready air force.[1] First in the Korean War (1950–53) and then again in 1979, Beijing's leaders gave precedence to this quest, but it was the Gulf War in 1991 coupled with growing concern over Taiwan that most alerted them to the global revolution in air warfare and prompted an accelerated buildup.

This study briefly reviews the history of China's recurrent efforts to create a modern air force and addresses two principal questions. Why did those efforts, which repeatedly enjoyed a high priority, fail? What have the Chinese learned from these failures and how do they define and justify their current air force programs? The answers to the first question highlight changing defense concerns in China's national planning. Those to the second provide a more nuanced understanding of current security goals, interservice relations, and the evolution of national defense strategies.

With respect to the first question, newly available Chinese military writings and interviews with People's Liberation Army (PLA) officers on the history of the air force suggest that the reasons for the recurrent failure varied markedly from period to period. That variation itself has prevented the military and political leaderships from forming a consensus about the lessons of the past and the policies that could work.

In seeking to answer the second question, the article examines emerging air force and national defense policies and doctrines and sets forth Beijing's rationale for the air force programs in light of new security challenges, particularly those in the Taiwan Strait and the South China Sea. In the 1990s, the air force has fashioned both a more realistic R&D (research and development) and procurement policy and a more comprehensive strategy for the PLA Air Force (PLAAF) in future warfare. We conclude that this strategy is recasting time-

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1. Two English-language studies, though now dated, provide the foundation for any understanding of this subject: Kenneth W. Allen, Glenn Krumel, and Jonathan D. Pollack, *China's Air Force Enters the Twenty-first Century* (Santa Monica, Calif.: RAND, 1995); and Duan Zijun, chief ed., *China Today: Aviation Industry* (Beijing: China Aviation Industry Press, 1989).

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honored Chinese dogma concerning "active defense" and no first strike, and that PLA theorists have inched closer to Western concepts on the role of air power in warfare.[2]

We begin with an overview of Beijing's response to heavy losses from U.S. air strikes against Chinese forces in the Korean War, and the PLA's abortive three-decade effort to build a modern air force. With the ending of the chaotic Cultural Revolution and the Mao Zedong era in 1976, China's new leader, Deng Xiaoping, and his military commanders once more gave priority to air force modernization. Here we analyze the Chinese inability to achieve the objectives of the 1980s and provide the background for the PLA's urgent reevaluation of air power that followed the 1991 Gulf War. We then examine the conclusions reached in that reevaluation and show how these conclusions have changed PLAAF strategy and procurement policies. The final sections of the article discuss how Beijing's concerns about a future conflict in the Taiwan Strait intensified internal PLA debates on air force missions and further transformed its modernization programs. We end with an assessment of the Chinese case for continuing the search for a modern air force in light of the decades of repeated setbacks and the overwhelming air superiority of its potential adversaries.

Marching in Place

Chinese leader Mao Zedong first elevated the importance of his fledgling air force in the early stages of the Korean War. In 1951, faced with mounting Chinese casualties from U.S. air strikes, he called for the formation of a national aviation industry, and in October, his diplomats inked an accord in Moscow on technical support for that industry. Although Moscow long resisted a serious commitment to providing air support during the Korean War, within weeks after the October agreement, Soviet experts began heading to China to help construct assembly plants for planes and jet engines.[3]

2. Zheng Shenxia and Zhang Changzhi, "On the Development of the Modern Air Force and the Change in Military Strategy," *Zhongguo Junshi Kexue* [China military science], No. 2 (1996), pp. 82–89.

3. Duan Zijun, chief ed., *Dangdai Zhongguo de Hangkong Gongye* [Contemporary China's aviation industry] (Beijing: Chinese Social Science Press [hereafter CSS Press], 1988), pp. 18–19. We review the Sino-Soviet controversy over air support in Sergei N. Goncharov, John W. Lewis, and Xue Litai, *Uncertain Partners: Stalin, Mao, and the Korean War* (Stanford, Calif.: Stanford University Press, 1993), chap. 6.

Paying for these factories did not pose an initial insurmountable obstacle. Mao had negotiated a pledge of $300 million in credits during his journey to Moscow in the winter of 1949–50. The Chinese at first resolved to devote the bulk of this sum to buying Soviet naval equipment for an invasion of Taiwan planned for the summer of 1950. Chinese losses to U.S. air raids in Korea changed Mao's mind, however, and in February 1952, he redirected half of the credits to the air force. Over time, virtually all these credits flowed to the purchase of planes and aviation ordnance from Moscow.[4] Thereafter China manufactured Soviet-designed jet fighters and then bombers under license.

The record of accomplishment from this investment is unimpressive.[5] Poor planning, lack of financial and human resources and the requisite industrial base, misguided bureaucratic meddling, Nikita Khrushchev's denigration of air power at a time of Soviet influence within the PLA, and the rising importance attached to building the strategic forces interrupted progress toward a combat-ready air force for the next quarter century. Chief of the General Staff Luo Ruiqing, reflecting deepening PLA concerns about the mounting conflict in Indochina, did try again to accelerate the aircraft program in 1964,[6] and by 1966, China had begun making light and medium bombers as well as fighters based on leftover Soviet blueprints. In 1966 Mao also approved construction of an assembly center and other pioneering facilities in Shaanxi Province for manufacturing parts for the Soviet-designed bombers, and gave precedence to the production of bombers over all other aircraft. Still, the results did not match the mandated effort or commitment of scarce resources.

The mistakes and missteps extended well beyond the pace of production. Dictated by the PLA's traditional strategy of "active defense," including the protection of its big cities and industrial bases, China should have assigned a comparable priority to R&D programs on fighters, radar systems, surface-to-air missiles, and electronic countermeasures for strengthening air defense. That decision, too, was not forthcoming. Decades later PLA historians would blame Beijing's senior leaders for their failure to grasp the need for such protection.

Mao was also mired in outmoded concepts about the nature of warfare. Even as he was expressing his fears of imminent global conflict in the 1960s and

4. Yang Guoyu, chief ed., *Dangdai Zhongguo Haijun* [Contemporary China's navy] (Beijing: CSS Press, 1987), p. 687.
5. Unless otherwise cited, the information in this paragraph and the next is from Song Yichang, "The Startup of China's Modern Aviation Industry and Reflections on It," *Zhanlüe yu Guanli* [Strategy and management], No. 4 (1996), pp. 102–106.
6. Huang Yao and Zhang Mingzhe, *Luo Ruiqing Zhuan* [Biography of Luo Ruiqing] (Beijing: Contemporary China Press, 1996), pp. 398–399.

pushing the quest for nuclear weapons and long-range missiles, he impeded all weapons procurement programs by launching massive industrial construction in China's interior or "Third Line." In these remote bastions, primitive factories would manufacture the tools of war for the survivors of the predicted nuclear holocaust. Just at the moment violent clashes broke out on the Sino-Soviet frontier in March 1969, Mao remained so committed to this Third Line construction that most of the money for the aviation industry was poured into Third Line projects that were doomed from the outset.[7]

The fault lay with form as well as substance. To succeed, any R&D program on advanced aircraft and their armaments must be minutely planned and take into account technological uncertainties, long lead times, and the vagaries of political commitment. However, the Central Military Commission (CMC)—the PLA's small but powerful senior command and policymaking body—in a near frenzy caused by the mounting border tensions and the general crisis mood of the times, ruined any possibility for such success. In 1971 it ordered the aviation ministry to commence R&D programs on 27 new types of aircraft.[8] By starting everything at once, nothing truly started.

During the Cultural Revolution (1966–76), moreover, the onslaught of Mao-inspired radicalism exacted a wrenching toll on the cohesion of the air force command system and its fighting capacity. Factional pressures and simplistic slogans paralyzed the PLAAF, causing it to slight pilot training and flight operations. For example, in 1964 every fighter pilot had 122 flying hours, but each pilot averaged only 24 and 55 flying hours in 1968 and 1970, respectively. Many pilots had only 30–40 flying hours a year, some even fewer than 20 hours, and plane crashes came with tragic regularity. By 1972 only 6.2 percent of PLAAF pilots could fly safely at night in good weather, and a mere 1 percent could do so under marginal night conditions.[9]

For a while, nothing seemed to go well. In 1973, for example, Zhou Enlai called on the air force to heighten its fighting skills within two and a half years.[10] However, the lack of well-trained pilots was so consequential that the

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7. Peng Min, chief ed., *Dangdai Zhongguo de Jiben Jianshe* [Contemporary China's capital construction] (Beijing: CSS Press, 1989), vol. 1, pp. 159–160; Duan, *Dangdai Zhongguo de Hangkong Gongye*, p. 73; and Yan Fangming, "A Review of Third Line Construction," *Dangshi Yanjiu* [Studies on the party's history], No. 4 (1987), p. 73.
8. Lin Hu, "The Development of Air Force Equipment in the Seventh Five-Year Plan Period (1986–90)," in Wang Runsheng, chief ed., *Kongjun Huiyi Shiliao* [The air force: historical materials on recollections] (Beijing: Liberation Army Press [hereafter PLA Press], 1992), p. 784; and Duan, *Dangdai Zhongguo de Hangkong Gongye*, pp. 95–96, 100, 136, 145.
9. Lin Hu, chief ed., *Kongjun Shi* [The history of the air force] (Beijing: PLA Press, 1989), p. 197.
10. Zhang Tingfa and Gao Houliang, "The Construction of the Air Force Has Entered a New Historical Stage after Bringing Order out of Chaos," in Wang, *Kongjun Huiyi Shiliao*, p. 620.

air force could not assign a single organic squadron to provide air cover during the Sino-South Vietnamese armed conflict, January 15–20, 1974.[11] As an emergency measure, the air force had to transfer qualified commanders from different squadrons on an ad hoc basis to fly these missions.

During these same years of upheaval, Mao's radical bannermen launched a large-scale persecution of aircraft designers and engineers, one of the ideologically targeted groups of "intellectuals." Moreover, technical and logistics bugs, the result of "politics in command," continued to plague airplane production. A typical case was the J-6 fighter, a version of the MiG-19. In 1971, 7 of the 40 J-6s built for foreign sale proved defective.[12] Hundreds of the J-6c's (the most advanced version of this plane) were built before the design was finalized, and millions of yuan had to be budgeted to have them dismantled and rebuilt. In this and similar ways, the aviation ministry wasted 65.8 percent of its R&D funds. In 1972 Marshal Ye Jianying, who had replaced Lin Biao to oversee CMC operations, told the ministry never to "give birth to a child before giving birth to its father," but to no avail. Throughout the decade, the ministry, without doing the necessary planning, launched a series of "unsuccessful efforts to finalize aircraft designs."[13]

What is more, the institutes under the Aviation Research Academy (or Sixth Academy) made sorry headway in their quest for new designs. For example, Chinese engineers could not finish the designs for the J-7 and J-8, two fighters then under development, until more than ten years after the inaugural test flights of their prototypes. Not until 1979, thirteen years after the test flights of a prototype J-7, did the ministry approve the J-7 to replace the J-6.[14] Program after program fell far short of minimal requirements and firm deadlines.

By the end of the Cultural Revolution in 1976, the aviation industry was reeling from the decade of neglect and strife.[15] Quality problems occurred

11. The information in the rest of this paragraph is from Lin, *Kongjun Shi*, p. 197.
12. Zhao Dexin, chief ed., *Zhonghua Renmin Gongheguo Jingji Zhuanti Dashiji (1967–1984)* [A specialized chronology on the economy of the People's Republic of China (1967–1984)] (Zhengzhou: Henan People's Press, 1989), p. 110.
13. Yao Jun, "The Scientific Research Works of the Air Force," in Wang, *Kongjun Huiyi Shiliao*, p. 710; Lin, *Kongjun Shi*, p. 200; and Duan, *Dangdai Zhongguo de Hangkong Gongye*, pp. 95–96, 100, 136, 145. The quotes are from Duan, *Dangdai Zhongguo de Hangkong Gongye*, pp. 83, 100.
14. Duan, *Dangdai Zhongguo de Hangkong Gongye*, pp. 82–84; and Xie Guang, chief ed., *Dangdai Zhongguo de Guofang Keji Shiye* [Contemporary China's defense science and technology cause] (Beijing: Contemporary China Press, 1992), vol. 2, p. 191.
15. The information in this paragraph and the next is from Wang Dinglie, chief ed., *Dangdai Zhongguo Kongjun* [Contemporary China's air force] (Beijing: PLA Press, 1989), pp. 545–546; Lin, *Kongjun Shi*, pp. 236–237; and Zhang and Gao, "Construction of the Air Force," pp. 621–622, 625, 628–629. The quote is from Wang, *Dangdai Zhongguo Kongjun*, p. 546.

on the vanes of the J-6c turbojet engines. Rivets on the Q-5 attacker (fighter-bomber) were found loosened. Rotary wings dropped from Z-5 helicopters. Engineers found flaws endemic in the J-6c fighter and the Q-5 attacker as well as the Z-5, and shipped 1,050 of these aircraft back to the factories where technicians hunted down thousands of defects. The air force summarized these faults as "backward equipment, poor-quality products, and inadequate components." Moreover, it could not break free from its reliance on the Soviet aircraft and R&D methods introduced in the 1950s and 1960s, and PLAAF leaders concluded that the revolutionary advancements in foreign aviation technologies had increased the inequality between China and other military powers.

After years of fruitless striving, official examinations exposed unresolved training issues and leadership failures. Fifty percent of pilots could not accurately land by instrument. Most fighter pilots had failed to master the art of hitting targets from a wide angle of attack. Some fighter squadrons had a percentage of hits in mock dogfights as low as 1.7 percent, and most attacker and bomber pilots had equally dismal records on the target ranges. Many pilots had few, if any, opportunities to fire a gun or make a bombing run. To make matters worse, a third of their commanders were deemed incompetent. The results of near nonstop investigations confirmed the extent of the problems but failed to come up with agreed solutions.

By 1977 senior air force commanders faced the costs of these failures and drafted a Three-Year Plan for Constructing the Air Force (1978–80) for the CMC's approval.[16] The plan focused on pilot training and new weapons systems and called for a fresh attempt to end the confusion and the stalemate. The favored remedies dealt with command and discipline at the regimental level and above. The key, the CMC proclaimed, lay in organizational and leadership reforms, the time-honored Maoist panaceas for programmatic shortcomings.

What happened after Deng Xiaoping took charge of the CMC in 1977 interests us most, because of his emphasis on air force modernization. In August he ordered the air force to shape up, saying, "the frequent and recent plane accidents were the result of inadequate training and aircraft quality." By

16. This and the next paragraph are based on Zhang and Gao, "Construction of the Air Force," pp. 621–623, 628; Wang Hai and Zhu Guang, "Consolidate the Air Force Pilots' Training with Combat Capabilities as a Criterion," in Wang, *Kongjun Huiyi Shiliao*, p. 778; and Wang, *Dangdai Zhongguo Kongjun*, p. 515. Deng's quote is from Zhang and Gao, "Construction of the Air Force," p. 621.

then, the air force had begun assigning pilots many more flying hours, and compared with 1974, the serious aircraft accident rate dropped sharply from 0.62 percent to 0.3 percent per 10,000 flying hours by 1978.

At about the same time, Deng began by pressing the bureaucratic aviation ministry to finalize the J-7b as a replacement for the J-6.[17] Early in 1978, the CMC had announced a new guiding principle: "The air force must enhance domestic air defense capability with air defense of strategic points as a center and strengthen its capability to provide support in land and naval battles." In response, the ministry called a meeting in July 1978 to rethink its R&D programs. This session ended with an order to concentrate on the J-7b and to begin planning for follow-on generations to replace it.

Convinced that the air force would play a much greater part in any future large conflict, Deng publicized his general conclusions about its role. He wrote: "The army and navy both need air cover. Otherwise, the enemy air force will run rampant. . . . We must possess a powerful air force to ensure air domination [in a future war]." He told the CMC to "attach primary importance" to the pursuit of air superiority. On January 18, 1979, Deng, who by then had become China's "paramount leader," elevated his perspective on air power to official CMC dogma:[18] "Without the air force and air domination, winning a future war is out of the question. The army needs air support and air cover. Without air cover, winning a naval battle is also out of the question. . . . Give priority to the future development of the air force. . . . Stress investment in the development of the aviation industry and the air force to ensure air domination."

Deng's secondary, though unstated, purpose in concentrating on the air force was to assert his authority over what he and other senior officials regarded as a potentially dangerous service. The new leadership attached special political weight to the air force because Lin Biao had wrested control of the PLAAF at the onset of his abortive coup against Mao in 1971. As a result of these and other power struggles in the Cultural Revolution that involved the air force, party leaders thereafter sought to keep a much tighter rein over the air force

17. The aviation ministry did not finalize the J-7b's designs until 1979 and later put the J-7b into series production to replace the J-6s. The information in this paragraph is from Duan, *Dangdai Zhongguo de Hangkong Gongye*, pp. 83, 95–96, 99–101, 136, 145. The quote is from pp. 99–100.

18. Shao Zhenting, Zhang Zhengping, and Hu Jianping, "Theoretical Thinking on Deng Xiaoping's Views on the Buildup of the Air Force and the Reform of Operational Arts," *Zhongguo Junshi Kexue*, No. 4 (1996), pp. 43, 44, 45; and Wang, *Dangdai Zhongguo Kongjun*, pp. 550–551. Deng's quotes are from Shao, Zhang, and Hu, "Theoretical Thinking," pp. 43, 44, 45.

than the other service arms. Later, PLA officers credited Deng's action to "removing a sword of Damocles" over his head,[19] but quietly acknowledged that some political leaders continue to distrust the air force.

So the question is: With so much emphasis given to the air force after 1977, what happened next? Herein lies an enigma coming at a mandated turning point in the history of the PLAAF.

Choosing Priorities: The Air Force in the 1980s

What we see here is a case of "small politics" operating in the context of "large politics," as the Chinese say. While Deng at one level was elevating the air force in his security equation, his overriding and competing "larger" goal was to consolidate his power base as the nation's supreme leader. From late 1977 on, Beijing became enmeshed in a grand leadership realignment, and Deng sought time for his supporters to regain the powers wrested from them during the Cultural Revolution. The rivals expanded their arena of engagement to encompass all areas of the political and socioeconomic system. In need of "soldiers" who would man their coalition, Deng and his associates assigned top priority to reversing "unjust verdicts" on loyalists brought down by the Cultural Revolution radicals. It was a matter of numbers. He had to rehabilitate the more than 6,000 senior officials who would become his main foot soldiers.[20] From 1979 to 1981, power politics placed on hold his programs to revitalize the air force.

Only in 1981 did the air force begin trying to implement its second and third three-year plans for training and combat readiness. Fundamental changes to be carried out by the air force were announced, and Deng as CMC chairman singled out his air force commanders, praising them for "strict enforcement of orders and prohibitions." "The air force has a good style of work," he said, and "has made great achievements in training, style of work, and discipline."[21] Blessed by Deng, PLAAF headquarters once more urged the aviation industry to gear up for high production and performance.

What happened in the air force programs, however, could not have been more disappointing to the military high command. For public consumption, air force units and the aviation industry put on a face of intense activity while

19. Information from a PLA senior colonel, July 1997.
20. Quan Yanchi and Huang Lina, *Tiandao Zhou Hui yu Lushan Huiyi* [Heavenly principle: Zhou Hui and the Lushan conference] (Guangzhou: Guangdong Tourism Press, 1997), pp. 1–3.
21. Zhang and Gao, "Construction of the Air Force," pp. 622–624, 631, 637–638.

resorting to traditional delaying tactics: meetings, platitudes, studies, and reports recommending more meetings and more studies. The air force, for example, sponsored a series of theoretical studies and became masters of the obvious: "Air domination is playing a more and more important role under modern conditions. Although air domination cannot determine the outcome of a war, it does produce a great impact on the course and outcome of a war."[22] In appearance, the air force was on track. In practice, it was standing still.

For their part, the leaders in the defense industry echoed Deng's edict giving high priority to the air force. Still, in 1981 the director of the National Defense Science and Technology Commission (NDSTC), Zhang Aiping, conceded that the air force was one of the two weak links in the Chinese military and again prodded the aviation industry to produce advanced weaponry.[23] And once more, actions did not match the official word.

In March 1983, presumably in a mood of frustration but technically with orders and organizations in place, the Commission of Science, Technology, and Industry for National Defense (COSTIND), which had replaced the NDSTC the year before, convoked a national defense-industry conference.[24] At this gathering, the CMC demanded that the aviation ministry clarify its approach to "renewing a generation, developing a generation, and conducting pre-study on a generation [of new weapons and aircraft]." Yang Shangkun, the CMC's executive vice chairman, directed COSTIND to "revitalize the aviation industry," and Zhang Aiping, now minister of defense, for good measure added that the ministry should "ensure success in essential systems, attach greater importance to scientific research, and replace obsolete weapons."

By the mid-1980s, the CMC had to face facts: it revisited its policy priorities and finally revamped its weapons procurement policy. First, holding that local conventional wars under nuclear deterrence were the most likely to occur in the future, the CMC determined that the R&D programs on conventional weapons should take precedence over those on strategic weapons. Second, the

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22. Hua Renjie, Cao Yifeng, and Chen Huixie, chief eds., *Kongjun Xueshu Sixiang Shi* [The history of the academic thinking of the air force] (Beijing: PLA Press, 1992), p. 316. Hua quotes "leading air force comrades" but does not identify them.

23. According to Zhang Aiping, the other weak link was the Second Artillery Corps. Zhang Aiping, "Speech at a Conference Attended by Leading Cadres from Aviation Industrial Enterprises (March 6, 1981)," in Zhang, *Zhang Aiping Junshi Wenxuan* [Selected military writings of Zhang Aiping] (Beijing: Yangtze River Press, 1994), pp. 371–374.

24. Unless otherwise cited, the information in this and the next paragraph is based on Yao, "Scientific Research Works," pp. 712, 715; and Duan, *Dangdai Zhongguo de Hangkong Gongye*, pp. 100–104. The quote is from Duan, *Dangdai Zhongguo de Hangkong Gongye*, p. 100.

military was enjoined to strengthen the existing conventional forces and to fashion new weapons. Third, whereas ground weapons originally dominated these forces, the navy and the air force now were given pride of place. Of all the services, the air force was awarded highest priority, though, as we shall see, this was not to last.[25] The immediate result of this policy edict was to bring the high-profile SLBM (submarine-launched ballistic missile) and nuclear-powered submarine programs to a halt.

In the meantime, the CMC prescribed these future wartime tasks for the air force: defend strategic points and provide air cover for strategic deployment of mass troops; maintain air domination in the main theaters of operations in support of the army and the navy; launch surprise attacks on high-value targets of the enemy; participate in nuclear counterattack; and conduct strategic aerial reconnaissance. The CMC further directed the PLAAF to prepare defenses against air raids and to support the other services opposing a ground invasion or launching counteroffensives.[26] The effect of this directive, almost unnoticed at the time, was to give the air force license to fashion its own strategy, a strategy that was to become full-blown in the 1990s.

One reason for the failure to notice the change was the rush of activity on the production front. In line with its newly defined strategic missions and weapons priorities, the air force began drafting a series of procurement directives and multiyear plans. These plans emphasized domestic air defense and listed a number of high-priority projects: surface-to-air missiles, medium/long-range all-weather interceptors, early-warning systems, electronic countermeasure equipment, and automatic command-and-control systems. The air force was supposed to undertake research on space defense weapons and long-range bombers that could launch cruise missiles. Yet most R&D programs centered on fighters and fighter-bombers, the HQ-7 surface-to-air missile, a navigation system for the H-6 medium bomber, new-type radar systems, unmanned reconnaissance aircraft, and avionics for fighters.[27]

Moreover, during the 1980s, the PLAAF air fleet had begun to grow, although obsolete aircraft, weapons systems, and training protocols dramatically

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25. Liao Guoliang, Li Shishun, and Xu Yan, *Mao Zedong Junshi Sixiang Fazhan Shi* [The development of Mao Zedong's military thinking] (Beijing: PLA Press, 1991), p. 600.
26. "The Cross-Country Trends of the Chinese Air Force: Interview with Air Force Commander Liu Shunyao," *Xizang Wenxue* [Tibet literature] (Lhasa), supplement to No. 4 (1998), pp. 42–43. See also Gao Rui, *Zhanlüe Xue* [Strategy] (Beijing: Military Science Press, 1987), pp. 113–114.
27. Zhang and Gao, "Construction of the Air Force," pp. 628–629; Gao, *Zhanlüe Xue*, p. 114; Lin, *Kongjun Shi*, pp. 239–241; and Yao, "Scientific Research Works," p. 715.

weakened its combat readiness. In attempting to respond to revolutionary changes in Western military aviation, the PLAAF found itself caught between the leadership's demand for near-term improvements and the Maoist-era insistence on self-reliance. The ensuing compromise restricted the definition of self-reliance to the outright purchase of aircraft, while extending the meaning of Deng Xiaoping's Open Door policy to permit the acquisition of foreign air-launched weapons and avionics. The most dramatic evidence of the compromise came in 1986, when a consortium of U.S. companies led by Grumman signed a deal to install avionics on 55 J-8b fighters. Other Western countries also signed contracts for upgrading both avionics and weapons.[28]

At about the same time, Deng made what was to be his last real attempt to adhere to self-reliance in building the air force. His initial solution: the air force must clean house. "The total number of our air personnel is perhaps the largest in the world," he said, and only after deep reductions in personnel and outdated planes could the air force "significantly raise its efficiency." Deng blasted those officers who sought remedies in foreign purchases: "How many advanced airplanes can you afford to purchase? . . . We will become poor soon after we have bought a few airplanes."[29] The emphasis on efficiency simply masked the more basic compromise. Self-reliance was still the mandated policy, but it merely precluded the purchase of foreign aircraft.

Yet this limitation was to have a short half-life. Rapid obsolescence was moving faster than paced acquisitions and rendering the modified self-reliance policy unworkable.[30] By 1988, 48.8 percent of aircraft, 53.9 percent of aircraft engines, 42 percent of radar systems, 50 percent of HQ-2 surface-to-air missiles, and 42 percent of HQ-2 missile guidance sites were not operational. This state of disrepair restricted pilot training and further degraded combat readiness.

For these and other reasons, the CMC, while attempting to heed Deng's instructions, finally was forced to face these failures, but it could not directly blame the policy or its assumption that the PLAAF could modernize quickly on its own. As it had done so often in the past, the high command first

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28. "China's F-8II Upgrade to Include Litton Navigation System," *Jane's Defence Weekly*, March 19, 1988, p. 529; "Grumman in Chinese Fighter Deal," *Jane's Defence Weekly*, November 19, 1988, p. 1261; and "Asia Watch: Military A-5M Fantan," *Asian Aviation*, November 1988, p. 11. This Grumman deal was put on hold in the summer of 1989 as a result of the Tiananmen incident and then canceled in 1990.

29. Deng's quotes are from Shao, Zhang, and Hu, "Theoretical Thinking," pp. 45, 47.

30. Unless otherwise cited, the information in this paragraph and the next two is from Lin, "Development of Air Force Equipment," pp. 789–791. The quote in the next paragraph is from ibid., pp. 789–790.

concluded that management and budget deficiencies were at fault. Obediently, the PLAAF called for "reducing equipment, readjusting flying hours, differentiating the first-line combat units from others, and abolishing obsolete equipment," and for a time, carrying out these changes seemed to make a difference. Compared with 1989, readiness in 1990 increased in most main sectors: aircraft, engines, radar systems, surface-to-air missiles, and missile guidance sites.

Following suit, COSTIND pushed the aviation ministry to expand aircraft acquisitions. The revised wish list was defensible but overly ambitious: five types of replacement fighters, three new fighter-bombers, five fighters under development or under study, and new types of ground attack aircraft. The aviation ministry directed work to proceed on the next-generation surface-to-air and air-to-air missiles.[31] By the early 1990s, initial replacement systems had begun to enter the inventory, and the high command seemed to relax.

By this time, PLA strategists and intelligence specialists had begun recalculating the strategic balance. They weighed the future threat of a superpower surprise attack against China's coastal areas and proposed a coordinated response with the air force playing the pivotal role. Decades hence, the United States or another military power, even Japan or India, might pose such a threat, they argued, and the danger of a lightning or surgical strike against strategic Chinese targets would be particularly acute during escalating crises. They further warned their commanders about the transfer of advanced airborne weapons from the West and Russia to China's neighbors and potential adversaries. They believed that these weapons outclassed China's, and cited India as an example of a military power making the transition from a defensive to an offensive air capability. The PLA, they maintained, had only a defensive air force, and a weak one at that.[32] New aviation technologies were further widening the technology gap to China's disadvantage.

In May 1990, at the high tide of assessments focusing on the air force, CMC Executive Vice Chairman Yang Shangkun convened a conference to discuss air combat systems and once more issued bureaucratic directives echoing those of the past to "accelerate the development of the air force equipment."[33] For all

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31. For information on the R&D on the HQ, PL, and other missile series, see Xie, *Dangdai Zhongguo de Guofang Keji Shiye*, vol. 2, pp. 14–39, 47–61; and Michael Mecham, "China Displays Export Air Defense Missile," *Aviation Week & Space Technology*, December 2, 1996, p. 61.

32. Teng Lianfu and Jiang Fusheng, *Kongjun Zuozhan Yanjiu* [Studies on air force operations] (Beijing: National Defense University Press, 1990), pp. 148, 250, 266–267; and Yu Guantang, chief ed., *Kongjun Zhanlüe Yanjiu* [On air strategy] (Beijing: Military Translation Press, 1991), pp. 181, 195, 196.

33. Lin, "Development of Air Force Equipment," p. 784.

practical purposes, Yang's call and the resultant CMC directive duplicated Deng's directives of a decade earlier. Despite the flurry of activity in the 1980s, the result, in short, was an air force weaker in comparative terms than the one that began the decade. The questions are why, and what led to a turning point for the PLAAF?

The Turning Point and the Emergence of an Air Force Strategy

The search for an answer takes us back to the mid-1950s, an era of forced social change and constrained resources. From then to the 1980s, Mao Zedong and his heirs were embarked on a crusade to create a nuclear and missile arsenal, and, as we have noted, that goal blunted any sustained quest for PLAAF modernization. Even in the Cultural Revolution, Mao attempted to protect his strategic weapons programs from the turmoil,[34] but R&D on conventional weapons was mostly shut down. There was no national commitment to the air force or other conventional programs comparable to the one that built the bomb and its missile delivery systems.

For a quarter century, the defense industry received mixed messages. Despite ritual calls to build up the conventional forces, the industry's main target remained the development of nuclear weapons and their delivery systems, and everyone knew that this goal took primacy over all others. Money, expertise, and political backing told the real story, and promotions went to those who made their mark in the strategic programs. Where it mattered, few truly cared about the aviation industry, and everyone, especially those in the oft-criticized aviation ministry, knew it.

When they did worry about conventional arms in the 1960s and 1970s, Mao and his lieutenants in practice favored the ground forces with which they were most familiar. Confining the navy and the air force to subordinate status, they echoed the PLA mission statement that stressed "domestic air defense and support for operations of the army and the navy." When conventional weapons did rise to priority status in the latter half of the 1980s, the conflict with Vietnam and other Southeast Asian states over ownership of the Spratly Islands in the South China Sea cast a shadow on all planning, and contravening the stated priority given to the air force, naval equipment for a time went to

34. John W. Lewis and Xue Litai, *China Builds the Bomb* (Stanford, Calif.: Stanford University Press, 1988), chap. 3; and Lewis and Xue, *China's Strategic Seapower: The Politics of Force Modernization in the Nuclear Age* (Stanford, Calif.: Stanford University Press, 1994), chaps. 3, 6.

the head of the list.[35] Such repeated contradictions, it should be noted, plagued all conventional weapons programs and count among the main causes in the chain of air force program failures.

In addition to a lack of focus on the air force because of strategic and naval priorities, the Chinese military had to cope with the overriding change of policy in the early 1980s that turned the nation's economy to civilian production. After his return to power, Deng dismissed the likelihood of near-term conflicts and ordered the near-total shift to activating the economy.[36] Sharp reductions in the defense budget followed, and the PLA's share of the annual state budget dropped from a high of 18.5 percent in 1979 to about 8 percent in 1989.[37] The downward spiral of defense orders in turn undermined morale in a labor force feeling insecure in increasingly idle defense factories. The most qualified workers and staff began scouring the nonstate sector for higher pay and better career opportunities. For an industry based on self-sacrifice and high purpose, the new money culture and accelerated defense conversion further diluted any concerted attempt to strengthen the air force. Some Chinese officers compared the increased priority for the air force in a declining military to filling a bathtub on a sinking ship. For the PLA, potential external threats might become real overnight. For Deng, "overnight" was decades away, but so was his dream of self-reliance.

The revolution in air-delivered weapons dramatized by the United States in the 1991 Gulf War shattered Beijing's complacency. Time was no longer an ally. The danger ahead was total, perhaps permanent, obsolescence with the result that China's air defenses could not prevent surprise attacks deep into the nation's heartland.[38] Neither offense nor defense was a viable option given the

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35. Luo Ping and Shi Keru, "For Enhancing Air Offensive Capabilities," *Zhongguo Kongjun* [Chinese air force], No. 3 (1997), p. 11; Liao, Li, and Xu, *Mao Zedong Junshi Sixiang Fazhan Shi*, pp. 600–601; and Chen Weijun, "Jiang Zemin and Li Peng Support Generals' Request for a Large Increase in the Military Budget in Preparation for Any Contingency," *Guangjiaojing* [Wide-angle Lens] (Hong Kong), No. 2 (1991), p. 12. The quote is from Luo and Shi, "For Enhancing Air Offensive Capabilities," p. 11.

36. In 1985 Deng Xiaoping predicted that China could focus on economic construction in a peaceful environment for the next fifty years. "Deng Xiaoping's Informal Talks on the Situation at Home and Abroad," *Liaowang* [Outlook], September 16, 1985, p. 10.

37. Qi Miyun, "The Shift of the Guiding Principle for Army Construction Judged by [the Decrease in] Military Funds," *Junshi Shilin* [Military history circles], No. 4 (1987), p. 20; and Yuan Jiaxin, "Pondering the Strategic Shift of the Guiding Ideology for Our Army's Construction," *Junshi Shilin*, No. 4 (1987), p. 10.

38. For a Chinese estimate of the penetrability of modern bomber weapons capable of launching deep surprise attacks, see Chen Hongyou, chief ed., *Xiandai Fangkong Lun* [On modern air defense] (Beijing: PLA Press, 1991), pp. 54–56; and Hua, Cao, and Chen, *Kongjun Xueshu Sixiang Shi*, p. 273.

state of the force. Some strategists analyzed the possibility of such attacks in the context of a future confrontation between the PRC and Taiwan, and assigned a greater probability to future hostilities with the United States should cross-strait tensions increase.[39] As reports of Iraq's defeat poured into his office, CMC Executive Vice Chairman Yang Shangkun attempted to blunt the psychological impact produced on his army by the U.S.-led victory: "The model [of the Gulf War] is not universal. It cannot, at least, be applied in a country like China, which has a lot of mountains, forests, valleys, and rivers. Another characteristic of this war is that the multinational forces faced a very weak enemy."[40]

For the air force, air operations in the Gulf War came as an especially rude wake-up call. For decades, the PLAAF had been given only operational and tactical assignments to provide air cover and fire support for the other two services in combined operations. It had no identifiable strategy of its own, though it did sponsor strategic studies and seminars on implementing Mao's concept of People's War "under modern conditions." In the latter half of the 1980s, the CMC had begun to give the air force additional defensive assignments, but these assignments served to further highlight the technological chasm between the advanced countries and China and forced the PLAAF planners to extend their research to encompass foreign air strategies. They resolved that their service would have to establish its own strategic direction and that the central condition for its successful implementation lay in technology, meaning advanced knowledge, not just new hardware.[41]

From the late 1970s on, Deng Xiaoping had issued a series of directives defining the PLAAF's combat tasks. He said: "Active defense itself is not necessarily limited to a defensive concept. . . . Active defense also contains an offensive element. If we are attacked, we will certainly counterattack. . . . The bombers of the air force are defensive weapons. . . . We [must] have what others have, and anyone who wants to destroy us will be subject to retaliation." His recurring message called for the air force to shift from a purely defensive to a combined defensive-offensive posture. Freed from the shackles of the more traditional interpretation of People's War, PLA strategists began a systematic refinement of "China's concept" of deterrence. They pored over the West's

39. Hua, Cao, and Chen, *Kongjun Xueshu Sixiang Shi*, pp. 357–358.
40. Quoted in "The United States Also Sells Weapons," *U.S. News & World Report*, May 27, 1991, p. 44.
41. Gao, *Zhanlüe Xue*, p. 114; Teng and Jiang, *Kongjun Zuozhan Yanjiu*, pp. 147, 150, 151; and Yu, *Kongjun Zhanlüe Yanjiu*, pp. 25, 30.

writings on high-technology warfare and concluded that in order to move toward a combined-forces posture, the PLAAF must add more offensive forces.[42]

This conclusion in turn spurred further research. Air force strategists assumed that China would continue to face regional military threats. Operating within the prescribed military strategy of "active defense," they began elaborating the nation's first air strategy to meet those threats. They reviewed global politics and military relations, potential combat scenarios, current missions and assignments, China's economic and industrial capacity, and existing PLAAF capabilities.[43] These strategists further assumed that the most likely wars would be limited and held that air domination was a prerequisite for victory. Such wars would always begin with air strikes, they declared, and air power would decide "the destiny of the state."[44]

The emerging air strategy emphasized both the requirements and tactics of air power and deemed the two interrelated and interactive. Echoing the strategists, the CMC declared that by the end of the twentieth century the air force must be able to "cope with local wars and contingencies of various types and make preparations for rapid expansion in case of a full-scale war."[45] Heralding this declaration, the air force issued its own slogan calling for "quick reaction, integrated coordination, and combat in depth (*kuaisu fanying, zhengti xietiao, zongshen zuozhan*)." "Quick reaction," "integrated coordination," and "combat in depth" sounded like textbook phrases from a U.S. defense paper, but when taken together and compared with previous policy statements, they infused the new PLAAF strategies with greater substance and provided cover for even bolder thinking. The air force had begun to claim its coveted lead position in grand strategy and now turned to its operationalization.

That position, when more fully elaborated, modified the prevailing interpretations of active defense, although translating that position into significant results proved elusive throughout the 1990s. The PLA still ruled out preemptive air strikes, especially against more powerful opponents, and held to the

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42. Deng's quotes are from Shao, Zhang, and Hu, "Theoretical Thinking," pp. 44, 46–47.
43. Yu, *Kongjun Zhanlüe Yanjiu*, pp. 49, 55–56, 196.
44. Liu Yichang, chief ed., *Gao Jishu Zhanzheng Lun* [On high-tech war] (Beijing: Military Science Press, 1993), p. 225; Teng and Jiang, *Kongjun Zuozhan Yanjiu*, pp. 81, 98, 142; and Yu, *Kongjun Zhanlüe Yanjiu*, p. 98. The quote is from Yu, *Kongjun Zhanlüe Yanjiu*, p. 98.
45. In 1986 the CMC approved the fifteen-year strategic goal for the air force. Wang, *Dangdai Zhongguo Kongjun*, pp. 649–650. The quote is from ibid., p. 650. Unless otherwise cited, the information in this paragraph and the next is from Teng and Jiang, *Kongjun Zuozhan Yanjiu*, pp. 126–151; and Yu, *Kongjun Zhanlüe Yanjiu*, pp. 39, 43, 163.

declaratory policy of retaliation only. Yet the air force recognized its fate if required to remain totally passive in a first strike.[46] Once hit, there would be little left for a second-strike response, and herein began the modification.

"Quick reaction" would provide part of the mandate to launch the instant second blow as a prerequisite for deterrence, even survival. Moreover, "integrated coordination" would begin at first warning, and give the air force access to and even control over various high-tech arms in conventional war. This "coordination" would continue throughout the entire course of the conflict and include collecting and analyzing intelligence information; conducting command, control, and communications; organizing combat units of various arms in combined operations; and guaranteeing sustained logistical support.

By calling for "integrated coordination," the CMC gave the air force the authority to manage the long-range bomber air groups and oversee the initial stages of joint operations with the other services and between air combat units stationed in different military regions.[47] The CMC itself would issue orders through a dual command-and-control system for employing all air combat units; that is, all corps- and division-level air units would come under the joint administration of PLAAF headquarters and the seven greater military region commands. Strategic or theater combat units in large operations would report directly to air force headquarters, while tactical combat units in local operations would be directed by air force commanders in the greater military regions.

At the same time, the presumed requirement to conduct operations over a wide geographical area was leading the PLAAF to embrace the concept of "combat in depth," and it was the thinking underlying this concept that most tested the operational limits of the hallowed no-first-strike inhibition. (It should be noted at the outset that the PLAAF has not adopted nor is it considering a forward strategy and that many of the elements of the traditional "active defense" policy remain untouched. Rather, it adheres to the principle of "light deployment in the frontier and massive deployment in the rear.") According to the early formulations of this combat-in-depth principle, the military still would not be allowed to retaliate until the enemy had inflicted

46. According to PLA strategists, the "gap" in aviation technologies between China and its rivals and the strategy of "active defense" predetermine "quick reaction" as the essence of air strategy. Teng and Jiang, *Kongjun Zuozhan Yanjiu*, p. 260.

47. The information in this and the next paragraph is from Yu, *Kongjun Zhanlüe Yanjiu*, pp. 25, 79, 86, 163; Hua, Cao, and Chen, *Kongjun Xueshu Sixiang Shi*, pp. 324–325; and Teng and Jiang, *Kongjun Zuozhan Yanjiu*, pp. 186–187. The quote is from Teng and Jiang, *Kongjun Zuozhan Yanjiu*, p. 186.

the initial blow, and the emerging strategy implied that in that first engagement the frontier forces would be sacrificed. The air force would have deployed all its bombers, transport planes, and most attackers to the rear, and only the frontier-based fighters would probably be lost.

Yet even these fighters were to be deployed for maximum survivability. Fighter air groups would be dispersed throughout the nation, while bombers and attackers would be concentrated in the rear as a second-strike deterrent.[48] To facilitate this deployment policy, air combat units were divided into three types: quick reaction air groups (*kuaisu fanying budui*), alert air groups (*zhanbei zhiban budui*), and strategic reserves (*zhanlüe yubeidui*).[49]

PLAAF commanders knew, of course, that a discontinuity existed between these policy pronouncements and combat reality. As a stopgap measure, the frontier air groups were ordered to camouflage their aircraft and move them to semi-hardened shelters even though their commanders realized the futility of such measures in surviving a sustained attack by advanced precision-guided munitions. Other measures quickly followed to increase survivability and readiness. The air force selected highways and other alternative sites as emergency runways for the dispersion of frontier planes, and began to develop equipment for the refueling of fighters on freeways in emergencies. It is unclear how many of these measures have actually been tested or could be implemented under combat conditions.

The CMC also approved the establishment of a national air defense network. Plans called for military and civilian cooperation to minimize and recover from the destructive effect of air raids, and preparations began for the drafting of a new national air defense law adopted some years later.[50] Like the combat units, air defense systems were deployed "lightly" at the frontier and "massively" in designated rear areas. The CMC more recently has called for further strengthening the air defense network at strategic points and airfields in theater and multitheater zones.[51]

As a result of the transition to a combined offensive-defensive posture, the balance has steadily tilted toward the offense. This ongoing shift was quick-

48. Teng and Jiang, *Kongjun Zuozhan Yanjiu,* pp. 186–187, 258.
49. The information in this sentence and the next paragraph is from Yu, *Kongjun Zhanlüe Yanjiu,* pp. 75, 81, 82, 86, 228; and "A Support System Set Up in China Ensuring Military Aircraft to Land on Freeways," *Qiao Bao* [The China press] (New York), May 31, 1996, p. 2.
50. The People's Air Defense Law of the People's Republic of China was adopted on October 29, 1996.
51. Hua, Cao, and Chen, *Kongjun Xueshu Sixiang Shi,* pp. 320–322; Yu, *Kongjun Zhanlüe Yanjiu,* pp. 102, 112–113, 115; and Teng and Jiang, *Kongjun Zuozhan Yanjiu,* pp. 158–159, 187.

ened by tactics to defend against attacks on theater targets and by the reassignment of air groups as shock units against the enemy's rear areas.[52] Step-by-step but without fanfare, significant changes were occurring in Chinese military doctrine, and the clarity between an actual strike and a warning of an attack as the cause for launching the rear-based bombers and attackers was lost.

Moreover, the changes and the debate at the highest levels continue. Some strategists still doubt the soundness of the current strategy in a limited war involving the use of high-tech weapons. They belittle the wisdom of a mere partial shift toward an active offensive strategy. Precision-guided bomber weapons and cruise missiles, they argue, could inflict surprise attacks deep inside China, and despite the latitude implied by combat in depth, these attacks could well wipe out any retaliatory forces and countermeasures and leave the leadership without workable options in an escalating crisis.[53] The argument about the impact of high-tech weapons remains unsettled and has become a focal point in the strategic studies of the late 1990s.

Impact on Procurement

To close the gap between plans and performance, PLA analysts have concluded from their studies and debates that the force structure must be revamped. The total number of aircraft and air force personnel within the PLA must be reduced, and the composition and size of the main PLAAF combat units and their arming must be reviewed. Along with its preoccupation with enhanced air defenses, the air force has fretted about its puny ground attack capability. For decades, more than 70 percent of the PLA's military aircraft were fighters, while bombers, attackers (fighter-bombers), helicopters, and transport planes made up the balance.[54] In line with the new strategy, the air force began to adjust the mix of its order of battle and to retire large numbers of obsolete

52. In the Chinese military lexicon, theater coordination (*zhanyi xietong*) and tactical coordination (*zhanshu xietong*) mean coordination carried out between services in a campaign and a battle, respectively. Hua, Cao, and Chen, *Kongjun Xueshu Sixiang Shi*, p. 319. This interpretation is suitable for the difference between theater and tactical operations. The information in this paragraph is from ibid., pp. 312–313, 318–319, 323.

53. Zheng and Zhang, "On the Development of the Modern Air Force," pp. 84–85; Teng and Jiang, *Kongjun Zuozhan Yanjiu*, pp. 101–102; and Liu, *Gao Jishu*, pp. 226–235.

54. Hu Guangzheng, "Drawing Lessons from the Development of the Military Establishments in the Twentieth Century," *Zhongguo Junshi Kexue*, No. 1 (1997), p. 124; Yu, *Kongjun Zhanlüe Yanjiu*, pp. 28, 68, 220; and Hua, Cao, and Chen, *Kongjun Xueshu Sixiang Shi*, pp. 311, 312.

aircraft. Although fighters still far outnumber attackers and bombers, the ratio is shifting, and increasing numbers of reconnaissance planes, electronic countermeasures aircraft, early-warning aircraft, air refueling aircraft, and transport planes are entering the force.[55]

The strategists have particularly applauded the greater attention given to attackers. They maintain that all leading military powers have mandated such a priority. They argue that attackers, air refuelable and equipped with precision-guided cruise missiles, match bombers in range and destructiveness. With greater maneuverability, attackers could help repulse an aggressor. While a certain number of strategic bombers could reinforce deterrence and complicate an enemy's strategic calculus, attackers could do both and in the future should far outnumber deployed bombers. This planned reversal in plane ratios also had a political rationale. Any marked growth of China's strategic bomber fleet might aggravate the suspicions of its neighbors and fuel an arms race.[56] The nuclear-capable attacker was considered the near-perfect plane to obscure the boundary between offense and defense and between retaliation and first strike.

Thus changes in strategy increasingly interacted with shifts in weapons procurement. The air force earlier had worked out short-term (five years), medium-term (ten years), and long-term (twenty years) procurement programs,[57] but almost before they were ready for promulgation, they had to be redrafted. Finally, in 1992 a new procurement policy was adopted: *duo yanzhi, shao shengchan, zhongdian zhuangbei* (literally, more R&D, less production, and focus on key equipment). In an attempt to upgrade air weapons systems, the air force stressed surface-to-air missiles; long-range, all-weather fighters; command, control, and information systems; early-warning aircraft and air refueling aircraft; and ground attack capabilities with a focus on airborne precision-guided cruise missiles. Simultaneously, the air force also began upgrading its technical and strategic knowledge base.[58] Chinese commanders had absorbed the lesson from the West: create the technical and industrial infrastructure first.

In early 1993, following a prolonged review of the Gulf War's "lessons," the CMC called for two cardinal changes by the year 2000: change the military

55. Unless otherwise cited, the information in this sentence and the next paragraph is from Yu, *Kongjun Zhanlüe Yanjiu*, pp. 211–212, 220; Hu, "Drawing Lessons," p. 124; and Teng and Jiang, *Kongjun Zuozhan Yanjiu*, pp. 296–298.
56. Information from a senior Chinese security specialist, 1997.
57. Yu, *Kongjun Zhanlüe Yanjiu*, p. 193.
58. Gao, *Zhanlüe Xue*, p. 114; Teng and Jiang, *Kongjun Zuozhan Yanjiu*, p. 151; and Yu, *Kongjun Zhanlüe Yanjiu*, pp. 25, 30.

from dependence on manpower and People's War to greater reliance on science and technology; and switch plans for military preparedness from winning a conventional local war to winning a high-tech local war.[59] PLA strategists further downgraded the likelihood of regional or global wars and acknowledged that the two changes highlighted the gap between Chinese and Western air forces.

This was a sobering finding because in earlier decades they had consistently belittled the idea that a decisive inequality even existed. In self-defense, the strategists claimed that the gap was of recent origin and had not always existed between China and the West. They held that J-6 fighters of the 1960s were comparable then to fighters anywhere in the world, but that the development of avionics in Western countries had created what they called "short legs" (*duantui*). PLA aircraft, they said, were short on avionics and had short ranges.[60]

The shadow of a possible conflict in the Taiwan Strait made these short legs especially dangerous. Should that conflict occur, the PLAAF would now expect to be defeated. Any domestic program to correct this weakness, moreover, would require the creation of a much more sophisticated industrial base and a huge investment, and would face long lead times. Even before the 1993 decision, the choice had become clear: total self-reliance would have to be abandoned.[61] The best planes for the next decade would have to come from foreign countries. Although PLA strategists rationalized such purchases as being "mutually complementary" to the dogma of self-reliance,[62] everyone in the high command had come to recognize that Mao's dictum for military modernization again must be set aside in practice. Once more the supplier would have to be Russia, where many senior Chinese leaders had been trained in the 1950s and whose arsenals were becoming available for a price.

In November 1992, shortly before the "two changes" decision, senior Russian and Chinese military officials began annual meetings on military-technical cooperation and signed a so-called Protocol I to formalize their commitment to long-term ties.[63] During his visit to Beijing that December, Russian President

59. Hu Changfa, "Some Theoretical Issues on Operational Command under High-Tech Conditions," *Guofang Daxue Xuebao* [National Defense University gazette], No. 4 (1997), p. 30; "The Communist Army Is Pursuing Two Fundamental Changes by the Beginning of the Next Century," *Shijie Ribao* [World journal] (New York), September 15, 1996, p. A13; and "Strategic Changes in the Guiding Principle for Building Up China's Army in the 1990s," *Qiao Bao*, July 31, 1997, p. A4.
60. Song, "Startup of China's Modern Aviation Industry," pp. 103, 104.
61. Teng and Jiang, *Kongjun Zuozhan Yanjiu*, p. 300.
62. See, for example, Yu, *Kongjun Zhanlüe Yanjiu*, p. 226.
63. Unless otherwise cited, the information in this paragraph and the next is from interviews with a knowledgeable Russian official in 1993 and 1994.

Boris Yeltsin signed the "Memorandum of Understanding on Sino-Russian Military Equipment and Technology Cooperation," the origins of which could be traced to a similar, though largely unfulfilled, agreement dated December 28, 1990. Protocol I included provisions for the sale of 26 Su-27 fighters and jet engines as well as the training of Chinese pilots. The second annual meeting, which took place in Moscow in June 1993, led to the conclusion of Protocol II in May 1994. Inter alia, this document simplified the approval procedures endorsed in 1990.

Even before the signing of Protocol I, the PLAAF had concluded its own agreement with the Russians, signed on August 3, 1992, for delivery of an advanced air defense system, and the contract for its delivery was finalized in July 1993. Protocol II added to the list of air defense systems and itemized areas for further defense industrial and technology cooperation, especially the areas of communications and electronic countermeasures. Consistent with the protocol, the CMC told the PLAAF to reinforce its "shield" while sharpening its "spear" and to purchase Russian air defense systems, including S-300 and TOR-M1 surface-to-air missile systems.[64]

China has so far purchased 72 Su-27s from Russia, and of these, 48 have already been shipped to bases in Wuhu, Anhui Province, and Suixi, Guangdong Province. In the first phase of what was to become a quite complex deal, China signed a contract to pay Russia a $2.5 billion license fee for manufacturing 200 Su-27s (J-11s) over fifteen years. The 72 Su-27s purchased from Russia are the basic model Su-27S, while the planes to be built in China are the higher-performance Su-27SKs. At the same time, China's aviation industry has been cooperating with Russia and other nations such as Israel, Iran, Great Britain, and Pakistan in developing advanced fighters for the PLAAF and for export.[65] Negotiations on other planes and aviation systems continue with these countries but are seldom fully reported.

The concentration on hardware attracted the most publicity, of course, but personnel requirements carried equal weight as the procurements progressed. The existing pilot training programs, which were written between 1987 and 1994, mainly dictate how to fight conventional local wars. They do not meet

64. "Communist China Is Reportedly Negotiating for the Purchase of Russian High-Performance Weapons," *Shijie Ribao*, September 3, 1996, p. A12; and "Communist China Is Reportedly Purchasing Antiaircraft Missile Systems from Russia," *Shijie Ribao*, January 16, 1996, p. A2.
65. Ma Zhijun and Qiu Minghui, "Exclusive Interview with Chief Commander of the [Taiwanese] Air Force Huang Xianrong," *Xin Xinwen* [The journalist] (Taipei), May 31–June 6, 1998, p. 47; Zeng Huiyan, "The Chinese Military Will Enhance Its Fighting Capacity in an All-Round Way," *Shijie Ribao*, January 5, 1997, p. A2; and Xie and Sun, "New Fighter," p. 8.

the terms set forth by the new guiding principle for the Chinese military to wage a high-tech local war. In 1997 the PLAAF finished drafting training programs for such wars, but in carrying them out, it has encountered a fundamental problem because only 20.7 percent of air officers are college graduates. Quick fixes or short-term training classes cannot solve the lack of qualified technical personnel to operate high-tech air weapons in an environment that attracts the best to civilian occupation.[66] Senior officers are coming to recognize that the real costs may be the price tag to attract and hold skilled men and women.

Taiwan as the Focal Point: Making Conventional Deterrence Credible

China's planned introduction of advanced air weapons and improved training understandably carry weight in assessments of the PLAAF's capabilities in the Asia Pacific region. Significant in these calculations are estimates of China's crisis behavior, and how it reflects traditional Chinese perspectives on deterrence.[67] Mao's revolutionary doctrine, if not ancient strategies, long ago dictated the threatened use of force in manipulating an adversary's responses, and China's leaders have consistently demanded the military's acquiescence to political authority when calibrating the magnitude and timing of the pain, if any, to be inflicted. In these circumstances, recourse to force always remains subordinate to political stipulations that can violate standard military principles.

The Taiwan crisis in 1996 is a typical example of current Chinese views on deterrence. By the mid-1990s, PLA planners had concluded that the momentum of the independence movement in Taiwan and its increasing recognition by the international community had become an ever more grave challenge. "Danger from without" was coinciding, they believed, with "trouble from within." The needed preparations for a possible conflict across the Taiwan Strait then prompted additional changes in China's force posture and defense strategy. By the fall of 1995, the CMC had formulated the *wen nan bao bei* policy, which, loosely translated, meant that the PLA would shift its planning priorities from the South China Sea to Taiwan and its "foreign supporters." The

66. "It Is Hard to Give Full Play to Advanced Fighters," *Shijie Ribao*, August 22, 1997, p. A12.
67. Allen S. Whiting, *The Chinese Calculus of Deterrence: India and Indochina* (Ann Arbor: University of Michigan Press, 1975), pp. 202–203, 233; and Alastair Iain Johnston, "China's Militarized Interstate Dispute Behaviour, 1949–1992: A First Cut at the Data," *China Quarterly*, No. 153 (March 1998), pp. 1–30.

fundamental challenge, Beijing declared, was the threat to the nation's territorial integrity and national sovereignty.

By late 1995, China's leaders believed the time had come to draw a line that separatists in Taiwan must not cross.[68] The question was: How could Beijing signal threats and inducements that would influence the Taiwanese population and their leaders without leading to unwanted or uncontrolled conflict? Taipei would have to be forced to choose between the status quo and escalating violence, and the Taiwanese would be put in a position of having to decide for themselves. According to one military official: "They will think twice before making a radical push." The Taiwanese presidential election of 1996 would constitute the decision point, but what kind of force, he asked, would change the election outcome in Beijing's favor and not create a backlash?

Chinese policymakers, including those in the PLA, argued most about the threats to be used. What short of war would influence Taiwan? In the end, they singled out the missile option as the most effective way to deliver the signal. Accurately controlled and easily escalated or suspended on a step-by-step basis, missile "flight tests" in international waters near Taiwan, they believed, could help convey the appropriate deterrent warning but allow Beijing to avert a head-on collision with Taipei and direct foreign intervention. The logic of controlled coercion, it would seem, was consonant with Robert McNamara's in the early stages of U.S. intervention in Vietnam.

In fact, Beijing's leaders did not have feasible alternatives, and in any event, they believed the missile would carry the most convincing message. The use of air power was clearly not an option, for the PLAAF could convey only a weak threat, its planes had no targets outside Taiwan itself, and the CMC could not be sure how the superior Taiwanese air force would react. The PLAAF was unprepared to deliver a clear and controllable threat.[69]

The stark reality was that the PLAAF was not ready for combat. Poor logistics, an inadequate budget, and a string of Su-27 accidents were still plaguing air force command. According to an American specialist, Chinese Su-27 pilots lacked adequate training and "were unable to perform anything other than navigation flights." All PLAAF interceptors relied principally on

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68. For an informed treatment of the 1996 Taiwan crisis in retrospect, see Chas. W. Freeman, Jr., "Preventing War in the Taiwan Strait: Restraining Taiwan–and Beijing," *Foreign Affairs*, Vol. 77, No. 4 (July/August 1998), pp. 6–11. The quote is from an interview with a senior PLA officer, December 1995.

69. "Su-27 Pilots Conduct Navigation Training in Night Flights," *Shijie Ribao*, January 17, 1997, p. A10.

land-based centers to conduct command and control in air battles.[70] The actual deployment of its combat units was still on a defensive (not an offensive) basis, and Beijing's intelligence knew that the Taiwanese military had little fear of the mainland's aircraft.

The March 1996 missile "tests" thus constituted the only real option China had to threaten Taiwan with actions intended to serve as a lasting omen. Beijing hoped that this high-risk undertaking, even when it provoked the deployment of U.S. aircraft carriers, would not permanently impair U.S.-China relations. With the restoration of military-to-military ties in late 1997 and subsequent security exchanges and agreements, this hope appeared to have been well founded until late 1998, when allegations arose concerning Chinese espionage in the U.S. nuclear and missile programs. The tests themselves did alert Taiwan to what one Taiwanese scholar called "the most vulnerable part of our defense network."[71] Moreover, the "test firings" produced a deep impression on Taiwan's population, forcing many Taiwanese to reevaluate their long-term economic interests and dreams of independence.

The missile firings and the ensuing crisis with the United States, of course, did not come without some near-term repercussions for Beijing, including the activation of U.S. congressional interest in theater missile defense for Taiwan. Steadily deteriorating U.S.-China relations quickly drove the Chinese military to understand the limits of U.S. restraint and its latent sympathies in any future Taiwan-PRC conflict. The CMC also could not dodge the truth of the PLA's lack of readiness for war, large or small, and it ordered the PLAAF to work on contingency planning with the Taiwanese air force and the U.S. Air Force as imaginary enemies. The PLAAF also responded by revising its prescribed tactics for a high-tech local war. The PLAAF commander defined such tactics in general as "air deterrence, air blockade, and air strikes," but added little detail.[72]

In the winter of 1996–97, the CMC followed up on these developments and convened a high-level symposium on command and control in future battles. Commanders from all services and military regions attended and listened to

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70. Barbara Opall and Michael J. Witt, "China Pits U.K. vs. Israel in AEW Quest," *Defense News*, August 5–11, 1996, p. 19; "Su-27 Pilots Conduct Navigation Training," p. A10; "Many Su-27s Damaged by the Chinese Air Force," *Shijie Ribao*, April 15, 1997, p. A12; and "The PLA Has Purchased Production Lines for Building Su-27s," *Shijie Ribao*, August 12, 1997, p. A2.

71. This and the next paragraph are based on Barbara Opall, "PLA Missiles Diminish Value of Taiwan's Islands," *Defense News*, August 26–September 1, 1996, p. 8; and Li Suolin, "Notes of the Commander of a 'Blue Squadron,'" *Zhongguo Kongjun*, No. 1 (1995), pp. 4–6.

72. Sun Maoqing, "Air Force Commander Liu Shunyao in an Interview with Journalists Says That China Will Build a Modern Air Force," *Renmin Ribao* [People's daily] (overseas edition), April 16, 1997, p. 4.

panels on how to fight a high-tech local war. Given the country's technological shortcomings, the main presenters stressed the importance of innovative force deployments and tactical operations—what they called "software"—in mitigating shortcomings in military hardware. A common theme in the presentations was the urgency of planning for contingencies in the Taiwan Strait.[73]

In line with China's deterrence criteria, senior commanders at the meeting told their subordinates how to coordinate combined-services landing operations against Taiwan in case deterrence should fail. They stressed the salience of air force operations throughout a possible Taiwan campaign and assigned the PLAAF the special mission of coordination. Meanwhile, the navy would operate according to a new strategy: "Block ports to surround the enemy and intercept its reinforcements, seize opportunities to annihilate the enemy at sea, enforce a blockade of the strait, and prevent the enemy from launching a surprise attack (*fenggang weijie, haishang xunjian, fengbi haixia, fangdi tuxi*)." The navy also adopted a policy for conducting possible future landing operations, while the army advanced a strategy for breaking Taiwan's coastal defenses after such initial landings. Although these formulas appeared simplistic as promulgated, they spurred the services to prepare detailed operational plans for potential landing operations against Taiwan. By discussing and justifying offensive contingencies at such a senior-level and well-publicized symposium, PLA generals and their political leaders intended to demonstrate China's resolve to check Taiwan's drift toward independence—as a last resort by force.

Woven into the new operational dicta were lessons from the Gulf War. General Liu Jingsong (then commander of the Lanzhou Greater Military Region and now president of the Academy of Military Science) stressed that the very assembly and deployment of coalition forces constituted the "first firing" and justified preemptive military action. Such preemptive action might "postpone or even deter the outbreak of a war,"[74] reflecting the revised no-first-strike and deterrence policies. Liu ended by commenting on a hypothetical confrontation over Taiwan between China and the United States.

Thus, by 1997, a strategic calculus had begun to take shape. The CMC had switched priorities from nuclear to conventional weapons and slowed down the deployment of strategic forces. The air force had claimed precedence over

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73. The information in this and the next paragraph is from Hu Changfa, "Some Issues on Operational Theory in a High-Tech Local War," *Guofang Daxue Xuebao*, No. 1 (1997), pp. 32–38.
74. Liu Jingsong, "Key Principles for Waging Combined Operations against Invading Enemies in a Theater," *Guofang Daxue Xuebao*, No. 5 (1997), p. 41. On Liu's views as perceived by the Pentagon, see Barbara Opall, "Study Pits PLA Nukes against U.S., Taiwan," *Defense News*, September 23–29, 1996, p. 10.

the other service arms, and the People's War as a unifying dogma had given way to service-specific strategies. As Taiwan became the focal point of Chinese military planning, the procurement of Russian aircraft, presumably a stopgap measure, had qualified Deng Xiaoping's call for self-reliance. With the shadow of a threatened U.S.-Chinese confrontation over Taiwan looming larger, some PLA senior generals advocated scrapping the no-first-strike policy in favor of "retaliation" on warning. Interpretations of "combat in depth" also signaled a fundamental change in the Chinese military strategy of "active defense" toward a more proactive strategy to fight high-tech local wars. The reassessment of China's security interests had spawned an ongoing process of constant debate and reformulation within the military and political hierarchies.

In that process, the die is already cast concerning the future of the air force. The CMC knows that it must rely on the country's conventional forces should deterrence fail. In any military showdown across the strait, air power and defense against air strikes would hold the key to victory or defeat.[75]

The Case for the Quest

Our examination of the shift away from the antiquated thinking of People's War and of the strategic reasoning underpinning the search for a modern air force leaves a central question unanswered: Is that quest realistic? All of China's potential adversaries have the advantage of long experience in producing or importing ever more advanced fighters and bombers, and several have employed those aircraft in combat and repeated combat exercises. There is no near- to medium-term likelihood that China's air force could match those of its possible foes.

Beijing's leaders do not dispute this. Rather, they advocate the development of the nation's air arm as a condition for China to become a major military power and a technological competitor in defense and commercial aerospace. The dominant position of the air force in contingency plans for combat in the Taiwan Strait helps focus on and mobilize resources to meet that condition, but the priority would remain even if Taiwan were not in the calculus. Four principal arguments provide the core of the Chinese rationale for the priority and the policies sustaining the quest. We focus on the fourth of these arguments, which relates to Taiwan, because it has the overriding impact on current

75. Pan Shiying, *Xiandai Zhanlüe Sikao* [Considerations of modern strategies] (Beijing: World Knowledge Press, 1993), pp. 128–129.

military discussions in China. At this writing, it remains to be seen whether the security crisis after the Indian and Pakistani nuclear tests in May 1998 will lead to a further refinement of those arguments, although the elements of the current "Taiwan case" could readily be extended to an unwanted showdown with India.[76]

The first argument simply echoes the Chinese belief that all nations, regardless of size, must prepare for war and that recent large-scale wars have demonstrated the deadly destructiveness of air power. To the Chinese, the proposition is self-evident: the contemporary state requires a combat-ready air force. One PLA officer in typical fashion states, "India, Iran, Iraq, and even North Korea have attached great importance to the buildup of air power even though their air forces could never match the U.S. Air Force."[77] Speaking as the CMC's chairman, Jiang Zemin told his commanders that the nation would "bitterly suffer" if it did not strive to create a powerful air force.[78]

The Chinese military makes a second argument that the most likely nonnuclear threats to its security will come first from the air, especially from Taiwan or the United States. From the Korean War to the Gulf War, China has drawn the lesson that conceding control of the air to an adversary can lead to political intimidation and humiliation, not to mention huge losses. China's national security and diplomatic influence require that it demonstrate the will and commitment to challenge any would-be attacker from the air even as its leaders acknowledge the PLAAF's current weaknesses.

The third argument links the deterrent force of advanced aircraft to nuclear deterrence. PLA strategists, not just those from the PLAAF, hold that the revolution in conventional weapons has increased the need for air power in reinforcing nuclear deterrence. A deputy commander of the PLAAF has said, "Nuclear deterrence might not work without a high-tech air force, especially in the post-nuclear era," and many of his colleagues have expressed doubts about whether nuclear weapons alone could deter a devastating conventional attack. Because the essence of the revised PLA strategic guidelines is to "prevent the outbreak of a war and prevail after its outbreak," a powerful air force has become an indispensable component of nuclear deterrence and all steps

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76. For an authoritative study of China's response to the May tests, see Zou Yunhua, *Chinese Perspectives on the South Asian Nuclear Tests* (Stanford, Calif.: Center for International Security and Cooperation, Stanford University, 1999).
77. Interview with a PLA senior colonel, 1996.
78. Quoted in Liu Taihang, "Strengthen Studies on Air Force Military Theory to Guide the Quality Construction of the People's Air Force," *Zhongguo Junshi Kexue*, No. 4 (1997), p. 46.

on the escalation ladder.[79] Although it would be easy to dismiss these statements as special pleading on the part of a deputy air force commander, the PLA does appear to be taking steps to link air and missile command systems in the new strategy.

The PLA's conclusions on the likelihood of future wars being local and high-tech supports a fourth argument: a nation cannot plan to fight a high-tech war without having an effective air arm. This fourth argument follows from the third one above and applies with special force to any future military showdown over the Taiwan Strait caused by a Taiwanese declaration of independence. As in the past, the CMC would prefer to threaten or "blockade" Taiwan with the use of missiles fired in measured numbers close to, but not against, the island itself. PLA generals hold that for such a calculated demonstration of force to work, the missile bases would have to be protected. That military requirement in turn would make the PLAAF Taipei's first target. If Taiwan's planes could easily destroy the air bases protecting China's missile bases, the missile forces would face the classic use-it-or-lose-it dilemma, and not surprisingly, Taipei's public statements concerning its war plans appear consistent with this PLA assessment.[80] Thus the anticipated outcome of the battle for air dominance would determine the ultimate political and military effectiveness of the missiles as a weapon of choice to threaten or blockade the island.

The Chinese analysis of such a conflict with Taiwan does not end there, however. Beijing knows that halting Taiwan's move toward independence could spark a U.S. military response in an escalating cross-strait crisis. In the worst case, which neither side wants, the United States might be faced with the choice of intervention or a Taiwanese defeat. A critical element in the fourth argument is the assumption that formidable Chinese air power could cause Washington to pause. The very possibility of that hesitation could inhibit Taipei's move toward independence in the first place, because Taiwan would not be sure it could prevail in the air. A PLA officer puts it this way, "The Taiwan issue involves the territorial integrity and national sovereignty of China. It is our vital security interest to prevent Taiwan from drifting toward independence. In contrast, the future of Taiwan does not involve U.S. vital

79. Quoted in Zhang Changzhi, "Air Deterrence and National Resolve," *Zhongguo Kongjun*, No. 1 (1997), p. 14.

80. One Taiwan military officer has asserted, "As a last resort, we can carry out air raids against strategic targets in sixteen provinces of the Chinese mainland including coastal areas and interior provinces." Conversation with a Taiwan army officer in Taipei, 1996.

interests. If Beijing copes with the Taiwan issue properly and demonstrates resolve at the crucial moment, Washington will probably keep its hands off the issue."[81]

Operationally, the ability to execute a policy of missile intimidation and air defense has necessitated carrying out carefully planned exercises. The purpose of these exercises is both to enhance and to publicize the PLA's readiness for conflict in the strait. At the end of 1996, following the well-advertised issuance of CMC directives, a group of specialists from the PLAAF, the Second Artillery Corps (the Strategic Missile Force), and other services completed the operational rules for coordinating combined-services campaigns across the strait and carrying out exercises to validate them.[82]

Although the literature on the fourth argument deals primarily with Taiwan, the policy imperative is much more profound. The future of the island is only one element in the defining principle that underlies Chinese policy: restoring and preserving the nation's territorial integrity and sovereignty. The issue is how to prevent any foreign intervention that could threaten that principle. Preserving its sovereignty lies at the heart of China's national security policy, and that sovereignty is assumed to be indivisible.

Taiwan is the domino most vulnerable to a foreign "push," but its toppling could lead to the loss of control in other border areas such as Tibet, Xinjiang, and Inner Mongolia. Should fear of foreign intervention lead to Beijing's compromise on the Taiwan issue, so the argument goes, other separatists might become more defiant in a chain reaction. The modern-day CMC officers have read the history of the last centuries and seen how foreigners splintered the nation and showed contempt for its sovereignty. They have concluded that only ready military forces can discourage separatists and their foreign champions. The logic of that conclusion has led them to foresee a sequence of action and reaction in which the air force would play a decisive part, and it is that sequence that leads us back to the first argument: a modern state must have a modern air force.

Arguments based on national stature, threat assessments, deterrence, and sovereign independence, of course, are neither new nor unique to China. What

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81. Interview with a PLA senior colonel, 1997.

82. See, for example, Liu Shunyao, "Follow the Direction Given by Our Party's Third-Generation Collective Leadership to Build a Powerful Modern People's Air Force," *Zhongguo Junshi Kexue*, No. 3 (1997), p. 90; and Zheng Shengxia, "Importance Shall Be Attached to Certain Issues Concerning the Employment of the Air Force in Combined-Services Campaigns," *Guofang Daxue Xuebao*, No. 1 (1997), p. 46.

is relatively new is the centrality given to the air force in Beijing's formulation of those arguments, particularly as they apply to Taiwan and the United States. China's search for an effective air force also reaches back to the foundations of the PRC and the Korean War. Although the recent formulations giving saliency to the air force make military and political "sense" at least to senior PLA commanders, the question remains: Can China actually build the credible air power that will deter foreign aggressors and minority separatists alike?

Embedded in the policy are assumptions concerning the directions of technology, the nature of future conflicts, the behavior of foreign states, and the sustainability of current defense programs. After examining the security implications of the PLAAF's buildup in the decade ahead, we conclude that the answer to that question is far from clear even to the Chinese who have placed their bets on the air force. More than three decades have passed since then Chief of the General Staff Luo Ruiqing called for a shift in priorities from strategic to conventional weapons, with the emphasis on the air force. A victim of the Cultural Revolution, Luo's call vanished with him. The challenge of an emerging independent Taiwan appears to have resurrected Luo's dream of a world-class air force. Standing in the way are competing demands and policies beyond the military's, even beyond China's, control. After decades of failed plans, the realists know that the dream could fade once again.