

## Chinese Statesmen and the Use of Airpower

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The development of airpower and its influence on history has been primarily a Western narrative, with American, European, and even Russian centers. Aside from Japan's operationally brilliant but strategically unsustainable military employment in the Pacific War, no Asian power has been a significant airpower beyond its immediate region.<sup>1</sup> China, though it has regained much of its pre-nineteenth-century economic significance and plays an increasingly important geopolitical role, still has not fully proven itself in the realm of airpower.<sup>2</sup> That may finally be changing, and if so, the ramifications could be considerable.

Today Beijing's military air components are finally on the verge of giving the country's leaders something they have dreamed of since before the 1949 founding of the People's Republic of China: a reliable instrument of national power. Though civil and military aviation have long been a tool of national consolidation and development, and the latter has played a vital if limited role in many of China's twentieth-century military campaigns, both started from virtually nothing, and the journey upward has been arduous indeed. From the Chinese Communist Party (CCP)'s failure to reunify Taiwan to its awkward reliance on Soviet aid during the Korean War to its truncated invasion of Vietnam, airpower can be said to have been at least as much a limiting factor as an enabler. Yet China's leaders used it as best they could, as part of a larger pattern of

foreign policy in which they played a weak but strengthening hand with notable skill to consolidate China's autonomy and advance its strategic interests. In its six decades of existence, the People's Liberation Army Air Force (PLAAF) claims to have shot down 1,474 aircraft and damaged 2,344, for a total of 3,818.<sup>3</sup> Airpower has thus been at the heart of modern Chinese statecraft, and for that reason alone its evolution and use merits careful examination.

Founded during the Nanchang Uprising on 1 August 1927, the Red Army gradually incorporated subordinate units throughout the Long March of 1934–1935, the War of Resistance against Japan in 1937–1945, and the War of Liberation in 1945–1949, until the PRC's establishment on 1 October 1949. The term *People's Liberation Army* was used to describe individual units as early as 1945, but only the Central Military Commission (CMC) order on 1 November 1948 made the term PLA broadly applicable to CCP armed forces.

Founded on 11 November 1949, the PLAAF began operations with captured Nationalist and Japanese aircraft. Like the PLA Navy (PLAN, which had been established on 23 April 1949), its early leaders had only ground experience; this persisted until the mid-1980s, since which time all commanders have been former pilots. The PLAAF, PLAN, and Second Artillery—established in 1966 and responsible for most ballistic missiles—were subordinated to the ground forces through the end of the Cold War. A survey of PLA uses of force during the latter half of the twentieth century reveals primarily ground force actions on China's land borders with some degree of air "support" (albeit never close air support near ground troops), as well as several efforts to assert sovereignty over disputed islands (although China's air forces did not generally fly over water until the late 1990s). PLAAF wartime operations have followed a general pattern in which a sudden political decision forces rapid preparation and deployment of underprepared PLAAF forces, facilitated by political work, and guided by nuanced rules of engagement established by the PLA's highest decision-making body, the CMC. Using Chinese territory as a sanctuary, the PLAAF deploys hundreds of aircraft to a border zone. Conflict operations are then used both to achieve military objectives and to train pilots and support personnel.<sup>4</sup>

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Under Soviet guidance, the PLA established the Naval Aviation Force in 1951. Apparently subordinated to the PLAAF initially, it subsequently was divided into three fleet air divisions. In 1950 a naval air academy was established in Qingdao to provide fifteen months of primarily technical instruction. By January 1953 PLA Naval Aviation had established a fighter and a light bomber division. Its 80 aircraft were Tu-2 bombers, MiG-15 fighters, and Il-28 bombers. By 1958 the force had grown to a shore-based 470 aircraft charged with coastal air defense. The separate PLA Air Defense Force was merged into the PLAAF in 1957.

It is surface-to-air missiles (SAMs) and antiaircraft artillery (AAA), not aircraft, that have provided primary air defense. The PLAAF has long employed both; Naval Aviation relies primarily on AAA and has largely phased out its SAMs. The extent to which PLAAF and Naval Aviation aircraft are capable of flying in airspace covered by the various services' SAMs remains unclear.

Paramount leaders have always had disproportionate influence on the PLA because it is a party army. Mao Zedong (1893–1976) is the most prominent example of the interrelation between PRC political and military leadership. He led the CCP to victory in the anti-Japanese and civil wars and was China's principal leader from 1949 to 1976. During that time he commanded the PLA as head of the CMC and served as China's foremost military strategist. In developing PLA tactics, Mao drew on both traditions of peasant insurgency and guerrilla warfare experience, which he privileged under the aegis of "People's War" at the expense of technological emphasis. In doing so, he limited possibilities for Chinese airpower development even as he presided over its one significant use in conflict, in Korea. However they decide to manage affairs of state in the future, Mao's successors will finally have significant aviation assets at their disposal.

### Doctrine and Trends

Nations develop airpower in different ways, but they are guided by broadly overlapping doctrine. The U.S. Air Force (USAF) basic doctrine document cites General H. H. "Hap" Arnold's definition: "Air power is

not made up of airplanes alone. Air power is a composite of airplanes, air crews, maintenance crews, air bases, air supply, and sufficient replacements in both planes and crews to maintain a constant fighting strength, regardless of what losses may be inflicted by the enemy. In addition to that, we must have the backing of a large aircraft industry in the United States to provide all kinds of equipment, and a large training establishment that can furnish the personnel when called upon.”<sup>5</sup>

The closest Chinese equivalent of *airpower* is *kōngzhōng lìliàng*.<sup>6</sup> This term is a foreign derivative, however, and the more commonly used Chinese term is *zhìkōngquán*, or “command of the air.”<sup>7</sup> Like the USAF concept of “air dominance,” this is defined as control over air operations “over [at least] a critical or limited area for [at least] a short period of time.”<sup>8</sup> The scope of this definition has expanded as increasingly well-armed Chinese aircraft are able to go farther, fly higher, and stay up longer, all while under better protection. The organizational components of Chinese airpower include the PLAAF, Naval Aviation, Army Aviation, and, in some respects, the Second Artillery. This chapter focuses only on the first two.

The USAF also frequently cites General Arnold’s observation that “offense is the essence of air power.”<sup>9</sup> As modern airpower is defined by offensive (or what the United States euphemistically terms “defensive and offensive counterair operations”), it is only logical that the PLAAF has gradually begun its shift from purely defensive operations to simultaneous offensive and defensive operations. Likewise, Naval Aviation’s “doctrine” fits into the PLAN’s overall doctrine of “near seas active defense.” This doctrine does not mention offensive capabilities, but successful aircraft carrier group development would give China that capability.

In the summer of 2004 the CMC authorized the PLAAF, for the first time in its history, to have its own service-specific aerospace strategy known as “integrated air and space operations, simultaneous offensive and defensive operations.” China’s 2004 Defense White Paper was the first to mention “conducting both offensive and defensive operations,” which was actually formulated around 1987 under PLAAF Commander General Wang Hai (1985–1992). Although it was not mentioned in the 2006 paper, it was included in the 2008 and 2010 papers. The

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2008 report was the first to put it in a strategic context as “the strategic requirements of conducting both offensive and defensive operations.” This appears to have come out at about the same time PLAAF strategists began writing increasingly about becoming a “strategic air force.”

Yet although there was considerable press coverage and speculation surrounding PLAAF Commander General Xu Qiliang’s (2007–) mention of space during the PLAAF’s sixtieth anniversary in November 2009, none of China’s white papers has mentioned “integrated air and space” in the PLAAF section or any other section. Other services and organizations, including the General Armaments Department and the Second Artillery, are competing for control of China’s emerging space capabilities, while the PLAN may have a much greater role in air capabilities as Chinese deck aviation progresses. Since even Chinese leaders probably do not know yet how these factors will ultimately play out, it is useful to review how their predecessors have attempted to develop and employ airpower, and the interests and challenges that have shaped their actions.

### Background

Long a dream of Chinese statesmen, Chinese airpower emerged from virtually nothing and experienced many false starts. Sun Zhongshan (Sun Yat-sen, 1866–1925), the founder of modern China, promoted airpower as a key to liberating and modernizing his nation. In 1917 his Guangzhou Revolutionary Government established an aviation bureau, flying squadron, and aviation school. A Western arms embargo stunted Sun’s efforts, however.

Subsequently, the Guomindang (GMD, or Nationalists; also known as the Kuomintang, or KMT) obtained aircraft and instructors from Moscow. Jiang Jieshi (Chiang Kai-shek, 1887–1975), who would emerge as the leader of the GMD and later of the Republic of China on Taiwan, used Russian-supplied aircraft in his Northern Expedition to recapture China from local warlords, albeit with limited effect. Nevertheless, Jiang accorded priority to development of an air force, first to reunify China and later as the only hope of rapidly raising military capabilities against the Japanese. His efforts were facilitated by the lifting of the Western-

imposed arms embargo in 1929; the introduction of U.S. and Italian military aircraft and professionals followed in 1932. In a substantial achievement for the time, seven hundred pilots and six hundred aircraft were assembled, only to be destroyed in substantial part shortly after Japan invaded China on 7 July 1937.

Soviet assistance arrived by late 1937, and U.S. assistance by 1942, giving the Nationalists more than one thousand aircraft by 1945. These proved to be of little use in the subsequent civil war with the CCP. By 1937 three hundred aircraft had been lost to CCP destruction and poor maintenance; the remainder were used primarily for resupply, not to attack CCP forces directly. By the time the CCP seized complete control of mainland China and Mao Zedong established the People's Republic on 1 October 1949, most GMD aircraft and pilots had been sent to Taiwan; the CCP assumed use of their abandoned facilities.

Like its GMD rival, the CCP traces its aviation experience to a Russian-established aviation school. In 1925–1926, eighteen cadets (nine GMD, nine CCP) were sent to the USSR for advanced flight training. Two CCP cadets, Chang Qiankun and Wang Bi, would play a foundational role in PLAAF development. After the 1927 GMD-CCP split, two CCP groups of nineteen each enrolled in Soviet air force schools for further training; this was the cradle of early PLAAF leadership. A guerrilla army, the PLA captured its first GMD aircraft in February 1930. In 1937 the CCP cooperated with a local warlord to receive Soviet aircraft. The resulting Xinjiang Aviation Unit was cut off from Soviet supplies in 1941–1942 and disbanded in 1942, however. The following year Mao authorized special negotiations with the GMD for the freedom of the unit's personnel, who were then granted three months' special living conditions during which to recover. In 1941, with Mao's guarded approval, the CMC established an aviation engineering school; it was suspended in 1943. In May 1944, at the CCP headquarters of Yan'an, the CMC founded an aviation section. Wang and Chang became its director and deputy director, respectively.

On 28 August 1945, on the way to American-sponsored negotiation efforts with the GMD, Mao made his first plane flight. Even before this, he was a supporter of aviation development. Like Sun Zhongshan

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and Jiang Jieshi, he saw an air force as vital to national unity, economic development, and defense. But, perhaps in part because he had witnessed his predecessors' failures, Mao was also cautious and pragmatic. He realized that China's backwardness and resource constraints would limit the speed with which it could progress in this area, and he believed that a "People's War" approach, which emphasized human capital and ideology over technology, was the only choice for China.

Nevertheless, after Japan's surrender left the GMD as the CCP's primary threat, the CMC established an airfield at Yan'an and sent staff to Manchuria to gather Japanese equipment and begin flight training. These efforts were aided further when fifty-four GMD air force pilots defected, bringing twenty planes with them. On 1 March 1946 the Northeast Aviation School was established in Tonghua, Jilin Province. It drew on forty Japanese aircraft, captured Japanese pilots and ground crews, Nationalist defectors, and some 660 Chinese personnel. On 17 March 1949 the CMC upgraded its aviation section to an Aviation Bureau; Chang served as the director and Wang the political commissar. The bureau assumed control of GMD personnel, equipment, and facilities; on 4 May it established the CCP's first combat squadron.

With its control over mainland China imminent, the CCP made a concerted effort to acquire Soviet aid. In July 1949, at Mao's direction, Vice Chairman of the Central People's Government Liu Shaoqi traveled to Moscow to request fighters, bombers, help in training pilots and mechanics, and Soviet air force officers to assist. Stalin approved, thereby initiating a decade of Soviet aid that would afford China the foundations of an air force and an aviation industry, but would be fraught with tension and limited in critical ways. Finally, on 11 November 1949, the CMC formally disestablished the Aviation Bureau and established the PLAAF, with army unit commanders Liu Yalou (1949–1965) and Xiao Hua (1949–1950) as its first commander and political commissar, respectively; Chang and Wang became their deputies. Liu was subsequently accorded the rank of general; the PLA had no ranks at that time, instated them during 1955–1965, and reinstated them in 1988. He had Soviet training, was politically correct, and enjoyed good connections with Mao.

## The Mao Era

In its initial decades, the Red Army (PLA) had considerable leadership continuity, as commanders of the campaigns from the 1930s to the 1950s largely rose through the ranks together in the same military regions and forged a variety of reciprocal bonds. Schooled on the battleground of the People's War, these first-generation commanders had very little naval or air experience. They also played a major role in affairs of state: Mao and Deng Xiaoping became national leaders, Zhou Enlai became premier, and Chen Yi became foreign minister.

Three other PLA leaders merit special mention. Zhu De (1886–1976), one of the few early PLA leaders to receive a professional military education, arguably founded the Red Army, commanded the Eighth Route Army, and later became PLA commander in chief. Peng Dehuai (1901–1974) commanded the Chinese People's Volunteers (CPV) in Korea in 1951. In 1954 he returned from Korea and was appointed minister of national defense and National Defense Council vice chairman. Having criticized Mao's disastrous policies at the 1959 Lushan Conference, Peng was purged and further repressed during the Cultural Revolution. Lin Biao (1907–1971) was educated at the Whampoa Academy and served the CCP in a variety of early military commands. Lin was named vice premier and National Defense Council vice chairman in 1954. As minister of national defense (1959–1971), Lin rose to great power and was designated Mao's successor. He died in September 1971 when his aircraft crashed under mysterious circumstances in Mongolia, after he allegedly plotted a coup against Mao. This incident would marginalize the PLAAF as a politically unreliable organization until after Mao's death, in 1976, and even the rehabilitation of his successor Deng Xiaoping (1904–1997) in 1978.<sup>10</sup>

Leadership and political reliability have long been important limiting factors for China's air forces. Emphasis on political reliability is evidenced by the fact that the PLAAF had no confirmed pilot commanders until Wang Hai in 1985, though some sources suggest that Ma Ning (1973–1977) was also a pilot. PLAAF Commander Wu Faxian's (1965–1971; 1915–2004) involvement with Defense Minister Lin

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Biao harmed his force's development severely. In May 1965 Wu Faxian (PLAAF political commissar 1957–1965) was appointed PLAAF commander and was concurrently assigned as a deputy chief of the General Staff and a deputy director of the CMC's General Office. While so empowered, he became a member of Defense Minister Lin Biao's clique. Upon Lin's demise, Wu Faxian was arrested immediately. He was tried ten years later and sentenced to seventeen years in prison.<sup>11</sup> The PLAAF was not assigned a new commander until eighteen months after Wu's arrest, when Ma Ning was appointed in May 1973.<sup>12</sup>

#### *Establishment of a Military Aviation Industry*

China emerged from the Anti-Japanese War and the civil war as it had entered them: impoverished, largely uneducated, and virtually unindustrialized. Limited resource-extraction and processing facilities had been established in coastal areas by foreign enterprises and in scattered interior locations by warlords. Overall, however, China's unevenly located resources were underexploited and disconnected for want of infrastructure. Lacking even relevant raw materials and trained pilots, the People's Republic had to create an aviation industry from virtually nothing.

These deficiencies necessitated significant Soviet guidance and assistance, which were secured by the February 1950 Treaty of Friendship, Alliance, and Mutual Assistance. The CCP launched its first Five Year Plan for industrial and agricultural development and production in 1949. In 1951 Premier Zhou Enlai called for licensed production of Soviet fighters and trainers by 1954–1956. That same year Minister of Heavy Industry He Changgong led a delegation to Moscow to seek technology transfer. In 1952 Li Fuchun and Marshal Nie Rongzhen (1899–1996) led a study of how to develop the industry. On 8 January 1953 Zhou convened a meeting concerning the defense industrial aspects of China's first Five Year Plan.

Limited funds were allocated to establish an aviation industry with a relatively comprehensive, if rudimentary, infrastructure. By soliciting extensive Soviet aid and focusing on development of heavy industrial plants and equipment, China doubled industrial capacity within five

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years. Nie Rongzhen was the first major PLA technocrat, heading the National Defense Industry Office and its successor, the National Defense Science and Technology Commission, in the 1950s and 1960s.

This early progress (albeit from a very low baseline) would be squandered by counterproductive Maoist policies. Mao's Great Leap Forward (1958–1960)—which sought to render China self-sufficient through labor-intensive light industrialization, agricultural collectivization, and military production—wasted limited resources and undermined economic development. Mao repressed Peng Dehuai and others who opposed these policies, which included devoting significant PLA focus to agricultural production. Soviet advisers were expelled in 1960 following deterioration of the bilateral relationship. Soviet withdrawal interrupted transfer of aviation expertise and imposed an ethos of self-reliance on China's aviation industry; but independent, inefficient factories failed to meet the PLAAF's needs.

Subsequent preparation for "early war, big war, and all-out nuclear war" caused Mao to order roughly half of military production dispersed among a "Third Line" network in China's vast interior. This process, which occupied much of the 1960s and 1970s, may have consumed as much as half of defense expenditures, unquestionably dispersed scarce human and material resources inefficiently, and further overextended China's limited transportation infrastructure. The Cultural Revolution (1966–1976) threw all but the highest-priority weapons program into disarray, dividing bureaus into rival factions and even threatening rail links critical to the development of advanced weapons systems. Though Zhou Enlai's intervention protected missile development, and even that of satellites to some extent, aircraft development suffered greatly.

The military importance of aircraft was recognized, but limited resources were squandered by Marshal Lin Biao's unrealistic production targets for the industry and subsequent implication in the alleged "571" coup attempt in 1971. Lin's doctrine of imminent war during the Cultural Revolution was particularly damaging to the PLAAF, which suffered from low training and high accident rates of aircraft that were poorly constructed and maintained and supplied with insufficient fuel and spare parts. In 1969, for instance, the PLAAF shuttered twelve of

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its twenty-nine schools. In 1970 pilots averaged 30–40 flight hours annually, far below the 123 hours mandated by regulations. The aircraft industry's organization, and the quality of its products, remained poor.

### *The Korean War, 1950–1953*

The Korean War, known in China as the War to Resist U.S. Aggression and Aid Korea, is the only war that the PLAAF has ever fought in its six-decade history. It thus merits special examination. The motives of Mao and Stalin, and what they knew of Kim Il-sung's invasion plans, remain debated by scholars. What is agreed is that Mao attempted to caution the United States that its forces should not enter North Korea, Washington dismissed these warnings, and the CPV crossed the Yalu in late October 1950, later to be supported indirectly by Soviet pilots, as well as the PLAAF.

PLAAF participation in Korea may be divided into three eras. First, from late October 1950 to July 1951 the PLAAF developed its capabilities rapidly in preparation for conflict. Second, from September 1951 to May 1952 the PLAAF and Soviet forces provided air defense in parallel. This limited role resulted from political restrictions that confined the Soviets to providing rear air defense, the MiG-15's short range, and lack of working airfields in North Korea. Third, from July 1952 to the 27 June 1953 armistice, the PLAAF engaged in more independent air operations.<sup>13</sup>

Whereas American and Soviet forces were self-limited by political concerns, the PLAAF was limited primarily by inability and inexperience. It had only begun large-scale development the previous year, with crash programs to establish aviation schools and select young, politically reliable cadets; and even that had initially been focused on Mao's planned invasion of Taiwan. Airfields inherited from the GMD were generally in poor condition; upgrades were prioritized carefully. Drawing on captured supplies, the PLAAF developed support, maintenance, and logistics units.

PLAAF Commander Liu Yalou and his staff emphasized fighters over bombers; their goals were attaining air superiority over the GMD,

supporting an amphibious assault on Taiwan, and defending a reunified China's airspace (including that over water). Now, in the new Korean context, PLA leaders suddenly found their ground forces vulnerable to air attack, but they lacked airpower experience and concepts. The Korean War provided strong impetus to develop the PLAAF rapidly, but its leaders failed to understand the tremendous challenges involved. At the same time, Soviet influence and PLA perceptions led to the PLAAF's being envisioned as a tactical support unit for the ground forces; other roles were unexplored.

As they weighed whether to intervene in the Korean War in October 1950, Chinese leaders were particularly concerned about the lack of air support available to them. Here Stalin's desire to divert America and its allies with an Asian conflict without directly involving the USSR and facing retaliation provided critical but limited support; this was to become a double-edged sword that would ultimately help catalyze the 1960 Sino-Soviet split. To secure nine Chinese divisions on the Sino-Korean border, Stalin had offered air support, in the form of a 124-plane MiG division. Russian pilots would train their Chinese counterparts, then transfer the aircraft to them after two to three months. As early as 21 July 1950 a Soviet air unit arrived in northeast China; this played a critical role in convincing Chinese troops not to fear a U.S. air attack. Mao used Soviet loans and citizens' contributions to purchase Soviet aircraft—a total of 2,470—after China entered the Korean War in October 1950.

Though China's leadership agreed that PLAAF development was important and was generally unified in policy approaches, some predictable differences did emerge along bureaucratic lines. As part of a larger pattern throughout the war, CPV Commander Peng Dehuai, faced with uncertainty regarding ground-air force coordination and Soviet assistance, requested maximum air support for the ground forces under his command, repeatedly pressed Mao for additional resources, and even threatened to resign on one occasion. Zhou Enlai and Liu Yalou, by contrast, did not want to risk the nascent PLAAF that they were working so hard to build. Mao, responsible for overall national decision making and acutely aware of China's limited international leverage and domestic resources, communicated with Stalin, dispatched Zhou Enlai

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to seek Soviet aid, and adjusted strategy and policy as necessary. Like Stalin, he faced his own escalation concerns. Mao requested Soviet air support to safeguard rear supply lines, not to support ground operations. Though the latter might have been impossible to achieve in any case, Mao might have further restrained himself in this area because he feared Soviet-American confrontation. Believing that airpower did not negate his doctrine of People's War, Mao used airpower as a defensive deterrent and sought to avoid conflict with the United States. He kept his strategic focus almost exclusively on his ground forces, even though doing so imposed heavy costs and limited his ability to achieve his wartime goals.<sup>14</sup>

Air defense (as provided by antiaircraft artillery, not by aircraft, as was the case in the Soviet Air Defense Forces, or APVO) was a fundamental concern for the CCP, which did not initially control the airspace over China's coastal cities. On 6 February 1950 Nationalist aircraft bombed Shanghai, killing 1,400 and threatening CCP governance. Following strong Chinese requests, later that month Moscow provided advanced MiG-15s for air defense of Shanghai. But Stalin declined to support Mao's plans for a Taiwan campaign and prohibited the MiG-15s from flying beyond China's coastline. In September 1950 the PLA Air Defense Headquarters was established to defend major cities.

Differences between Stalin's and Mao's strategic objectives emerged almost immediately; repeated diplomatic negotiations could not fully resolve them. In what Mao must have considered a geopolitical bait and switch to bring China into the war, Stalin declined to deliver the air support that China expected, providing instead training and air defense. Soviet pilots were initially prohibited from flying beyond the Yalu River; Stalin wanted to avoid fighting the Americans, and he pushed the Chinese to do so instead. Even as Soviet air operations extended over the Yalu, they provided little air support for CPV ground troops. Caution was taken to an impractical degree: Soviet planes carried North Korean insignia; pilots wore Chinese uniforms, were supposed to speak Chinese in radio communications, and were instructed to identify themselves as "Eurasian Chinese of Soviet extraction" if captured.<sup>15</sup>

Nevertheless, Soviet assistance was massive and provided tangible

benefits almost immediately. Beginning on 1 November 1950, UN air superiority was challenged by Russian-piloted MiG-15s. By mid-November Moscow had sent six MiG-9 fighter divisions, two MiG-15 divisions, eleven anti-aircraft and artillery regiments, and several searchlight and radar battalions to China. Within a month, these were joined by one La-9 division, one Il-10 division, and one Tu-2 bomber division to bolster air defense. Chinese air and ground crews were provided with training. Following debate, and with these new assets in hand, Mao approved Peng's request for air support of ground forces on 4 December 1950.<sup>16</sup>

In early 1951, using most of its staff officers, the PLAAF formed the CPV Air Force Headquarters. The CPV joint command Air Force Headquarters was officially formed on 25 April, and China attempted to place air divisions under its authority, but in practice operations with Soviet and North Korean air forces were not formally coordinated. Citing political reasons, Soviet pilots refused to join. The small number of North Korean pilots played a minimal role in the war, as Kim Il-sung husbanded his nation's few remaining aircraft after his air force was decimated in early Allied raids.

Before China officially entered the air war, starting on 28 December 1950, small PLAAF units tried to gain combat experience under the cover of Soviet planes but met with limited success. The first PLAAF combat with American planes occurred on 12 September 1951. That these efforts occurred at all was testimony to Beijing's tenacity; the asymmetry its air force faced was staggering. The PLAAF had fewer than one-fifth of the USAF's aircraft; its pilots had one-tenth the flying hours and no air combat experience whatsoever. Problems with Soviet advisers, rapid training, and limited flight hours produced a high PLAAF accident rate. Critically limiting the PLAAF's range, as Mao himself recognized, was the lack of usable airfields in North Korea, and the lack of reliable air cover to repair them. Thanks to UN bombing operations, in which airfields under construction were bombed no fewer than 119 times, this would remain a limiting factor throughout the war. As a result, the PLAAF was confined to Chinese airfields, making the MiG-15's hundred-mile range a determining factor. This forced the CMC to change the PLAAF's mission from supporting ground forces directly through a progression

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of repaired airfields in North Korea to "maintaining air superiority in northwestern Korea, providing point protection of key transportation lines and military and industrial targets, and providing indirect support for the ground forces."<sup>17</sup>

Almost immediately Mao attempted to use airpower to further his political objectives. As an armistice seemed increasingly possible in late 1951 and early 1952, he ordered the PLAAF to obtain more combat experience. On 1 November 1951 the PLAAF deployed Tu-2 bombers against South Korean radar and radio monitoring sites at Taehwa-do to aid negotiations at Panmunjom. The mission failed disastrously when mistiming facilitated a devastating Allied air attack; the PLAAF never again used bombers in daylight raids.

Despite this setback, PLAAF efforts finally began to pay off in a series of modest but politically significant victories. On 10 February 1952 Zhang Jihui was credited with shooting down a top U.S. ace, Major George Davis; several similar kills followed. As is true of many such events in the Korean War, confirming evidence remains unclear; regardless, such achievements represented a major propaganda coup at the time. This was part of a larger pattern in which the PLAAF was treated as a symbolic bellwether and indication of CCP competence: "If the Communists could make airplanes work, they could make anything work."<sup>18</sup>

In another sign of the connection between airpower and statecraft, China's leadership imposed strict rules of engagement, including a prohibition on striking below the 38th parallel. This restriction of operations to a "MiG Alley" over North Korea spared Chinese airfields and aircraft from retaliatory strikes and made virtue of the reality that, with no unbombed North Korean airfields to utilize, PLAAF aircraft lacked the range to return unrefueled from striking South Korea. Beijing likewise restricted air operations in response to enemy restraint. In February 1952, for example, Zhou Enlai called off an attack on Kimpo Airfield, located in a safe haven south of the 38th parallel, after Washington restricted bombing north of the Yalu. The following year Beijing resisted North Korean requests to bomb Seoul.

It is difficult to assess the influence of Chinese airpower on the

Panmunjom negotiations, as the factors influencing them are debated to this day. It seems clear, however, that Moscow would never have been willing to fight an air war in Beijing's behalf. Without Chinese assumption of control over, and some responsibility for, Soviet aircraft and pilots, and the resulting influence on air combat and psychological benefits for CPV ground forces, the Korean War might have ended very differently.

By the time of the 27 July 1953 armistice, thanks to top leadership support, China had developed and acquired the world's third largest air force, equipped with many advanced Soviet aircraft, supported by a command and logistical system and pilots with combat experience, some of whom would later lead the PLAAF. The PLAAF's thirteen aviation schools had trained 5,945 flight and 24,000 maintenance personnel. Its three thousand aircraft in twenty-eight air divisions had performed 26,491 sorties (42 percent of the number of Soviet sorties) and engaged in 366 discrete air battles. Drawing on the in-combat contributions of ten fighter divisions, two bomber divisions, and eight hundred pilots, as supported by 59,700 ground personnel, the PLAAF claimed to have shot down 330 enemy aircraft (25 percent of Soviet totals) and hit another 95. These achievements came at a combat loss of 231 aircraft and damage to 151, and 168 lost to other causes, and the loss of 116 airmen (only four fewer than the Soviets). This reportedly resulted in a 1:1.42 air-air kill ratio (1.9:1 for the Soviets, although the latter figure had been much higher earlier in the war).<sup>19</sup>

In the ensuing decade the PLAAF continued to develop organizationally. Having raised its first airborne unit in 1950, it formally established an airborne corps in 1960. In 1957 it assumed control of the PLA Air Defense Force; in 1958 it established a surface-to-air missile force and added new antiaircraft artillery and radar units. Its central headquarters expanded, and it established regional headquarters and air corps throughout China. Its twenty-nine schools created regulations and teaching materials based on China's new indigenous experience.

Despite rapid improvements, however, the PLAAF suffered from significant limitations that persisted throughout the war. Its air divisions varied tremendously in their combat contributions. Its command system was overly centralized, its leaders inexperienced. Despite a tremendous

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emphasis on morale, some Chinese pilots had difficulty coping psychologically with the perilous asymmetries they faced.

Much of what the Korean War gave to the PLAAF in spurring its short-term buildup it took away in terms of long-term strategic justification for its development. The most immediate legacy of the war was the entry of the U.S. Seventh Fleet into the Taiwan Strait, thereby preventing the PLA from incorporating Taiwan physically into the PRC. This eliminated what otherwise might have been a significant impetus for PLAAF development. The Korean experience convinced many of Mao's senior military leaders (for example, Peng Dehuai) that modernization and professionalization were essential, but Mao maintained that a "People's War" of attrition was the correct choice for China. Even though his own son had been killed in an air raid in Korea, Mao concluded that enemy air attack was less significant than ground attack.<sup>20</sup>

### *The Offshore Islands Campaign, 1954–1955*

In the first decades after Jiang Jieshi and the Nationalists retreated to Taiwan, he sent surveillance flights over the mainland (with American assistance), sparking many low-level skirmishes with Communist forces. These included one hundred CIA-supported U-2 flights; the PLAAF shot down five from 1963 to 1967.

The PLAAF's initial mission was to work with the ground forces and navy to seize GMD-held islands. These efforts were disrupted by the Korean War, which removed the possibility of retaking Taiwan by triggering American involvement. By 1954, however, the PLAAF was charged with a similar, if more modest, role: attacking offshore islands to coerce the GMD and thereby express Beijing's will to reincorporate Taiwan. The most dramatic CCP-GMD confrontation was part of the 1954–1955 Yijiangshan Campaign, the only PLAAF operation to date coordinated in depth with other services (in this case, the ground forces and navy) in combined operations. In it, two hundred CCP aircraft in five divisions (one bomber, one ground attack, three fighter), two independent reconnaissance regiments, and three naval air divisions performed reconnaissance, air defense, fighter escort, and strike missions.<sup>21</sup>

On 25 October 1949 thirty thousand Third Field Army soldiers had attempted to take Jinmen via small boats across the ten-kilometer strait but suffered heavy casualties and seized only a small beachhead, which they failed to reinforce, and withdrew. In spring 1954 the PLAN began to shell Jinmen and Mazu, prompting U.S. naval and air force deployment to the region, both to support the Nationalist garrisons and to prevent Nationalist forces on Taiwan from attempting to retake the mainland—a central goal of Jiang's, which he never relinquished during his lifetime. Between March and August 1954 the PLAAF gained control of the airspace surrounding the Dachen Islands and neighboring Zhejiang province on the mainland. In September the PLA amassed forces near the Dachen Archipelago's Yijiangshan Islands (selected because they lay opposite ample mainland railroads and airfields), engaged in drills, and conducted aerial reconnaissance. On 1 November the PLAAF and PLAN staged a seventy-eight-day blockade of the islands, supported by PLAAF and Naval Aviation bombardment, and attacked GMD ships. On 18 January 1955, with an amphibious landing supported by air and naval forces, the PLA captured the main island. During 2–9 February the PLA seized four other islands.

As they had in the Korean War, Chinese leaders adopted a cautious, responsive approach. The CMC imposed defensive rules of engagement on the PLAAF, ordering it not to enter the high seas, not to bomb the Dachens when U.S. ships were in the area, and not to attack U.S. military platforms in international waters or airspace under any circumstances. Even over Chinese land and airspace, PLAAF pilots could attack U.S. aircraft only if they entered Chinese airspace, could return fire only if under direct attack, and could bomb Jinmen or Mazu only if the GMD air force bombed mainland China.<sup>22</sup>

### *The Taiwan Strait Crisis, 1958*

China initiated the 1958 Taiwan Strait Crisis by shelling Jinmen. Mao's strategic objectives included (1) expelling the Nationalist air force from PRC airspace over Fujian and eastern Guangdong provinces, (2) testing the 1954 U.S.-Taiwan mutual defense treaty,

(3) persuading the Nationalists to accept a Korean War-style armistice, and (5) rallying public opinion in the United States. In 1958, with the outbreak of the Sino-Soviet border conflict, Mao's policy of "one country, two systems" was abandoned, and the PLA was ordered to prepare for a full-scale invasion of Taiwan. In 1958, Mao's policy of "one country, two systems" was abandoned, and the PLA was ordered to prepare for a full-scale invasion of Taiwan. In 1958, Mao's policy of "one country, two systems" was abandoned, and the PLA was ordered to prepare for a full-scale invasion of Taiwan.

By late 1958, the PLA had not intervened in the Taiwan Strait Crisis. That Beijing's vis-à-vis Taiwan MiG-17 air force was engaged in PLAAF operations until Beijing's Thus ended the full-fledged by Mao to fact that PL ing Taiwan umbrella—in the Wes

(3) persuading the United States to resume negotiations regarding Korean War POWs, (4) playing a leading role in the socialist world by expressing solidarity for Arab national independence movements, and (5) rallying support for domestic initiatives. August–October 1958 witnessed seven air battles—history’s only large-scale air combat between the PLAAF and its Nationalist counterpart. Meanwhile, U.S. ships escorted Nationalist ships to resupply GMD-held offshore islands, and the USSR supplied SA-2 missiles to China. Again determined to avert direct U.S. involvement and limited by the PLAAF’s inability to bomb Nationalist-held islands, the CMC imposed the following rules of engagement: do not conduct operations over high seas, bomb Jinmen and Mazu only if Nationalist aircraft bomb the mainland, and initiate attacks on U.S. aircraft only if they enter mainland airspace. In an example of air-based intelligence available to U.S. statesmen but not to their Chinese counterparts, six U-2 overflights during this period found no evidence of “troop movements that would indicate that the PRC was planning to invade the islands,” thereby undermining implicit PLA threats to do so in ordering Nationalist garrisons to surrender (unsuccessfully) at the outset of the shelling.<sup>23</sup>

By late October 1958 it had become clear that Washington would not intervene directly and that Moscow would not provide the support that Beijing desired. Likewise, the PLAAF’s counterstrike capabilities vis-à-vis Taiwan were uncertain because of the limited range of Chinese MiG-17 aircraft and the need to dedicate half its aircraft to defending PLAAF bases. At Mao’s instruction, therefore, the PLA halted air operations and switched to intermittent shelling (this would continue until Beijing and Washington normalized relations on 1 January 1979). Thus ended the latest Chinese military operations to date involving full-fledged air combat. Though the crisis may have been manipulated by Mao to further domestic initiatives, it nevertheless highlighted the fact that PLA limitations and U.S. support precluded Beijing from taking Taiwan and that Moscow would not provide Beijing with a nuclear umbrella—though it did supply much more weaponry than was known in the West at the time.

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*The Chinese Vietnam War, 1965–1969*

Before and during the Vietnam War, China provided military assistance to Communist allies in Southeast Asia. The PLA made incursions into Burma in 1960–1961. In the 1960s it assisted Laos by constructing roads and providing air defense. China supplied North Vietnam with large amounts of weapons throughout the Vietnam War but sought to limit its involvement in the conflict by rejecting repeated North Vietnamese requests for pilots and aircraft.<sup>24</sup>

As the U.S. became involved in Vietnam, China once again faced a significant military challenge on a sensitive border. Concerned in particular with the resulting air threat, on 5 August 1964 the CMC placed the Guangzhou and Kunming military regions on alert and sent additional PLAAF forces to the border provinces of Guangxi and Yunnan, redeploying air divisions, constructing new airfields, and setting up additional radar installations. In late 1965 the PLAAF began deploying AAA units to North Vietnam. This was hardly unprompted; between 1964 and 1968 U.S. aircraft routinely overflew southeast China on their way to Vietnam, which Beijing viewed as a flagrant violation of its airspace. The CMC instructed the PLAAF not to engage U.S. aircraft, even in Chinese airspace, but actively encouraged both PLAAF and PLAN aircraft to attack the BQM-147 drones that the U.S. flew over this area of China from 1964 to 1969 to show resolve, and it claims to have shot down twenty.<sup>25</sup>

Even this nuanced approach proved unsustainable from Beijing's perspective. Until April 1969 U.S. reconnaissance aircraft routinely flew as close as twenty miles from China's coast, and a U.S. unmanned aerial vehicle reportedly touched down on Hainan Island in February 1970.<sup>26</sup> Following the appearance of two U.S. Navy F-4B Phantoms over Yulin Naval Base on Hainan Island on 8 April 1965, the CMC authorized the PLAAF to attack U.S. aircraft that entered PRC airspace. Mao ordered the best PLAAF and Naval Aviation units to the region "to strike relentless blows" against any further intruding aircraft. Starting on 20 September 1965, PLAAF and Naval Aviation forces shot down twelve U.S. aircraft and damaged four. In April 1967 a U.S. Navy F-4

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was shot down near Guangxi Province in southern China; this is the most recent instance of a PLAAF aircraft downing a manned aircraft. In May 1967 a U.S. Navy A-4 was shot down in a similar location; this is the most recent instance of a PLAAF AAA unit downing a manned aircraft. Despite Hanoi's entreaties, however, China did not engage U.S. aircraft over North Vietnam, though Chinese aircraft did occasionally penetrate its neighbor's airspace. Instead, China supplied Hanoi with sixteen AAA divisions and offered its aircraft sanctuary.<sup>27</sup>

### The Deng Era

Long before becoming China's second-generation leader, Deng Xiaoping served in a variety of military leadership roles during the civil war. In 1975, after regaining Mao's favor, he was named CCP vice chairman, CMC vice chairman, and chief of the General Staff. From 1978 until his last public appearance in 1994, he was China's preeminent leader, despite stepping down formally in 1989 as CCP CMC chairman and in 1990 as State CMC chairman—positions in which he had served since 1981 and 1982, respectively. Shortly after a visit to the United States in 1979, he ordered China's Self-Defensive Counterattack against Vietnam, and in 1989 he ordered the Tiananmen Square crackdown.

Deng restored stability after decades of Maoist turmoil. His post-1978 reforms brought much-needed technology transfer, foreign direct investment (FDI), and export markets. During the sixth Five Year Plan (1980–1985), defense was given priority as the “fourth modernization.” China's first aviation sector restructuring had begun in the early 1970s. The worst excesses were halted rapidly. When Lin Biao died and Commander Wu Faxian was arrested in 1971, the PLAAF was freed from the control of two Maoist ideologues, but it was also deprived of a commander until May 1973. Other leadership changes ultimately helped restore the PLAAF and the aviation industry to a more logical trajectory. Maintenance and quality control were acknowledged to have become serious problems. Zhou called for immediate results and in 1971 ordered a thorough reassessment of the industry. But within three years he faced political challenges

that limited his power, and after two more both he and Mao would be dead. It was thus under Deng's leadership that these efforts were finally consolidated as part of his larger reforms. Deng sought to improve Chinese airpower and also to assert stronger control over the PLAAF, which he and others viewed as a "potentially dangerous service" in the wake of the Lin Biao incident.<sup>28</sup> Deng was also concerned about the loyalty of the airborne force: during the Wuhan incident in early 1967, central China's political, economic, and transportation hub had "suffered factional strife between the 'Rebels,' who were supported by Premier Zhou Enlai, and the 'Million Heroes,' who were supported by the Wuhan Military Region (MR) command. When Zhou sent two people to mediate the situation in July, the MR commander arrested them and helped arm more of the 'Million Heroes,' which led to more bloodshed between the two factions. The acting Chief of the General Staff, Yang Chengwu, ordered the PLAAF's 15th Airborne Army to intervene on behalf of the 'Rebels' and to rescue the two mediators."<sup>29</sup>

Major PLAAF reforms, including the reestablishment of training and education, began in 1977 with the appointment of the former PLAAF political commissar Zhang Tingfa (1975–1977, 1977–1985) as commander. To fund China's rapid economic development and a shift to smaller, better-equipped forces, Deng significantly downsized the PLA, which had peaked at a level of six million personnel. Since 1949 the PLAAF has implemented six reductions in force (in 1960, 1970, 1975, 1985, 1992, and 2003), all of which were part of larger PLA force reduction programs. Early initiatives were aimed primarily at cutting the size of headquarters staffs by 15 to 20 percent. By the end of 1976 the PLAAF had shed 190,000 personnel from its 1972 peak of 760,000. In August 1985 it further downsized 20 percent by eliminating some establishments, reforming the unit organization structure, and eliminating old equipment. In October 1992 Deng would carry out yet another 20 percent reduction. In the late 1980s the PLAAF was finally fully integrated into the campaign command structure of the ground forces, following their bureaucratic synchronization by geographic area in 1985.<sup>30</sup>

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### *The Sino-Vietnam Border Conflict, 1979*

China launched the Self-Defensive Counterattack against Vietnam from 17 February to 17 March 1979, ostensibly because of border incursions, but in reality to punish Vietnam for preparing to overthrow its ally Pol Pot in Cambodia and to halt its Soviet-assisted expansion of influence in Southeast Asia. While moving thirty to forty divisions to the Vietnamese border, China prepared simultaneously to deter an attack by the USSR, which had concluded the Treaty of Friendship and Cooperation with Vietnam in 1978. Encountering heavy resistance when its forces crossed the border, Beijing stated that the PLA would not proceed farther than fifty kilometers into Vietnam. While it prepared fifteen border airfields to accept 20,000 PLAAF aviation, SAM, and AAA troops, and massed 800 to 1,100 aircraft there, the PLAAF was in no position to go to war, having been devastated by the Cultural Revolution. It was charged with major logistics preparations, but it had great difficulty with fuel supply. It deployed J-7s, its most capable aircraft at that time, to frontline airfields to counter Vietnam's limited number of MiG-21bis aircraft, but their operational status was questionable.

To avoid escalating the conflict, which he planned to end within thirty-three days, or contend with better-trained Vietnamese pilots and a lack of proximate Chinese airfields, Deng relegated the PLAAF to providing deterrence and support: it did not engage in air combat and flew no ground attack aircraft or bomber sorties into Vietnamese airspace.<sup>31</sup> Neither side flew missions to support its ground forces directly because neither wanted to escalate the conflict. The PLAAF flew 8,500 sorties over Chinese territory, including area familiarization, evacuation of wounded personnel via helicopter, and postconflict operations. On-station time for border sorties was severely limited. After accomplishing its basic objective, the PLA systematically withdrew twenty-eight days after invading. Severe problems with coordination, command, control, and logistics demonstrated how unprepared for combat the PLA had become. In a separate incident, a Vietnamese MiG-21 crossing into Guangxi Province was shot down on 5 October 1987; this is the most recent instance of a PLAAF SAM shooting down an aircraft.

### The Jiang Era

Jiang Zemin (1926–) was hand-picked by Deng to head China's third-generation leadership, becoming CCP general secretary and CMC chairman in 1989 and president of the PRC in 1993. During his decade in office, Jiang increased PLA budgets and directed significant PLA modernization. An electrical engineer by training, and one of the first Chinese leaders to grasp the significance of the information age and its implications for warfare, Jiang built on Deng's technical and economic reforms to fund research and development and weapons programs at a level previously unimaginable for China. Since 1990, China's annual official defense expenditure has increased on average more than 10 percent annually, yielding an official budget of \$106.4 billion for 2012 (the second highest in the world after that of the United States). This supports higher levels of weapons and equipment development and acquisition. In September 2003 the PLA initiated its tenth downsizing since 1951.<sup>32</sup> The 2003–2004 downsizing included 200,000 troops, of which 170,000 (85 percent) were officers, including 50 PLAAF flag officers.<sup>33</sup> Jiang worked with the CMC and PLAAF to provide the service with its own strategic theory, although this would not come to fruition until after his retirement.

### *The Taiwan Strait Crisis, 1995–1996*

Chinese air operations in proximity to the Taiwan Strait offer examples of how airpower is already affording Chinese leaders strategic tools that can be adjusted to send a variety of signals, against a backdrop of growing deployments opposite Taiwan. Of note is the fact that PLAAF aircraft did not fly over water until 1996 and flew to the center line of the Taiwan Strait for the first time in 1999.

The 1995–1996 Taiwan Strait Crisis offers the most prominent example to date of such signaling. The PLA fired ten DF-15 short-range ballistic missiles to the north and south of Taiwan (not over the island or in the strait) as part of large-scale military exercises. These exercises, and the accompanying political rhetoric, were designed to discourage independence moves by Taiwan's President Lee Deng-hui before and

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during his election. This was in accordance with Jiang Zemin's "two transformations," which, following conspicuous U.S. success in the First Gulf War, sought a "Revolution in Military Affairs" (RMA) that emphasized quality over quantity and mandated PLA preparations to fight "limited local wars under high-technology conditions," and a later focus on "informatization," or the use of information technology and networks. It also suggested an increased PLA attention to asserting sovereignty over claimed territory on its maritime periphery.

PLAAF and PLAN aircraft were involved in related exercises but did not approach the main island of Taiwan itself. A large number of aircraft were deployed to airfields opposite Taiwan, and some were involved in the PLAAF's first flights over the strait. Subsequently, in July–August 1999, to show Beijing's displeasure with a statement by Lee Deng-hui about special "state-to-state" relations between Taiwan and mainland China, the PLAAF dispatched numerous aircraft over the strait, and to the center line for the first time. By early August the flights were reduced, probably to preserve the political effect of ramping up sorties to generate public attention in the future. As their capabilities grow, China's air forces will be capable of further strategic signaling options, including circumnavigating Taiwan with bombers or an aircraft carrier, or even implementing an air blockade.

### The Hu Era

Hu Jintao (1942–) recently led the fourth generation of China's leadership. Like his predecessors, he chairs the CMC (since 2004) in addition to serving as general secretary of the CCP (since 2002) and president of the PRC (since 2003). Under Hu's leadership the 2,285,000-strong PLA is divided into the ground forces (70 percent of personnel, or 1.6 million), the PLAN (11.2 percent, or 255,000), the PLAAF (13–14.4 percent, or 300,000–330,000), and the Second Artillery (strategic missile forces) (4.4 percent, or 100,000).<sup>34</sup> The PLAAF also has a surface-to-air missile and antiaircraft artillery corps and three airborne divisions assigned to the 15th Airborne Corps. It has multiple academic institutions and research institutes.

Together with naval aviation, the PLAAF in 2011 possessed 2,300 operational combat aircraft of varying degrees of capability. Their range is severely limited by lack of deck aviation platforms (carriers), substantial aerial refueling capabilities, and overseas bases. Still hampered to some extent even today by bottlenecks in China's domestic aviation industry, the PLAAF continues to import large numbers of advanced aircraft and aeroengines from Russia, and has "encountered difficulty expanding its fleet of long-range heavy transport aircraft" and tankers.<sup>35</sup> Most helicopters in the PLA's disproportionately small fleet (totaling 700–800 airframes, including roughly more than 500 for the ground forces, perhaps as many as 100 or more for the navy, and approximately 100 for the air force) are either imports or copies of foreign models.<sup>36</sup> Varying degrees of progress are finally being made in a wide range of areas, however. China has produced its own fourth-generation fighters, the J-10 and J-11B (an all-Chinese variant of the Russian *Flanker*), and is developing the J-15 carrier-based fighter and the J-20 stealth aircraft.

At an expanded CMC conference on 24 December 2004, Chairman Hu Jintao introduced a new military policy that defined the four new missions of the PLA: first, to serve as an "important source of strength" for the CCP to "consolidate its ruling position"; second, to "provide a solid security guarantee for sustaining the important period of strategic opportunity for national development"; third, to "provide a strong strategic support for safeguarding national interests"; and fourth, to "play an important role in maintaining world peace and promoting common development."<sup>37</sup> The last two missions truly reflect new emphases for the PLA, and the fourth is unprecedented. Hu requires the PLA "pay close attention" not only to "interests of national survival, but also to national development interests; and not only to safeguard the security of national territory, territorial waters, and airspace, but also to safeguard electromagnetic space, outer space, the ocean, and other aspects of national security."<sup>38</sup>

Hu has stated further: "As we strengthen our ability to fight and win limited wars under informatized conditions, we have to pay even more attention to improving non-combat military operations capabilities."<sup>39</sup> In an attempt to transform Hu's general guidance into more

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specific policy, articles in state and military media have argued that the PLA must go beyond its previous mission of safeguarding national "survival interests" to protecting national "development interests," that is, economic growth.<sup>40</sup> High-level PLA officers are now conducting sophisticated analysis of the "nonwar military operations" needed to promote these interests.

As China's 2010 Defense White Paper elaborates, "The PLAAF is working to ensure the development of a combat force structure that focuses on air strikes, air and missile defense, and strategic projection, to improve its leadership and command system and build up an informationized, networked base support system."<sup>41</sup> It is contending with the General Armaments Department and the Second Artillery to assume authority over China's growing military space assets. According to the U.S. Department of Defense, "The PLA's new missions are . . . driving discussions about the future of the PLAAF, where a general consensus has emerged that protecting China's global interests requires an increase in the PLAAF's long-range transportation and logistics capabilities." Yet "it is likely that the Air Force's primary focus for the coming decade will remain on building the capabilities required to pose a credible military threat to Taiwan and U.S. forces in East Asia, deter Taiwan independence, or influence Taiwan to settle the dispute on Beijing's terms."<sup>42</sup>

PLAAF and Naval Aviation forces must thus prepare for the traditional missions of being ready to coerce Taiwan and further China's other territorial and maritime claims in the East and South China seas, while also supporting increasing nontraditional operations. Indeed, China's only major uses of airpower under Hu's tenure have been in this latter category.

#### *Gulf of Aden Anti-Piracy Deployment, 2008–*

The dramatic rise of piracy in the waters off of Somalia in 2008, combined with United Nations Security Council resolutions designed to empower other nations to fight that piracy, presented the Chinese with a historic opportunity to deploy a naval force to the Gulf of Aden to

protect merchant vessels from pirates. For the first time in its modern history, China has deployed naval forces operationally (as opposed to representationally) beyond its immediate maritime periphery. Since 26 December 2008, on what have been twelve task force deployments thus far, China has sent some of its most advanced naval platforms. These are equipped with the PLAN's most advanced helicopter, the Russian Ka-28 Helix. In testimony to both China's utter lack of experience and its determination to perform on a new world stage, the helicopters on the first mission were piloted by some of the PLA's finest: two senior colonels with several thousand hours of flight experience. These helicopters assumed a frontline role in what have been extremely cautious rules of engagement. If the PLAN detects a "suspicious vessel," it will deploy a helicopter for surveillance and reconnaissance, and for deterrence measures if necessary. During transit to the Gulf of Aden special forces aboard the warships, building on earlier, land-based training, carry out antipiracy exercises with shipborne helicopters, from which they rappel onto the deck to simulate landing on hijacked or pirate vessels. The helicopters also practice nighttime landing operations at sea, a new area for the PLAN.

Though the PLAN has sought to minimize contact with pirates during all three types of operations, it has encountered, and demonstrably deterred, them on several occasions. Of all PLAN platforms, helicopters have had the closest and most numerous encounters. These modest aviation assets have enabled China to safeguard key maritime interests, receive considerable international and domestic approbation for its contributions, and help guarantee it a voice in future regional security affairs.

### *Libya Evacuation Operations, Spring 2011*

The PLA's first operational deployment to Africa and the Mediterranean, as well as its largest noncombatant evacuation operation (NEO) to date, took place in response to increasing unrest in Libya in February–March 2011. The bulk of China's 35,000 nationals in Libya were evacuated overland on buses (to Tunisia and Egypt), by sea on chartered merchant

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vessels (primarily from Benghazi), as well as by air on chartered aircraft (primarily from Tripoli) and military aircraft (Sabha to Khartoum, Sudan). The deployment set a major precedent because it marked the first time China has sent military assets to a distant part of the world to protect its citizens there. This demonstrates Beijing's growing capability to conduct long-range operations, which it was both incapable of doing and unwilling to do only a decade ago.

It also represented the first use of long-range military transport aircraft to rescue Chinese citizens from a foreign conflict zone. On 28 February 2011 four Il-76 transport aircraft were dispatched to Libya via Khartoum with CMC approval. As of the evening of 2 March 2011, the Il-76s had moved 1,700 Chinese from Libya to Khartoum.

The deployments sent a clear diplomatic message: Beijing was unwilling to tolerate Chinese citizens being harmed by large-scale political violence overseas and will increasingly be able to scale up long-range deployments if necessary. At the same time, Beijing has probably struggled to balance the national pride many Chinese felt about the rescue operation with the fact that the precedents set will substantially increase popular pressure for intervention in future crises.

Finally, this operational experience is valuable but incomplete; China's air forces have not fought any combat engagements in recent years. The PLA's Commander Xu Qiliang joined the PLA in 1966 at age sixteen, eight years after his service's most recent participation in "large-scale air-to-air combat."<sup>43</sup>

### The Future of Chinese Airpower

China has entered the second decade of the twenty-first century as a global economic and political power with growing regional military capabilities. Ongoing territorial and maritime claims disputes on its immediate periphery, as well as ethnic unrest in its western provinces and poverty in its vast interior, continue to necessitate prioritization in military development and the focusing of high-end military capabilities in areas close to home. Yet as the world's second largest economy, with its manufacturing industries requiring tremendous imported resources

and 40 percent of its oil arriving by sea, China's interests increasingly extend beyond its shores to resource-rich areas of the developing world and the trade- and energy-rich sea-lanes of the Indian Ocean. China's vigorous soft-power diplomacy and status as one of five permanent members of the UN Security Council can only safeguard these interests to a certain degree. Meanwhile, China is the first developing nation to have produced comprehensive aerospace capabilities. The aviation component, which has so long lagged, is finally reaching internationally capable levels. China's nationalistic, increasingly well-educated citizens will not easily permit their leaders to accept perceived indignities now that Beijing more than ever has the means to defend its interests. How Beijing will decide to develop and employ its military capabilities to safeguard its growing interests will critically influence the course of events in the twenty-first century.

A key uncertainty is how far China's military will operate intensively beyond its shores. To support power projection overseas, both for national prestige and for limited missions beyond Taiwan, China must extend the range of its airpower. This is likely to mean further emphasis on aerial refueling, acquisition of some modest access rights to overseas military facilities, and development of some form of deck aviation capability. With respect to the last, China's former Ukrainian *Kuznetsov*-class aircraft carrier *Varyag* has undergone sea trials since August 2011, and will become operational in 2012. The U.S. Department of Defense states that "China likely will build multiple aircraft carriers with support ships over the next decade."<sup>44</sup> Developing the necessary forces, training, and experience for long-range combat capabilities would be extremely expensive and time-consuming, however. Building an aircraft carrier is one thing; mastering the complex systems that enable airpower projection requires years and precious lives.

Amid this dynamism, one thing is certain: for the first time in the history of the People's Republic, Beijing's leaders will be able to plan ahead, shape events, and choose from a wide variety of capable air assets to support their statecraft. How, when, and where they decide to do so will represent a fascinating new chapter in the influence of airpower on history.

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## Notes

The views expressed in this chapter are mine alone. I draw heavily on the following seminal sources, which I am grateful for permission to cite: Allen et al., *China's Air Force Enters the 21st Century*; Allen, "The PLA Air Force: 1949–2002"; Allen, "Air Force Deterrence and Escalation Calculations for a Taiwan Strait Conflict"; Zhang, *Red Wings over the Yalu*; Zhang, "Air Combat for the People's Republic"; and *People's Liberation Army Air Force, 2010*.

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### Suggestions for Further Research

Many areas concerning China's use of airpower for military purposes remain inadequately explored. First, the state of education, training, and jointness in China's air forces, including professional military education for its leaders, remains uncertain. Second, though it has certainly improved markedly in recent years, the realism of training conducted by China's air forces is unclear, particularly concerning jamming, minimum altitude, and night flight operations. For instance, Chinese military publications emphasize the importance of flying in a "complex electro-

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magnetic environment," but they fail to clarify whether China's air forces actually train under conditions of their own jamming and understand fully the practical ramifications. If jamming is simulated instead, how will they know what would happen under real conditions? Finally, a third critical question is how does or will China's air forces deconflict aircraft and SAMs working in the same airspace. Do they actually practice this, and how would it work during real combat? PLAAF writings suggest that SAMs and aircraft conduct "combined-arms training," but by U.S. standards this is opposition-force training, as the aircraft attack areas the SAMs are covering. It is difficult to find documentation of SAMs and aircraft working together against attacking aircraft, or of Naval Aviation aircraft flying combat air patrols (CAP) for PLAN ships against attacking aircraft. Can PLAAF and Naval Aviation aircraft actually fly in the same airspace covered by the various services' SAMs? How do or will they actually coordinate so that the SAMs do not shoot down friendly aircraft? Will the fighters fly out and meet enemy aircraft with SAMs covering them, or will the aircraft be the last line of defense in case the SAMs do not shoot down the enemy aircraft? The answers to these questions will help determine the extent to which China's air forces can finally be used as a reliable instrument of statecraft. On a different tack, how and how well have Chinese statesmen been trained to handle modern geopolitical problems? Is their focus on deterrence, peace, or aggrandizement as the realities of airpower?

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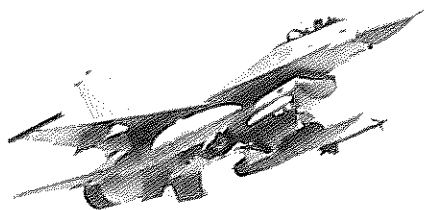
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FOREWORD BY GENERAL RICHARD B. MYERS, USAF (RET.)

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**F**rom early zeppelins, to the Luftwaffe and the *Enola Gay*, to the unmanned aerial vehicles of today's modern military, airpower has long been regarded as an essential instrument of war. In addition, aircraft have long been utilized for security and surveillance, and they are vital to diplomatic and humanitarian efforts. As a means for statesmen to advance a variety of goals, airpower has created new possibilities and problems in times of peace as well as war. In *The Influence of Airpower upon History*, editors Robin Higham and Mark Parillo bring together a distinguished group of scholars to examine the many ways in which aviation has affected policy making since 1903, and how various nations have viewed the technological development of airpower. Geography, national interests, diplomacy, and economics shape how nations view their aerial capability and understand its power, flexibility, and limitations. The success of a nation's airpower is often determined by the ways in which military, commercial, and civil aviation come together.

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*The Influence of Airpower upon History* analyzes air strategy in countries around the world and explores how a nation's presumed technological capability, or lack thereof, has become a crucial aspect of diplomacy. In such a technology-dependent domain, both war and peace efforts are continuously influenced by changes in aircraft and mechanization—from precision weapons in the late twentieth century to remotely piloted vehicles in the twenty-first century. Together, the contributors to this insightful volume offer a greater understanding of the history of military force and diplomatic relations in the global community.

**ROBIN HICHAM**, professor of history emeritus at Kansas State University, Manhattan, is the author or editor of more than thirty books, including *The Military History of the Soviet Union* and *Why Air Forces Fail: The Anatomy of Defeat*.

**MARK PARILLO**, professor of history at Kansas State University, is the editor of *We Were in the Big One: Experiences of the World War II Generation*.

Cover, top: Lockheed Martin B-16 (Paulo M. F. Pires/iStockphoto.com); bottom: President John F. Kennedy (center) at Homestead Air Force Base, Florida (National Museum of the USAF)

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"This outstanding collection of essays delves into the complex nature of airpower in its first century and illustrates its profound impact on national growth and strategy. Highly recommended."

—JOHN B. LUNDSTROM, author of *Black Shoe Carrier Admiral: Frank Jack Fletcher at Coral Sea, Midway, and Guadalcanal*

"A significant contribution to the fields of aviation history, military history, and defense policy. Higham and Parillo have done a great service by assembling highly qualified and well-respected authors to write nine excellent chapters that are informative, stimulating, and provocative. *The Influence of Airpower upon History* raises aviation history from its concentration on operations, hardware, and heroes to a much higher level. Essential reading for students and scholars, and also of interest to buffs."

—KENNETH P. WERRELL, author of *Death from the Heavens: A History of Strategic Bombing*



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## Foreword

The rapid rise of airpower—just a little over one hundred years old—has had a profound effect on world events. As this work points out, the use of airpower frequently resulted in controversy at the highest levels of government, as national leaders and statesmen debated how airpower might contribute to their particular vital national interests and to shaping world events.

Specifically, this work gives an important historical context to how various nations have viewed the development of airpower. As Higham and Parillo point out, from the earliest days of airpower, geography, national interests, diplomacy, and economics all have shaped how a nation views this vital capability. Indeed, airpower is about how military, commercial, and civil aviation all come together. These components are mutually reinforcing and mutually dependent, and a nation needs to be aware of the health of all three to understand the power, flexibility, and limitations of airpower.

As the reader moves through the various chapters, a fascinating mosaic emerges of specific nations making specific airpower choices to meet their overall security needs. For the military components alone this contribution is invaluable: the authors remind the reader that airpower is not the exclusive domain of one military service. Carrier-based aviation, as it did in the past, today still plays an important role in world events. And armies rely on airpower in the form of helicopters for tactical mobility and offensive firepower.

Moreover, the book also offers an important reminder of how fast things change in this technologically dependent domain. Stealthy aircraft and precision weapons are excellent late twentieth-century models. A twenty-first-century example is the increasing reliance on remotely piloted vehicles, which have replaced manned aircraft for a variety of missions. In addition, there is a developing imperative to integrate bet-



ter the air, space, and cyber capabilities. This all comes at a relatively high price, and an effective military always has to balance the expense and challenge of exploiting new technologies with the looming danger of obsolescence.

In its significance for those at the highest level of government, this work is also a cautionary tale. Senior advisers must be able to offer their president or prime minister meaningful airpower options without asking their nation to spend lavishly to realize next-generation capabilities. Specifically for the United States, it highlights the need to advise the president accurately on what airpower capabilities can *and* cannot do when the government is looking for unique, innovative options with which to address national security challenges.

This responsibility only grows with time. Looking at our nation's last fifteen years, we see that airpower has been called on in unique ways and has emerged as a force that can at times unilaterally shape the outcome of world events. The Kosovo conflict is an excellent example. The NATO bombing campaign started in March 1999 to force the Federal Republic of Yugoslavia to settle its differences with Kosovo peacefully. Although there was pressure in some quarters to use ground forces as well, President Clinton decided to use airpower exclusively, and in relatively short order President Milošević agreed to a peaceful way forward. NATO's assistance to rebel elements in Libya in overthrowing Muammar Gaddafi's government is another recent example of airpower's being the deciding force in the rebels' success. In Libya airpower achieved what might have been attempted by U.S. Marines in another era.

In my role as the principal military adviser to the U.S. president and National Security Council, I frequently found myself in discussions about the most effective way to apply military force in pursuit of national objectives. What a president or prime minister always wants is a variety of options. Airpower in particular offers many unique options in most security scenarios, given its inherent flexibility and agility. Historical context is also important when advising senior civilian leadership. In that vein, this book is must reading for those who will be discussing the application of airpower to today's complex security and diplomatic challenges.

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In short, this volume does an excellent job of helping us think about airpower in its constituent parts—commercial, civil, and military. Only by thinking about all three of these mutually reinforcing capabilities does one get the comprehensive view of how airpower can contribute to a country's national strategic objectives. It also highlights the capabilities and limitation of the air domain. Parillo and Higham have done a great service to world leaders and their military advisers by outlining airpower's historical development so they can fully understand and articulate the various opportunities for using this powerful force effectively.

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2001–2005