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## Making China's nuclear war plan

John W. Lewis and Xue Litai

### Abstract

For the last decade of Mao Zedong's rule in China, his revolutionary thinking dominated all strategic planning and operations and directly shaped the policies of the strategic rocket forces, the Second Artillery. Only in the mid-1980s did Mao's legacy give way to concepts governing nuclear forces throughout the world and permit the development of China's first nuclear strategy and acceptance of the principles of nuclear deterrence. Step by step, the ever-more complex command-and-control mechanisms of the People's Liberation Army adopted and refined new roles for its nuclear and conventional missiles to support peacetime diplomacy, to manage military crises, and to pursue combat readiness. The authors examine the evolution of China's overall defense strategy, with a focus on central elements of today's nuclear war plan and how they are operationalized. They seek to answer this question: How did conventional missiles change nuclear strategy, the organization of the combined conventional-nuclear missile forces for both deterrence and combat, and the relationship of the Second Artillery to the other military commands?

### Keywords

China, double command, military strategic guideline, nuclear strategy, nuclear war plan, People's Liberation Army, Second Artillery

In the latter half of the 1980s, the Chinese Central Military Commission (CMC) bolstered the country's strategic deterrent by adding conventionally armed missiles to its strike forces. At first, the missiles were viewed as part of a menu of weapons for foreign arms sales, though little thought appears to have been given to their eventual role in the order of battle for the People's Liberation Army (PLA).<sup>1</sup>

Starting in 1993, China's military strategy was transformed as the conventional missile arsenal grew. US capabilities

demonstrated in the Gulf War, as well as the increased threat of Taiwan declaring independence from the mainland, created a more sophisticated approach to the concept of nuclear deterrence, the combined use of conventional and nuclear missiles, and preparations for a cross-strait war with Taiwan and the United States. In the decades that followed, these seemingly separate changes came together and led to the formulation of a war plan that presents both the Chinese and potential military adversaries with daunting uncertainties.

The basic dilemma stems from the deployment of both nuclear and conventional missiles on bases controlled by the Second Artillery, which previously had been solely tasked with overseeing the country's nuclear deterrent, and the close links those bases have to the theater military commands.

If, in a time of high tension, the Chinese command authorized a conventional missile attack as an act of preemptive self-defense, the enemy and its allies could not know if the incoming missiles were conventional or nuclear. In a worst-case scenario, a Chinese first-strike conventional attack could spark retaliation that destroys Chinese nuclear assets, creating a situation in which escalation to full-scale nuclear war would not just be possible, but even likely.

### China's conceptual approach to nuclear weapons

A basic understanding of the Chinese approach to nuclear weapons includes the knowledge of Beijing's military strategy or basic military strategic guideline (*junshi zhanlüe fangzhen* 军事战略方针), nuclear policy (*he zhengce* 核政策), nuclear strategy (*he zhanlüe* 核战略), nuclear deterrence theory (*he weishe lilun* 核威慑理论), applied strategic principles (*zhanlüe yunyong yuanze* 战略运用原则), and operational regulations (*zuozhan tiaoling* 作战条令). These conceptual elements form a six-tier hierarchy and define the theoretical basis of China's buildup of nuclear forces and nuclear war plan. In theory, they determine how China's nuclear forces are deployed and employed for combat.

Yet, what began as the pursuit of a "pure" nuclear war plan could not

resist the influence of changes that gained momentum in the 1980s and continue to the present day. The authoritative *China's National Defense in 2006* puts it this way: "Pursuing a self-defensive nuclear strategy, China's nuclear strategy is subject to the state's nuclear policy and military strategy" (State Council of the People's Republic of China, 2006: Sect. II). Nuclear strategy itself, now being tested in repeated military exercises, has adjusted to the introduction of conventional missiles into the Second Artillery, the emergence and management of the ever-present threat of Taiwan "separatism" as the central military priority, and the development of an overall war plan that integrates nuclear and conventional weapons and Second Artillery command structures into the theater military commands.

The starting point for the PLA's military strategy is "active defense" (Lewis and Xue, 2011a,b), a principle that aims to "gain mastery by striking only after the enemy has struck first" (*hou fa zhi ren* 后发制人) (Peng et al., 1989: 169). That principle finds direct expression in the country's fundamental nuclear policy, now approaching its 50th anniversary.

From its first nuclear test in 1964, China has not substantially changed its declared nuclear policy (Yao, 2007). Specifically, over most of the past decades, that policy has included these essential components (Jia and Dong, 1999: 410–415; Feng, 1993: 1311; Ma, 2007: 101–105):

- Nuclear weapons should be completely prohibited and thoroughly destroyed worldwide.
- The threats presented by the nuclear powers have compelled China to develop nuclear weapons;

its small arsenal is only for self-defense.

- At no time and under no circumstances will China be the first to use nuclear weapons, an obvious derivative of a no-first-use policy, or *hou fa zhi ren*.
- China will not use or threaten to use nuclear weapons against non-nuclear weapon states or in nuclear weapon-free zones.
- China opposes nuclear proliferation, will never help other countries develop nuclear weapons, and will not deploy nuclear weapons in other countries.<sup>2</sup>
- Since the 1980s, China has demanded that countries importing nuclear-related materials and equipment from China accept the International Atomic Energy Agency (IAEA) safeguards and not retransfer them to a third country without China's consent. China has also guaranteed that all imported nuclear materials and equipment would be used only for peaceful purposes.<sup>3</sup>

Even a cursory examination of these components leads to a conclusion that is obvious but needs to be noted: China's nuclear policy is controlled by national political concerns and decisions. Beijing's leaders have traditionally deemed nuclear weapons to be political instruments with a deterrent role that now is considered central (Peng et al., 1989). Their position results in a well-recognized aspect of China's international arms control statements that often mention and explain its nuclear policy but not its nuclear strategy, which is dominated by military considerations. Simply put, nuclear policy is

open and widely promulgated, while nuclear strategy is sensitive and rarely elaborated in public.

Nuclear strategy contains decisions relevant to weapons procurements, deployment, and employment, and to civil defense (Wu and Wu, 2007). Chinese officials call these decisions the "content" (*neirong* 内容) or "elements" (*yaosu* 要素) of nuclear strategy (Ma, 2007; Yao, 2007). Nuclear strategy covers the requirements for deterrence and the principal national security and combat missions of China's nuclear forces, as well as the organization of those forces, plans for nuclear war preparedness, and regulations for nuclear alerts and targeting under wartime conditions (Ma et al., 1992; Li and Teng, 2007). Chinese military experts have compared their nuclear-related conceptual elements as a whole to the US nuclear war plan, or Single Integrated Operational Plan (SIOP), as it was called until 2003.<sup>4</sup>

After the formal establishment of the Second Artillery on July 1, 1966, those responsible for the initial buildup of the nuclear forces—from Mao Zedong to Marshal Nie Rongzhen—provided guidance on nuclear policy, not nuclear strategy, and no leaders since then have ever expressed any interest, let alone crafted a "nuclear doctrine" (*he xueshuo* 核学说).<sup>5</sup> In terms of the building and employment of nuclear weapons, they merely limited the scale of China's nuclear arsenal to "minimum retaliation means" (*qima de huanji shouduan* 起码的还击手段), providing almost no other details<sup>6</sup> (Nie, 1986). For this reason and the chaotic Chinese political climate over the decade of the Cultural Revolution from 1966 to 1976, the Second Artillery only slowly developed

rigorous operational and targeting plans. From 1964 up to the late 1980s, the nation did not have an explicit nuclear strategy. It rejected “Western” concepts of nuclear deterrence and had yet to agree on such critical components as applied strategic principles and operational regulations.<sup>7</sup>

With the return to power of Deng Xiaoping in 1977,<sup>8</sup> the Central Military Commission for the first time gave priority to encouraging strategic studies. In December 1979 and July 1981, the Second Artillery convened symposiums on the approved nuclear conceptual elements, and within a year its leaders promulgated “The Military Language of the Second Artillery” and new work regulations. In 1983, they established the Military Academic Department (*Junshi Xueshu Bu* 军事学术部), which was responsible for conducting strategic studies. The next year, the Second Artillery established the Committee for Academic Research (*Xueshu Yanjiu Weiyuanhui* 学术研究委员会), composed of retired senior officers who would engage in theoretical research.

The main task for these officers was to formulate the Second Artillery’s “science of operations” (*zhanyi xue* 战役学) and operational principles and rules for missile launch units. The Second Artillery assigned Major General Li Lijing, then deputy director of the Committee for Academic Research, to oversee the studies on the science of operations. Almost immediately, however, Li Lijing recognized the flaw in his assignment—the absence of a formal integrated nuclear strategy—and reported it to the Second Artillery, which authorized him to establish a nuclear strategy research team to draft a comprehensive nuclear strategy.

From March to November 1987, a series of symposia on “academic issues regarding [military] strategy and nuclear strategy” were held in Beijing (Shen, 2008: 142). Some 50 to 60 experts from China’s Academy of Military Science, the National Defense University, the Commission of Science, Technology, and Industry for National Defense, the Ministry of State Security, and the Second Artillery attended to draft the nation’s nuclear strategy. It took two more years before the CMC formally endorsed the final version of the strategy.

The draft represented a meaningful break from the past and provided the basis for advancing the current “limited nuclear retaliation” (*youxian he baofu* 有限核报复) strategy, which replaced the term “minimum retaliation” (Zhang, 1994: 119). Only in 2006 did China, for the first time, proclaim its current “self-defensive nuclear strategy” (*ziwei fangyu de he zhanlüe* 自卫防御的核战略). Its fundamental goal was to “deter other countries from using or threatening to use nuclear weapons against China” (State Council of the People’s Republic of China, 2006: Sect. II). Thereafter, the vague term “self defense” most often replaced “limited nuclear retaliation” as the declared nuclear strategy.

### China and nuclear deterrence theory

Before the development of a nuclear strategy, the Central Military Commission repudiated the ideas behind deterrence and linked it with “imperialist blackmail.” Such rejection was repeatedly echoed in Chinese official statements. For example, China’s

first white paper on arms control and nonproliferation issued in 1995 stated, “The Chinese Government has always opposed nuclear blackmail and nuclear deterrence policy” (Teng, 2011: 26).

Such public statements did not reflect reality. Although Mao’s immediate successors could not safely embrace the concept of nuclear deterrence, no enemy, they held, could ignore the existence of China’s nuclear weapons arsenal, and current military analysts now claim that China in fact had adopted an “existential nuclear deterrence” (*cunzaixing he weishe* 存在性核威慑) theory under Mao himself (Zhao, 2009: 397). The very existence of the Chinese arsenal had forced Beijing’s enemies to think twice before launching a nuclear assault. Furthermore, the history of the 1969 Sino-Soviet nuclear confrontation demonstrated that China’s “minimum retaliation means” in fact did function to deter Moscow from launching a surgical attack against China, and Mao knew it.<sup>9</sup> Nevertheless, for most of the Deng Xiaoping era, from 1977 to 1997, the military spoke only of the limited nuclear retaliation as dictated by the no-first-use policy and the Second Artillery’s “limited” nuclear arsenal.

The commitment to the no-first-use policy, of course, reflected the reality of China’s small and highly vulnerable nuclear arsenal. One source puts it this way: “The small number of [our country’s] nuclear missiles cannot destroy an enemy state’s nuclear counterattack forces. The launch of nuclear assaults would no doubt provoke unbearable nuclear retaliation. Judging from this logic, the assumption that China would launch nuclear assaults [first] is absolutely incredible” (Research Society, 2011). A decision to launch first would

have been tantamount to suicide. In the polemics with Moscow and Washington in the 1960s and thereafter, “no-first-use,” of course, had a better ring to it than “avoiding self-destruction.”

By the latter half of the 1990s, however, Chinese officials and security specialists used the ever-increasing academic exchanges with Western counterparts to distance themselves from Mao’s dicta and to incorporate deterrence into their strategic lexicon (Research Society, 2011; Teng, 2011). Moreover, their nuclear arsenal was no longer so limited and vulnerable, and the arsenal was growing within a new, less threatening strategic security environment. The time had come to add nuclear deterrence to the search for a modern nuclear strategy.<sup>10</sup>

It was not until 2006, however, that China’s defense white paper did finally connect deterrence to the nation’s nuclear forces and officially endorse the terms nuclear deterrent force (*he weishe lilian* 核威慑力量) and strategic deterrence (*zhanlüe weishe* 战略威慑). It declared, “The Second Artillery Force aims at progressively improving its force structure of having both nuclear and conventional missiles, and raising its capabilities in strategic deterrence and conventional strike under conditions of informatization. . . . Its fundamental goal is to deter other countries from using or threatening to use nuclear weapons against China. . . . It endeavors to ensure the security and reliability of its nuclear weapons and maintains a credible nuclear deterrent force” (State Council of the People’s Republic of China, 2006: Sect. II). Nuclear deterrence had come of age in China.

Under the CMC leadership of Jiang Zemin, from 1989 to 2004, and Hu

Jintao, from 2004 to 2012, the Chinese military added new content to the theory, though its essence remained unchanged. In the Jiang Zemin years, the theory was routinely described as “combining multiple means,” including nuclear and conventional ones (*he chang jianbei duozhong shouduan peihe* 核常兼备、“多种手段配合”), to strengthen the deterrent. Jiang highlighted the relationship between the “conventional sword” and the “nuclear shield” as China’s unique dual deterrent.<sup>11</sup>

In 2006, Hu Jintao authorized further changes that reflected the growing influence of Sun Zi in the military, advocating a self-defensive nuclear strategy in order to “subdue the enemy without fighting a battle” (*buzhan er qu ren zhi bing* 不战而屈人之兵). Thereafter, Hu urged the Second Artillery to build a streamlined and effective strategic force for nuclear deterrence and conventional strikes (*jinggan youxiao he chang jianbei de zhanlüe daji liliang* 精干有效核常兼备的战略打击力量) if needed, but primarily for self-defense and war prevention.

### Strategic guidelines evolve

Coinciding with the official adoption of nuclear deterrence and its increasing sophistication, the basic military strategic guideline simultaneously began to change. After his return to power in 1977, Deng Xiaoping reexamined the security threat to China. As Sino-US relations improved in the 1980s, the Soviet threat also began to ebb, and Deng’s first conclusions were that war would be neither global nor imminent. The United States remained mired in a global stalemate with the Soviet Union, and American

power had met its match in Vietnam. At the same time, he could foresee China’s own coming clash with Vietnam and, perhaps, with India at some far distant point. In 1984, based on Deng’s strategic calculus, the CMC began to embrace a new strategic guideline of preparing for local wars and limited conflicts (*youxian chongtu* 有限冲突) and even considered abandoning the still-hallowed Maoist guideline of preparing for “an early war, an all-out war, and a nuclear war” (Wang, 1999: 276). Deng’s guideline prompted the military to start research and development on sophisticated conventional weapons for limited local conflicts. Faced with an inferior and difficult-to-modernize air force and navy, the CMC would rely on the Second Artillery for a quick fix with the introduction of conventional missiles (Ge, 2008).

As demonstrated in China’s short but disastrous war with Vietnam in 1979, Beijing concluded that the PLA could not fight as an integrated force in a local war, and, in 1987, its security theorists stepped up research on joint operations (*lianhe zhanyi* 联合战役) using advanced technologies.<sup>12</sup> By 1988, it had become clear that a new military strategic guideline was needed to prepare for a possible future war. No longer fearful of foregoing Mao’s legacy, the commission formally decided to switch the strategic guideline to preparing for local wars and “sudden incidents” (*tufa shijian* 突发事件) (Ge, 2008: 295).

But this was only the beginning. In its decisive victory in the 1991 Gulf War, the United States carried out a so-called “revolution in military affairs” by integrating modern information and communications systems, intelligence capabilities, space technology, futuristic

aircraft, and advanced tactics. Within a short period, moreover, Beijing reacted to Taiwanese President Lee Teng-hui's alleged attempt to move Taipei away from the one-China policy.

In November 1992, CMC Chairman Jiang Zemin authorized General Zhang Zhen, Jiang's deputy within the CMC, to conduct research on the feasibility of adopting a new guideline to adapt to the "swift development of the international situation" and the global military revolution (Ling, 2005: 18–20). In January 1993, Jiang told his generals to adopt a guideline of winning "high-tech local wars" focused on China's southeast coast, that is, the Taiwan Strait (Jiang, 2006a: Vol. 1, 285). The elements of a new military strategic guideline were being put in place.

This guideline redefined the central military mission of the People's Liberation Army, identified China's "imagined enemies," and set the scale and type of future operations. Fighting a high-tech local war was listed for the first time as the PLA's priority mission, and the new guideline formally helped cast off the historic burden of preparing for a land invasion (Peng, 2002). The next imagined enemies were Taiwan separatists and their nuclear-armed US supporters, though Beijing's overall national strategy still gave priority to peace, stability, and development while preparing for the predicted high-tech local war.

The Chinese military has continued to add new elements to the military strategic guideline. In 1999, the CMC revised it to winning local wars under conditions of informatization and nuclear deterrence, and on December 27, 2002, Jiang, a former minister of electronics, put ever-greater emphasis on the

relevance of the information era and deleted any reference to nuclear deterrence. His new guideline would "switch ... from preparation for local wars under general conditions to the winning of local wars under conditions of informatization" (Jiang, 2006b: Vol. 3, 584). By this time, the need to deter a US nuclear response had become far less pressing, though nuclear deterrence still remained viable. And these changes continued under Hu Jintao, who in March 2004 promoted the concept of scientific development for China's long-term growth, including the military.

### Conventional missile programs

As early as 1984, the Ministry of Astronautics Industry assigned the First Academy (for building missile launch vehicles) to develop a conventional tactical missile primarily for sales abroad. In October 1985, the academy started work on the missile's overall design. The ministry code-named the missile M-9, but internally called it the DF-15. This single-stage missile had a 600-kilometer range and could be fitted for either a conventional or a nuclear warhead. Stored in semi-hardened launch sites, its mobility and solid rocket propulsion would help solve the increasing vulnerability of the missile forces to detection and destruction.<sup>13</sup>

Beginning in the latter half of the 1980s and for years thereafter, PLA strategists pondered the question: "What can the [nuclear-armed] Second Artillery do when waging a conventional local war?" (Wang, 1989; Lewis and Xue, 2006). At that time, China was facing growing military challenges from its neighbors, especially Vietnam, India, and Japan,



three countries that had begun introducing advanced conventional weapons into their order of battle. The contention for control of the Spratly Islands in the South China Sea further added to the perceived threat. The PLA had neither aircraft carriers nor in-flight refueling capability and could not dominate the air over the Spratlys should war break out. As a makeshift measure, the CMC turned to another of its missiles under development, the medium-range DF-25.

The CMC then had to decide where to put these new short-to-medium-range missiles—either the regular armed forces or the Second Artillery—and a strong debate erupted. These missiles were to supplement the short-range tactical missiles long stationed in select ground forces units. As a Second Artillery deputy commander recalled, the case for the missiles to go to the Second Artillery was overwhelming. Only the strategic rocket forces had the proven leadership, management, and logistical systems needed for fully and quickly constructing and running the conventional missile launch sites and support facilities. Despite the obvious rejoinder—only the regular ground, naval, and air force units were tasked to fight a conventional war, and they already possessed older tactical missiles—the CMC accepted the Second Artillery's arguments because of the advantages of its “low investment and quick work results” (Ge, 2008: 295).

The Second Artillery accelerated the preparations for forming a unit under Base 52, the main missile complex opposite Taiwan, and the base received its first DF-15s in April 1992. One year later, as the missiles were still arriving, the CMC formally commissioned the first conventional missile brigade and

ordered it to be ready to launch within one year (Ge, 2008; Modernization, 2009).

Since the mid-1990s, the number of Base 52's conventional brigades and new, more accurate ballistic missiles has steadily increased, even as the political changes on Taiwan clearly reduced the so-called separatist threat, and these quick-action “fist units” (*quantou budui* 拳头部队) have proliferated throughout the coastal areas opposite Taiwan (Ge, 2008; Modernization, 2009). Moreover, according to a 2008 US defense report, a large number of land-attack cruise missiles, the DH-10, had been deployed in a southern missile base in Yunnan, and, in just a few years, several nuclear bases had also become nuclear- and conventional-capable under a newly evolving command structure (Second Artillery Armaments Department, 2008; United States Office of the Secretary of Defense, 2008: 56).

### **The merger of missile forces into the general war plan**

As short- and medium-range conventional missiles were being deployed, China's prevailing doctrine on combined-arms operations allowed only the integration of the combat capabilities of various units within a single service; the ground forces played the decisive role with the backing of other services (that is, the navy, air force, and Second Artillery). Truly joint operations, by contrast, would combine the capabilities of several services and prioritize them according to perceived combat requirements. The Second Artillery commanders would now have direct battlefield responsibilities for the first time. But making this adjustment

would take time, and even now the rules of engagement are still being rewritten and repeatedly tested in exercises in the effort to prove fully joint war-fighting capabilities. As joint operations are now envisaged, the Chinese ground forces no longer automatically enjoy the dominant position; the three services and the conventional missile forces have equal status in the command-and-control chain (Fan, 1998).

It should be noted that, at first, the CMC deemed conventional missiles only as a range-extending weapons system. Its senior officers, however, soon maintained that a “huge psychological impact on the enemy” would result from a conventional missile assault and that the threat of that attack could “deter the outbreak of a conventional local war in time of peace and contain the expansion and escalation of a conventional local war after it had broken out” (Wang, 1989: 298). Now the Second Artillery could act both during crises and local wars.

At the same time, Beijing’s leaders worked to keep the Second Artillery’s conceptual world in line with changes in the military strategic guideline. The CMC labored to place the PLA command-and-control mechanisms and training programs on a “scientific” basis, which first seemed more like a slogan than a genuine improvement on Jiang’s demand for ever greater dependence on information technology. On June 27, 2006, Hu elaborated on the concept of “systems” (*tixi* 体系) by using information technologies to integrate all of the PLA services and their systems—or what the Chinese call the “system of systems.” Hu said: “A local war under conditions of informatization is a confrontation among systems, and its

basic form is the integrated joint operations. Joint operations need joint training. We must attach importance to the enhancement of integrated joint combat capabilities and place stress on joint training” (Hu, 2006). In March 2012, Hu then urged the PLA to take the “systems” to a new level by strengthening capabilities for “systems confrontation” (*tixi duikang* 体系对抗) with potential enemies (Wang and Cao, 2012: 1).

More and more training would concentrate on winning the information-technology battle under combat conditions. For the Second Artillery, Hu’s “systems confrontation” would require streamlining command and control for deterrence, crisis management, and war-fighting. As one Second Artillery commander stated, the strategic rocket forces would be entering into a new stage. This stage, he said, would be characterized by “double [nuclear and conventional] deterrence” (*shuangchong weishe* 双重威慑), “double [nuclear and conventional] operations” (*shuangchong zuozhan* 双重作战), and “double [nuclear and conventional] command” (*shuangchong zhihui* 双重指挥) (Ge, 2008: 300; Yuan, 2009: 294). While some considered the three “doubles” no more than slogans, the efforts to test and refine these concepts in multiple and increasingly realistic exercises suggest otherwise. Both “systems confrontation” and the three “doubles” now play a key role in the search for a complete strategy that supports the most recent military strategic guidelines and deterrence theory.

For the CMC, systems coordination required a focus on senior personnel assignments in support of intelligence sharing, interoperable combat communications, and transparent

command-and-control mechanisms. Coordinating the conventional missile forces and the other PLA services in theater joint operations posed a myriad of novel and complex challenges. To meet them, the General Staff designated groups at three levels. In the first one, the Second Artillery dispatches a “coordinating group” (*xietiao zu* 协调组) to join similar groups from the other services at the theater joint operations headquarters. These groups participate in formulating the procedures for the general war plan, and together they coordinate the conventional missile brigades with the combat units of the other services. When authorized by the theater commander, the Second Artillery group then issues orders to the missile brigades, supervises their implementation, and helps update the joint operations.

At the second level, a designated missile base and the theater headquarters of other relevant services exchange “coordinating and liaison groups” (*xietiao lianluo zu* 协调联络组). Each group reports to its own headquarters on orders assigned from its counterpart services, provides feedback on the requirements for actions to be taken by other services, and submits requests for actions to be taken by the other services on behalf of its own headquarters.

Finally, in theater joint operations, each missile base must strengthen coordination among its engaged missile brigades and the combat units of other relevant services. To do this, it must set up a “theater coordinating team” (*zhanchang xietiao xiaozu* 战场协调小组) responsible for such actions as reporting launch positions and maneuver routes of missile

battalions, warning on the timing and trajectories of missiles to be launched, and submitting requirements for support. Missile brigades can also dispatch battlefield teams to the combat units of other services as ad hoc assignments (Zhou, 2002).

According to the war plan, the conventional missile forces, in contrast to other major military units, mostly play a supplementary role in theater joint operations. But they have the principal role in striking against the enemy’s targets in strategic depth—including airfields, naval ports, missile launch bases, and command-and-control centers. Moreover, the worsening cross-strait relations in the 1990s opened the way for the conventional missile forces to play a part in emerging crises. The increased threat of Taiwan’s independence had already accelerated the growth of the conventional missile arsenal and brought changes to the military strategic guideline and the theory of deterrence. These missiles could now be used in a limited “first strike”—that is, a justifiable self-defensive first use of missiles launched from a once all-nuclear base—for war-initiation or presumed crisis-control purposes.

In July 1995 and March 1996, conventional missiles from Base 52 were targeted against the waters close to Taiwan as a warning to Taipei’s independence-minded leaders. How much their use aggravated rather than moderated the crisis is still open to dispute.<sup>14</sup> Yet, for Beijing, the missiles had hit their intended political targets: Taiwanese public opinion and US defense policy. As one Chinese source states: “On the day after the launches of six missiles [in July 1995], over 6,000 Taiwanese

people held a demonstration against the independence forces. The stock market in Taiwan twice crashed right after the missile launches” (Li et al., 2000: 56). Despite the strong US military response, which had now been exposed for the CMC’s future planning purposes, Beijing had found a useful tool for “maintaining pressure” (*baochi yali* 保持压力) on Taiwan’s separatists to “readjust their strategy for independence” (Zhu, 2000: 166). For their part, the Second Artillery commanders have continued to argue that the missiles launched in the mid-1990s “did contain the ‘Taiwan independence’ forces’ arrogance” (Jing and Peng, 2008: 8).

### Applied strategic principles

In the six-tier hierarchy that defines the role for China’s nuclear weapons within the overall war plan, applied strategic principles and operation regulations directly govern the Second Artillery’s training, exercises, and, in wartime, combat operations. The applied strategic principles summarize the main conceptual elements within the first four tiers of the six-tier strategic hierarchy and as action statements dictate the formulation and execution of operational regulations. They are also called “applied operational principles” (*zuozhan yunyong yuanze* 作战运用原则) and have separate versions for nuclear and conventional missile units.

In pursuit of the so-called core nuclear strategy of “deterrence of a nuclear war and limited nuclear retaliation,” five applied principles govern the nuclear force. These are consistent with the conceptual elements of the first four tiers and, while repetitious, are

more detailed. They are (Li, 2008: 29–31; Second Artillery’s, 2006):

- Oppose nuclear blackmail (*fan he’ezha* 反核讹诈): Deter the enemy from starting a nuclear war, and thwart and neutralize the enemy’s nuclear deterrent and blackmail.
- Gain mastery by striking only after the enemy has struck first (*hou fa zhi ren* 后发制人): At no time be the first to use nuclear weapons, and, if the enemy strikes, authorize only limited nuclear retaliation.
- Centralize command (*jizhong zhihui* 集中指挥): The CMC alone has the power to decide on and direct the employment of nuclear missiles. The Second Artillery must carry out the CMC’s orders strictly and correctly.
- Strictly protect the missile units (*yanmi fanghu* 严密防护): Ensure the survivability of the missiles needed for the counterattack.
- Strike only key targets (*zhongdian fanji* 重点反击): Choose only strategic targets in the enemy’s homeland for effective nuclear retaliation.

While nuclear weapons have predominantly political and war-prevention or deterrence uses, conventional missiles, as we have seen, are deemed premier weapons for preemptive strikes in a high-tech local war. The CMC thus has adopted eight more-detailed applied operational principles for those missile units:

- Concentrate firepower (*jizhong shiyong* 集中使用): Only the CMC can authorize the use of the Second Artillery’s conventional

missile and determine the scale of operations. Those operations must concentrate rather than scatter the missiles' firepower.

- Employ weapons for preemptive use (*xianji zhidi* 先机制敌): Launch the missile assaults first to seize the combat initiative.
- Strike preselected key targets (*zhongdian tuji* 重点突击): Fire the missiles against those targets that will produce the greatest impact on the battlefield and will most weaken the enemy's threats.
- Take timely protective maneuvers (*shishi jidong* 适时机动): Protect the access roads and provide the necessary air cover to ensure the safety of the units and their ability to launch.
- Strictly protect the missile units (*yanmi fanghu* 严密防护): Use all protective means possible, including camouflage, missile coating, and damage-resistant tunnel fortifications. Set up decoys, provide ready air cover, prevent ground assaults, keep the missile units hidden before launch, and evacuate each launch site immediately after launching.
- Maintain full readiness (*chongfen zhunbei* 充分准备): Keep the weapon systems and launch sites in good condition, actively collect intelligence on the enemy, and prepare the routes for maximum mobility.
- Closely coordinate (*miqie xietong* 密切协同): As noted, the General Staff can create three groups to coordinate with the other PLA services and tactical missile units.
- Ensure comprehensive support (*quanmian baozhang* 全面保障):

This principle includes such combat support as intelligence, firing data, meteorological updates, reliable communications and electronic countermeasures, engineering backup, and routine logistics.

### Operational regulations for nuclear weapons

The sixth and final tier in the control and use of Chinese nuclear weapons, operational regulations, governs the combat actions of the missile units and the use of their nuclear weapons.<sup>15</sup> Many of their contents also apply to the actions of the conventional missile brigades.

Compared with those of the other services, the Second Artillery's command-and-control procedures for the nuclear units are more explicit and inflexible. These procedures apply to both the nuclear and conventional missile forces in accordance with the "system of systems" and "three doubles" requirements. The need for absolute control over these missile forces has given ever-higher urgency to improving and validating the Second Artillery's wartime practices, and the unique relationship of the Second Artillery to the CMC has made the rocket forces' modernization both easier and more sensitive than similar efforts in the other services. But beyond modernization and readiness is the ultimate challenge of the nuclear nightmare, the final dimensions of which can never be fully known or adequately anticipated.

For Beijing and the still-haunting legacy of Mao Zedong, who repeatedly called on his troops to "get organized," institutionalized procedures are bedrock. Under the all-powerful CMC, the

General Staff Operations Department plays a critical role in the communications chain from the commission to the missile headquarters. The CMC uses this department's command center to transmit and monitor all missile deployment and employment decisions. For their part, the missile bases have constructed command centers in hardened underground bunkers that contain communications equipment, drainage and decontamination systems, and power generators. Commanders in these centers reportedly believe they could survive and operate for long periods under nuclear, conventional, cyber, or chemical attacks. The Second Artillery also has created redundant mobile airborne and truck-mounted posts to communicate with launch battalions.

By 1998, the General Staff Communications Department had developed a "software radio technology" to connect the transceivers using different frequencies. This technology, PLA sources state, integrated analogue and digital messages. It ensured reliability and protected "system of systems" communications between the Second Artillery headquarters and the CMC's four general departments (staff, political, logistics, and armaments) and between the missile bases and the other PLA services in joint operations. Earlier, the communications department also began working on a blast- and jam-proof underground communications system capable of penetrating hundreds of meters of hard rock. By the late 1990s, this state-of-the-art equipment in the command centers could link the CMC and the strategic missile bases under the most complex wartime conditions. Short of its total destruction, the engineers held, the center could provide

"communications of last resort." The department then added more secure "nuclear counterattack communications" equipment to these centers, and a recent authoritative PLA source states that these communications guarantee the CMC's wartime command and control over all nuclear forces (Chen et al., 2009).

Even as it has upgraded its missiles and these command-and-control mechanisms and tested their readiness, the missile command prescribed a four-stage alert system and a two-level order sequence for the launch of nuclear weapons. From the lowest to highest, the four-stage system consists of Standing War Preparedness Alert, Class 3 Alert, Class 2 Alert, and Class 1 Alert.

The CMC authorized a two-level sequence of orders to raise the alert status and, in extremis, to launch nuclear weapons: the preparatory order (*yuxian haoling* 预先号令) and the formal order (*zhengshi mingling* 正式命令). A preparatory order normally contains four main parts: a concise description of the enemy's status; a brief statement of the unit's assigned mission; the unit's required preparations with a precise schedule; and the timing and location of the operation. The CMC gives this order to initiate a Class 3 or Class 2 Alert. In authorizing the Class 3 or Class 2 status, a formal order both would confirm the preparatory order and set in motion planning for a higher-stage alert. In a confirmed emergency, the CMC, now operating as the national command authority, would be able to bypass the preparatory order and directly tell the General Staff's Operations Department to issue the formal order that initiates a Class 1 Alert.

The sequence of alerts and orders would involve the following:

- Standing War Preparations Alert (*jingchangxing zhanbei zhuangtai* 经常性战备状态). This routine or normal day-to-day readiness condition assumes that an enemy attack is possible but unlikely. To order any higher alert status, intelligence must indicate a heightened threat level.
- Class 3 Operational Preparations Alert (*sandeng zhanyi zhunbei zhuangtai* 三等战役准备状态). Intelligence must indicate that an enemy attack is probable to justify the initiation of this alert status. Upon receipt of a preparatory order from the CMC via the command-and-control systems, the Second Artillery sends the order to the missile bases, which accelerate preparations for launching their missiles. The CMC then issues a formal order to confirm the mandated preparations in anticipation of going to a higher-stage alert. During the preparations, base security is rapidly upgraded.
- Class 2 Operational Preparations Alert (*erdeng zhanyi zhunbei zhuangtai* 二等战役准备状态). To initiate this alert status, intelligence must confirm that an enemy attack is underway, but the CMC in consultation with the Politburo's Standing Committee has not yet decided on its response. When a Class 2 Alert is sounded upon receipt of the encoded preparatory order, all bases shift to maximum readiness, and the air defense and ground units assigned to missile bases become fully activated.

All further actions await receipt of the formal order.

- Class 1 Operational Preparations Alert (*yideng zhanyi zhunbei zhuangtai* 一等战役准备状态). A CMC-issued formal order to the Second Artillery headquarters will move specified launch bases to a Class 1 Alert. The precise nature of the threat level required to reach this decision remains highly classified, and the range of possibilities and response options could be quite complex. For example, the initial enemy attack could be a non-nuclear assault on China's strategic targets such as the Second Artillery missile silos or command-and-control installations, and the PLA war plan would dictate the high command's possible responses, including nuclear retaliation on the attacker's homeland. The formal order raises the combat-ready status of the designated bases and gives authority to their commanders to launch a nuclear counterattack upon receipt of a firing order from the CMC in accordance with the specific operational plan. In this alert status, the base and its launch battalions must be ready for firing missiles.

By the time a Class 1 Alert is issued, the Standing Committee of the Chinese Communist Party Politburo would have made its decision for a nuclear response and transferred the national command authority to the military commission.<sup>16</sup> After the CMC finalizes the relevant operational and targeting plan with the committee's general approval, the CMC promulgates the firing order via the

General Staff Operations Department to the Second Artillery and selected launch units. The firing order also has a two-level sequence: the preparatory order and formal order. The preparatory order includes the precise timing for the mobile units to enter pre-surveyed launch sites far from their storage caves and for units in hardened silos to perform pre-launch inspections. The designated missile units can launch only upon receipt of a formal order from the CMC. The content of any formal order is said to be the core secret within the nuclear war plan.

Because of its limited number of nuclear warheads and missiles, the Second Artillery has selected a list of priority targets of the major imagined enemies and ranked them for their perceived value. The criteria for making the target list range widely, from international security threats and a potential enemy's retaliatory capabilities to the availability of specific weapons for use against high-value targets. The assessment of each missile system's attack profile (survivability, penetrability, precision, and destruction potential, for example) and the characteristics of each possible target are also considered.

Using those criteria, the CMC divides the targets of China's probable enemies into five categories, based on:

1. The relationship of strategic and tactical targets to overall war aims. Strategic targets include strategic missile launch bases, naval and air bases, central military and political headquarters, political and economic centers, industrial bases, and vital communications hubs. Tactical targets include
  2. The value of the target—whether a military, industrial, or transportation site—to the enemy.
  3. The vulnerability of the target to destruction (i.e., how “soft” or “hard” it might be).
  4. The difficulty of destroying targets of different shapes.
  5. The difficulty in finding targets and the maneuverability of mobile targets.

In formulating targeting policies, the Second Artillery has adopted the principle of cost-effectiveness, or use of the fewest weapons for maximum effect. It regularly reruns its scientific calculations and computer simulations to test and refine those policies and has written several tens of operational plans for the CMC's use in a crisis or war. These plans cover contingencies from warnings and alerts to escalation scenarios and full-scale nuclear war. Given China's fundamental vulnerability in today's nuclear environment, Beijing would activate any of these plans only as a last resort.

Yet, should the unthinkable nuclear conflict occur, the Second Artillery has calculated the exact sequence of steps leading up to launching its missiles under different conditions. Officers in its Operations Department have categorized and numbered hundreds of cards that list the key elements for each type of launch. The crises themselves are typed, and precise responses dictate which cards would be used. At the onset of a crisis, launch brigades are directed to select a predetermined



set of numbered cards that have been chosen to achieve the CMC's political and military aims. When so ordered, the launch commanders must follow the instructions on these cards and strictly pursue their mandated procedures in a "timely, precise, and secret" manner.

A typical launch order is simple and encrypted. It specifies the battalions to be alerted, the number or numbers of the targeting cards to be used, the time period to complete the order, the escape plan for the soldiers after launching its missiles, and other items. The numbering and contents of the targeting cards are top secret. They include the names of the targets with their geographical coordinates, the types and numbers of missiles and warheads to be used, the types and heights of the expected explosion, the launch sequence, and the intended effects of the ordered nuclear strikes.

The increased importance of the three "doubles" concepts, with the complicating deployment of large numbers of conventional missiles, undoubtedly has forced the CMC and missile commanders to reconsider and modify some of the all-nuclear operational regulations and to test them in repeated combat exercises.<sup>17</sup> Yet, the profound differences between the nuclear and conventional battlefields and the highly fluid and diverse challenges of modern conventional warfare defy easy generalization or predetermined actions written down on little cards. Alerts and targeting in such complicated and unpredictable warfare will depend more on traditional military experience and combat lessons

that have no parallel in the preparations for a nuclear conflict.

### **The contradictions of double command in a high-tech local war**

By the end of the 1990s, China's Central Military Commission had changed the military strategic guideline to winning high-tech local wars and nuclear deterrence. Years later, the CMC stated that a local war under conditions of informatization "is a confrontation between systems, and its basic form is the integrated joint operations." Thereafter, the Chinese military began moving in the direction of enhancing its integrated joint combat capabilities and joint training.<sup>18</sup>

Because the CMC attaches great importance to the dynamic relationship between the nuclear shield and the conventional sword, it considers conventional missiles to be one of the multiple means to consolidate the nation's strategic deterrent. The sequential and possibly combined employment of conventional and nuclear missile brigades is deemed a fundamental source of political and military strength. It is, however, also the troubling source of critical uncertainties. The basic dilemma for the war planners stems from the deployment of the two types of missiles on the same Second Artillery bases with fundamentally different capabilities and purposes. In the practice of double deterrence and double operations, the nuclear missiles' essential mission is to deter a nuclear first strike on China, and they are only to be used in extremis. At the same time, the conventional weapons on the

formerly all-nuclear bases must be ready to strike first and hard.

This unique duality complicates three basic elements of China's nuclear policy and strategy:

- A small, stable nuclear arsenal is housed with large and increasing quantities of mid-range conventional ballistic and cruise missiles.
- No-first-use of nuclear weapons is stated policy, but conventional missiles can be fired first from bases that also contain nuclear missiles, using the same command-and-control infrastructure as would be used for a nuclear launch.
- The CMC holds sole authority for the use of nuclear weapons, but the launch of conventional missiles is under the CMC's command authority and the coordinated operational control of the theater joint command.

Of the three doubles of Chinese nuclear strategy, double command is the most complex and unpredictable; it is also the concept about which we know the least. A missile base's headquarters exercises command and control over both its nuclear and conventional missile brigades, but that double command is governed by the schizophrenic requirements just described.

Furthermore, the missile forces themselves do not have self-defensive capabilities, even though their mission statement is defined as self-defense. After all, missiles are essentially offensive in nature and must be fired to assure their survival. The missile forces always face this use-it-or-lose-it predicament when confronting a stronger and more

aggressive rival. And the air- and missile-defense systems assigned to protect them would also risk destruction on combat missions predicated on the strategic guideline of active defense, even though China by definition and tradition cannot be the aggressor.

If the CMC authorizes a missile base to launch preemptive conventional attacks on an enemy, however, the enemy and its allies could not immediately distinguish whether the missiles fired were conventional or nuclear. From their perspective, the enemy forces could justifiably launch on warning and retaliate against all the command-and-control systems and missile assets of the Chinese missile launch base and even the overall command-and-control system of the central Second Artillery headquarters. In the worst case, a self-defensive first strike by Chinese conventional missiles could end in the retaliatory destruction of many Chinese nuclear missiles and their related command-and-control systems. That disastrous outcome would force the much smaller surviving and highly vulnerable Chinese nuclear missile units to fire their remaining missiles against the enemy's homeland. In this quite foreseeable action-reaction cycle, escalation to nuclear war could become accelerated and unavoidable. This means that the double policies could unexpectedly cause, rather than deter, a nuclear exchange.

Yet, the reasoning could go the other way, too, as appears to be the case today in Chinese military planning circles. Launching conventional weapons from nuclear bases might deter any direct response, because the victim of that attack would fear the consequences of

retaliating against bases that have nuclear and not just conventional weapons. This fear—that a conventional response might trigger a Chinese nuclear counter-retaliation—could, in the eyes of Chinese experts, deter such a response, preventing escalation. Beijing’s strategic theorists argue, moreover, that the coordination of systems that the Chinese war plan requires connects Second Artillery bases to the theater military commands, thereby constraining and challenging enemy tactics and targeting policies in a high-tech local war.

Thus, the dilemma for China and any potential enemy: Both sides, clinging to incongruous assessments, run the risk of provoking unanticipated escalation to nuclear war by seeking a quick victory or tactical advantages in a conventional conflict. This dilemma is not only real, but perilous.

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### Notes

1. In the preparation of this study, the authors relied heavily on the outstanding works of other scholars. The following works have been especially important: Johnston, 1995/1996; Stokes, 2002; Allen and Kivlehan-Wise, 2005; Christman, 2011; and O’Connor, 2011.
2. For Beijing’s commitment not to deploy nuclear weapons in foreign countries, see Yao, 2007: 349. We recognize that considerable evidence suggests China did assist Pakistan’s nuclear program, but Beijing has always denied the validity of that evidence.
3. China joined the IAEA in 1984 and pledged to support the agency’s safeguards thereafter. It acceded to the Nuclear Non-Proliferation Treaty in March 1992.
4. This is based on personal interviews conducted by the authors.
5. The PLA uses the term “nuclear doctrine” only when discussing Western or Russian military concepts.
6. On these “means,” see Lewis, 2007: Chapters 1, 3, and 6.
7. The rest of this paragraph and the next three are based on Lewis and Xue, 2011a: 66–69; Lewis and Xue, 2011b: 26–28; Shen, 2008: 137–143; and Xu, 2006, 303–305.
8. When Deng Xiaoping returned to power in 1977, Hua Guofeng was still the party head. In 1981, Deng ousted Hua and became the paramount leader (but without the formal title).
9. For detailed information on the cause and effect of the 1969 Sino-Soviet nuclear confrontation, see, for example, Lewis and Xue, 2006: Chapter 3.
10. For details on the evolution of deterrence theory in China’s official nuclear strategy between 2002 and 2006, see State Council of the People’s Republic of China, 2002a and 2002b: Sects. II, III; 2004a and 2004b: Chapter III; and 2006: Sect. II.
11. The information in this and the next paragraph is from Zhao, 2009: 397.
12. For an analysis on the Sino-Vietnamese border war in 1979, see, for example, Lewis and Xue, 2006: Chapter 5.
13. For a comprehensive study on the introduction of conventional missiles into the Second Artillery order of battle, see Christman, 2011.
14. For a review of the crisis, see Ross, 2000. A brief description of the US military response from Washington’s perspective can be found in Tyler, 1999.
15. Unless otherwise cited, the information in this section is taken from Lewis and Xue, 2006: 202–207; it is used with the permission of Stanford University Press. The Chinese sources for this section are: Liu,

- 1994: 404; Wang and Zhang, 2001: 372; Liu et al., 2002: 445; Xue, 2002: 89–392; and Luo, 2004: 9–10.
16. The head of the Politburo's Standing Committee, the party general-secretary, is normally the same person as the chairman of the Central Military Commission.
  17. The policies flowing from the three "doubles" also apply to the air and naval units having nuclear arms. See Chen et al., 2009: 236.
  18. See Hu, 2006. For rocket forces' joint training programs, see, for example, Wei, 2002, and Zhao, 2002.
- ## References
- Allen K and Kivlehan-Wise M (2005) Implementing PLA Second Artillery doctrinal reforms. In: Mulvenon J and Finkelstein D (eds) *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the People's Liberation Army*. Alexandria, VA: CNA Corporation, Chapter 6.
- Chen D et al. (chief eds) (2009) *Zhongguo Junshi Tongxin Baiké Quanshu [Encyclopedia of Chinese Military Communications]*. Beijing: Chinese Encyclopedia Press.
- Christman R (2011) Conventional missions for China's Second Artillery Corps. *Comparative Strategy* 30(3): 198–228.
- Fan J (1998) Several issues on the planning for joint operations. In: Wen H and Fang M (chief eds) *Zhongguo Dangdai Guofang Wenku [A Collection of Essays on Contemporary China's Defense]*. Beijing: China's Defense Newspaper Press, Vol. 1, 46–47.
- Feng W (1993) *Zhongguo Dangdai Ganbu Da Baiké [Chinese Contemporary Encyclopedia for Cadres]*. Yanzhan: Yanbian People's Press.
- Ge D (2008) The birth of a new-type missile unit. In: Editing and Research Section of the Political Department of the Second Artillery, *Huihuang Niandai Huigu zai Gaige Kaifang zhong Fazhan Qianjin de Dier Paobing [Golden Age: A Review of the Development and Progress of the Second Artillery in Reform and Opening]*. Beijing: Central Documentation Press, 294–303.
- Hu Jintao (2006) Switching military training to informatization. *New China News Agency*, June 27.
- Jia J and Dong X (1999) *Yitian Gongheguo Daodan Hewuqi Fazhan Jishi [Heavenly Sword: A True Record of Events in the Republic's Development of Nuclear Missiles]*. Beijing: Xiyuan Press.
- Jiang Z (2006a) The international situation and the military strategic guideline (January 13, 1993). In: *Jiang Zemin Wenxuan [Selected Works of Jiang Zemin]*. Beijing: People's Press, Vol. 1, 278–294.
- Jiang Z (2006b) On the military revolution with Chinese characteristics (December 27, 2002). In: *Jiang Zemin Wenxuan [Selected Works of Jiang Zemin]*. Beijing: People's Press, Vol. 3, 576–599.
- Jing Z and Peng X (2008) A review of the golden experience of accelerating construction and development of the second artillery in the reform and opening. In: Editing and Research Section of the Political Department of the Second Artillery, *Huihuang Niandai Huigu zai Gaige Kaifang zhong Fazhan Qianjin de Dier Paobing [Golden Age: A Review of the Development and Progress of the Second Artillery in Reform and Opening]*. Beijing: Central Documentation Press, 1–20.
- Johnston A (1995/1996) China's new 'old thinking': The concept of limited deterrence. *International Security* (20)3: 5–42. Available at: <http://www.citeulike.org/user/crikey/article/6254171>.
- Lewis J (2007) *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age*. Cambridge, MA: MIT Press.
- Lewis J and Xue L (2006) *Imagined Enemies: China Prepares for Uncertain War*. Palo Alto, CA: Stanford University Press.
- Lewis J and Xue L (2011a) An assessment of China's nuclear policy and nuclear strategy. In: Center for Arms Control and International Security, China Institute of International Studies (eds) *Quanqiu He Taishi Pinggu Baogao [Global Nuclear Posture Review]*. Beijing: Current Affairs Press, 64–76.
- Lewis J and Xue L (2011b) Evolution of Chinese military strategic guidelines and nuclear strategy. *Lingdao zhe [Leaders]* 38: 18–30.
- Li G and Teng J (2007) The situation of arms control, disarmament, and non-proliferation in 2006. In: Chinese Arms Control and Disarmament Association (ed.) *2007 Niandu Guoji Junbei Kongzhi yu Caijun Baogao [Annual Report on International Arms Control and Disarmament (2007)]*. Beijing: World Knowledge Press, 64–76.
- Li S (2008) The establishment of the strategic position of the Second Artillery's military training. In: Editing and Research Section of the Political Department of the Second Artillery, *Huihuang Niandai Huigu zai Gaige Kaifang zhong Fazhan Qianjin de Dier Paobing [Golden Age: A Review of the Development and Progress of the Second Artillery in Reform and Opening]*. Beijing: Central Documentation Press, 23–31.

- Li W, et al. (eds) (2000) *Changkong Lijian Huojian Bing [A Sharp Sword from the Sky: Rocketmen]*. Beijing: PLA Press.
- Ling H (2005) General Zhang Zhen in his position of the CMC Vice Chairman. *Xiangchao [Hunan Tide] (Changsha)* 1: 18–20.
- Liu H, et al. (chief eds) (2002) *Siling Jiguan Gongwen Xiezu Daquan [A Complete Collection on the Writing of Official Documents at (PLA) Headquarters]*. Beijing: National Defense University Press.
- Liu Z (chief ed.) (1994) *Xiandai Jundui Zhihui [The Command of a Modern Army]*. Beijing: National Defense University Press.
- Luo B (2004) To oppose sharply Hu [Jintao] and Wen [Jiabao], Jiang Zemin ceaselessly clamors for war. *Zhengming (Cheng Ming Monthly)* 8: 9–10.
- Ma G, et al. (1992) *Xin Shiqi Xin Mingci Da Cidian [A Large Dictionary of New Terms in the New Era]*. Beijing: Chinese Television Broadcast Press.
- Ma J (2007) *Zhongguo Junshi Baiké Quanshu (Di'er Ban) Zhanlüe Daodan Budui Zhanlüe Xueke Fence [Chinese Military Encyclopedia (Second Edition), Fascicle of Strategic Missile Force's Strategy]*. Beijing: Chinese Encyclopedia Press.
- Modernization of the Second Artillery (2009) Both the nuclear and conventional [forces] are capable of strategic and tactical precision strikes. Available at: [http://bbs.tiexue.net/post2\\_3856218\\_1.html](http://bbs.tiexue.net/post2_3856218_1.html).
- Nie R (1986) *Nie Rongzhen Huiyilu [Nie Rongzhen's Memoirs]*. Beijing: PLA Press.
- O'Connor S (2011) The PLA's 2nd Artillery Corps. *I&A* 1(11).
- Peng G, et al. (eds) (1989) *Junshi Zhanlüe Jianlun [Concise Introduction to Military Strategy]*. Beijing: PLA Press.
- Peng X (2002) *Jiang Zemin Guofang he Jundui Jianshe Sixiang Xuexi Gangyao [Program of Study on Jiang Zemin's Thought on National Defense and Army Construction]*. Beijing: Central Literary Contributions Publishing Bureau.
- Research Society for the History of Two Bombs and One Satellite (2011) China's nuclear doctrine (Part 3). Available at: [www.ldyx.org/a/liangdanyixing/lunwenzhuanlan/2011/1129/41426\\_3.html](http://www.ldyx.org/a/liangdanyixing/lunwenzhuanlan/2011/1129/41426_3.html).
- Ross R (2000) The 1995–96 Taiwan Strait confrontation: Coercion, credibility, and the use of force. *International Security* 25(2): 87–123. Available at: [http://muse.jhu.edu/journals/international\\_security/summary/v025/25.2.ross.html](http://muse.jhu.edu/journals/international_security/summary/v025/25.2.ross.html).
- Second Artillery Armaments Department (2008) 'Long sword' sharpened: Witness the organic and systematic development of the combat and support capabilities of a certain new-type missile equipment. In: Editing and Research Section of the Political Department of the Second Artillery, *Huihuang Niandai Huigu zai Gaige Kaifang zhong Fazhan Qianjin de Dier Paobing [Golden Age: A Review of the Development and Progress of the Second Artillery in Reform and Opening]*. Beijing: Central Documentation Press, 681–687.
- Second Artillery's Main Equipment and Basic Applied Principles (2006) Available at: <http://lt.cjdbjy.net/thread-247240-1-1.html>.
- Shen K (2008) Explorations of theoretical research work by the Second Artillery. In: Editing and Research Section of the Political Department of the Second Artillery, *Huihuang Niandai Huigu zai Gaige Kaifang zhong Fazhan Qianjin de Dier Paobing [Golden Age: A Review of the Development and Progress of the Second Artillery in Reform and Opening]*. Beijing: Central Documentation Press, 137–143.
- State Council of the People's Republic of China (2002a) *2002 Nian Zhongguo de Guofang [China's National Defense in 2002]*. Beijing: Information Office of the State Council.
- State Council of the People's Republic of China (2002b) *China's National Defense in 2002*. Beijing: Information Office of the State Council.
- State Council of the People's Republic of China (2004a) *2004 Nian Zhongguo de Guofang [China's National Defense in 2004]*. Beijing: Information Office of the State Council.
- State Council of the People's Republic of China (2004b) *China's National Defense in 2004*. Beijing: Information Office of the State Council.
- State Council of the People's Republic of China (2006) *China's National Defense in 2006*. Beijing: Information Office of the State Council.
- Stokes M (2002) Chinese ballistic missile forces in the age of global missile defense: Challenges and responses. In: Scobell A and Wortzel L (eds) *China's Growing Military Power: Perspectives on Security, Ballistic Missiles, and Conventional Capabilities*. Carlisle, PA: Strategic Studies Institute, 107–168.
- Teng J (2011) Review of and prospect for the Sino-American dialogue in the nuclear field. *Guoji Wenti Yanjiu [International Studies]* 3: 25–30.
- Tyler P (1999) *A Great Wall: An Investigative History*. New York, NY: Century Foundation.
- United States Office of the Secretary of Defense (2008) *Military Power of the People's Republic of China 2008*. Washington, DC: Defense Department.
- Wang H and Zhang Y (chief eds) (2001) *Zhanyi Xue [Science of Operations]*. Beijing: National Defense University Press.
- Wang S and Cao R (2012) Hu Jintao attended the plenary meeting of the PLA delegation [to the National

- People's Conference] and delivered an important speech. *Jiefangjun Bao* [Liberation Army Daily], March 13, p. 1.
- Wang W (chief ed.) (1999) *Zhanlüe Xue* [Studies of Strategy]. Beijing: National Defense University Press.
- Wang Z (1989) Requirements for the construction of the Second Artillery is determined by the development of the military situation in the Asian-Pacific region. In: China Forum for Future Military Studies (ed.) *YaTai de Xuanwo* [Eddies in the Asian and Pacific Region]. Beijing: Military Science Press, 293-299.
- Wei F (2002) Explore the application of the Second Artillery's nuclear deterrent under conditions of information warfare. *Changying* [Long Rope] (2).
- Wu T and Wu Y (2007) On the contributions of China's nuclear policy to international strategic stability. In: Chinese Arms Control and Disarmament Association (ed.) *2007 Niandu Guoji Junbei Kongzhi yu Caijun Baogao* [Annual Report on International Arms Control and Disarmament (2007)]. Beijing: World Knowledge Press, 65-73.
- Xu J (2006) *Niaokan Diqiu* [Bird's Eye View of the Earth]. Beijing: PLA Literature Press.
- Xue X (chief ed.) (2002) *Zhanyi Lilun Xuexi Zhinan* [A Study Guide to Operational Theory]. Beijing: National Defense University Press.
- Yao Y (2007) China's nuclear strategy. In: Yan Xuetong (chief ed.) *Zhongguo Xuezhe Kan Shijie Guoji Anquan Juan 5* [The World in the View of Chinese Scholars on International Security, Volume 5]. Beijing: New World Press, 347-362.
- Yuan W (ed.) (2009) *Silingbu Xunlian Lun* [On Training in the Headquarters]. Beijing: National Defense University Press.
- Zhang A (chief ed.) (1994) *Zhongguo Renmin Jiefangjun* [The Chinese People's Liberation Army]. Beijing: Contemporary China Press, Vol. 2.
- Zhao X (2002) Keeping pace with the times, deepening reform, and promoting innovation to push forward ceaselessly the Second Artillery's science- and technology-related military training. *Changying* [Long Rope] (6).
- Zhao Z (2009) On the new development of the nuclear deterrence theory and practice in the new era. In: Academy of Military Science's Research Department for War Theory and Strategy (ed.) *Gaige Kaifang Yilai Dang de Junshi Zhidao Lilun Chuangxin Fazhan Bihui Wenji* [Collected Works Delivered at a Pen Club on the Creative Development of the Party's Guiding Theory on Military Affairs Since the Commencement of Reform and Opening]. Beijing: Military Science Press, 396-403.
- Zhou X (2002) A study on the new mechanism of coordination between the conventional missile force and the other PLA services. *Guofang Daxue Xuebao* [National Defense University Gazette] 9: 100-101.
- Zhu Y (chief ed.) (2000) *2000-2001 Zhanlüe Pinggu* [Strategic Evaluation During 2000 and 2001]. Beijing: Military Science Press.

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**Xue Litai** is a research scholar at the Project on Peace and Cooperation in the Asian-Pacific Region at Stanford University's Center for International Security and Cooperation. His research focuses on global and regional factors that could cause armed conflicts across the Taiwan Strait and the impact produced by the crisis upon the security and stability of the Northeast-Pacific region.

Lewis and Xue have published several books and articles on China's military-technological-industrial complex, including *China Builds the Bomb* (Stanford University Press, 1988).