

The Chinese Military Updates China's Nuclear Strategy

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In December 2013 the Chinese Academy of Military Sciences (AMS) published an updated edition of *The Science of Military Strategy* (AMS 2013). The text is the collective effort of 35 Chinese military scholars who present a comprehensive description of how the People's Liberation Army (PLA) perceives military developments in China and around the world. This is the third edition of an authoritative work intended to assess China's evolving strategic situation, articulate new Chinese thinking, and provide coherent guidance for the continued development, deployment, and possible future use of Chinese military force.

The text offers a more candid, detailed and nuanced presentation of PLA views on the strategic issues it covers than readers might find in other Chinese military sources.

The Science of Military Strategy was not written for foreign audiences but for Chinese military professionals. The preface describes it as one of the Chinese academy's most significant and influential academic products. The book was written by a committee of experts to educate the Chinese military rather than to serve a political or diplomatic purpose. As a result, the text offers a more candid, detailed, and nuanced presentation of PLA views on the strategic issues it covers than readers might find in other Chinese military sources such as official white papers, individual journal articles, editorials, or press releases.

The new edition presents the PLA's views on nuclear deterrence, nuclear war, and nuclear arms control with unprecedented clarity, especially compared to previous editions. It provides the PLA's assessment of the effectiveness of China's nuclear forces and how it

intends to use them, and the PLA's interpretation of how U.S. policies influence China's nuclear strategy. This information can provide insights into how proposed expenditures on new U.S. nuclear and conventional weapons might affect the future development of China's nuclear forces.

In this paper, UCS examines some of the key passages on nuclear weapons and policy contained in *The Science of Military Strategy* and discusses their implications for U.S. decision makers (all extended quotes are from AMS 2013 and were translated from the original Chinese by UCS).

Nuclear Deterrence with Chinese Characteristics

The book reaffirms that nuclear weapons continue to play a very limited role in Chinese military strategy. Their sole purpose is to deter other nuclear-armed states from using or threatening to use nuclear weapons against China. In the words of the authors:

As it has been for a long time, the objective of China's development and utilization of nuclear weapons is concentrated on preventing enemy nations from using or threatening to use nuclear weapons against us.

The text clarifies PLA views on three key aspects of Chinese nuclear weapons policy relevant both to neighboring non-nuclear weapons states concerned about the possibility of China using its nuclear weapons to influence the outcome of territorial disputes and to U.S. military planners worried about a Chinese nuclear response to a conventional U.S. attack. It states that:

1. China will not use nuclear weapons to attack or threaten non-nuclear states;

2. China will not use nuclear weapons to respond to conventional attacks; and
3. China will use nuclear weapons only after it has confirmed an incoming nuclear attack.

The authors describe these three aspects of China's nuclear policy as "special characteristics" of Chinese nuclear deterrence:

The directed nature of the target of deterrence. *From the first day China possessed nuclear weapons it openly declared and committed not to use nuclear weapons, or threaten to use nuclear weapons, against non-nuclear weapons states or regions. This restricted the use of our country's nuclear weapons, and the target of nuclear deterrence, to nuclear-armed states. China's nuclear deterrent is only directed at nuclear weapons states; it is only in effect against nuclear-armed states.*

The limited objective of deterrence. *China's nuclear deterrent will not be used to deter non-nuclear hostile military activity and its effect in other non-nuclear military also is not evident. Strictly limiting the scope of the effect of nuclear deterrence to the hostile nuclear activities of nuclear-armed states makes the objective and the scope of the effect of China's nuclear deterrent progressively more focused.¹*

The defensive nature of the method of deterrence. *China upholds a policy of no first use of nuclear weapons, only using nuclear weapons in self-defense after an enemy country uses nuclear weapons against us. Chinese nuclear deterrence is*

¹ The use of "progressively" in this context implies an ongoing narrowing of focus. That implication raises the question of what previously broader focus might have existed in the past. The 2003 edition of a related Chinese military text, *The Science of Second Artillery Operations* (the Second Artillery operates China's land-based nuclear missiles), indicates the PLA would consider alerting its nuclear forces in response to U.S. conventional attacks on certain targets, such as large dams or Chinese nuclear power plants (Kulacki 2011). In this passage from *The Science of Military Strategy* the PLA appears to explicitly exclude that possibility, or any other scenario where it would apply its nuclear deterrent to the non-nuclear military activity of nuclear states. That, in turn, could mean that the alert operations detailed in *The Science of Second Artillery Operations* are no longer part of China's nuclear strategy.

built on the foundation of effective retaliation, and through the actual strength as well as the possibility of creating for the enemy unbearable nuclear destruction, accomplishes the objective of preventing an enemy nuclear attack. This is defensive nuclear deterrence.

Chinese strategists believe the destructive nature of nuclear weapons is so extreme their mere existence creates "a latent influence limiting enemy military activity." They believe it is this "inherent nature" of nuclear weapons that creates their deterrent effect, not the specific number of weapons or "the relative strengths and weaknesses" of opposing nuclear forces:

After the nuclear arms race between the United States and the Soviet Union reached a balance of nuclear terror, they could not but face the fact that a large nuclear war has no winner, that it would create the cruel reality of 'nuclear winter' and that they must therefore make a new strategic choice to actively control the strategic motivations to use nuclear weapons, and switch to relying on fighting limited regional wars under the conditions of nuclear deterrence to obtain limited political war objectives.

Limited Weapons for Limited Nuclear War

The book explains how the PLA plans to use its nuclear weapons should deterrence falter. *The Science of Military Strategy* envisions responding to an enemy nuclear attack according to the following guidelines:

1. A Chinese retaliatory nuclear attack will be limited. An unstated number of China's surviving nuclear capabilities must be held in reserve for additional acts of retaliation;
2. A Chinese retaliatory nuclear attack will target enemy cities, not enemy military capabilities;
3. The objective of a Chinese retaliatory nuclear attack is to cause the enemy to cease future nuclear attacks against China.

As a result, the text indicates that even when Chinese strategists contemplate the possible use of Chi-

na's nuclear weapons, the sole purpose remains to deter an enemy from using or threatening to use nuclear weapons against China.

These characteristics shape PLA thinking about how to modernize, diversify, or expand the size of China's nuclear forces. According to the PLA text, China's nuclear arsenal is not intended to win a war, eliminate an enemy's capacity to make war, destroy an enemy economy, decapitate an enemy government, or enact vengeance on an enemy population or its leaders.² As a result, China does not need weapons designed to fulfill those missions. Instead, the size and capabilities of China's nuclear force are calibrated to assure Chinese decision makers have enough nuclear weapons to survive a first strike, engage in limited retaliation, and preserve future deterrence.

How much is enough is an open question for Chinese strategists. The PLA describes the current force as "far smaller" and "less capable" than the nuclear forces of Russia and the United States, yet still able to satisfy the "basic" requirements for effective deterrence. PLA strategists believe a deliberate lack of transparency about the actual size of the force helps meet those requirements by increasing the effectiveness of China's smaller, less capable nuclear force:

On the question of nuclear deterrence, maintaining an appropriate degree of ambiguity, allowing opponents to guess about China's nuclear capability, the scale and timing of a Chinese nuclear retaliatory attack, etc. increases the degree of difficulty for the opponent's policy, helping raise the effective deterrent function of China's limited nuclear force.

They point out that choosing not to target opposing nuclear forces but cities reduces the requirements for effective retaliation. According to the authors:

² The authors of *The Science of Military Strategy* emphasize that enemy targets and the scale of the attack must be limited in order to demonstrate restraint, with the expectation that its nuclear-armed enemy will understand that China's retaliatory strike was clearly not an act of vengeance or an attempt to win the war but a necessary attempt to dissuade a second nuclear attack on China.

There are in principle two targets for a nuclear attack, military targets and urban targets. Politically, attacking military targets is comparatively more acceptable. Militarily it enables gaining the initiative, which is beneficial to controlling the war situation. But it requires comparatively high requirements for the number, precision, and destructive function of nuclear weapons. In order to effectively destroy an opponent's nuclear forces a preemptive nuclear attack is generally required. This is the choice commonly pursued by large nuclear countries with aggressive nuclear strategies. Targeting cities can cause great damage to an enemy society and a large loss of life, which creates the effect of strong shock while having comparatively lower requirements for the scale of the force of a nuclear attack, the capabilities of nuclear weapons, the timing of a nuclear attack, etc.

In general, the PLA sees continued progress in nuclear arms control and disarmament as likely, deserving of support, and beneficial to China's interests.

Limiting the scale of nuclear retaliation further reduces China's nuclear weapons requirements:

When carrying out a nuclear retaliatory attack, there is the need to create unendurable damage to the opponent, to frighten the opponent, while at the same time controlling the degree of the strength of retaliation, the pace, and the scope of the target, where the goal is not to win a nuclear war, but to avoid creating with an opponent the situation of a nuclear counterattack.

These passages show the PLA's goal is to respond to a limited nuclear attack by selecting an ideal nuclear retaliatory strike that shocks the enemy into recovering the restraint it lost when it chose to launch a nuclear attack against China in the first place. Chinese strate-

gists expect this act of limited retaliation would stop the nuclear exchange.

While Chinese strategists believe they can engage in limited nuclear retaliation with a limited nuclear force, they are clearly worried about potential losses in a first strike from a less restrained adversary with a larger nuclear arsenal. The PLA plans to address that anxiety, if necessary, by launching its retaliatory nuclear strike upon warning of an incoming nuclear attack:

When conditions are prepared and when necessary, we can, under conditions confirming the enemy has launched nuclear missiles against us, before the enemy nuclear warheads have reached their targets and effectively exploded, before they have caused us actual nuclear damage, quickly launch a nuclear missile retaliatory strike. This is in accord with our guiding policy of no first use of nuclear weapons and can effectively avoid having our nuclear forces suffer great losses, raising the ability of our nuclear missiles to survive and retaliate.

The text does not specify how the PLA plans to confirm an incoming nuclear attack, although it does indicate the PLA intends to field new early warning capabilities. There is no discussion of the strategic challenges associated with a decision to launch on warning, particularly the risk of an accidental or erroneous launch either due to false or ambiguous warning, technical problems or damage to the early warning systems, or poor judgment.

Nuclear Arms Control and Disarmament and Comprehensive National Power

The PLA depicts nuclear arms control and disarmament in a positive light and encourages its continued development. But it also sees nuclear arms control negotiations as an important arena of international competition:

On the one hand, nuclear arms control and disarmament has a positive effect on preserving strategic

stability, preventing the outbreak of nuclear war, limiting the scale of nuclear war, reducing the destruction of nuclear war, reducing military expenditures, etc. These are the principal motivations behind and the reasons why worldwide nuclear arms control and disarmament continues to move forward. On the other hand, nuclear arms control and disarmament is also, especially to the large nuclear nations, an important means of fighting for and protecting nuclear superiority, strategic superiority for limiting, weakening the nuclear capabilities of strategic opponents.

The authors emphasize national interests when discussing the implementation of China's nuclear arms control and disarmament policy:

Select the style, methods, measures and tactics of the nuclear arms control and disarmament struggle according to the standard and requirements of protecting national security and development interests.

In general, the PLA sees continued progress in nuclear arms control and disarmament as likely, deserving of support, and beneficial to China's interests:

Nuclear arms control and disarmament is an important trend in global military affairs, appropriate for this era, consistent with the objectives of China's nuclear policy and the development of China's nuclear weapons and compatible with the overall requirement for national peace and development. We should energetically put forward the proper effort and take on the proper responsibility.

But because the PLA sees nuclear arms control and disarmament as part of a broader military competition, it urges caution to insure Chinese participation does not put China at a disadvantage:

At the same time, China's nuclear forces are relatively small and weak, China's nuclear foundation is comparatively fragile, and the influence of nuclear arms control and disarmament on the nation's actual nuclear force is relatively clear. So

when putting into practice concrete nuclear arms control and disarmament operations complete caution is required. If the time is not ripe, if conditions are not prepared, if we have an inaccurate grasp of the opponents' motives or the consequences of actions can not be estimated, we cannot act hastily.

PLA strategy is focused on understanding and responding to U.S. investments in the advanced conventional military capabilities it believes the United States intends to use to undermine the credibility of China's overall military deterrent.

Paradoxically, the PLA seems to believe China needs to strengthen its nuclear force in order to gain the initiative in the international struggle over nuclear arms control and disarmament:

In the recent past, the present, and for a period in the future, international nuclear arms control and disarmament is still a struggle between Russia and the United States, the countries with the most nuclear weapons in their arsenals. Actual nuclear strength is the foundation for conducting struggle in nuclear arms control and disarmament, and China's actual nuclear strength is still comparatively weak. The gap between the practical needs of protecting national security and the requirements of future military struggle is relatively large. We should develop to seek the initiative, grasp opportunities, and lay a firm foundation for future participation in a realistic nuclear arms control and disarmament process, progressively striving to gain the initiative in the nuclear arms control and disarmament struggle.

U.S. Influences on China's Nuclear Strategy

The 2013 edition of *The Science of Military Strategy* identifies the United States as the most important factor in China's nuclear security environment:

In recent years, the nuclear security situation facing our country is, in general, trending towards complexity. First, the principal target of China's nuclear struggle is the nation with the strongest actual nuclear capability. The United States is making China its principal strategic opponent and is intensifying construction of a missile defense system in the East Asia region, creating increasingly serious effects on the reliability and effectiveness of a Chinese retaliatory nuclear attack.

Chinese strategists also recognize trends in U.S. military policy that are contributing to the continued reduction of the number of nuclear weapons:

Against the background of continually expanding advantages in conventional military power and the accelerating construction of a global missile defense system, U.S. reliance on nuclear weapons is progressively being reduced through decreases in the number of nuclear weapons and limits on the scope of the roles played by nuclear weapons, etc.

But the PLA book makes clear that Chinese strategists do not believe these trends reflect a meaningful shift in U.S. nuclear weapons policy. In addition to noting that the United States maintains a first-use posture and keeps its nuclear weapons on high alert ready for rapid launch, Chinese strategists point to U.S. plans to upgrade its nuclear weapons complex and question whether the United States is committed to working towards the eventual elimination of nuclear weapons:

The United States, while reducing its nuclear arsenal, is preserving, even accelerating, its ability, when needed, to rapidly increase its nuclear forces, and add to the manpower, technical resources and infrastructure of its actual nuclear strength.

Chinese strategists also believe new U.S. conventional military capabilities could significantly weaken China's nuclear deterrent:

The United States is currently putting into effect a plan for a conventional "rapid global strike" which, as soon as it becomes an actual combat capability, used to carry out a conventional attack against our nuclear missile forces, will put us in a passive position, greatly influencing our nuclear retaliatory capability, weakening the effectiveness of our nuclear deterrent.

The PLA interprets these developments as part of a major adjustment in U.S. national security strategy. It sees the Obama administration's use of the terms "rebalance" and "air-sea battle" as part of a new "war-fighting concept" that has a "strongly directed nature":

The United States is strengthening traditional military alliance relationships and establishing new strategic partnership relations with the aim of building around the land mass of Asia a massive naval alliance system to realize the strategic need to contain China's rise.

This perceived adjustment in U.S. strategy undermines PLA confidence in the Obama administration's commitment to nuclear arms control and strategic stability:

While promoting the reduced role of nuclear weapons, it stresses continuing to preserve U.S. nuclear superiority. While consolidating and expanding superiority in conventional weapons, it is expending great energy developing space, cyber and other new types of war-fighting forces.

The PLA believes the United States is not interested in strategic stability but in "seeking an absolute military superiority" that includes using these new types of war-fighting capabilities to undermine China's "limited but effective nuclear force." The text indicates how the PLA plans to respond to a perceived U.S. effort to render itself invulnerable to a Chinese nuclear counterstrike.

For the present, the construction and development of nuclear forces should be centered on raising the informational technology of nuclear weapons systems, strengthening command and control, continuously enhancing penetration capability under informationalized conditions, protection and survival capabilities, rapid response capability, mobility, etc. actively raising the credibility of nuclear deterrence.

What Does this Mean for the United States?

The PLA sees the United States as China's primary strategic adversary. It believes the United States is actively trying to limit China's development and restrict its freedom of action in the international system by using a broad combination of cultural, economic, diplomatic, and military pressure. It sees the United States as the most powerful nation in an increasingly multipolar international order and expects the United States to remain the most powerful nation for the indefinite future.

At the same time, the PLA believes China is entering a period of unprecedented strategic opportunity. It sees the role of China's military as supporting the continued growth of China's cultural, economic, and diplomatic influence in the international order, most importantly by preventing the outbreak of regional military conflicts that could derail Chinese development. The authors see continued investment in conventional military modernization as a prerequisite for deterring an aggressive United States, or one of its regional allies, from starting such a conflict.

The Science of Military Strategy indicates that nuclear weapons play a marginal role in Chinese military strategy and do not figure prominently in PLA preparations for possible military conflicts. The sole purpose of China's nuclear arsenal is to prevent nuclear-armed adversaries from using or threatening to use nuclear weapons against China. The PLA believes this role can be fulfilled with a limited but modern nuclear force. In the highly unlikely event of a nuclear attack on China, the PLA intends to engage in limited nuclear retaliation intended to restore the status-quo ante. The PLA is not preparing to start, fight, or win a nuclear war.

PLA strategy is focused on understanding and responding to U.S. investments in the advanced conventional military capabilities it believes the United States intends to use to undermine the credibility of China's overall military deterrent, including its nuclear forces. The text identifies missile defenses, military space systems, cyber warfare, and global precision strike weapons as the most important foci of a technological competition between aggressive U.S. efforts to acquire the means to exert military pressure and defensive Chinese efforts to counter it. The PLA is particularly concerned about the integrity of its command and control systems.

The authors of *The Science of Military Strategy* do not see the successful implementation of PLA strategy as contingent on matching U.S. military capabilities, particularly U.S. nuclear capabilities. Because nuclear weapons play a marginal role in Chinese military strategy, U.S. efforts to negate China's nuclear deterrent with new nuclear weapons systems, particularly new tactical nuclear weapons such as the long-range standoff weapon (LRSO), are unlikely to have a significant impact on Chinese military strategy or behavior. The PLA is already convinced that U.S. intent is aggressive, and views the U.S. commitment to nuclear reductions with considerable skepticism. It also believes a U.S. nuclear attack is highly unlikely, especially given U.S. superiority in conventional weaponry. While China could respond to new U.S. tactical nuclear weapons by increasing the size of its nuclear arsenal, the text suggests the PLA is more focused on upgrading nuclear command and control systems; improving the ability to prevent U.S. detection, tracking, and targeting of its nuclear forces; and degrading the effectiveness of U.S. missile defenses.

The most troubling PLA response to perceived U.S. threats against the survivability of China's nuclear forces is the shift to a launch-on-warning posture dependent on early warning systems. China's land-based nuclear missiles are currently kept off high alert with the warheads and the missiles separated and under different commands. It is unclear whether this long-standing practice would change as China begins to field new early warning capabilities. If the PLA did decide to increase readiness to launch rapidly by mat-

ing warheads to missiles during normal peacetime operations, that would, in combination with procedures to launch on warning, significantly increase the risk of an accidental or erroneous launch of a Chinese nuclear weapon.

The most troubling PLA response to perceived U.S. threats against the survivability of China's nuclear forces is the shift to a launch-on-warning posture dependent on early warning systems.

Because the PLA is determined to respond to U.S. investments in missile defenses, rapid global strike, and other new military technologies that it believes could challenge the effectiveness of China's overall military deterrent, including its nuclear deterrent, binding international arms control agreements may be the most effective means available to U.S. policy makers seeking to restrain the development of advanced Chinese military capabilities, including Chinese nuclear weapons. The PLA agreed to the terms of the 1996 Comprehensive Test Ban Treaty even though it significantly inhibited China's ability to develop new types of nuclear weapons. A fissile material cut-off treaty could place a verifiable cap on the size of China's nuclear arsenal, yet China appears willing to begin negotiations (Wu 2012). PLA strategists recognize that international arms control agreements impose serious limits on the future development of Chinese military capabilities, but both the text and past PLA behavior indicate Chinese military strategists are willing to accept those limits in exchange for a corresponding measure of U.S. restraint.

Despite efforts by both sides to develop a strategic dialog, strategic trust between the PLA and the U.S. military remains well out of reach (Lieberthal and Wang 2012). Mutually acceptable strategic adjustments, however, are both possible and urgently needed. Both militaries seek to avoid war, in part because if war should break out it will be difficult to restrain.

PLA strategists believe that modern military technologies, especially space and cyber technologies, can disable or destroy the information systems needed to make decisions and control military activity, while at the same time requiring decision makers to act quickly in a crisis. Escalation will be rapid and could end in a nuclear exchange.

U.S. policy makers, congressional appropriators, and U.S. military planners continue to invest in the pursuit of a decisive military advantage that will discourage their Chinese counterparts from continuing to compete. *The Science of Military Strategy* suggests that is highly unlikely. In the absence of a mutual binding agreement to exercise restraint, the United States and China are likely to continue to press forward in a high-tech arms race that increases strategic instability, the likelihood of war, and the possibility of a nuclear exchange.

References

China Academy of Military Science (AMS). 2013. Military Strategy Research Department. *The science of military strategy*. Beijing: Military Science Press.

Kulacki, G. 2011. Chickens talking with ducks: The U.S.-China nuclear dialogue. *Arms Control Today* 41 (October): 15-20. Online at http://www.armscontrol.org/act/2011_10/U.S._Chinese_Nuclear_Dialogue (accessed March 6, 2015).

Lieberthal, K. and Wang, J. 2012. *Addressing U.S. China strategic distrust*. The Brookings Institution, China Center Monograph Series 4 (March): 1-50. Online at http://www.brookings.edu/~media/research/files/papers/2012/3/30%20us%20china%20lieberthal/0330_china_lieberthal.pdf

Wu, H. 2012. Statement by H.E. Ambassador Wu Haitao, Permanent Representative of China to the Conference on Disarmament, on FMCT. May 31. Online at <http://www.china-un.ch/eng/cjik/cjizdh/t936939.htm>

Yu, J., ed. 2004. *Dier paobing zhanyixue (The science of second artillery operations)*. Beijing: People's Liberation Army Press.