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PRC Writings on Strategic Deterrence: Technological Disruption and the Search for Strategic Stability

Alison A. Kaufman and Brian Waidelich

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Abstract

This paper examines recent writings from the People's Republic of China (PRC) and China's People's Liberation Army (PLA) in order to highlight major themes and evolution in concepts of deterrence, strategic stability, and escalation control, particularly between 2017 and 2022. It focuses in particular on how technological evolution in recent decades appears to be shifting conversations within China about the definitions of, and relationship between, strategic stability, strategic deterrence, and strategic capabilities.

PRC writings in the past several years suggest that the evolution of military technology, and the rise of concepts such as cross-domain deterrence, are disrupting long-standing dynamics of strategic deterrence, such that the PRC can no longer be confident in its ability to deter other countries from attacking it with nuclear weapons or with newer technologies that may have a similarly devastating effect. These concerns, in turn, may lead (and in some ways have already led) to changes in the PRC's approach to its nuclear deterrent and other strategic capabilities.

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Maryanne Kivlehan-Wise, Director
China Studies Program
CNA China & Indo-Pacific Security Affairs Division

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Executive Summary

Background

This paper examines recent writings from the People's Republic of China (PRC) and the People's Liberation Army (PLA) in order to highlight major themes and evolution in concepts of deterrence, strategic stability, and escalation control, particularly between 2017 and 2022.

PRC writings during this period display growing concern that innovations in military technology over the past several decades undermine strategic stability. Many PRC authors argue that the balance of military capabilities that enabled China to maintain a fairly small nuclear deterrent is becoming more fragile, and that as a result, Beijing can no longer be confident in its ability to deter other countries from attacking China with nuclear or other strategic weapons.

This paper provides a baseline for understanding, from a conceptual perspective, how PRC authors frame the challenges that these dynamics pose to China's strategic deterrent and to strategic stability, and the implications they may have for Beijing's approach to strategic capabilities.

Key findings

Strategic stability, strategic deterrence, and strategic capabilities

PRC writings link the concepts of strategic stability, strategic deterrence, and strategic capabilities. Although PRC authors do not explicitly employ an ends-ways-means construct, based on their discussions we may think of strategic stability as the *ends*, strategic deterrence as the *ways*, and strategic capabilities as the *means*.

- PRC writings argue that the goal of deterrent activities is not just to contain crisis or war in the immediate term, but to establish longer-term strategic stability conducive to China's national security and development.
- PRC writings (similar to Western writings) usually define *strategic stability* as a situation in which potential adversaries have no incentive to escalate a conflict to nuclear war or to engage in arms racing.
- Strategic stability is established and maintained through *strategic deterrence*. Historically, this usually meant nuclear deterrence.
- Strategic deterrence, in turn, is achieved through having sufficient *strategic capabilities* (particularly military capabilities) to deter strategic attack.

PRC writings characterize the PRC's relationship with the United States as one of *asymmetric strategic stability*.

- Asymmetric strategic stability is a state in which two sides with differing levels of overall strategic capabilities are nonetheless “mutually vulnerable” to counterattack by the other, in that neither side can prevent a retaliatory nuclear strike by the other.
- Countries in a state of mutual vulnerability have diminished incentives to launch a preemptive nuclear strike against one another.
- Mutual vulnerability generally requires that countries have a survivable second-strike nuclear capability, which acts as a strategic deterrent.

PRC writings assert that asymmetric strategic stability can only be maintained if all sides refrain from actions that undermine one another's strategic deterrent and erode mutual vulnerability.

- Maintaining mutual vulnerability requires that the stronger side refrains from disruptive actions that undermine the weaker side's second strike capability.
- If it does not refrain from such actions, then the weaker side must upgrade its own capabilities to keep up, leading to arms racing.

Most PRC authors argue that as a “medium” nuclear power, China does not need to seek parity with “great” nuclear powers such as the US, so long as mutual vulnerability is maintained.

- Many PRC authors historically believed that China could achieve this status with a lean nuclear stockpile.
- According to PRC authors, asymmetric strategic stability achieved through mutual vulnerability has enabled China to maintain a no first use (NFU) policy.

Dynamics of deterrence in a changing world

Recent PRC writings argue that technological evolution since the Cold War results in the need to define strategic capabilities more broadly than in the past. They assert that some non-nuclear capabilities have the potential to create strategic effects either by undermining the other side's nuclear deterrent, or by generating large-scale effects that are as devastating as a nuclear strike.

- Emerging non-nuclear strategic capabilities identified in recent PRC writings include conventional precision strike weapons, missile defense systems, and cyber and space capabilities that could destroy or undermine another country's second-strike capacity.
- PRC writings argue that while nuclear weapons remain at the core of China's strategic deterrence capability, they now comprise just one part of China's “strategic deterrence system,” which also includes high-end conventional capability (e.g., hypersonics), cyber capabilities, and space capabilities.

PRC authors argue that these changes disrupt asymmetric strategic stability and deterrence dynamics between China and the US. Specific concerns that they express include the following.

- *Crossing the nuclear threshold.* The line between conventional and nuclear war has been blurred by non-nuclear capabilities with strategic effects, and by nuclear capabilities with tactical effects. These changes undercut the significance of crossing the nuclear threshold.
- *Undermining second strike capability.* US missile defense, prompt strike capabilities, cross-or multi-domain deterrence, and offensive operations in space and cyber could weaken China's second-strike capability and undermine its strategic deterrent.
- *First mover advantage.* Offense-dominant domains like space and cyber, as well as "use it or lose it" assets like submarine-launched nuclear weapons, grant a greater advantage to the first mover in a nuclear conflict and increase the incentive for preemptive attack.
- *Escalation control.* New technologies and cross-domain deterrence may make escalation control more difficult, because it can be hard to ascertain what constitutes a first strike vs. a retaliatory one and therefore which side is responsible for escalation.

Implications

Many PRC authors argue that new technologies and geostrategic dynamics mean that the PRC's previous approach to nuclear deterrence is not sustainable if the PRC wishes to maintain asymmetric strategic stability with the US. They argue that technological evolution and US actions are undermining China's second-strike capability and require a reassessment of how asymmetric strategic stability may be restored.

- What China considers to be a "stable" strategic balance is not limited to a balance of nuclear capabilities.
- PRC analysts will take nuclear, conventional, space, cyber—and possibly other—capabilities into account when assessing the US-China strategic balance.

Viewed in this context, some recent PLA force modernization decisions could be understood as an attempt to restore asymmetric strategic stability, which they depict as being eroded by US actions. Some actions that PRC authors say or imply may help restore the strategic balance with the United States include the following.

- *Upgrading China's nuclear capability,* to include increasing stockpiles of deliverable nuclear warheads and diversifying the land-, sea-, or air-based carriers of nuclear weapons.
- *Building up China's missile defense capability* so that it is less vulnerable to nuclear strike.
- *Developing space and cyber capabilities* to undermine the US nuclear deterrent, provide early warning of attacks, and potentially support preemptive attacks.
- *Reconsidering China's no first use nuclear weapons policy.*

PRC subject matter experts assert that the vast majority of PRC scholars and policy makers remain committed to China's NFU nuclear weapons policy.

- However, PRC writings also acknowledge the existence of a small-scale but persistent debate on whether NFU will always remain sufficient for maintaining strategic deterrence in light of growing technological and geostrategic disruptors.

None of the writings we surveyed for this study advocated that the PRC should seek to match the US in terms of overall nuclear capability, but they strongly suggest that Beijing will continue to increase its nuclear stockpile and diversify its delivery platforms.

- The appropriate size and composition of a nuclear arsenal to achieve effective asymmetric strategic deterrence appears to be a source of significant debate among PRC scholars.

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1. Introduction

This paper examines recent writings from the People’s Republic of China (PRC) and China’s People’s Liberation Army (PLA) in order to highlight major themes and evolution in concepts of deterrence, strategic stability, and escalation control, especially between 2017 and 2022.¹ It focuses on how technological evolution since the end of the Cold War appears to be shifting conversations within China about the definitions of, and relationship between, strategic stability, strategic deterrence, and strategic capabilities.

1.1 Background and issues

As PLA nuclear and conventional military capabilities mature, many observers both inside and outside China wonder what the PRC’s leadership intends to do with these capabilities. Scholarly and policy analyses reveal a number of questions about the nature, purpose, and implications of PRC deterrence capabilities and activities, particularly—though not solely—in the nuclear domain.

For example, the US Government has identified exponential changes in both the number and structure of China’s nuclear forces in recent years. In 2020, the US Department of Defense (DOD) estimated in its annual publicly-released “China Military Power Report” that the PRC’s nuclear weapons inventory was in the low 200’s, and that the number could double by 2030.² In the 2021 iteration of that report, however, DOD revised its estimate upward, predicting that the PRC may have as many as 700 deliverable nuclear warheads by 2027 and 1,000 or more by 2030. Moreover, the same report notes that China may have already complemented its existing land- and sea-based nuclear capabilities with an air-based capability, forming a “nascent” nuclear triad.³

¹ This paper draws upon and expands previous CNA research, particularly a 2016 paper that identified major themes in PRC writings between 2000 and 2015 about controlling escalation along the continuum of conflict. Alison A. Kaufman and Daniel M. Hartnett, *Managing Conflict: Examining Recent PLA Writings on Escalation Control*, DRM-2015-U-009963-Final-3 (Arlington, VA: CNA, 2016).

² Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2020*, <https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>.

³ Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2021*, <https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF>.

These and other recent changes in the PRC's strategic military capabilities inspire questions and assumptions about their purpose and intent. These include questions such as whether the PRC intends to use its nuclear capabilities coercively rather than purely defensively; whether the PRC will take cues from the 2022 Ukraine conflict and similarly seek to use nuclear threats to deter US and ally intervention in a Taiwan conflict; and whether PRC leadership may reconsider China's no first use (NFU) nuclear policy, which commits China to employ nuclear weapons only in response to nuclear attack by another country.⁴ These questions and assumptions have real policy implications for the US, its allies, and other nations, and point to the importance of understanding how PRC decision-makers think about strategic deterrence.

The goal of this paper is to provide a baseline, grounded in recent writings by PRC and PLA authors, for understanding from a conceptual perspective how the PRC might seek to modernize or reorient its strategic deterrent, and why. While many analyses start with recent changes in the PRC's strategic posture and try to draw conclusions about what may have driven those changes, this paper begins with PRC concepts and considers what changes we might expect to see if practice follows theory. It is not intended to delve into specific policy decisions, but rather to provide an overview of how PRC scholars frame key concepts and issues related to strategic deterrence.

1.2 Approach and data

To understand evolving PRC views of strategic stability, strategic deterrence, and strategic capabilities, we examined approximately four dozen open-source, Chinese-language publications from PRC military and civilian authors, mostly issued between 2017 and 2022, that we assessed to reflect the overall tone and spectrum of debate on these topics and on their potential implications for China's future strategic posture. Our goal was to highlight themes and perceptions that appeared to be particularly salient for understanding the conceptual context against which PRC decisions about force modernization and deterrence posture may be made.

⁴ See, for example, Bryant Harris, "U.S. Nuclear Commander Warns of Deterrence 'Crisis' Against Russia and China," *Defense News* (2022), <https://www.defensenews.com/pentagon/2022/05/04/us-nuclear-commander-warns-of-deterrence-crisis-against-russia-and-china/>; Denny Roy, "The Ukraine War Might Kill China's Nuclear No First Use Policy," *The Diplomat*, May 11, 2022, <https://thediplomat.com/2022/05/the-ukraine-war-might-kill-chinas-nuclear-no-first-use-policy/>; Nan Li, "Will China Abandon Its 'No First Use' Nuclear Policy?" *The Straits Times*, Feb. 15, 2022, <https://www.straitstimes.com/opinion/will-china-abandon-its-no-first-use-nuclear-policy>; Tong Zhao, "China's Silence on Nuclear Arms Buildup Fuels Speculation on Motives," *Asia-Pacific Leadership Network*, Nov. 12, 2021, https://www.apln.network/news/member_activities/chinas-silence-on-nuclear-arms-buildup-fuels-speculation-on-motives.

Approach to PRC texts

The texts we selected for analysis were written by PRC military and civilian researchers at a variety of institutions and at various stages of their careers. Some of the authors come from prestigious PLA military research institutions such as the Academy of Military Sciences (AMS) or the National University of Defense Technology (NUDT). Others are civilian scholars who have international reputations for their work on strategic and nuclear issues. Still others are recent doctoral or postdoctoral students, suggesting that these topics are subjects of current, ongoing research in some of China's most influential universities.

We selected texts to capture a range of viewpoints in PRC and PLA writings on the issues of interest, rather than to serve as an exhaustive examination or perfectly representative sample. Where possible, we have tried to highlight writings from authors and institutions that are in a position to have some knowledge of official PRC views on deterrence and/or to influence official PRC and PLA policies on deterrence; such authors and institutions may be assumed to credibly represent at least one line of thinking that has some traction within the PLA.⁵ That said, we found that there was significant debate on many of the topics discussed in this paper, suggesting that this is a lively and evolving conversation within the PRC.

Primary sources used for this study include the following:

- Official statements by PRC civilian and military leadership
- Official documents, such as PRC defense white papers
- Authoritative military reference books such as the *PLA Encyclopedia*
- Several editions of the *Science of Military Strategy*, published in 2013 by AMS and in 2015, 2017, and 2020 by China's National Defense University (NDU)
- Scholarly books and journal articles
- Conference papers
- PRC media reporting in official sources such as the *PLA Daily* and *People's Daily*.

1.3 Overview of argument

In this paper, we look at the connections that PRC authors draw between strategic deterrence and strategic stability. PRC writings during the past several years generally express growing confidence in the country's ability to protect its national interests and to deter other countries from challenging those interests, particularly through the use of military deterrence. Yet these

⁵ For a discussion of the criteria for assessing credibility, see Kaufman and Hartnett, *Managing Conflict*, (2016), Chapter 1.

writings also display growing concerns that the strategic stability that has dissuaded major powers from going to war for more than half a century—and which has enabled China to maintain a fairly small strategic nuclear deterrent—is becoming more fragile.

As this paper will show, a number of PRC authors assert that innovations in military technology over the past several decades are fundamentally disrupting long-standing dynamics of strategic deterrence, such that the PRC can no longer be confident in its ability to deter other countries from attacking it with nuclear weapons or with newer technologies that may have a similarly devastating effect. These concerns, in turn, may lead—and in some ways have already led—to changes in the PRC's approach to its nuclear deterrent and other strategic capabilities.

2. Ends and Ways: Strategic Stability and Strategic Deterrence

PRC writings link the concepts of strategic stability, strategic deterrence, and strategic capabilities. Although PRC authors do not explicitly employ an ends-ways-means construct, based on how they frame these issues we may think of strategic stability as the *end*, strategic deterrence as one *way* to achieve that end, and strategic capabilities—particularly strategic military capabilities—as a *means* for attaining deterrence.

PRC writings on deterrence argue that the goal of deterrent activities is not just to contain crisis or war in the immediate term, but to establish longer-term strategic stability conducive to China’s national security and development.

Strategic stability has been a central concept in international relations and nuclear arms control negotiations throughout the nuclear age. In its most comprehensive sense strategic stability may include geopolitical dynamics in the economic, political, and other realms. In this paper we focus on the military dimensions of strategic stability: historically, a disincentive on all sides, underpinned by the fear of military escalation, to use nuclear weapons against one another. Recent PRC writings make clear that today, strategic stability for China in the military domain means something far broader than nuclear arms control. This chapter delves into PRC military and civilian authors’ debates on the relationship between strategic stability and strategic deterrence.

Prevalence of Western international relations theory in PRC writings

PRC writings about deterrence, strategic stability, escalation control, and related concepts draw heavily from, and frequently cite, foundational Western international relations theories, particularly those developed during the Cold War. Thus these discussions are not original to China; rather, PRC authors are taking concepts and debates that arose in an earlier Western context and grappling with what they mean for the PRC today. The PRC writings we examine may define some terms or concepts in ways that diverge from their original sources. In the following sections of this paper, we explore how some key terms and concepts are formulated in recent PRC writings.

2.1 Ends: Strategic stability—a long-term objective for the PRC

Strategic stability (*zhanlüe wending*; 战略稳定) is identified in PRC writings as a state in which there is no rational reason for the main actors of a regional or global system to use military force against each other. PRC writings on this topic broadly follow Western definitions and descriptions.⁶

Although they quibble about some of the particulars, PRC authors generally describe strategic stability as having the following characteristics:

- A balance of strategic capabilities among adversarial states. (“Balance” does not necessarily mean “equivalence,” as will be discussed in 2.1.2.)
- Recognition on all sides that the costs to a state of initiating conflict against another state will outweigh any potential gains.
- The absence of state behavior that triggers arms races.
- The ability of states to control escalation in a crisis or conflict.⁷

The last two elements, arms racing and escalation control, are identified as the two key subcomponents of strategic stability by both PRC authors and their Western counterparts.⁸

⁶ A useful overview of the historic roots of “strategic stability” and related concepts can be found in Elbridge A. Colby and Michael S. Gerson, eds., *Strategic Stability: Contending Interpretations*, (Carlisle, PA: Strategic Studies Institute and U.S. Army War College Press, 2013).

⁷ See, for example Xu Weidi (徐纬地), “Strategic Stability and Its Relationship with Nuclear, Space, and Cyber,” (*Zhanlüe wending ji qi yu he, waikong he wangluo de guanxi*; 战略稳定及其与核、外空和网络的关系), *Information Security and Communications Privacy (Xinxi anquan yu tongxin baomi*; 信息安全与通信保密), no. 9 (2018): 20; Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework: An Asymmetric Strategic Balance Approach,” (*Goujian zhongmei he zhanlüe wending xing kuangjia: fei duichen xing zhanlüe pingheng de shijiao*; 构建中美核战略稳定性框架:非对称性战略平衡的视角), *Journal of International Security Studies (Guoji anquan yanjiu*; 国际安全研究), no. 1 (2019); Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (*Zhongmei zhanlüe wending guanxi de yanjin*; 中美战略稳定关系的演进), *Contemporary American Review (Dangdai meiguo pinglun*; 当代美国评论), no. 2 (2017).

⁸ A 2022 edited volume from US-based Pacific Forum International contains some essays asserting that, as one author put it, “US strategists typically define strategic stability narrowly, in a way that prevents nuclear crises and arms races. The focus, simply, is crisis stability and arms race stability. Chinese strategists, on the contrary, generally define it much more broadly, to include almost all national security and foreign policy. Chinese strategists, plainly, consider the entire balance of the US-China relationship, going way beyond the sole nuclear and even military dimension.” David Santoro, ed., *US-China Mutual Vulnerability: Perspectives on the Debate*, Vol. 22, SR2, *Issues and Insights* (Pacific Forum International, May 2022): 3, <https://pacforum.org/wp-content/uploads/2022/05/Issues-Insights-Vol.-22-SR-2.pdf>. Nonetheless, the majority of the PRC sources we examined for this study defined strategic stability in terms of arms race stability and crisis stability.

Arms race stability (*zhanbei jingsai wending*; 战备竞赛稳定) is a state in which antagonistic powers do not have an incentive to continue building up their strategic capabilities in an attempt to outmatch one another. Luo Xi, a researcher at the AMS who is a prolific writer on issues related to deterrence, claims that arms race stability is high when “one country’s development of arms does not easily cause an adversary to expand its own arms,” and it is low if the reverse is true.⁹ Two senior fellows from the Chinese Academy of Social Sciences (CASS), Zou Zhibo and Liu Wei, asserted in 2019 that two essential elements of arms race stability are (1) “limited and transparent” development of arms that does not seek “strategic superiority” and (2) mutual recognition that the other side’s arms development will not upset the established strategic balance.¹⁰

Crisis stability (*weiji wending*; 危机稳定) refers to the ability of adversarial states to prevent crises from escalating to undesired levels. Zou Zhibo and Liu Wei stated in 2019 that crisis stability is high when countries in a state of crisis are able to use “preestablished communication channels to control and resolve the crisis and thereby restore bilateral relations to a pre-crisis state.”¹¹ Yang Yuan, an associate professor at the School of International Relations at the University of CASS, characterizes crisis stability in terms of the relative risk that two states’ conventional military conflict will escalate to nuclear conflict.¹²

2.1.1 Symmetric strategic stability

According to PRC writings, symmetric strategic stability may be achieved when adversarial states possess largely equivalent strategic capabilities.

Taking as an example the US-Soviet Union nuclear buildup during the Cold War, CASS Senior Fellow Zou Zhibo claims the two sides established a “symmetric and balanced” nuclear force structure in which each side had an “equivalent capability to bring nuclear destruction to the

⁹ Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (*Meiguo zhanlüe weishe tixi de tiaozheng yu zhongmei zhanlüe wendingxing*; 美国战略威慑体系的调整与中美战略稳定性), *Journal of International Relations (Guoji guanxi yanjiu*; 国际关系研究), no. 6 (2017): 47-48.

¹⁰ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 45.

¹¹ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 45.

¹² Yang Yuan (杨原), “Beyond Assured Destruction: Quantity of Nuclear Weapons, Commitment Credibility and Rationale of Nuclear Deterrence,” (*Chaoyue “quebao cuihui”: he wuqi shuliang, chengnuo kexindu yu he weishe yuanli*; 超越“确保摧毁”: 武器数量、承诺可信度与核威慑原理), *Journal of International Security Studies (Guoji anquan yanjiu*; 国际安全研究), no. 5 (2021): 21.

other.”¹³ This symmetry, says Zou, had the effect of “containing and dispelling any attempts to wage war—including nuclear war—between the two sides.”¹⁴

Hu Gaochen, an assistant researcher at Tsinghua University’s School of Social Sciences, adds that present-day India and Pakistan are also in a state of symmetric strategic stability, calling them states with “basically equivalent nuclear power.”¹⁵

2.1.2 Asymmetric strategic stability

PRC writings reviewed for this paper devoted significant attention to *asymmetric strategic stability*, a system where the main strategic competitors do not have equivalent strategic capabilities. This is not surprising; given the disparities between the PRC’s nuclear capabilities and those of the US and Russia—both in terms of the number of warheads and the types of delivery systems—any form of strategic stability between China and either of those two powers that did not require China to achieve nuclear parity would be inherently asymmetric.

Notably, **the term asymmetric strategic stability does not arise frequently in Western writings**, although the idea that non-equivalent or small nuclear forces can have powerful deterrent effects runs throughout many works of classic deterrence theory.¹⁶

¹³ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 55. This is essentially mutually assured destruction (MAD).

¹⁴ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 55.

¹⁵ Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (*Zhongmei buduichen he wending yu meiguo zhanlüe jihui zhuyi lunxi*; 中美不对称核稳定与美国战略机会主义论析), *Journal of International Security Studies* (*Guoji anquan yanjiu*; 国际安全研究), no. 2 (2021): 71.

¹⁶ A report from a 2016 Track 2 (i.e., non-governmental) dialogue between US and PRC think tanks noted this point as well, observing that “Discussion of ‘asymmetric strategic stability’ suggested the Chinese have found some way to differentiate the term strategic stability from its (problematic) Cold War origins and were aimed at reassuring the US that China was not seeking parity.” “The Tenth China-US Dialogue on Strategic Nuclear Dynamics: A CFISS-Pacific Forum Workshop,” Beijing, PRC, June 13-14, 2016, <https://pacforum.org/events/the-tenth-china-us-dialogue-on-strategic-nuclear-dynamics>. Vipin Narang has discussed an “asymmetric escalation posture” between Pakistan and India; Vipin Narang, “Posturing for Peace? Pakistan’s Nuclear Postures and South Asian Stability,” *International Security* 34, no. 3 (2010), 38-78. On this element of classic deterrence theory, see for example various works of Bernard Brodie, Thomas Schelling, and Robert Jervis.

2.2 Ways: Strategic deterrence and its role in maintaining strategic stability

Many PRC writings assert that strategic stability (whether symmetric or asymmetric) is achieved through “mutual deterrence”—that is, the ability of each state actor to persuade or induce other states not to upset that stability.¹⁷ As some authors contend, effective deterrence may enable China to “subdue the enemy without fighting,” or assist in achieving Beijing’s strategic objectives without resorting to high-intensity armed conflict.¹⁸

2.2.1 Conceptualizing deterrence

Deterrence describes ways in which one country may exert pressure on another country through armed force and/or other instruments of national power. In China, as in the US, the concept of deterrence in the 20th century was particularly prominent in discussions of how to prevent a nuclear conflict, and is most commonly rendered in Chinese as *weishe* (威慑). Many PRC authors appear to use the term to describe actions that preserve a status quo beneficial to China’s interests, or else seek to transform an existing state of affairs into what Beijing views as the legitimate status quo.¹⁹

The usage of *weishe* and related terms in PRC writings suggests that their exact content is both flexible and debated. Some PRC writings employ *weishe* in a narrow sense that is consistent with classical Western notions of deterrence: convincing an adversary *not to take action* that it wants to take. For example, Zhang Wenzong, director of the Politics Research Office in the Institute of American Studies of the China Institutes of Contemporary International Relations (CICIR), notes that *weishe* refers to “the use of force to *scare the adversary away from doing something*” (emphasis added).²⁰

¹⁷ E.g., Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017).

¹⁸ See for example Zhang Wenzong (张文宗), “US Deterrence and Coercion toward China and China’s Response,” (*Meiguo duihua weishe yu xiepo ji zhongguo yingdui*; 美国对华威慑与胁迫及中国应对), *Contemporary International Relations (Xiandai guoji guanxi*; 现代国际关系), no. 12 (2016): 12; Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), “On Our Country’s Strategic Deterrence Capability Building,” (*Lun woguo zhanlüe weishe nengli jianshe*; 论我国战略威慑能力建设), *Journal of PLA Nanjing Institute of Politics (Nanjing zhengzhi xueyuan xuebao*; 南京政治学院学报), no. 3 (2017): 101.

¹⁹ Li Bin, a well-known PRC scholar of nuclear deterrence, wrote a lengthy article in 2014 laying out his views on the relationship between deterrence, compellence, and changes to the status quo. Li Bin (李彬), “The Difference in Chinese and American Understandings About ‘Nuclear Deterrence’,” (*Zhongmei dui “heweishe” lijie de chayi*; 中美对“核威慑”理解的差异), *World Economics and Politics (Shijie jingji yu zhengzhi*; 世界经济与政治), no. 2 (2014).

²⁰ Zhang Wenzong (张文宗), “US Deterrence and Coercion toward China and China’s Response,” (2016), 24.

Many PRC authors, however, use *weishe* in a more expansive sense that some Western authors say conflates the concept of *deterrence* with the additional concept of *compellence*: convincing an adversary *to take an action* it does not want to take—which could mean doing something it does not want to do or *stopping* something it is already doing.²¹ *Weishe* in this broader sense does not focus on whether one wants the opponent to take an action or refrain from an action; rather, as Li Bin, a nuclear expert and professor at Tsinghua University, explains, *weishe* in this sense entails “the use of force to make the other party perceive fear.” Li (and many Western authors) thus argues that *weishe* may be better translated as “coercion.”²²

In fact, although *weishe* is the most commonly-used term to describe this act of persuading or dissuading an adversary, the Chinese-language literature suggests that there is a wide range of terms and concepts to describe actions that might be considered “deterrent,” “compellent,” “coercive,” or other related concepts. Indeed, many PRC theorists of deterrence acknowledge the somewhat fuzzy nature of the concept and debate the significance of choosing one term over another in a given situation.²³

Table 1 summarizes some of the Chinese-language terms that are used in the texts we examined. In this paper, we generally translate terms as shown in this table; for *weishe*, we usually use “deterrence” unless its meaning is obviously something else.

²¹ Li Bin identifies nine different Chinese-language terms used by PRC military and civilian subject matter experts to describe the concepts of “deterrence,” “compellence,” and “coercion,” often in overlapping or ambiguous ways. Li argues that Chinese theorists do not draw the same distinctions between these three concepts and that *weishe* can be used to apply to all three. See Li Bin (李彬), “The Difference in Chinese and American Understandings About ‘Nuclear Deterrence,’” (2014).

²² Li Bin (李彬), “The Difference in Chinese and American Understandings About ‘Nuclear Deterrence,’” (2014), 8. See also Liu Ziyi (刘子夜), “On the Conditions for Successful Cyber Coercion,” (*Lun wangluo xiepo chenggong de tiaojian*; 论网络胁迫成功的条件), *Quarterly Journal of International Politics (Guoji zhengzhi kexue*; 国际政治科学), no. 2 (2020): 156.

²³ This is not a uniquely Chinese-language problem of defining terms; the concept of deterrence is also fuzzy in many Western writings.

Table 1. Chinese-language terms for deterrence, compellence, and coercion

(bolded terms were the most commonly used in the texts we examined)

Chinese word	Identified or contextually inferred English-language equivalent
<p>weishe; 威慑^{abcdefghino}</p> <p>ezhi; 遏制^{abgjk}</p> <p>shezhi; 慑止^{ano}</p>	<p>Deterrence</p> <p>(convincing someone <i>not to take an action</i> that they want to take)</p>
<p>qiangpo; 强迫^{abdj}</p> <p>qushi; 驱使^{an}</p> <p>weibi; 威逼^{ag}</p> <p>qiangzhi; 强制^{mo}</p>	<p>Compellence</p> <p>(convincing someone <i>to take an action</i> that they do not want to take, either by starting something or stopping something they are already doing)</p>
<p>weishe; 威慑^{ap}</p> <p>qiangzhi; 强制^{abeghijklno}</p> <p>xiepo; 胁迫^{ag}</p> <p>bipo; 逼迫^{abgi}</p> <p>weiya; 威压^a</p> <p>qiangpo; 强迫^{adj}</p>	<p>Coercion</p> <p>(using force or the threat of force to deter and/or compel)</p>

Sources:

^a Li Bin (2014); ^b Zhao Weihua (2014); ^c Jin Canrong (2016); ^d Liu Jianguyong (2016); ^e Xue Guifang and Zheng Jie (2015); ^f Liu Zhangren (2014); ^g Zhang Wenzong (2016); ^h Ye Hailin (2015); ⁱ Zhao Weidong (2013); ^j Li Kaisheng (2015); ^k Li Wenjie and Zou Ligang (2014); ^l Feng Jiangfeng (2015); ^m Zhu Feng (2017); ⁿ Luo Xi (2018); ^o Xie Chao (2021); ^p Xiao Tianliang, ed. (2020) ²⁴

²⁴ Li Bin (李彬), "The Difference in Chinese and American Understandings About 'Nuclear Deterrence'," (2014); Zhao Weihua, "Models for Resolving the China-Vietnam South China Sea Dispute: An Analysis of the Roles of Extraregional Great Powers and International Law" (*Zhongyue nanhai zhengduan jiejuemoshi tansuo—jiyu quyuwai daguo yinsu yu guoji fa zuoyong de fenxi*; 中越南海争端解决模式探索—基于区域外大国因素与国际法作用的分析), *Journal of Contemporary Asia-Pacific Studies (Dangdai yatai; 当代亚太)* no. 5 (2014): 95-119; Jin Canrong, "Pressure Faced by China and the Path to a Response Following the 'South China Sea Arbitration Case'," (*"Nanhai zhongcai an" hou zhongguo mianlin de yali yi yingdui zhi dao*; "南海仲裁案"后中国面临的压力与应对之道), *Pacific Journal (Taipingyang xuebao; 太平洋学报)* 2016: 51-53; Liu Jianguyong, "The Situation of the Korean Peninsula and Sustainable Security for Northeast Asia," (*Chaoxian bandao jushi yu dongbei ya ke chixu anquan*; 朝鲜半岛局势与东北亚可持续安全), *Northeast Asia Forum (Dongbeiya luntan; 东北亚论坛)*, no. 3 (2016): 3-14; Xue Guifang and Zheng Jie, "Safeguarding Rights and Interests in the South China Sea: Legal Support of Military Operations Other Than War of the PLA Navy," (*Nanhai weiquan: haijun zhuhanqian feizhanzheng junshi xingdong de falü baozhang*; 南海维权: 海军遂行非战争军事行动的法律保障), *Humanities and Social Sciences Journal of Hainan University (Hainan daxue*

Elements of deterrence

However the term is translated, most PRC deterrence theorists—like their Western counterparts—state that effective deterrence depends on three elements: (1) credible capability to take the threatened action; (2) resolve or commitment to take that action if needed; and (3) the ability to successfully communicate capability and commitment so they are recognized by an adversary.²⁵

Several of the writings we examined debate which of these three elements is most important. Of those writings, the majority emphasize capability as the central element of deterrence. PRC

xuebao renwen shehui xueban; 海南大学学报人文社会科学版), no. 33 (Nov. 2015): 1-7; Liu Zhangren, “On Improving Maritime-Control Capability through Navy-Coast Guard Cooperation and Coordination,” (*Lun haijing haijun xietong peihe tigao Haiyang guankong nengli*; 论海警海军协同配合提高海洋管控能力), *Journal of China Maritime Police Academy* (*Gong'an haijing xueyuan xuebao*; 公安海警学院学报), no. 9 (2014): 51-54; Zhang Wenzong (张文宗), “US Deterrence and Coercion toward China and China’s Response,” (2016); Ye Hailin, “Limited Conflict and Partial Control—Escalation of the South China Sea Issue Since 2014 and the Intent and Policies of the Relevant Parties,” (*Youxian chongtu yu bufen guankong—2014 nian yilai nanhai wenti de jihua yu youguan gefang de yitu he celüe*; 有限冲突与部分管控—2014 年以来南海问题的激化与有关各方的意图 和策略), *Journal of Strategy and Decision-Making* (*Zhanlüe juece yanjiu*; 战略决策研究), no. 5 (2015): 36-55; Zhao Weidong, “Equipment Conditions of Vessel/Helicopter on Vessel Use of Force for Maritime Law Enforcement Operations,” (*Haishang zhifa duichuan wuli shiyong zhi zhuangbei tiaojian tanxi*; 海上执法对船武力使用之装备条件探析), *Journal of the Maritime Police of China* (*Gong'an haijing xueyuan xuebao*; 公安海警学院学报), no. 13 (May 2013): 1-5; Li Kaisheng, “Is It Appropriate to Use Force? An Analysis of Interests and Policy in Territorial Disputes,” (*Wuli shiyong shifou shiyi? Lingtu zhengduan zhong de liyi yu zhengce bianxi*; 武力使用是否适宜? 领土争端中的利益与政策辨析), *Journal of International Relations* (*Guoji guanxi yanjiu*; 国际关系研究), no. 1 (2015), 71-84; Li Wenjie and Zou Ligang, “International Law Analysis on the Use of Force in Maritime Law Enforcement,” (*Haishang zhifa zhong shiyong wuli xingwei de guojifa pouxu*; 海上执法中使用武力行为的国际法剖析), *Pacific Journal* (*Taiping xuebao*; 太平洋学报), no. 22 (July 2014): 9-16; Feng Jiangfeng, “Research on the Construction of Our Country’s Coast Guard Legal System,” (*Woguo haijing falü zhidu goujian yanjiu*; 我国海警法律制度构建研究), *China Water Transport* (*Zhongguo shuiyun*; 中国水运), no. 15 (Dec. 2015): 60-63; Zhu Feng, “The Trump Administration’s Coercive Diplomacy against North Korea,” (*Telangpu zhengfu dui chaoxian de qiangzhi waijiao*; 特朗普政府对朝鲜的强制外交), *World Economics and Politics* (*Shijie jingji yu zhengzhi*; 世界经济与政治), no. 6 (2017): 60-76; Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (*Meiguo goujian quanyu zhisheng xing zhanlüe weishe tixi yu zhongmei zhanlüe wending xing*; 美国构建全域制胜型战略威慑体系与中美战略稳定性), *Foreign Affairs Review* (*Waijiao pinglun* (*Waijiao xueyuan xuebao*); 外交评论(外交学院学报)), no. 3 (2018); Xie Chao (谢超), “Misunderstanding and Crisis Alleviation in the Doklam Standoff,” (*Dong lang duizhi zhong de cuowu ren zhi yu weiji huanhe*; 洞朗对峙中的错误认知与危机缓和), *Quarterly Journal of International Politics* (*Guoji zhengzhi kexue*; 国际政治科学) 5, no. 1 (2020); Xiao Tianliang (肖天亮), ed., *Science of Military Strategy (2020 Revision)*, (*Zhanlüe xue (2020 nian xiuding)*; 战略学(2020 年修订)) (Beijing: National Defense University Press (*Guofang daxue chubanshe*; 国防大学出版社), 2020), 131.

²⁵ E.g., Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*. It is common to see PRC authors attribute these three elements of effective deterrence to Henry Kissinger. Writings reviewed for this paper that do so include Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018); Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (*Heweishe jili: shili jichu, xin hao chuandi he xinli boyi*; 核威慑机理: 实力基础、信号传递和心理博弈), *International Forum* (*Guoji luntan*; 国际论坛), no. 1 (2022); and Du Yanyun (杜雁芸), “The Militarization of Cyberspace: Trends and Countermeasures,” (*Wangluo kongjian junshihua fazhan taishi ji qi yingdui*; 网络空间军事化发展态势及其应对), *Pacific Journal* (*Taipingyang xuebao*; 太平洋学报), no. 12 (2021).

authors note that deterrence capabilities span all domains of national power; at the lower end of the continuum of conflict, deterrence efforts tend to focus on economic, diplomatic, and media activities that are less likely to escalate to full-blown crisis or conflict. However, most of them say the capability to employ force against another country is the backstop to deterrence.²⁶

That said, a handful of authors argue that commitment is equally or more important for creating a credible deterrent. Yang Yuan of the University of CASS tied commitment specifically to nuclear deterrence, arguing in 2021 that the devastating consequences of nuclear war make it unlikely that any country would willingly pursue it unless the interests at stake are tremendous. Yang writes: “Under the circumstance that the loss of control of the conflict [i.e., undesired escalation] will cause unbearable losses to both parties, *whoever is willing to take the greater risk of loss of control can force the other party to make concessions*. The willingness to take the risk of losing control ... depends on the *relative stakes* of both parties in the conflict.”²⁷ Alarmingly, Yang then adds that “Generally speaking, in regional disputes involving the United States, US interests are often ‘not really critical,’ so nuclear-armed states in the region often have [levels of] resolve more favorable to the situation.”²⁸

Similarly another scholar, writing about China’s involvement in the Korean War, asserted in 2020 that “resolve is not determined by objective circumstances” such as material capabilities, but rather by “the sense of national security threat, the sense of international obligations, and the precautionary judgment of risks.”²⁹

2.2.2 Strategic deterrence

In PRC writings, **strategic deterrence** (*zhanlüe weishe*; 战略威慑) is differentiated from general deterrence in the following ways:

²⁶ Yin Jiwu (尹继武), “Private Information, Diplomatic Communication and the Escalation of Sino-US Crisis,” (*Siyou xinxi, waijiao goutong yu zhongmei weiji shengji*; 私有信息、外交沟通与中美危机升级), *World Economics and Politics* (*Shijie jingji yu zhengzhi*; 世界经济与政治), no. 8 (2020): 73; Yu Xiaoqing (于潇清), “Exclusive Interview with Da Wei: We Must Lose No Time in Stabilizing China-US Relations,” (*Zhuanfang Da Wei: wending zhongmei guanxi shibuwodai*; 专访达巍: 稳定中美关系时不我待), *The Paper*, (*Pengpai xinwen*; 澎湃新闻), Jan. 1, 2022, https://m.thepaper.cn/rss_newsDetail_16108723?from=rss; Wang Zhengda (王政达), “China’s Objectives, Means, and Tactics for Managing Korean Nuclear Crises,” (*Zhongguo dui chao he weiji guanli de mubiao, shouduan yu celüe moshi*; 中国对朝核危机管理的目标、手段与策略模式), *Journal of Jiangnan Social University* (*Jiangnan shehui xueyuan xuebao*; 江南社会学院学报) 19, no. 3 (2017).

²⁷ Yang Yuan (杨原), “Beyond Assured Destruction,” (2021), 18-19.

²⁸ Yang Yuan (杨原), “Beyond Assured Destruction,” (2021), 24. Emphasis added.

²⁹ Yin Jiwu (尹继武), “Private Information, Diplomatic Communication and the Escalation of Sino-US Crisis,” (2020), 86.

- Strategic deterrence, as described in these writings, focuses almost entirely on the use or threat of *military force* to exert pressure on another country. For example, strategic deterrence is described in the 2020 NDU *Science of Military Strategy* as “an alternative mode of military struggle” that is “lower in intensity and cost and has greater room for maneuver” than “actual combat.”³⁰
- Strategic deterrence seeks to achieve *strategic* benefits for one’s own *strategic interests*. For example, in 2019 four researchers at the AMS Assessment and Demonstration Research Center asserted that China’s strategic deterrence capacity can be measured in terms of how well the PLA can “deter any intentions, forces, or actions of hostile powers that influence or impede China’s achievement of strategic objectives.”³¹

Strategic deterrence by these definitions has a longer-term, broader purpose than more limited deterrence that might focus on deterring another party from taking a specific, time-limited action or operation.³²

Mutual vulnerability and asymmetric strategic deterrence

PRC writings follow classic deterrence theory in postulating that countries with strategic capabilities can achieve mutual strategic deterrence either through **mutually assured**

³⁰ Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*, 127.

³¹ Feng Wei (冯伟) et al., “A Study on the Assessment Indicators and Models of Military Strategic Capacity,” (*Junshi zhanlüe nengli pinggu zhibiao ji pinggu moxing yanjiu*; 军事战略能力评估指标及评估模型研究), *Military Operations Research and Systems Engineering (Junshi yunchou yu xitong gongcheng*; 军事运筹与系统工程), no. 3 (2019): 45. This is similar to the definition of strategic deterrence presented in, for example, the 2004 US *Strategic Deterrence Joint Operating Concept*: “Strategic Deterrence is defined as the prevention of adversary aggression or coercion threatening vital interests of the United States and/or our national survival. Strategic deterrence convinces adversaries not to take grievous courses of action by means of decisive influence over their decision making.” US Department of Defense, *Strategic Deterrence Joint Operating Concept*, 2004, https://man.fas.org/eprint/sd_joc_v1.pdf. See also Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), “On Our Country’s Strategic Deterrence Capability Building,” (2017), 101.

³² Apart from “strategic deterrence,” some PRC writings also discuss “campaign deterrence” (*zhanyi weishe*; 战役威慑) and “tactical deterrence” (*zhanshu weishe*; 战术威慑). Commenting on the differences between strategic deterrence and campaign deterrence, a 1998 article appearing in the journal *Conmilit* (produced by the China National Defense Science and Technology Information Center) states that “campaign deterrence” places particular emphasis on the “direct deployment of operational forces” to show capability and resolve in a certain location and thereby “issue the enemy a clear warning.” See Wang Yong (王勇), “Campaign Deterrence Characteristics of the US Military in the ‘98 Gulf Crisis,” (*‘98 haiwan weiji zhong meijun zhanyi weishe tedian*; ‘98 海湾危机中美军战役威慑特点), *Conmilit (Xiandai junshi*; 现代军事), no. 5 (1998): 32. Another author explains the difference between strategic and tactical deterrence using the example of the 2020 hostilities between PLA and Indian Army troops in Ladakh, writing that “the heights occupied by the Indian Army ... have no actual combat value. The tactical value of the action was very limited, [but] the strategic deterrence value must be considered.” Xie Chao (谢超), “Misunderstanding and Crisis Alleviation in the Doklam Standoff,” (2020).

destruction (MAD) (*xianghu quebao cuihui*; 相互确保摧毁), or **mutual vulnerability** (*xianghu cuiruo*; 相互脆弱).³³ PRC writings describe MAD as the principle that a nuclear attack by one side would be met with an overwhelming nuclear counterattack by the other, so that both sides would be decimated. During the Cold War, MAD evolved with regard to whether military or civilian assets would be the primary targets of this destruction, and what this would mean for the relative size of each side's nuclear arsenal.³⁴ These decisions formed the basis for a number of arms control treaties between the US and the USSR. Some PRC authors note that MAD is feasible only for countries with massive nuclear arsenals.³⁵

Mutual vulnerability, by contrast, holds that effective strategic deterrence can be established not by both sides being able to inflict equally great amounts of pain on the other, but rather by each side not being able to avoid a costly and painful retaliation by the other. In other words, the key to mutual vulnerability is not to have an extremely large number of nuclear weapons, but rather to (1) have *enough* weapons to inflict sufficient punishment on the other side, and (2) possess a survivable second-strike capability.

The PRC writings we examined repeatedly highlighted *mutual vulnerability as the key to asymmetric strategic deterrence between a "medium nuclear power," such as China, and "great nuclear power," such as the US or Russia*.³⁶ A 2019 PRC journal article explained that, in this situation, escalation control is achieved through each side's inability to destroy the other's second-strike capability, and arms control treaties should center on ensuring that neither side upends this balance.³⁷ One adds that "among the scholars who believe that China's nuclear

³³ Fiona Cunningham and Taylor Fravel, in a widely-cited article from 2015, use the term "assured retaliation" to capture this dynamic. However, in our dataset of PRC sources the term "mutual vulnerability" appeared exponentially more often—and the one time that "assured retaliation" was used it was referring to Fravel and Cunningham's article. Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and U.S.-China Strategic Stability," *International Security* 40, no. 2 (Fall 2015).

³⁴ For a report on this evolution while it was occurring, see James Reston, "The McNamara Doctrine of Limited Nuclear War," *The New York Times*, June 20, 1962, <https://timesmachine.nytimes.com/timesmachine/1962/06/20/82046415.html?pageNumber=34>.

³⁵ For example, Lu Yin (鹿音), "The Evolution of Sino-US Strategic Stability," (2017); Wang Zhengda (王政达), "The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game," (2022); Yao Yunzhu, *Post-War American Deterrence Theories and Policies (Zhanhou meiguo weishe lilun yu zhengce*; 战后美国威慑理论与政策), (Beijing: National Defense University Press, 1998).

³⁶ See, for example, Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021); Luo Xi (罗曦), "The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability," (2017); Wang Zhengda (王政达), "The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game," (2022).

³⁷ As a 2019 article put it, "At the heart of nuclear strategic stability is the removal of one side's incentive to disarm the other side's nuclear weapons by attacking first." Zou Zhibo (邹治波) and Liu Wei (刘玮), "Constructing the Sino-US Nuclear Strategic Stability Framework," (2019).

deterrence capability is effective, most of them use mutual vulnerability to describe the strategic and stable relationship between China and the United States.”³⁸

Mutual vulnerability underpins China’s no first use (NFU) nuclear policy, which states that China will not use nuclear weapons first in a conflict, but only as part of a “nuclear strategy of self-defense, the goal of which is to maintain national strategic security by deterring other countries from using or threatening to use nuclear weapons against China.”³⁹ For many years, this has involved maintaining a survivable second-strike capability that can dissuade other countries from launching a preemptive nuclear attack.

2.2.3 Pure deterrence and warfighting deterrence

PRC writings on strategic deterrence frequently reference a key distinction that they say is relevant for a country’s decisions about its deterrent capabilities and posture: pure deterrence vs. warfighting deterrence.⁴⁰ This distinction turns on the extent to which one expects that nuclear weapons will actually be *used*, vs. merely threatened, as part of a deterrent strategy.

Pure deterrence (*chun weishe*; 纯威慑), as described in PRC writings, is an approach in which a state limits the intended function of its nuclear weapons to purely “defensive weapons,” aimed at deterring enemy invasion by threatening “massive damage” and “unacceptable

³⁸ Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021).

³⁹ State Council of the People’s Republic of China, *China’s National Defense in the New Era*, (2019), https://english.www.gov.cn/archive/whitepaper/201907/24/content_WS5d3941ddc6d08408f502283d.html.

⁴⁰ These terms, like many, derive from western discussions on nuclear deterrence. For example, international relations scholars cited in Jiang Tianjiao’s discussion on “pure deterrence” include Robert Jervis, Stephen Walt, Charles Glaser, and Thomas Schelling. In Western literature on deterrence, pure and warfighting deterrence are just two of four concepts that center on approaches to nuclear strategy: pure deterrence, conventional deterrence, extended deterrence, and warfighting deterrence. By contrast, most of the PRC writings we examined focus just on pure and warfighting deterrence, either mentioning the other two categories only briefly, or not discussing them at all. See, for example, Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (*Mei’e zhanshu hewuqi fazhan xianzhuang yu yingxiang tanxi*; 美俄战术核武器发展现状与影响探析), *Military Digest (Junshi wenzhai*; 军事文摘), no. 11 (2021): 50.

PRC subject matter expert discussion of the dichotomy of “pure deterrence” and “warfighting deterrence” can be traced back to at least the late 1980s. For example, a 1988 article published in the CASS journal *American Studies* analyzes the historical evolution of US nuclear declaratory policy, employment policy, and force development policy, and asserts that US nuclear strategy has transitioned from “pure deterrence” (or what the authors translated as “nuclear deterrence only”) to “warfighting deterrence.” See Zhang Jingyi (张静怡) and Song Jiuguang (宋久光),

“From ‘Nuclear Deterrence Only’ to ‘Warfighting Deterrence’: Evolution of US Nuclear Strategy Since 1960s,” (*Cong “chun weishe” dao “shizhan weishe”—liushi niandai yilai meiguo he zhanlüe de yanbian*; 从“威慑”到“实战威慑”——一六十年代以来美国核战略的演变), *American Studies Quarterly (Meiguo yanjiu*; 美国研究), no. 4 (1988). See also Yao Yunzhu, *Post-War American Deterrence Theories and Policies*, 19-20.

losses” to an opponent that initiates a nuclear conflict.⁴¹ The function of nuclear weapons in this formulation is primarily psychological: they deter the other side from attacking by threatening the opponent with guaranteed counterattack, including of civilian assets.⁴²

Given the extremely high costs that would be incurred should either side use its nuclear weapons, “pure” nuclear deterrence does not require nuclear use. In fact, “*pure*” nuclear deterrence takes place without ever actually using nuclear weapons: the purpose of having nuclear weapons is to remind opponents not to use theirs.⁴³ Breaching the nuclear threshold would constitute a significant escalation.

Warfighting deterrence (*shizhan weishe*; 实战威慑), on the other hand, entails a *limited threat or use of nuclear weapons in combat* to both deter the adversary’s actions and achieve operational goals.⁴⁴ According to Gou Ziyi, a student at the PLA Strategic Support Force Information Engineering University, warfighting deterrence “emphasizes the possession of military power and flexible response capability that can actually be used in limited nuclear warfare.”⁴⁵ Another author adds that targets of nuclear weapons used for warfighting deterrence are likely to be military forces or other operationally-significant targets, rather than cities or civilians.⁴⁶ Gou highlights the role of tactical nuclear weapons in the implementation of warfighting deterrence, emphasizing their “high strike accuracy, controllable war effects, and good maneuverability.”⁴⁷

⁴¹ For example, Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy: Theory, History and Reality,” (*Meiguo shizhan weishe hezhanlüe: lilun, lishi yu xianshi*; 美国实战威慑核战略：理论、历史与现实), *Journal of International Security Studies* (*Guoji anquan yanjiu*; 国际安全研究), no. 2 (2021): 32-33; Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018), 44; Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021), 50.

⁴² Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021), 50.

⁴³ E.g., Wang Zhengda: “Due to the huge soft and hard killing effect of nuclear weapons, it is difficult to use them in actual combat, and they are mainly used as political and psychological weapons, that is, relying on the combination of hard power and soft power to achieve nuclear deterrence.” Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022).

⁴⁴ For example, Jiang Tianjiao states that a warfighting deterrence approach regards nuclear weapons as useable in “limited nuclear wars.” Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021), 36.

⁴⁵ Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021), 50. See also Zhu Yu (朱昱) et al., “Analysis of Missile Development Course, Status, and Future Operational Characteristics,” (*Daodan fazhan licheng, xianzhuang ji weilai zuozhan tedian fenxi*; 导弹发展历程、现状及未来作战特点分析), *Aerodynamic Missile Journal* (*Feihang daodan*; 飞航导弹), no. 12 (2019).

⁴⁶ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021), 36.

⁴⁷ Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021), 50.

Why does the distinction between pure deterrence and warfighting deterrence matter?

These two concepts of deterrence imply different ways that countries might conceptualize using nuclear weapons, and what the escalatory significance would be of doing so. In a “pure deterrence” model, the nuclear threshold remains significant: nuclear weapons are described as weapons of last resort that occupy a purely defensive role intended to discourage attacks by others. From the PRC perspective, this implies a NFU posture. In a “warfighting deterrence” model, on the other hand, nuclear weapons’ utility is assessed partly in terms of operational effectiveness, and their effects are assumed to be at least somewhat controllable. Nuclear weapons might be used offensively.

In principle, ascertaining whether an opponent favors pure deterrence or warfighting deterrence would enable one to assess whether and how that opponent might be inclined to actually use nuclear weapons in a future crisis or conflict.

PRC perspectives on US approaches to deterrence

A number of PRC authors describe the US approach to deterrence in terms of pure deterrence vs. warfighting deterrence. Nearly all assert that today, the US favors warfighting deterrence, i.e., the US would consider using nuclear weapons for offensive and/or operational purposes.⁴⁸ For example, four authors from the PLA Rocket Force Engineering University argued in 2019 that the US development of lower-yield, lower-radiation nuclear bombs is one indication that the US is adopting a warfighting deterrence strategy that “lowers the threshold of nuclear use.”⁴⁹

2.3 Implication: Strategic stability requires mutual vulnerability

This chapter discussed how PRC writings define and discuss several key terms and concepts related to strategic stability and deterrence. In the context of this paper, strategic stability can be thought of as a desired end state, while strategic deterrence strategies may be thought of as “ways” to accomplish the desired end state.

It is notable that PRC writings focus on the concept of asymmetric stability, which is largely absent in their Western counterparts. PRC authors argue that China does not need to have parity with potential adversaries in its nuclear deterrent, as long as it retains a survivable

⁴⁸ Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017), 33. See also Zhang Jingyi (张静怡) and Song Jiuguang (宋久光), “From ‘Nuclear Deterrence Only’ to ‘Warfighting Deterrence,’” (1988); and Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021), 38-47.

⁴⁹ Zhu Yu (朱昱) et al., “Analysis of Missile Development Course,” (2019).

second-strike capability that supports mutual vulnerability. Indeed, they say, **US-China strategic stability depends on this mutual vulnerability.**

A key element of strategic deterrence is strategic military capabilities, which may be thought of as the “means” by which strategic deterrence is carried out.⁵⁰ The next chapter examines some of the strategic capabilities that PRC writers say are critical for achieving asymmetric strategic stability.

⁵⁰ See, for example, Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 45.

3. Means: Strategic Capabilities

In this chapter, we examine how PRC authors define and describe the “strategic capabilities” that enable strategic deterrence. If strategic stability is the *end*, and strategic deterrence is one way to achieve that end, then strategic capabilities—and particularly, strategic military capabilities—are the *means* by which strategic stability may be achieved.

As we discuss below, the types of military capabilities that can have strategic effects have expanded significantly in the past several decades. PRC writings conceptualize strategic capabilities as part of a **strategic deterrence system** (*zhanlüe weishe tixi*; 战略威慑体系) in which the deterrent power of nuclear forces remains the central element, but is reinforced by certain *non-nuclear* forces or weapons.⁵¹ Notably, PRC leader Xi Jinping tasked the PLA with “establish[ing] a strong system of strategic deterrence” in his October 2022 report to the 20th National Congress of the Chinese Communist Party, suggesting that the concept now has the weight of official policy.⁵²

PRC authors generally agree that high-end conventional weapons, space, and cyber capabilities are important complements to nuclear forces, and these authors appear to be engaged in an ongoing discussion about what capabilities make up an adequate strategic deterrence system.

3.1 What is a strategic capability?

Although strategic capability includes many elements of national power, for our purposes the most important type is strategic military capability, and in particular **strategic weapons** (*zhanlüe wuqi*; 战略武器). The *PRC Military Encyclopedia* defines strategic weapons as “weapons that are used to achieve strategic objectives and have a deterrent effect.”⁵³

⁵¹ See, for example, Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018), and Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017). See also Zhou Lini (周黎妮), Fu Zhongli (傅中力), and Wang Shu (王姝), “Comparison between Space Deterrence and Nuclear Deterrence,” (*Taikong weishe yu he weishe bijiao yanjiu*; 太空威慑与核威慑比较研究), *National Defense Science and Technology* (*Guofang Keji*; 国防科技), no. 3 (2015).

⁵² Xi Jinping, “Hold High the Great Banner of Socialism with Chinese Characteristics and Strive in Unity to Build a Modern Socialist Country in All Respects,” Report to the 20th National Congress of the Communist Party of China, October 16, 2022, <https://english.news.cn/20221025/8eb6f5239f984f01a2bc45b5b5db0c51/c.html>.

⁵³ China Military Encyclopedia Editorial Committee, *China Military Encyclopedia (Second Edition): Equipment II* (*Zhongguo junshi baike quanshu (di er ban): junshi zhuangbei II*; 中国军事百科全书(第二版):军事装备 II) (Beijing: Encyclopedia of China Publishing House, 2015), 893.

Historically, strategic weapons were understood (both in the US and in China) as meaning nuclear weapons, and the PRC writings we examined generally agree that nuclear weapons still constitute the central component of a country's strategic deterrence capability.

However, **recent PRC writings say that technological changes since the Cold War have enabled the development of “new types of strategic weapons” in the past several decades.**⁵⁴ These writings describe **non-nuclear strategic weapons** (*feihe zhanlüe wuqi*; 非核战略武器) as advanced non-nuclear capabilities that can undermine nuclear deterrence by threatening an adversary's second-strike arsenal or wreaking a level of destruction similar to that of nuclear weapons. Zou Zhibo and Liu Wei of CASS describe non-nuclear strategic weapons as “high-tech, offensive non-nuclear weapons” that can “strike,” “degrade,” or “paralyze” an adversary's nuclear arsenal.⁵⁵ Lu Yin, a researcher at NDU's Strategic Studies Research Institute, argued in 2017 that US development of capabilities such as Conventional Prompt Global Strike (CPGS) gives conventional weapons the “strike function” of nuclear weapons.⁵⁶

The advent of such weapons, Zou and Liu argue, means that a country that uses a non-nuclear strategic strike to eliminate an adversary's nuclear inventory may achieve effects that are equivalent to a first use of nuclear weapons.⁵⁷ Li Zhe, a researcher at the Foreign Military Research Center of AMS's War Research Institute, stated in 2021 that non-nuclear strategic weapons have the potential to affect strategic stability “in the same way” as nuclear weapons.⁵⁸

As a result, strategic capabilities discussed in PRC writings are no longer limited to nuclear forces. PRC writings reviewed for this paper generally agree that in the current era, a country's strategic deterrence forces or “system” must include the following capabilities:

- Nuclear capability
- High-end conventional capability
- Cyber capability
- Space capability⁵⁹

⁵⁴ *China Military Encyclopedia (Second Edition): Equipment II*, 893.

⁵⁵ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 51-52.

⁵⁶ Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017), 35.

⁵⁷ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 51-52.

⁵⁸ Li Zhe (李喆), “Path to Nuclear Arms Control Remains Beset with Difficulties,” (*He junkong zhi lu reng jingji saitu*; 核军控之路仍荆棘塞途), *PLA Daily*, (*Jiefangjun bao*; 解放军报), Feb. 6, 2021, http://www.81.cn/jfjmap/content/2021-02/06/content_282330.htm.

⁵⁹ Zhang Yan (张岩), “The Historical Evolution of the Theory of Strategic Deterrence,” (*Zhanlüe weishe lilun de lishi yanjin*; 战略威慑理论的历史演进), *Military History (Junshi lishi*; 军事历史), no. 2 (2018): 60-61; Xiao Tianliang (肖

In the rest of this chapter, we briefly describe each of these types of strategic capabilities. Later in the paper, we discuss how PRC authors say these capabilities are changing the overall dynamics of strategic deterrence.

3.2 Nuclear strategic capabilities

Historically, “strategic deterrence” was generally considered to consist in deterring nuclear war through the threatened use of nuclear weapons. The ability of nuclear weapons to deter rested on assumptions about the unique nature of nuclear weapons and nuclear war.

3.2.1 Are nuclear weapons fundamentally different from other weapons?

PRC authors—like their Western counterparts—have emphasized that nuclear weapons have fundamentally different effects than other types of weapons, including “huge destructive capability,” “long-term ... effects,” and difficulty in restricting their targets to operational or military assets rather than civilian ones.⁶⁰ The consequences of large-scale nuclear attack were (and still are) considered to be inherently strategic: as Wang Zhengda, of Shandong University of Political Science and Law, put it in a 2022 article, “After a nuclear attack, a country may cease to exist as a dynamic political and economic entity.”⁶¹ Moreover, PRC authors note that in a full-scale nuclear war even the winners lose. The dynamics of mutual vulnerability mean that victory in a nuclear conflict is still incredibly costly: the first mover risks incurring devastating nuclear strikes as a result of its own actions.

The result of these terrible effects is that, as Wang Zhengda states, most countries and people have developed “an instinctive disgust and extreme fear of nuclear weapons.”⁶² It is this fear that underpins nuclear deterrence: as described in PRC writings, the strategic consequences of

天亮), *Science of Military Strategy (2020 Revision)*, 128-131; Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), “On Our Country’s Strategic Deterrence Capability Building,” (2017), 103-105; Li Zhe (李喆), “Path to Nuclear Arms Control Remains Beset with Difficulties,” (2021).

⁶⁰ For example, Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018); Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022); Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*, 128.

⁶¹ Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022).

⁶² Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022). See also Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), “On Our Country’s Strategic Deterrence Capability Building,” (2017).

nuclear war make it unlikely that nuclear powers will ever deliberately use these capabilities.⁶³ These writings imply that any nuclear weapon is a strategic weapon.

3.2.2. Symmetric and asymmetric nuclear capabilities

PRC authors say that symmetric strategic stability is achieved when adversarial states possess equivalent strategic capabilities—which historically has meant having similar nuclear capabilities. The US-USSR nuclear balance during the Cold War is often cited as an example.⁶⁴ Hu Gaochen, of Tsinghua University’s School of Social Sciences, argues that present-day India and Pakistan are also in a state of symmetric stability, having “basically equivalent nuclear power.”⁶⁵

These authors acknowledge, by contrast, that **as a nuclear power, the PRC’s nuclear deterrence capabilities have always been asymmetric.** PRC writings categorize China today as a “medium” nuclear power, in the company of France, the United Kingdom, India, and Pakistan, with only the US and Russia occupying “great nuclear power” status.⁶⁶

Hu Gaochen identifies two types of asymmetry in the nuclear forces of the US and China: the size of their nuclear weapon inventories, and those weapons’ deployment modes.⁶⁷ Citing data from the 2020 *SIPRI Yearbook*, Hu notes that there was “a rather large gap” in the number of nuclear warheads possessed by the US and China at the time (5,800 and 320, respectively).⁶⁸ In terms of “deployment modes,” Hu claims China’s nuclear weapons adopt a de-mating

⁶³ For example, Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018); and Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022).

⁶⁴ Referencing the US-Soviet Union nuclear buildup during the Cold War, two CASS Senior Fellows assert that the two sides established a “symmetric and balanced” nuclear force structure in which each side had an “equivalent capability to bring nuclear destruction to the other.” Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 55.

⁶⁵ Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021), 71.

⁶⁶ Fan Jishe (樊吉社), “The Logic and Evolution of China’s Nuclear Policy,” (*Zhongguo he zhengce de jiben luoji yu qianjing*; 中国核政策的基本逻辑与前景), *Foreign Affairs Review (Waijiao pinglun (waijiao xueyuan xuebao)*; 外交评论(外交学院学报)), no. 5 (2018): 4-6; Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021), 63-64, 72; Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 56; Zhang Yan (张岩), “The Historical Evolution of the Theory of Strategic Deterrence,” (2018), 59. Although numbers are unspecified in these writings, countries identified as “great” nuclear powers appear to be those whose nuclear weapons number in the thousands, “medium” in the hundreds, and “weak” in the tens.

⁶⁷ Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021), 71.

⁶⁸ *Ibid.*, 66.

posture (i.e., nuclear warheads are not pre-mounted on their delivery systems), whereas “a rather large number” of US nuclear warheads are mated and “ready for immediate use.”⁶⁹

For a medium nuclear power, like China, that cannot hold a great nuclear power at risk through numerical parity, a more achievable goal is to establish asymmetric nuclear deterrence. This requires establishing a credible deterrent by maintaining a survivable second-strike capability that can hold the other side’s civilian populace at risk of an “unbearable” nuclear counterattack.⁷⁰ This has formed the foundation of China’s nuclear policy since the PRC first developed nuclear weapons in 1964. As discussed in Chapter 5, PRC scholars engage in rigorous debate on the appropriate size and type of nuclear arsenal to achieve effective asymmetric deterrence.

Balancing transparency and ambiguity

In principle, the onus of maintaining mutual vulnerability between asymmetric powers is on the weaker member of the pair, which must demonstrate that the quality of its nuclear weapons compensates for numerical inferiority.⁷¹ However, many of the PRC writings we examined observe that the weaker side may have an equally strong incentive to promote uncertainty about the nature of its nuclear deterrent. As one author put it in 2022, in the context of asymmetric nuclear deterrence, the stronger side “often reveals their nuclear forces,” whereas the weaker side will routinely “conceal their nuclear forces” to increase the other side’s uncertainty and fear.⁷²

To maintain a credible deterrent, PRC authors say, the weaker party must balance transparency of commitment and broad capabilities with ambiguity about how these capabilities would be employed. On one hand, two authors wrote in 2019, effective nuclear deterrence depends on each side “clearly and unmistakably conveying its nuclear deterrence strength and resolve to the adversary.” They claim that although China’s nuclear weapons are “highly confidential and the scale of nuclear power they possess is relatively limited, China should inform the United States of its nuclear deterrence capabilities and its firm determination to use nuclear weapons at critical moments.”⁷³

On the other hand, they say, “on tactics and specific issues, China must remain a certain degree of ‘fuzziness’... it cannot be transparent about specific tactics, technical indicators, development, production, deployment and other important information about nuclear weapons.” The authors characterize this approach as “strategic transparency and tactical secrecy.”⁷⁴

⁶⁹ Ibid.

⁷⁰ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 57. See also Zhang Yan (张岩), “The Historical Evolution of the Theory of Strategic Deterrence,” (2018), 59.

⁷¹ Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017), 46.

⁷² Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022), 122-123.

⁷³ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019). Hu Gaochen similarly writes that deterrence requires that China “appropriately display the strategic level and

3.3 Non-nuclear strategic capabilities

PRC writings argue that in the 21st century, historic shifts in weapons technology mean that military strategic capability is no longer limited to nuclear weapons. In fact, some argue that certain non-nuclear weapons may be better for attaining strategic deterrence than nuclear weapons are.

3.3.1 Conventional strategic capabilities

Zhang Yan, an administrator at the PRC NDU's Graduate School with a PhD in military strategy from AMS, explains that although during the Cold War strategic deterrence was “mainly expressed through nuclear deterrence,” “rapid developments in science and technology” since then have created sophisticated, powerful conventional weapons that are “flexible, scalable, [and] credible” for deterring nuclear or conventional attack.⁷⁵ The 2020 *Science of Military Strategy* notes that “high-tech conventional weapons not only favorably compare with nuclear weapons in regard to long-distance strike and damage effects, but also offer accuracy and reliability that nuclear weapons cannot compete with.”⁷⁶ A number of PRC writings note that precision strike capabilities, such as CPGS, enable “conventional weapons to play the strike function of nuclear weapons”—that is, they have similar strategic-level consequences.⁷⁷

PRC writings identify the following as conventional strategic weapons:

- Hypersonic weapons
- Long-range precision strike systems
- Advanced missile defense systems⁷⁸

appropriately blur the tactical level”; Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021).

⁷⁴ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019).

⁷⁵ Zhang Yan (张岩), “The Historical Evolution of the Theory of Strategic Deterrence,” (2018), 60-61.

⁷⁶ Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*, 129.

⁷⁷ Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017). See also Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

⁷⁸ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 51-52; Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017), 35; Li Zhe (李喆), “Path to Nuclear Arms Control Remains Beset with Difficulties,” (2021); Huang Xiaoliang (黄晓亮) et al., “Analysis of Trends in US-Russian Nuclear Arms Confrontation,” (*Mei e he junbei duikang qushi fenxi*; 美俄核军备对抗趋势分析), *Aerodynamic Missile Journal (Feihang daodan*; 飞航导弹) 2020, no. 12 (2020); Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022); Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

3.3.2 Cyber and space strategic capabilities

A number of PRC authors identify cyberspace and outer space as emerging military domains that can generate large-scale strategic effects, characterizing capabilities such as anti-satellite weapons and cyberattacks as “non-nuclear strategic weapons.”⁷⁹ Because of their integration into nearly every element of advanced nations’ civilian and military patterns of life, cyber and space capabilities allow nations to hold at risk critical components of infrastructure and economy. Moreover, cyber and space play a critical role in nuclear command and control systems, intelligence, surveillance, and reconnaissance (ISR), and other crucial functions for nuclear deployment and thus can be used to undermine an opponent’s nuclear deterrent.⁸⁰ As a result, cyber and space have become what one author calls “effectiveness domains” that “have an increasingly significant war-enabling effect.”⁸¹

Cyber. A number of PRC authors discuss the growing role of cyber capabilities in strategic deterrence.⁸² One asserts that “some countries” view cyber weapons as “weapons of mass destruction.”⁸³

Space. Some PLA writings indicate that space and counterspace operations can undermine an adversary’s nuclear deterrent by degrading command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities, including those of nuclear forces.⁸⁴ As early as 2002, PRC researchers pointed out that space-based C4ISR systems could allow a country to better track, target, and strike an opponent’s nuclear forces.⁸⁵ A 2018 article

⁷⁹ For example, Li Zhe (李喆), “Path to Nuclear Arms Control Remains Beset with Difficulties,” (2021); Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017), 35.

⁸⁰ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021); Zhang Yan (张岩), “The Historical Evolution of the Theory of Strategic Deterrence,” (2018), 61.

⁸¹ Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017).

⁸² See, for example, Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*, 139. Luo Xi asserts that cyber rose to prominence when international security scholar James Der Derian coined the term “cyber deterrence” in 1994, and was further developed in the United States’ “official implementation of cyber deterrence strategy” in 2011 through the release of the White House’s “International Strategy for Cyberspace” and DOD’s “Strategy for Operating in Cyberspace.” See Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017), 34. See also Du Yanyun (杜雁芸), “The Militarization of Cyberspace: Trends and Countermeasures,” 54.

⁸³ Du Yanyun (杜雁芸), “The Militarization of Cyberspace: Trends and Countermeasures,” (2021), 59.

⁸⁴ Chang Xianqi, *Military Astronautics (Junshi Hangtianxue; 军事航天学)* (Beijing: National Defense Industry Press, 2002), 284.

⁸⁵ Xu Wei and Chang Xianqi, “Space Deterrence and Its Strategic Application,” (*Shilun kongjian weishe; 试论空间威慑*), *Journal of the Academy of Equipment Command and Technology (Zhuangbei zhihui jishu xueyuan xuebao; 装备指挥技术学院学报)* 13, no. 1 (Feb. 2002).

asserts that space deterrence “emerged as an auxiliary force for nuclear deterrence” during the Cold War, “providing strategic stability” by enabling each side to monitor the other’s missile launches and thereby “ensure the retaliation capability of both strategic forces.”⁸⁶

3.4 Implications: New strategic capabilities are reshaping strategic deterrence

As noted earlier, PRC writings assert that for many decades asymmetric stability has enabled the PRC to maintain a limited arsenal of strategic weapons. However, these writings also assert that asymmetric stability can only be maintained as long as each side feels vulnerable to attack by the other. This requires that the stronger side (i.e., the US) refrain from actions that undermine the weaker side’s (i.e., China’s) second strike capability. If it does not, the weaker side must upgrade its own capabilities to “keep up,” with the result that arms race stability—and strategic stability more broadly—is undermined.

In recent years, many PRC authors and policy makers express concern that US missile defense, prompt strike capabilities, offensive operations in emerging domains such as space and cyber, and cross- or multi-domain deterrence could weaken China’s nuclear deterrent, undermining long-standing asymmetric strategic stability between the US and China and requiring a reassessment of how this stability may be restored. We discuss these concerns in the next chapter.

⁸⁶ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

4. Technological Change and the Shifting Dynamics of Deterrence

The emergence of new strategic *means*, as described in the previous chapter, implies that the *ways* of deterrence must also change (even as the long-term *end*—strategic stability—does not change). **PLA authors assert that new technologies, tactical nuclear weapons, and the rise of cross-domain deterrence have fundamentally disrupted the deterrence dynamics that enabled asymmetric strategic stability between China and the US**—with potentially far-reaching implications for the PRC’s future strategic posture and policy. This chapter summarizes shifts in the dynamics of deterrence that some PRC authors say have resulted from these changes.

In the view of many PRC authors, these changes grant a greater advantage to the first mover in a nuclear conflict and degrade the PRC’s ability to deter nuclear conflict with a minimum survivable second-strike force. In the longer run, such changes could, in theory, even undermine the PRC case for a NFU policy.

4.1 Consequences of technology evolution for strategic deterrence and escalation control

As noted earlier, a basic principle of effective nuclear deterrence as described in PRC writings is that it is not necessary for each side to have the ability to decimate the other. Rather, it is enough that each side can retaliate against a first strike by the other, by possessing a survivable second-strike capability. PRC arguments in favor of China’s maintaining a relatively small nuclear arsenal rest on this assumption of mutual vulnerability.

However, if we read between the lines in most theories of mutual vulnerability, we see that this stability is premised on two factors: (1) as already stated, neither side is able to prevent a retaliatory nuclear strike by the other; and (2) “like strikes like”—for example, nuclear weapons are used to strike nuclear weapons—so that it is obvious what constitutes a first strike vs. a retaliatory one, and therefore which side is responsible for escalation and what response is appropriate.

A number of PRC authors argue that neither of these premises necessarily holds true in the current international environment. They point to several ways that technological innovation and nuclear powers’ reconsideration of nuclear posture have shifted, or are shifting, the

dynamics of strategic stability and strategic deterrence. According to these authors, these shifts include the following.

- The threshold between conventional and nuclear war has blurred.
- The effectiveness of second strike deterrence has been eroded, undermining mutual vulnerability.
- First-mover advantage has grown.
- It may be more difficult to control escalation.

In this chapter, we examine how PRC authors discuss these consequences.

4.1.1 Blurring the nuclear threshold

Many PRC authors assert that **the line between conventional and nuclear war is being blurred or even breached by new technologies and changed views of how to use nuclear weapons.** This changes the dynamics of deterrence by removing the absolute threshold between conventional and nuclear war.

“The new technology revolution mainly consists of two parts. First, *nuclear technology itself and its closely related technologies*, including intelligence, reconnaissance, and command and control systems, are changing. For example, the rapid development of computer and remote sensing technology has *challenged the survivability of nuclear weapons*. Secondly, the *rapid development of non-nuclear technologies* represented by missile defense, networks, artificial intelligence, unmanned combat platforms, hypersonic weapons, and directed energy weapons, etc., and the close interaction with nuclear weapons systems in different ways, *make the environment for future strategic interactions extremely complex and unpredictable.*”⁸⁷ (Emphasis added.)

—Jiang Tianjiao, Fudan University, 2021

First, as discussed in the previous chapter, there is a growing array of **non-nuclear capabilities with potentially strategic effects**, particularly high-end conventional weapons and newer domains including cyber, space, and (for some authors) artificial intelligence (AI).⁸⁸ As one

⁸⁷ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

⁸⁸ For example, Zou Zhibo and Liu Wei of CASS noted in 2019 that “some high-tech offensive non-nuclear weapons, such as outer space weapons, long-range precision strike weapons, and cyber weapons, can also effectively strike nuclear power and weaken it.” Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019). Many of the PRC writings examined for this paper discuss the cyber and space domains together. A handful also list AI as a third “new” domain, but in many of those articles AI is described as a force multiplier for cyber warfare. See Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021); and Cao Qiang (曹强), “New Characteristics, New Trends, and New Challenges—A Look Back and Reflection on Cyber Warfare (*Xin tedian, xin qushi, xin tiaozhan—wangluo zhan huigu yu xingsi*; 新特点、新趋势、新挑战—网络战回顾与省思), *Information Security and Communications Privacy (Xinxi anquan yu tongxin baomi*; 信息安全与通信保密), no. 1 (2020).

author put it in 2021, “non-nuclear and non-kinetic weapons ... can effectively destroy the opponent's nuclear weapons, further blurring the boundaries of nuclear war.”⁸⁹ Hence the strategic non-nuclear capabilities described previously—CPGS, hypersonics, and cyber and space weapons—all make it more likely that one or both sides will breach the nuclear threshold by using non-nuclear weapons. As AMS's Luo Xi put it in 2018, “The realization of a conventional prompt global strike capability would enable the United States to have a preemptive strike capability without the first use of nuclear weapons,” which would “provide the United States with options to cross the nuclear threshold.”⁹⁰ Another added in 2021 that

the paradox of the interaction between nuclear and conventional weapons is that ... in order to reduce the role of nuclear weapons ..., there has been an idea to actively develop conventional weapons to gradually replace [them]. ... [But] the more conventional weapons are developed, the greater the vulnerability of nuclear weapons and the more likely that strategic stability will be impacted instead. [Therefore], the risk of nuclear war will increase significantly.⁹¹

Second, **PRC authors assert that there has been a reinvigorated conversation about the use of nuclear weapons with tactical effects.** While the existence of tactical nuclear weapons is not new, a number of PRC authors assert that their use is now being considered more seriously, in both the US and Russia, than in the recent past.⁹² Some point especially to the US 2018 Nuclear Posture Review as highlighting the operational utility of such weapons.⁹³

The result of such a shift would be to change the purpose of using nuclear weapons. One author notes, for example, that during the height of the Cold War in the 1960s, the effects of nuclear weapons were known to be widespread and imprecise, so that it was impossible to limit strikes to military targets.⁹⁴ The massive civilian and human cost of nuclear strikes was one reason that nuclear weapons could be used for “pure” deterrence, i.e., to dissuade either side from

⁸⁹ Jiang Tianjiao (江天娇), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

⁹⁰ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

⁹¹ Jiang Tianjiao (江天娇), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

⁹² For example, Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018); Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017); Li Bin (李彬), “The Difference in Chinese and American Understandings About ‘Nuclear Deterrence’,” (2014); Li Zhe (李喆), “Path to Nuclear Arms Control Remains Beset with Difficulties,” (2021).

⁹³ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018); Luo Xi (罗曦), “The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability,” (2017); Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021).

⁹⁴ Jiang Tianjiao (江天娇), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

nearing the threshold of nuclear use, rather than for actual use. Nuclear escalation was controlled by ensuring that no one used nuclear weapons at all.

However, the potential use of smaller-scale, more precise tactical nuclear weapons that would enable countries to “actually conduct limited nuclear warfare” changes this calculus.⁹⁵ A 2019 article summarized the overall dynamic as one in which the utility of nuclear weapons as increasingly conceptualized as warfighting deterrence—that is, for operational purposes—rather than pure deterrence.⁹⁶

According to many PRC authors, the rise of non-nuclear strategic weapons and of nuclear non-strategic weapons means that the “disgust” that characterized earlier attitudes toward the use of nuclear weapons can no longer be relied upon to prevent decision makers from crossing the nuclear threshold. Some authors assert that the previously absolute boundaries between conventional and nuclear war are fading, and that over time the utility of nuclear weapons may be assessed as much for their combat effectiveness as for their deterrent value. This, in turn, means that the number and type of nuclear weapons a country holds in its arsenal may be determined in accordance with its tactical and operational needs rather than solely the desire to establish mutual vulnerability.

4.2.2 Undermining mutual vulnerability

Following on from this point, many PRC authors argue that new technologies erode China’s second-strike deterrent and ultimately destroy the mutual vulnerability that underpins US-China asymmetric strategic stability.

A major and long-standing concern expressed by the PRC government and echoed in PRC scholarly writings centers on missile defense systems. Authors argue that because such systems can destroy a nuclear weapon before it hits its target, they render an opponent’s second-strike deterrent useless. For example, in 2020 the PRC government expressed opposition to global missile defense systems and the deployment of space-based missile defense systems because of their ability to defend against intercontinental ballistic missiles

⁹⁵ “Strategic nuclear weapons can be used to perform tactical missions, and tactical nuclear weapons will have far-reaching strategic consequences no matter how small the explosion is or how small the coverage area is.” Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021). Jiang Tianjiao writes that “nuclear weapons have always been differentiated from conventional weapons due to their enormous destructive capabilities ... [But] making small, low-energy, high-precision, ‘clean’ (low radiation contamination), and penetrating nuclear weapons clearly blurs the nuclear-conventional boundaries and makes nuclear weapons more vulnerable to military strikes.” Jiang Tianjiao (江天娇), “The US Nuclear Warfighting Deterrence Strategy,” (2021). See also Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

⁹⁶ Zhu Yu (朱昱) et al., “Analysis of Missile Development Course,” (2019).

(ICBMs).⁹⁷ A 2019 article argued that the US has “developed conventional weapons systems related to detection, identification, tracking, and combating mobile missiles, which can rely on precision guidance and super lethality to weaken China's nuclear deterrence capability” by making it less likely that counterattacking missiles will reach their destination.⁹⁸

According to many of these authors, US missile defense systems that can undermine the effectiveness of China’s second-strike deterrent may embolden the US to take more assertive military actions against China.⁹⁹ Luo Xi of AMS explained in 2018 that

The United States is [now] trying to [gain] an absolute advantage in both offensive and defensive fields in the strategic deterrence system. It has improved its missile defense capabilities from the terminal stage of missile flight to the booster stage of the flight trajectory This strategic advantage places the United States in a position to avoid strategic retaliation by adversaries.¹⁰⁰

As a result, the 2020 NDU *Science of Military Strategy* argues, US missile defense systems will “destroy the existing fragile state of stability of mutual deterrence and will have a direct impact on the effectiveness of nuclear deterrence.”¹⁰¹

⁹⁷ “Statement of the Chinese Delegation at the Thematic Discussion on Nuclear Weapons at the First Committee of the 75th Session of the UNGA,” Permanent Mission of the People’s Republic of China to the UN, Oct. 26, 2020, https://www.fmprc.gov.cn/ce/ceun/eng/chinaandun/disarmament_armscontrol/unga/t1831640.htm.

⁹⁸ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019).

⁹⁹ For example, Fan Jishe, director and researcher at the Office of Strategy at CASS’s Institute of American Studies, states that China has “consistently and resolutely opposed the US development of missile defense systems,” as they “degrade the effectiveness of a PRC nuclear counterattack and could even neutralize China’s nuclear deterrence.” Fan Jishe (樊吉社), “The Logic and Evolution of China’s Nuclear Policy,” (2018), 19-20. See also Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021), 77-78; and Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019). Hu Gaochen qualifies this concern, arguing that only some types of missile defense systems undermine strategic stability: he claims that “point defenses” (*dian fangyu*; 点防御) around areas like the national capital, command centers, and major missile sites strengthen one’s nuclear retaliatory capability and improve strategic stability, whereas broader-scale “national missile defense capability” (*guojia daodan fangyu nengli*; 国家导弹防御能力) reduces the opponent’s nuclear retaliatory capability and degrades strategic stability. Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021), 77. See also Shao Haizhen (邵海祯) and Qi Fei (齐飞), “A Study on the Design and Assessment of Joint Nuclear Deterrence Forces System,” (*Lianhe he weishe lilianqiang tixi sheji ji pinggu wenti yanjiu*; 联合核威慑力量体系设计及评估问题研究), *Military Operations Research and Systems Engineering (Junshi yunchou yu xitong gongcheng*; 军事运筹与系统工程) 32, no. 4 (2018).

¹⁰⁰ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹⁰¹ Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*, 384.

The previously-stated concern about blurring the lines between nuclear and conventional warfare also pertains to mutual vulnerability; PRC writings note that the advent of capabilities such as CPGS can, as one article put it, “pose a first-round strike threat to China’s ICBMs, undermining the survivability of China’s land-based nuclear forces.”¹⁰²

Finally, some PRC authors argue that cross-domain deterrence (*kuayu weishe*; 跨域威慑)—which one author defines as when “the deterring party, facing the risk of attack in a certain domain, threatens to retaliate in other domains”¹⁰³—gives countries like the US, with many different types of capabilities, greater flexibility to deter an attack. Some imply that one capability may be used to substitute for another, as in a 2018 article in which the author claimed that “the United States is considering the use of nuclear deterrence to make up for the lack of space and cyber deterrence capabilities.”¹⁰⁴

4.2.3 Granting greater first-mover advantage

The erosion of mutual vulnerability, in turn, creates an incentive for both the stronger and the weaker side in an asymmetric relationship to launch preemptive strategic strikes. The stronger side is no longer deterred by the prospect of counterattack, while the weaker side will lose the utility of its strategic weapons if it does not use them first. One PRC author pointed out in 2021 that antisubmarine warfare, for example, creates a “use it or lose it” incentive for submarine-based weapons to strike preemptively rather than risk being wiped out before they are used.¹⁰⁵

This logic is exacerbated by the rise of non-nuclear strategic capabilities; as one author put it, “even if nuclear weapons are not used first, by first launching a non-nuclear strategic strike, one party can disarm the other party’s nuclear weapons and achieve the same effect of using nuclear weapons first.”¹⁰⁶ Jiang Tianjiao of Fudan University’s International Research Institute of Global Cyberspace Governance adds that eventually, conventional weapons could create an incentive for China to eschew its NFU policy: “With a limited nuclear arsenal threatened by

¹⁰² Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018); Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019); Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021); Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017).

¹⁰³ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹⁰⁴ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹⁰⁵ Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021).

¹⁰⁶ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019), 51-52.

conventional means, a relatively weaker party [i.e., China] may be forced to adopt a strategy of using nuclear weapons first.”¹⁰⁷

Finally, a number of PRC authors describe ongoing debates, in both Western and PRC literature, about whether certain capabilities in the space and cyber domains are easier to attack than to defend.¹⁰⁸ As one put it, “Conventional weapons and weapon systems enabled by emerging technologies such as space, cyber, and artificial intelligence face the dilemma of indistinguishable offensive and defensive attributes.”¹⁰⁹ While the writings we examined were not conclusive on whether these domains are definitively “offense dominant,” at a minimum they raised questions about whether countries with these capabilities may be more likely (or perceived as more likely) to consider undertaking a preemptive attack.

4.2.4 Increasing escalation risk

Finally, a number of PRC authors assert that taken as a whole, the issues described above mean that it may become much harder to control escalation in a conflict, particularly escalation to nuclear war. They provide several reasons for this conclusion.

It is harder to determine what constitutes a “first strike” and who is responsible for it.

According to PRC authors, once the line between conventional and nuclear war has been blurred, it may become unclear what specific actions should be considered as the onset or escalation of a conflict. For example, if a conventional weapon is used to strike China’s nuclear facilities, is that the first strike in a nuclear war? Similarly, if cyber or space assets are used to undermine PRC nuclear command and control capabilities so they cannot be used, is that a first strike?¹¹⁰ As one article asked, “How can one correctly understand conventional military

¹⁰⁷ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

¹⁰⁸ For example, Shen Yi (沈逸) and Jiang Tianjiao (江天骄), “Offense-Defense Balance in Cyberspace and a Proposed Model of Cyber Deterrence,” (*Wangluo kongjian de gongfang pingheng yu wangluo weishe de goujian*; 网络空间的攻防平衡与网络威慑的构建), *World Economics and Politics (Shijie jingji yu zhengzhi*; 世界经济与政治), no. 2 (2018); Jiang Tianjiao (江天骄), “Cross-domain Deterrence and Network Space Strategic Stability (*Kua yu weishe yu wangluo kongjian zhanlüe wending*; 跨域威慑与网络空间战略稳定), *China Information Security (Zhongguo xinxi anquan*; 中国信息安全), no. 8 (2019). On space, see for example: Gaoyang Yuxi, “The Adjustment of US Space Deterrence Strategy and Its Impact” (*Meiguo taikong taikong weishe zhanlüe tiaozheng ji qi yingxiang*; 美国太空威慑战略调整及其影响), *Peace and Development (Heping yu fazhan*; 和平与发展) 3, (2018): 127; and Zhou Lini, Fu Zhongli, and Wang Mei, “Comparison Between Space Deterrence and Nuclear Deterrence” (*Taikong weishe yu he weishe bijiao yanjiu*; 太空威慑与核威慑比较研究), *National Defense Science and Technology (Guofang Keji*; 国防科技) 36, no. 3 (June 2015): 53.

¹⁰⁹ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

¹¹⁰ See especially Li Bin 2014 on the problem of determining who is responsible for the “first strike” in a variety of types of conflict. Li Bin (李彬), “The Difference in Chinese and American Understandings About ‘Nuclear Deterrence,’” (2014).

means that can effectively destroy nuclear weapons? How can one define and respond to cyberattacks that can undermine nuclear deterrence and potentially destabilize strategic stability without a single soldier?”¹¹¹

In domains such as cyber and space, it may not even be possible to tell whether a strike has occurred or who is responsible for it. For example, one author argued in 2018 that it can be “almost impossible” to identify the source of a cyberattack, because the development of various encryption and proxy technologies and a low barrier to entry that means an attack could theoretically come from “any country or non-state actor.”¹¹² A 2021 article argued that these technologies blur the threshold not just of nuclear and conventional war, but of war and peace: “Attacks launched by cyber weapons, artificial intelligence and unmanned combat platforms are all in some kind of gray area, and it is difficult to clearly define whether they constitute an armed conflict or even a war.”¹¹³

It may not be clear what the appropriate level or type of retaliation is for a non-nuclear strategic attack, or for a tactical nuclear attack.

A key problem for decision makers, then, is determining the appropriate level and type of retaliation to various kinds of attack. Luo Xi writes that in general, “retaliation can be divided into matching retaliation (proportionate response) and escalating retaliation (escalatory response).”¹¹⁴ Cross-domain deterrence, in particular, poses a conundrum for this formulation. When like strikes like, it is fairly apparent whether one side has taken an action in that domain or not. Luo provides this example:

An adversary uses anti-satellite missiles to attack US intelligence, surveillance and reconnaissance [ISR] satellites. If the United States uses ISR to control and infiltrate the country’s airspace and attack the enemy’s air defense network, then such an act is a matching act of retaliation, because the act has restored the lost intelligence, surveillance and reconnaissance capabilities of the United States.¹¹⁵

¹¹¹ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

¹¹² Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018), 43; Liu Ziye (刘子夜), “On the Conditions for Successful Cyber Coercion,” (2020), 159. Another author, Du Yanyun, wrote in 2021 that attribution is the “greatest obstacle” to achieving cyber deterrence, as the identity of attackers in cyberspace can be difficult to confirm. This, says Du, leads to the “awkward situation” in which one “has deterrence capability but no deterrence objects.” Du Yanyun (杜雁芸), “The Militarization of Cyberspace: Trends and Countermeasures,” (2021), 61. For a discussion on the escalatory implications of PRC views on space deterrence, in particular, see Kevin Pollpeter, *Coercive Space Activities: The View from PRC Sources* (CNA and China Aerospace Studies Institute), forthcoming.

¹¹³ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

¹¹⁴ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹¹⁵ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

However, says the author, if a country responds to an attack in one domain with a counterattack in another it is less clear whether escalation has taken place. According to Luo, therefore “cross-domain deterrence will lead to the escalation of the crisis between the two countries. ... When deterrence fails, escalating retaliation is more likely to trigger the risk of crisis escalation.”¹¹⁶ Moreover, she adds, “the use of nuclear weapons to deter non-nuclear attacks is essentially an escalation of retaliation.”¹¹⁷

Similarly, another author explains that when it is not clear what constitutes a “first strategic strike,” it is easy for a country to find oneself in a situation of “asymmetric escalation,” in which one or both sides “threatens to retaliate against an adversary with a nuclear strike ... when the adversary has only shown signs of launching a conventional attack.”¹¹⁸

Conversely, some PRC authors ask what the appropriate response is to strikes by tactical nuclear weapons. A number of them point out that because the dividing line between “strategic” and “tactical” nuclear weapons is not absolute, it can be difficult to calibrate an appropriate response.¹¹⁹ As a result, says Yang Yuan of the University of CASS, “a credible second-strike [nuclear] force [that promises massive retaliation] cannot ensure deterrence against low-level [i.e., tactical] nuclear strikes that targets only military forces.”¹²⁰

Mingling of systems increases the likelihood of misinterpretation leading to escalation.

Several authors express concerns that the blurred lines between strategic and tactical capabilities may lead countries in a state of hostility to mistake one another’s intentions, with fatal effects. For example, Lu Yin, a researcher at the PLA NDU Strategic Studies Research Institute, argued in 2017 that because conventional and nuclear delivery systems may look the same, it can be difficult to tell whether ballistic missiles are carrying conventional or nuclear weapons.¹²¹ Another author made a similar argument about tactical nuclear weapons, since they may be carried on the same warhead as conventional weapons.¹²²

¹¹⁶ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹¹⁷ Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹¹⁸ Yang Yuan (杨原), “Beyond Assured Destruction,” (2021).

¹¹⁹ Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021); Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021); and Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹²⁰ Yang Yuan (杨原), “Beyond Assured Destruction,” (2021).

¹²¹ Lu Yin (鹿音), “The Evolution of Sino-US Strategic Stability,” (2017).

¹²² Yang Yuan (杨原), “Beyond Assured Destruction,” (2021).

Clear international standards or treaties do not yet exist for newer domains.

Several authors point out that in the absence of arms control agreements on tactical nuclear weapons or newer strategic domains, escalation control is difficult.¹²³ As one put it in 2021, “It is precisely because the definition of tactical nuclear weapons is ambiguous that it is more difficult to limit them.”¹²⁴ The same year, another author pointed out that the lack of a “unified system of rules” for cyberspace “makes it difficult to produce a clear legal definition of whether a cyber attack constitutes armed conflict or an act of war.”¹²⁵

Fear of preemptive attack increases the incentive for first use.

Finally, as noted above, these changes mean that there is a greater incentive for countries to launch preemptive attacks. Knowing this, potential opponents may themselves choose to act preemptively. Such weapons undercut China’s argument for a NFU policy: If a country has sworn not to use nuclear weapons first, how can it defend its capabilities against a conventional strike on those weapons?

As a caveat, it is worth noting that some PRC authors argue that tactical weapons, in particular, could in theory enable a more incremental and potentially more controllable escalation ladder. In a 2021 article, Gou Ziyi highlighted tactical nuclear weapons’ “highly precise strikes, controllable war effects, and good maneuverability,” echoing other authors who argue that tactical nuclear weapons limit collateral damage (and thus escalation) by enabling actors to strike more precise targets.¹²⁶ Gou adds that this may enable a more incremental approach to escalation: “The United States and Russia can flexibly switch between strategic nuclear weapons, tactical nuclear weapons and conventional weapons to enable them to escalate or reduce the level of conflict capability, highlighting the flexibility of nuclear force.”¹²⁷

¹²³ E.g., Gaoyang Yuxi (高杨予兮), “The Adjustment of US Space Deterrence Strategy and Its Impact,” (2018).

¹²⁴ Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021).

¹²⁵ Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021), 56.

¹²⁶ Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021), 50. See also Jiang Tianjiao (江天骄), “The US Nuclear Warfighting Deterrence Strategy,” (2021).

¹²⁷ Gou Ziyi (苟子奕), “Exploration of the Status and Effects of US and Russian Tactical Nuclear Weapon Development,” (2021).

4.2 Implications: Can asymmetric stability last?

When grappling with these perceived shifts in the dynamics of deterrence and escalation, many PRC authors question whether China's previous approach to strategic deterrence is sustainable for maintaining asymmetric strategic stability with the US.¹²⁸ PRC authors argue that these changes undermine both elements of strategic stability: crisis stability and arms race stability. First, according to PRC authors, technological disruptors may undermine **crisis stability** because they alter the incentives of both sides to prevent escalation to nuclear war.

- There may be overconfidence in the ability to control escalation. On one hand, say PRC authors, these new weapons and domains of war may enable better tactical control and limitation of collateral damage. On the other hand, this assumption could cause one or both sides in a conflict to become more aggressive. Tactical nuclear weapons could remove previous thresholds and long-standing psychological barriers to the use of nuclear weapons.¹²⁹
- Changes to nuclear posture, such as sea-based nuclear weapons, as well as offensive-dominant domains such as cyber and space, could create incentives to strike first.¹³⁰

Second, the technological changes described above may undermine **arms race stability** because when one country develops the ability to elude or disable a nuclear counterstrike, the other side must upgrade its own capabilities to restore its second-strike deterrent.¹³¹

Collectively, these concerns raise a number of questions about the overall effectiveness of China's long-standing strategic weapons policies and posture. In this view, the PRC's task now is to restore the balance of strategic capabilities by responding to each of these developments' ability to erode strategic stability. In the next chapter, we discuss PRC authors' suggestions for how China should respond to some of these concerns.

¹²⁸ See, for example, Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021); Jiang Tianjiao (江天骄), "The US Nuclear Warfighting Deterrence Strategy," (2021).

¹²⁹ Zhang Yan (张岩), "The Historical Evolution of the Theory of Strategic Deterrence," (2018).

¹³⁰ E.g., Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021).

¹³¹ Lu Yin (鹿音), "The Evolution of Sino-US Strategic Stability," (2017).

5. Restoring the Balance

The previous chapter discussed PRC views on technological shifts that many PRC authors believe could undermine strategic stability and heighten the risk of strategic-level conflict between China and the US. This chapter explores PRC subject matter experts' views on actions China could take, or is currently undertaking, to strengthen China's strategic deterrent and restore strategic balance.

Actions that PRC authors discuss in the context of restoring the strategic balance with the US include the following:

- Upgrading China's nuclear capability
- Strengthening missile defense
- Improving space and cyber capabilities
- Reconsidering China's NFU policy

5.1 Upgrading nuclear capability

Some PRC authors argue that technological change may require China's leadership to rethink its approach to China's nuclear arsenal. If the PRC does not have a guaranteed second-strike capability, they say, it can no longer credibly deter an opponent from striking China's nuclear facilities.

A significant body of literature exists among PRC subject matter experts, particularly in the military operations research community, about how to assess the necessary scale and structure of a country's nuclear forces. These discussions involve both quantitative and technical considerations.¹³²

¹³² For example: Feng Wei (冯伟) et al., "A Study on the Assessment Indicators and Models of Military Strategic Capacity," (2019); Zhang Minghua (张明华) and Feng Wei (冯伟), "Reflections on Several Issues of Military Strength Assessment," (*Guanyu junli pinggu ruogan wenti de sikao*; 关于军力评估若干问题的思考), *Military Operations Research and Systems Engineering (Junshi yunchou yu xitong gongcheng*; 军事运筹与系统工程) 32, no. 4 (2018); Shao Haizhen (邵海祯) and Qi Fei (齐飞), "A Study on the Design and Assessment of Joint Nuclear Deterrence Forces System," (2018).

5.1.1 Quantitative considerations

PRC authors argue that China needs a credible second-strike capability of sufficient size to impose unacceptable losses if the US launches a preemptive nuclear attack.¹³³

It is important to note that *none of the writings we examined argued that China should seek nuclear parity, in terms of numbers, with the United States*. The assessment that the US is a “big nuclear power” and China is a “medium nuclear power” was nearly universal, and none of these writings argued that this basic balance relationship should change. Rather, PRC authors appear to be trying to determine what adjustments to China’s nuclear forces—in terms of quantity and quality—are necessary to maintain asymmetric strategic stability.

Such writings do not offer suggestions for the precise number of nuclear weapons China needs to guarantee its retaliatory capability. However, they do identify several factors that they say should play into decisions about the number of weapons in China’s nuclear arsenal. Key questions they raise include the following.

What is the adversary’s cost tolerance? PRC authors contend that determining an adversary’s nuclear cost tolerance is an essential consideration: more nuclear weapons may be needed to deter a country with a relatively high cost tolerance.¹³⁴ They also note that a country’s cost tolerance may change over time. For example, one author argued in 2021 that while the US is generally nuclear risk averse, specific policies change between presidential administrations based on leaders’ assessments of the strategic environment and levels of redundancy in the US nuclear arsenal.¹³⁵ PRC writings also observe that a country’s cost tolerance may vary depending on the nature of the interest at stake.¹³⁶

How many targets, and of what kind, would need to be hit to cause “unacceptable losses”? PRC writings state that the size of one’s nuclear arsenal should be influenced by the type of designated enemy targets. One author notes that a country with more nuclear weapons may prioritize “hard targets” (e.g., missile silos, military commands), which require comparatively large numbers of warheads to destroy. In contrast, a country with fewer nuclear

¹³³ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019).

¹³⁴ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019); Shao Haizhen (邵海祯) and Qi Fei (齐飞), “A Study on the Design and Assessment of Joint Nuclear Deterrence Forces System,” (2018), 14.

¹³⁵ Qi Haotian (祁昊天), “US Strategic Deterrence and Signaling Game from the Perspective of Uncertainty,” (*Bu queding xing shijiao xia de meiguo zhanlue weishe yu xin hao boyi*; 不确定性视角下的美国战略威慑与信号博弈), *World Economics and Politics (Shijie jingji yu zhengzhi*; 世界经济与政治), no. 7 (2021): 64-76.

¹³⁶ See for example Yin Jiwu (尹继武), “Private Information, Diplomatic Communication and the Escalation of Sino-US Crisis,” (2020); Xie Chao (谢超), “Misunderstanding and Crisis Alleviation in the Doklam Standoff,” (2020).

weapons would prioritize “soft targets” such as civilian population centers, since it is only trying to maintain a second-strike deterrent.¹³⁷

How many nuclear weapons are likely to be destroyed by the adversary’s first strike?

PRC authors evince concerns that a US first strike by nuclear or conventional weapons could destroy significant portions of China’s nuclear forces at the outset of conflict.¹³⁸ Assuming China intends to abide by its NFU policy in the future, it follows that its nuclear stockpile would need to include both the expected number of weapons to be lost in an enemy first strike and the number required for a retaliatory second strike.

How many nuclear weapons are the adversary’s missile defense systems likely to intercept?

PRC subject matter experts note that aside from a US first strike, China must also account for missile defense systems that could destroy PRC nuclear weapons before they meet their target.¹³⁹ PRC planners may build redundancy into their nuclear stockpile based on their assessments of US missile defense capabilities and the expected number of second-strike warheads that would be intercepted.

How many nuclear weapons are expected to suffer technical failures?

PRC military operations researchers acknowledge that not all PRC nuclear weapons that penetrate enemy missile defense may reach their targets accurately or detonate when required.¹⁴⁰ It is plausible that China’s assessments for the number of weapons required for a second-strike capability also build in redundancy to compensate for the expected number of technical failures.

5.1.2 Technical considerations

PRC writings that discuss nuclear delivery systems highlight factors including survivability, cost-effectiveness, and penetration capability as relevant for determining which types of delivery systems to prioritize.

Survivability. PRC authors note that an adequate second-strike capability requires a diverse and distributed nuclear force structure that can survive an enemy attack.¹⁴¹ They draw

¹³⁷ Wang Zhengda (王政达), “The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game,” (2022), 105-106.

¹³⁸ Fan Jishe (樊吉社), “The Logic and Evolution of China’s Nuclear Policy,” (2018); Luo Xi (罗曦), “US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability,” (2018).

¹³⁹ Hu Gaochen (胡高辰), “An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism,” (2021).

¹⁴⁰ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019); Shao Haizhen (邵海祯) and Qi Fei (齐飞), “A Study on the Design and Assessment of Joint Nuclear Deterrence Forces System,” (2018).

¹⁴¹ Zou Zhibo (邹治波) and Liu Wei (刘玮), “Constructing the Sino-US Nuclear Strategic Stability Framework,” (2019).

particular attention to improving nuclear weapons' survivability by making them more able to elude enemy detection, and recommend that China increase its investments in nuclear submarines with improved stealth capability.¹⁴² Hu Gaochen also identifies "advanced road-mobile strategic missiles" as an important investment for ensuring that China's nuclear weapons are not discovered and targeted by the adversary.¹⁴³

Cost-effectiveness. The most survivable platforms are not always the most cost-effective, in terms of the monetary value required to ensure successful delivery of a warhead to its target, and PRC subject matter experts acknowledge that budgetary realities may affect the structure of China's nuclear forces.¹⁴⁴ In a 2018 analysis of four nuclear delivery platforms (road-mobile, silo-based, submarine, bomber), two authors from AMS's Assessment and Demonstration Research Center found that a road-mobile capability is most cost-effective for a country with a NFU policy that primarily requires that the weapons be able to evade an attack. In contrast, the authors argue that a country with a "first-use" or "launch-on-warning" nuclear strategy would find greater efficacy in silo-based missiles that are capable of delivering more damage than road-mobile platforms, as that country could assume 100 percent survivability for its silos before launching a preemptive attack.¹⁴⁵

Penetration and maneuver capability. Some PRC authors suggest that China can counter adversary missile defense systems by improving PRC nuclear weapons' ability to maneuver and penetrate enemy air defense systems.¹⁴⁶ Wang Zhengda offers a list of several developments that could be used to counter US missile defense capability, namely:

- Adding decoys to offensive missiles to increase the chances of real nuclear-armed missiles getting through missile defense systems

¹⁴² Shao Haizhen (邵海祯) and Qi Fei (齐飞), "A Study on the Design and Assessment of Joint Nuclear Deterrence Forces System," (2018); Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021); Luo Xi (罗曦), "US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability," (2018).

¹⁴³ Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021).

¹⁴⁴ Wang Zhengda (王政达), "The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game," (2022); Qi Haotian (祁昊天), "US Strategic Deterrence and Signaling Game from the Perspective of Uncertainty," (2021).

¹⁴⁵ Shao Haizhen (邵海祯) and Qi Fei (齐飞), "A Study on the Design and Assessment of Joint Nuclear Deterrence Forces System," (2018).

¹⁴⁶ Luo Xi (罗曦), "US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability," (2018); Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021).

- Using strategic nuclear submarines or developing more advanced land-based missiles that bypass US missile defense systems
- Developing hypersonic strategic nuclear weapons with enhanced penetration capability.¹⁴⁷

5.2 Strengthening missile defense

Earlier in this paper, we noted PRC authors' concerns that advances in US missile defense capability could increase US confidence about its ability to intercept China's second-strike weapons, thereby weakening China's strategic deterrent.

A small number of PRC authors suggest that China could help restore strategic balance with the US by investing in China's own missile defense capabilities, thus reducing the likelihood that a US first strike could successfully destroy China's nuclear arsenal.¹⁴⁸ Luo Xi, for example, claims that China has already begun to "restore and develop" its missile defense capability in response to US developments, citing four "ground-based midcourse missile intercept technology tests" that the PRC conducted in 2010, 2013, 2014, and 2018.¹⁴⁹ (After Luo's article was published, two additional tests were conducted in February 2021 and June 2022.)¹⁵⁰

An article appearing on the PLA's official website soon after the PRC's June 2022 missile intercept test stated that China's "mid-course anti-missile interception system" would be "iteratively upgraded" based on future threat environments. According to the article, this intercept capability could be used against both nuclear-armed ballistic missiles and "various new threats including hypersonic aircraft."¹⁵¹

¹⁴⁷ Wang Zhengda (王政达), "The Mechanism of Nuclear Deterrence: Capabilities, Signaling and Psychological Game," (2022).

¹⁴⁸ Luo Xi (罗曦), "The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability," (2017), 48; Hu Gaochen (胡高辰), "An Analysis of China-US Asymmetric Nuclear Stability and the US Strategic Opportunism," (2021).

¹⁴⁹ Luo Xi (罗曦), "The Adjustments of US Strategic Deterrence System and Their Implications to Sino-US Strategic Stability," (2017), 48.

¹⁵⁰ Ben Blanchard, "China says it tested missile-interception system," Reuters, June 19, 2022, <https://www.reuters.com/world/china/china-says-it-tested-missile-interception-system-2022-06-20/>.

¹⁵¹ "China's land-based mid-course anti-missile interception technology test of great significance," China Military Online, Jun. 21, 2022, http://www.81.cn/jwywpc/2022-06/21/content_10165260.htm.

5.3 Improving space and cyber capabilities

Several PRC authors suggest space and cyber investments or actions that China could take to improve its strategic deterrent. These include capabilities that could degrade an adversary's ability to conduct a nuclear first strike or other large-scale attack, or improve China's ability to respond quickly to such an attack.

A notable feature of the PRC discussion on space and cyber is that there appears to be some debate about whether these are effective domains for deterring a conflict before it breaks out. Some PRC authors advocate taking preemptive actions in the cyber and space domains to deter adversary strategic strikes. Others, however, assess that the challenges in detecting, attributing, and countering space and cyber activities make them unsuitable for deterrence.¹⁵²

Capabilities to preemptively disable or degrade adversary forces. PRC authors identify both space and cyber capabilities that China could potentially use in the future to preemptively target adversary (and specifically US) forces or infrastructure prior to the outbreak of a large-scale conflict. In space, these capabilities include anti-satellite weapons and space-based C4ISR systems. For example, in 2018 one author noted that if a US nuclear preemptive strike was thought to be imminent, China could potentially conduct a first strike in space with anti-satellite weapons.¹⁵³ An earlier article, from 2015, also observed that space-based C4ISR systems could improve a country's precision strike capability, enabling it to better track, target, or strike an opponent's nuclear or conventional forces.¹⁵⁴ Similarly, a 2016 article by a researcher at the PLA Academy of Military Sciences identifies cyberattacks as one type of action China could use prior to the outbreak of a conflict to force adversary submission and thereby "win without fighting."¹⁵⁵

¹⁵² For example, Shen Yi and Jiang Tianjiao (2018) take a positive view of cyber deterrence and propose a model for strategic stability in cyberspace based on "active cyber deterrence." Xu Weidi (2020), by contrast, argues against the use of cyber deterrence for strategic stability, calling it a "misguided approach." Shen Yi (沈逸) and Jiang Tianjiao (江天骅), "Offense-Defense Balance in Cyberspace and a Proposed Model of Cyber Deterrence"; Xu Weidi (徐伟地), "A Misguided Approach: Using Cyber Deterrence to Achieve Cyber Military/Strategic Stability," (*Yuanmuqiuyu: yi wangluo weishe qiu wangluo junshi/ zhanlue wending*; 缘木求鱼: 以网络威慑求网络军事 / 战略稳定), *Information Security and Communications Privacy (Xinxi anquan yu tongxin baomi*; 信息安全与通信保密), no. 9 (2020).

¹⁵³ Luo Xi (罗曦), "US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability," (2018), 61.

¹⁵⁴ Zhou Lini (周黎妮), Fu Zhongli (傅中力), and Wang Shu (王姝), "Comparison between Space Deterrence and Nuclear Deterrence," (2015), 53-54.

¹⁵⁵ Hu Wenlong (胡文龙), "Deep Insights of 'Quasi-War' Thinking for Military Struggle at a New Historical Starting Point," (*Zhun zhanzheng' sixiang gei xin de lishi qidian shang junshi douzheng de shenke qishi*; "准战争" 思想给新的历史起点上军事斗争的深刻启示), *Iron Soldier (Tiejun*; 铁军), no. 12 (2016): 35-36.

Capabilities to improve response time to a preemptive strike. PRC journal articles from 2017 and 2019 note the need for improvements in strategic early warning to strengthen the country's ability to deter strategic attacks.¹⁵⁶ For example, space-based early warning could improve China's ability to detect an adversary first strike at its initial stage and thereby increase the survivability of PRC nuclear forces.

Concerns about escalation using space and cyber weapons. PRC authors discuss the potential use of space and cyber capabilities with a mix of enthusiasm and caution. While some argue that using space and cyber weapons would not cross the threshold of a nuclear conflict, other suggest that they could escalate rapidly in an actual conflict. PRC writings also note ominously that as a country invests more in space and cyber capabilities, that country also becomes more vulnerable to attacks in those domains.¹⁵⁷

5.4 Debating changes to no first use

The writings we examined assert that **the vast majority of PRC scholars and policy makers are committed to China's NFU nuclear weapons policy.** However, PRC writings also suggest that there is a small-scale debate on whether NFU remains sufficient for maintaining strategic deterrence in light of growing technological and geostrategic threats.¹⁵⁸

Writing in 2018, a retired PLA general claimed that the notion of shifting to a first-use policy has gained attention among a small minority of civilian and military audiences who worry that China's NFU policy leaves it without means to "deter the powerful enemy."¹⁵⁹ That same year, Luo Xi suggested that in principle, moving to a first-use policy could put the PRC in a better position during escalation or crisis and could help restore strategic stability with the US.¹⁶⁰

One notable element in the PRC writings we examined for this study is that they acknowledge that a shift away from NFU could lead to longer-term strategic instability, particularly in terms of arms racing (although they also say that this would, of course, not be China's fault).

¹⁵⁶ Feng Wei (冯伟) et al., "A Study on the Assessment Indicators and Models of Military Strategic Capacity," (2019), 14-15; Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), "On Our Country's Strategic Deterrence Capability Building," (2017), 105-106.

¹⁵⁷ See, for example, Liu Ziye (刘子夜), "On the Conditions for Successful Cyber Coercion," (2020); Gaoyang Yuxi (高杨予兮), "The Adjustment of US Space Deterrence Strategy and Its Impact," (2018).

¹⁵⁸ Yang Yuan (杨原), "Beyond Assured Destruction," (2021), 37-38.

¹⁵⁹ Pan Zhenqiang, "A Study of China's No-First-Use Policy on Nuclear Weapons," *Journal for Peace and Nuclear Disarmament* 1, no. 1 (2018): 132.

¹⁶⁰ Luo Xi (罗曦), "US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability," (2018).

For example, Luo Xi claimed in 2018 that US policymakers themselves worry about the effect that US actions might have on PRC policy. Citing American scholars Taylor Fravel and Fiona Cunningham's 2015 article on PRC nuclear policy, Luo Xi writes:

In the view of the United States, China's "nuclear ambiguity" policy is mainly reflected in the lack of transparency in its nuclear weapons numbers, the progress of its nuclear program, and related nuclear strategies and theories. However, if the United States attacks China's nuclear weapons and their support systems with conventional weapons, it is unknown [by the US] whether China will still adhere to the "no first use" policy.¹⁶¹

This concern, says Luo, would then lead to the US further upgrading its own preemptive strike capabilities.

5.5 Implications: Shaping strategic force modernization?

The issues summarized in this chapter point to investments that the PRC might, in principle, make in order to restore an asymmetric strategic balance with the United States. There are, of course, many possible explanations for China's recent decisions in this regard, but the desire to respond to the technological changes discussed in this paper, and their implications for strategic stability, should not be discounted.

5.5.1 Implications for China's nuclear forces and posture

A number of authors highlighted factors or assumptions that might move the PRC toward increasing its nuclear arsenal if they hold true. According to these writings, China might further increase or diversify its nuclear forces if Beijing believes that the US military has capabilities or commitments that directly endanger China's second-strike capability.

Some specific factors and assumptions that these writings imply could change China's attitude toward NFU include the following.

- The adversary has nuclear or conventional long-range precision weapons that could destroy PRC nuclear forces in a first strike.
- The adversary has cyber or space capabilities that could disrupt or degrade China's command and control structure for executing a retaliatory strike.
- The adversary has missile defense systems or other capabilities that can reliably intercept China's nuclear weapons before they reach their targets.

¹⁶¹ Luo Xi (罗曦), "US Full-domain Deterrence and Its Implications for Sino-US Strategic Stability," (2018).

- The adversary is thought to have a high cost tolerance for being on the receiving end of a retaliatory nuclear strike.
- Expected damage to China from a first strike is intolerably high.
- PRC nuclear weapons are expected to perform poorly.

5.5.2 Implications for escalation control

The writings we surveyed for this paper discussed at length some potentially escalatory implications of the dynamics described in this chapter, while overlooking a number of others.

Many PRC authors asserted, repeatedly, that unless countries in a state of geostrategic tension can find an acceptable means of preserving mutual vulnerability, they must accept an inevitable arms race that will keep those countries locked in a permanent state of strategic instability. These authors are frank about the potential ambiguities posed by certain capabilities—such as the fact that it is difficult to tell whether a missile is carrying a nuclear weapon or a conventional one—and the risk that these ambiguities could create unintended escalation.

However, many of these authors seem confident that they can accurately assess US intentions and commitments that might lead the US to employ its nuclear arsenal in certain ways—and, as highlighted in chapter 2 of this paper, some assert that Washington is less willing to absorb costs in an Indo-Pacific conflict than Beijing is. In other words, it appears that PRC authors are quite aware of the danger of misinterpreting another country's intent in using a specific weapons system, but much less aware of the possibility that China may misestimate the other side's level of commitment to a particular issue.

6. Conclusion

This paper identified aspects of continuity and change in recent PRC and PLA writings on concepts related to deterrence, strategic stability, and escalation control. A central concern of many PRC strategists, planners, and scholars is how to assess the significance of recent shifts in the strategic capabilities and strategic deterrence systems of nuclear powers. In reconsidering the relationship between strategic stability, strategic deterrence, and strategic capabilities, PRC authors highlight a number of tensions that they say may lead to the longer-term breakdown of strategic stability between the US and PRC. In this chapter we offer some concluding thoughts on longer-term implications and unanswered questions.

6.1 Reassessing the foundations of strategic stability

Although the PRC's desire for long term strategic stability has not changed in principle, views on the nature of strategic stability have shifted. As shown in this paper, strategic stability no longer means just nuclear stability. Therefore, what China considers to be a “stable” strategic balance is not limited to a balance of nuclear capabilities. As a result, diplomatic discussions about strategic stability need to account for non-nuclear capabilities that have strategic effects.

PRC analysts will take nuclear, conventional, space, cyber—and possibly other—capabilities into account when assessing the US-China strategic balance. US investments in any of those areas have the potential to affect PRC perceptions of the viability of China's second strike capability and its ability to strategically deter the United States. Thus, the potential for strategic arms races exists not only in nuclear force development but in other forces or domains that the PRC conceptualizes as part of its strategic deterrence system.

Beijing can be expected to decry US advancements in strategic capabilities even as China develops countercapabilities. PRC interlocutors will likely continue to stress the need for more or improved crisis management mechanisms to underpin strategic stability, though it will be incumbent on the PRC side to actually use those mechanisms when they are needed.

PRC concerns about the broader state of US-China relations mean that attaining a state of mutual vulnerability in nuclear forces may not be enough to ensure strategic stability. While most PRC authors say that military capabilities lie at the heart of strategic deterrence, many also stress the importance of the other two elements of deterrence—commitment and communication. PRC planners may make assumptions about US resolve to undermine China's

strategic deterrent, or about Beijing's ability to accurately interpret and effectively transmit signals between strategic rivals, that shape how the PRC views US investments and activities. Even if Beijing views the US and China as being in a state of mutual vulnerability in terms of their strategic military capabilities, it may not assess the situation to be stable if it believes that the overall bilateral relationship is poor.

6.2 PRC force modernization

Our analysis suggests that one can plausibly interpret at least some of the PRC's force modernization and posture decisions as a response to Beijing's desire to restore asymmetric strategic stability against shifting geostrategic and technological dynamics. Investments in capabilities that can penetrate missile defense systems, for example, are logical outcomes of the dynamics described in this paper.

China's assessments of capabilities most important to strategic deterrence are evolving. PRC writings contend that the core capabilities within a country's strategic deterrence system may change over time. While they assert that nuclear, conventional, cyber, and space capabilities are currently most important, PRC writings also identify several other capabilities—including non-military capabilities—that play important supporting roles. Future research may examine whether these or other capabilities gain ground in future PRC writings on strategic deterrence:

- Economic deterrence capabilities¹⁶²
- Research and development (R&D) capability in emerging fields¹⁶³
- Mobilization capability¹⁶⁴
- "People's war deterrence"¹⁶⁵
- "Military theory deterrence"¹⁶⁶

¹⁶² Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), "On Our Country's Strategic Deterrence Capability Building," (2017), 104. Ling, et al., assert that China's economic deterrence capability is particularly powerful, quoting former Council on Foreign Relations President Emeritus Leslie Gelb as saying "Nations do not fear China's military might; they fear its ability to give or withhold trade and investments." They add that economic deterrence is "often easier and cheaper" than military deterrence.

¹⁶³ Feng Wei (冯伟) et al., "A Study on the Assessment Indicators and Models of Military Strategic Capacity," (2019), 16.

¹⁶⁴ Ling Shengyin (凌胜银), Sun Ying (孙英), and Chen Maoxia (陈茂霞), "On Our Country's Strategic Deterrence Capability Building," (2017), 104.

¹⁶⁵ Xiao Tianliang (肖天亮), *Science of Military Strategy (2020 Revision)*, 131. The 2020 *Science of Military Strategy* defines "people's war deterrence" (*renmin zhanzheng weishe*; 人民战争威慑) as "a type of deterrence that uses the full display and expression of the mighty power people's war to strike fear into the enemy."

¹⁶⁶ Feng Wei (冯伟) et al., "A Study on the Assessment Indicators and Models of Military Strategic Capacity," (2019), 16. A 2013 *PLA Daily* article states that military theory deterrence involves partially revealing to existing

It is worth considering what lessons the PRC leadership may take from the war in Ukraine, which was ongoing at the time that this paper was written. For example, if Beijing believes that Russia successfully deterred US and NATO intervention in Ukraine by threatening to use its nuclear forces, would the PRC similarly seek to use nuclear threats to deter US and ally intervention in a Taiwan conflict? If PRC leadership assesses that the nuclear threshold is no longer a clear red line due in part to the dynamics described in this paper, it is possible that crossing that threshold might be viewed as less risky than in previous eras.

6.3 Challenges for escalation control

The blurring of the nuclear threshold makes it harder to determine what constitutes a strategic strike, and therefore to control escalation at the high end of the conflict continuum. PRC writings point to the fundamental question of whether crossing the nuclear threshold will continue to be regarded as taboo. Absent comprehensive arms control treaties that cover the full range of strategic capabilities, it may become increasingly challenging to place limits on countries' deployment of these capabilities in a range of scenarios.

The shifts described in this paper change some of the dynamics of preemption and first-mover advantage. The dynamics described above could fundamentally alter a "medium nuclear power"'s incentive to seek only second-strike capabilities. For example, in a world where cyber and space capabilities could undermine a nuclear deterrent without needing to launch an actual nuclear attack, the incentive is strong to attack those capabilities preemptively. Because it is unclear what would constitute a first strike in a cross-domain scenario, one side could claim that its non-nuclear actions do not constitute a clear escalation, even if the effects undermine the other side's nuclear capabilities.

PRC authors' discussions of strategic stability focus on US-China dynamics, raising questions about potential blind spots in multipolar scenarios. PRC writings reviewed for this paper fixate on a US first strike and a PRC second strike, but do not consider the potential need for a *third strike* against another nuclear-armed power that could opportunistically hold China at risk once its nuclear forces are exhausted. Additionally, apart from missile defense, PRC writings say little about the non-nuclear capabilities of US allies and partners that, if used in concert with US forces, could tip the strategic balance further from Beijing's favor.

or potential adversaries that one's own side has "already prepared operational thought and theory to deal with them." Lu Tu (侣途), "Military Theory: Beware the 'Fog of Innovation'," (*Junshi lilun: jingti "chuangxin de miwu"*; 军事理论: 警惕“创新的迷雾”), *PLA Daily (Jiefangjun bao; 解放军报)*, Jan. 24, 2013.

Abbreviations

AI	Artificial intelligence
AMS	Academy of Military Sciences
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CASS	Chinese Academy of Social Sciences
CICIR	China Institutes of Contemporary International Relations
DOD	US Department of Defense
CPGS	Conventional Prompt Global Strike
ICBM	intercontinental ballistic missile
ISR	intelligence, surveillance, and reconnaissance
MAD	mutually assured destruction
NDU	National Defense University
NFU	no first use
NUDT	National University of Defense Technology
PLA	People's Liberation Army
PRC	People's Republic of China
SME	subject matter expert

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