

AN INDIAN PERSPECTIVE ON CHINA'S NUCLEAR WEAPONS

SANJANA GOGNA



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FOREWORD

Till now, China's approach to nuclear deterrence has been a no-first-use policy and reliance on a relatively small force of nuclear weapons capable of an appropriate retaliatory strike if China is attacked. Of late, China has embarked on an overt and somewhat aggressive nuclear force building and modernisation. China has been concerned about the slow movement forward of the arms control talks between the USA and Russia, who together hold 90 per cent of the world's nuclear weapons. While Presidents Biden and Putin have agreed to launch a dialogue on strategic stability, and lay the groundwork for future arms control and risk reduction measures, a lot more has still to happen.

China is concerned about the United States' plans and postures to contain its rise, and the US plans for new missile deployments and defences. China is conscious of the US massive global precision strike capabilities. Beijing has also to factor regional concerns which include nuclear states in its neighbourhood, especially India, with rising nuclear deterrent capability. India's push for strategic parity is unacceptable to China and it will attempt to counter it by all means. After China's military and strategic reforms, the nuclear forces and the Chinese People's Liberation Army (PLA) supporting elements of space and cyber, have helped increase its capabilities. The nuclear dimension is gaining priority in the PLA's approach and thinking. Technologies evolved for space and the rocket forces are being shared to improve nuclear delivery. Nuclear force modernisation and expansion is clearly now the new work-in-progress. China is also conscious of its vulnerability, particularly as it lags in military technology. This will also help in policy shaping. China is not yet ready to initiate a nuclear dialogue with the USA, and would wait for greater parity in capabilities. Being a relatively closed society, the world is looking for clarity on China's conventional and nuclear missile force segregation. Its extensive underground network of tunnels may conceal a larger nuclear arsenal than known in the open domain.

Induction of a larger number of Multiple Independent Reentry Vehicles (MIRVs) has further complicated the issues. The PLA's latest Intercontinental Ballistic Missile (ICBM), the DF-41, is reported to deploy up to 10 warheads. China's propagandist media claims that it covers the US mainland. It can be launched from silos, railcars and transporter erector launchers. China's sea-based nuclear deterrent and ballistic missile nuclear submarines comprise work-in-progress, but can already target India, Guam, Hawaii and Alaska. The H-6 aircraft variants are the current air component, and the stealth H-20 bomber is under development. China is also likely to soon have nuclear, air-launched ballistic missiles and dual-use air-launched cruise missiles with dual functions. Its nuclear arsenal is likely to double from the current 250 warheads to over 500 by 2025. China is also working on tactical nuclear weapons. Also, its push for hypersonic technology is aimed to upset the status quo. Meanwhile, China is investing in conventional capabilities and weapons, including cyber, electronic warfare, and kinetic or directed energy space weapons.

As Chinese capabilities increase, neighbouring states like Japan and South Korea are getting concerned and looking for higher nuclear security assurance from the USA, including deployment of more nuclear weapons in the region. In that context China's no-first-use nuclear policy currently serves its security requirements. China is, therefore, giving importance to balanced development of both conventional and nuclear capabilities. It also helps it to project ambiguity. China's military and nuclear strength is also meant for coercion of Taiwan. The question that is being asked is : will the USA threaten or respond with a second strike in the case of Beijing's offensive to reunify Taiwan?

India is the only major Asian country sharing a border with China and the only one having significant capability to act as a bulwark against it. China has been using border incidents to heckle India. Its initial war strategy is to use its missile forces to pin down the adversary because missiles are difficult to defend against. But the ambiguity of China's conventional and nuclear forces is likely to impact India's strategic calculations. In essence, China is continuing to use 'deterrence', 'coercion', and 'ambiguity'. The objective is to hide the truth, show a false strength, and force wrong decisions by the adversary.

China's record on nuclear proliferation has also been poor. North Korea and Pakistan stand out, and on this count, they have shown lack of nuclear maturity.

China's aggressive posture and connivance with Pakistan to try to checkmate India, has forced India to consider security partnerships. India's no-first-use stance has stood the test of time. Will Chinese belligerence force a relook? I hope not. As India gets its nuclear triad in place, it will surely have to relook at its total nuclear arsenal and modernisation of assets in view of the Chinese and Pakistani arsenals. The survivability of India's nuclear arsenal to a first strike is crucial. In this context, India must expand its nuclear submarine fleet in the times to come. Also, India must invest more in cyber, electronic warfare and space warfare capabilities.

Ms Sanjana Gogna has written a timely and very relevant monograph. The subject is of immediate concern, given the expanding Chinese nuclear arsenal and capability. The facts and figures speak for themselves. The policy-makers require clarity in shaping capability and doctrine. The document would make interesting reading for practitioners and researchers in the nuclear strategy domain.

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PREFACE

China's Defence White Paper released in July 2019 heralded Beijing's shift towards an assertive nuclear weapons posture. It recognised China's nuclear weapons as the strategic cornerstone to safeguarding national sovereignty and security. Further, it attributed Beijing's efforts to expand its nuclear force for an enhanced strategic deterrence capability to the rise in the international strategic competition—most likely the developments in the US' nuclear capabilities and missile defence systems and, to a lesser degree, the strengthening of Russia's nuclear capabilities.

China's response to its security challenges appears to entail a 'hedging' nuclear strategy involving asymmetric and competitive 'assured retaliation' capabilities combined with the risky elements of the tactics of nuclear ambiguity. It is notably due to the US-Russia nuclear dynamics, which are marked by similarities in size, posture, and capabilities. To wit, China has demonstrated a sharp accretion in its nuclear weapons capabilities: first, it has fielded the Dong Feng-41 (DF-41) Intercontinental Ballistic Missile (ICBM) in its nuclear armoury, which has a maximum range of 15,000 km and is capable of carrying Multiple Independently Targetable Reentry Vehicles (MIRVs); second, it has also equipped its Jin class ballistic missile submarines with the Juang-2 (JL-2) Submarine-Launched Ballistic Missile (SLBM) that has nearly three times greater range than that of its predecessor; third, it has showcased the Dong Feng-17 (DF-17), a Hypersonic Glide Vehicle (HGV) designed to penetrate all existing missile defence systems deployed by the US, at the 2019 National Day parade. Additionally, China has entangled its nuclear weapons by deploying dual-use weapons. Its DF-26 Intermediate-Range Ballistic Missile (IRBM), DF-21 Medium-Range Ballistic Missile (MRBM), along with possibly the DF-17, can carry both conventional and nuclear payloads, and, therefore, can cause warhead ambiguity.

China also has inconspicuous involvement in the nuclear dynamics in its immediate neighbourhood. It is involved in protracted territorial disputes with its nuclear-armed neighbour India. The territorial disputes led the two states to war in 1962, and in recent times, have caused frequent border skirmishes. Notwithstanding, there remains an ostensible quiescence on their nuclear front. Although both China and India have never issued a nuclear threat to each other, Beijing often views New Delhi as a peripheral threat;¹ it has been involved in developing and enhancing Pakistan's nuclear weapons programme to complicate India's security, and thereby offset a portion of the strategic challenge from New Delhi. Meanwhile, India has also sought to redraw the strategic balance through strengthened ties with the United States because of the latter's pivot to the Indo-Pacific. In recent years, India successfully tested its long-range Agni V missile, which has a range extending to the northern frontiers of China. There has also been a seeming move towards an offensive conventional posture evident in India's unprecedented boldness during the military standoffs in Chumar and Doklam in 2014 and 2017 respectively, and a military clash in the Galwan Valley in 2020. These developments pose a significant challenge—if not a threat—to China's security environment.

It also needs to be noted that China's neighbourhood is marked by nuclear polarity—a situation much different from the bipolar Cold War context which laid the basis for the mainstream deterrence theories. In the present times, changes in the nuclear capabilities of either the US or China inevitably disturb the strategic nuclear balance between Beijing and New Delhi. Further, any attempt by India to redraw the strategic balance vis-à-vis China is bound to pull Pakistan into an offence-defence spiral. This way, the overlapping dyads get morphed into a chain of security dilemmas and strategic rebalancing.

China's asymmetric and emerging assertive posture in the context of nuclear polarity presents a unique and complex set of challenges for the world's security. This monograph attempts to analyse the gradual developments in China's nuclear capabilities and posture and their implications on global and Southern Asian strategic stability. Cojoined to this endeavour is an attempt to highlight the Indian variable in Beijing's nuclear strategic calculus, and to bring out an Indian perspective on China's nuclear strategy.

The monograph is organised as follows: the first chapter traces how China's leaders have perceived nuclear weapons over the years; it highlights the subtle changes and continuities in their policies on deterrence and non-proliferation. The second chapter looks at China's nuclear force structure, including its current size, composition, and the nature of its nuclear weapons along with the role of its armed forces in its nuclear operations; next, it analyses the emerging aspects of its nuclear strategy and their implications on global and regional security. The third chapter looks at the current and emerging contours in the Sino-US nuclear dyad while making an attempt to highlight the parallel nuclear thinking in Beijing and Washington DC that guides those dynamics. The fourth chapter examines China's nuclear dynamics with India and Pakistan; it explains how China's nuclear equations with the US set off a chain of security dilemmas in Southern Asia that disturb its complex and interrelated strategic balance. Finally, the fifth chapter summarises the study and looks at the emerging trends in China's nuclear strategy and the prospects of arms control and nuclear risk reduction.

Note

1. Susan Turner Haynes, "China's Nuclear Threat Perceptions," *Strategic Studies Quarterly*, 10, no. 2, 2016, p. 26.

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ABBREVIATIONS

BMD	Ballistic Missile Defence
CMC	Central Military Commission
CBM	Confidence Building Measure
CPGS	Conventional Prompt Global Strike
CTBT	Comprehensive Nuclear Test Ban Treaty
HGV	Hypersonic Glide Vehicle
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IRBM	Intermediate Range Ballistic Missile
LAC	Line of Actual Control
LOW	Launch on Warning
LTBT	Limited Test Ban Treaty
LUA	Launch Under Attack
MIRV	Multiple Independently Targetable Reentry Vehicle
MRBM	Medium Range Ballistic Missile
MTCR	Missile Technology Control Regime
NFU	No First Use
NPT	Nuclear Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
PLA	People's Liberation Army
PLAAF	People's Liberation Army Air Force
PLAN	People's Liberation Army Navy
PLARF	People's Liberation Army Rocket Force
SLBM	Submarine-Launched Ballistic Missiles
SRBM	Short Range Ballistic Missiles
SSBN	Ship Submersible Ballistic, Nuclear
START	Strategic Arms Reduction Treaty
THAAD	Terminal High Altitude Area Defence
TMD	Theatre Missile Defence

1. CHINA'S EVOLVING NUCLEAR THINKING

On the emergence of nuclear weapons on the global scene in the 1940s, Mao Zedong—the chairman of the Chinese Communist Party between 1949-76—remarked that they do not change the basic rules of warfare. He asserted that warfare is about winning hearts and minds, suggesting that people decide the outcome of a war, not the possession of nuclear weapons. This thinking was rooted in his conception of ‘People’s War’, wherein he held the view that success in warfare depended on the strength of the people instead of weapons. He opined that the atomic bomb was only a paper tiger used to scare people;¹ thereby suggesting that nuclear weapons would not lead to the destruction of humanity but remain an extension of politics. He believed that nuclear weapons would not stop the trend of national liberation or independence and the people’s revolution.

Over the years, however, the Chinese leadership realised the salience of advanced strategic weapons for national security and, thus, developed the thinking that “to lag behind means to be exposed to invasion”.² The dominant nuclear thinking in China has remained broadly consistent with the Maoist emphasis on ideological considerations over material factors in the outcome of any struggle. Its leadership, thus, strives to master the same technologies as other major powers by continuously modernising their nuclear weapons, but keeps them in a low alert system in the anticipation that they will never be used.

Earlier Marxist Influences on China’s Nuclear Thinking

The Chinese nuclear thinking is also partly grounded in the Marxist theory of dialectical materialism.³ that posits that political and historical events result from the conflict of social forces caused by material needs. At the start of the Cold War confrontations in the mid-1940s, Mao grew concerned about the intensifying US imperialism. He referred to the US as the “forces of world

reaction” and believed them to be preparing for another war. He feared that the US was attempting to turn all its targets of external expansion into its dependencies through its anti-Soviet slogans. He suspected that the part of China under the Kuomintang rule could very well be a target.

Mao declared that the Communist Party must unite with other international revolutionary forces led by the Soviet Union. He argued that only after beating the reactionary forces, namely the US and its allies, could China do business and establish diplomatic ties with other countries on an equal footing. Incidentally, the start of the Cold War had also coincided with the dawn of the nuclear age. However, as John W. Lewis and Xue Litai in their trenchant analyses of China’s nuclear weapons programme in *China Builds the Bomb* note, Mao was not concerned about US nuclear weapons at this stage. He reasoned that the US and Soviet Union would compete for the lands that lay between them, and the US nuclear supremacy had little relevance in this confrontation. However, he believed that the Chinese revolutionaries could not hold on their own if they did not align with the Soviet Union.⁴

The Sino-Soviet alliance was established on February 14, 1950, and provided the joint contract to fight US imperialism. The Soviet Union assistance led China to significantly enhance its air force and navy capabilities when it entered the Korean War. Nevertheless, China suffered massive losses during the war, including 57,700 casualties, 73,000 non-battle casualties and 16,500 surrendered prisoners of war.⁵ The losses at war brought home the realisation that China needed technological modernisation and professionalism—even as its leaders publicly upheld the ‘men over weapons’ doctrine.

China’s Threat Perceptions During the Cold War

During the Cold War, China’s nuclear thinking was shaped by Beijing’s involvement in two events: the ending of the Korean War in 1953 and the Taiwan Strait crisis between 1954 and 1955. The first nuclear threat by the US came at the close of the Korean War when the president of the US at that time, Dwight Eisenhower, signalled to China about a possible nuclear use against its territories if the armistice negotiations remained a stalemate. The prevailing thinking in China, at this point, was to exercise greater caution against the American nuclear threat even as the world opinion at large undermined the

possibility of the US delivering on those threats. The Chinese leadership was resolute about not making any concession against the American nuclear threat that could be perceived as a sign of weakness. In response to the US nuclear threat, the Chinese leadership ramped up the process to construct fortifications, such as frontline battlefields and nuclear shelters, to give out signals of the Chinese preparations.

Lewis and Litai note that the US had begun to believe that the revolutionary expansionism under Mao's leadership would spread across Asia and threaten vital American interests in the region. The US, thereupon, unleashed efforts to contain the Communist expansion in Asia. The White House Document titled "US Policy Towards Communist China" published in 1953, perceived China as a formidable power possessing capabilities and laid out a strategy for the attrition of those capabilities and the impairment of Sino-Soviet relations. The document also recognised Taiwan as an important asset of the US in the Far East. The Chinese leadership interpreted the talks of a defence pact between Taiwan and the US as a move of aggression and responded aggressively.

Eisenhower formalised the Defence Treaty with Taiwan on January 5, 1955, and passed the Formosa Resolution to protect Taiwan from further aggression. The purpose of the resolution and the treaty was to stabilise the situation. It also sought to balance the psychological effect of the defeat of the US on the island of Dachen. Subsequently, the US halted taking further steps to bolster its military forces in Taiwan. It began to count on the right to use nuclear weapons as a means to defend Taiwan's offshore islands.

Lewis and Litai have noted that the Chinese leadership saw these events as partial victories as they were convinced that the US would not take China lightly. They suspected that the US would begin to view China as an adversary and, therefore, would seek pretexts to hit mainland China directly. Following these confrontations, Mao also feared that the US might engage in a nuclear war with China. The Chinese leadership particularly perceived the Formosa Declaration as the US resolve to fight a nuclear war against China. Although China was receiving nuclear protection from the Soviet Union, Mao doubted if the Soviet Union would risk its own survival to help China. Consequently, the Chinese leadership issued urgency to its strategic military programme and began acquiring nuclear weapons.

Building the Nuclear Bomb

China's decision to acquire nuclear weapons was a response to the immediate security threat emanating from the US and its need to safeguard its national interest. Mao was keen on restoring China's international position through a greater reliance on its military, such that it would distinguish the new state of China from its past and, at the same time, destroy the 'nuclear monopoly' of its adversaries.

In 1963, a year before the first nuclear weapons test, the Chinese leadership offered two rationales for its decision to acquire nuclear weapons: first, the use of nuclear weapons as intended as a means of defence against nuclear blackmail and nuclear war. Second, they were the means to offset the power politics whereby a few big powers could use their nuclear weapons to make other countries obey their orders. This view was further reinforced when the nuclear weapons possessing states initiated non-proliferation efforts to prevent other countries from acquiring nuclear weapons.

During that time, Mao had stated that the atomic bombs should not be taken casually, as their use would amount to a crime.⁶ He disagreed with the strategy of Russia's Premier, Nikita Khrushchev of immediate retaliation in response to a nuclear attack by an adversary. He even asked Khrushchev not to engage in an all-out attack if the US were to attack China. The Chinese leadership believed that a threat of a little revenge would be enough to deter an adversary.⁷ Insufficient financial resources and technological capabilities also had put quantitative restrictions on China's nuclear armoury. At this point, the Chinese leadership did not wholly disclose its strengths and resources. It kept information pertaining to its nuclear weapons capabilities vague in order to safeguard its interests.

French scientist Jean Frédéric Joliot-Curie, who was indignant about the non-proliferation efforts by the nuclear weapons possessing states, felt motivated to help China break America's monopoly over nuclear weapons. He helped the Chinese physicist Qian Sanqiang—who was initially charged to develop China's nuclear programme—to purchase nuclear instruments in England and France, and also gave Chinese radio-chemist Yang Chengzong ten grams of radium salt standardised for radioactive emissions.⁸

Mao also sought to take Soviet assistance—but to a limited extent. Mao reasoned that a stronger Communist power towards its east would favour the

Soviet Union; therefore, it should assist China in developing nuclear weapons willingly. He sought dual paths for China's nuclear weapons programme: the first, albeit a short-term programme, involved assistance from the Soviet Union in the initial phase; the second focussed on an independent long-term approach focussed on creating indigenous capabilities.

The Chinese leadership also shifted its military doctrine parallel to that of the Soviet Union to facilitate cooperation between the two Communist powers. The cost suffered by the Soviet Union at the hands of the imperialist forces in its covert involvement in the Korean War also motivated it to strengthen its military relations with China. In April 1952, the Soviet Union committed to providing China with a nuclear cyclotron and fissionable material to advance its research. At the beginning of 1953, a delegation of 26 Chinese scientists led by Qian arrived in the Soviet Union to facilitate scientific collaboration between the two countries and learn from the Soviet experience.

The mobilisation of Chinese scientists began as early as January 15, 1955. The cadre of Chinese bomb builders consisted of the Chinese youth, a handful of older officials, scientists, and technicians. A three-member group consisting of a leading Chinese economist Chen Yum, a senior battlefield commander Nie Rong Zhen, and a political commissar in the war-time army Bo Libo was at the helm of the affairs. Soon after, the 'Third Ministry of Machinery Building' was established to direct China's nuclear industry and replace the three-member group. Little information about this ministry exists in the literature as it functioned in extreme secrecy. Since its establishment, it supposedly played a dominant role by overseeing several projects covering all aspects of the comprehensive nuclear programme. By October 1957, China and the Soviet Union signed an agreement that provided the former with a 'sample of an atomic bomb' and technical data by the Soviet Union. Subsequently, a gaseous diffusion uranium enrichment plant was constructed in Lanzhou to produce weapons-grade uranium. Between 1955 and 1959, the exchange of scientists between the two Communist powers grew significantly. Approximately 260 scientists from both sides worked in each other's facilities.

Between 1959 and 1964, the organisational structure of China's nuclear weapons programme began to take a militaristic form as the Communist Party's Great Leap Forward policy—which was launched in 1958 to overhaul the

organisation of science and technology—had disrupted the centralised control within the organisation and brought chaos to the nuclear weapons programme.⁹ The State Science and Technology Commission was established to oversee the civilian part of the nuclear programme, while the Defence Science and Technology Commission was established to oversee its strategic aspects. The Defence Commission later emerged as the powerful body that controlled the scientific and technological resources of the People's Liberation Army (PLA) as well as the State Council's military-industrial system. It also oversaw the ministry's Fifth Academy that was later established to manage China's strategic missile programme.

During this period, the relations between the Soviet Union and China turned temporarily bitter. A significant reason for the deteriorating relations comprised the differences in their leaderships' views on the implications of nuclear weapons. While Mao regarded nuclear weapons as paper tigers that were never to be used, Khrushchev regarded them as weapons to fight the imperial forces. The gradually embittering relations resulted in the withholding of the prototype of the atomic bomb developed by the Chinese scientists with the help of the Soviet scientists in Moscow by the Soviet Union. However, anti-Soviet eruptions in Hungary and Poland behove the Soviet leadership to resume cooperation with China. The first Chinese atomic bomb test was conducted on October 16, 1964, at the Lop Nor testing site in Sinkiang province.

Chinese Conception of Nuclear Deterrence

Throughout the 1960s, Chinese scientists also worked towards developing thermonuclear weapons and an Intercontinental Ballistic Missile (ICBM). China conducted tests of a partial range of the Dong Feng-5 (DF-5) ICBM in 1971.¹⁰ There existed a significant gap between the progress in China's technical programme and the development of a nuclear strategy. China's nuclear thinking in this period continued to remain highly ideological; however, the operationalisation of China's nuclear weapons meant breaking from past thinking and articulating a defence strategy that incorporated the concept of nuclear deterrence.

Li Bin notes that there is a marked difference in the way the US and China perceive nuclear 'deterrence': The concept of 'deterrence' in the US is understood as an appropriate strategy in both strategic and conventional military terms;

in China, on the other hand, it is seen as an act of intimidation.¹¹ The term associated with the concept of 'deterrence' in Mandarin is *weishe* which refers to the strategy of coercion. However, many Chinese speakers use the term *weishe* to mean only coercion.¹²

In the standard definition, as put forth by the US, 'deterrence' involves the use or threat of force to prevent an adversary from taking action. It is closely related to the term 'compellence', which refers to using a threat to force an adversary to take action.¹³ The distinction between the two concepts also lies in their intended outcome: In the case of 'deterrence', a state—while forcing an adversary to forgo action—seeks to maintain the status quo; however, in the case of the 'compellence', the state—while 'compelling' a rival to take any action—seeks to change the status quo. Therefore, there lies a thin line between nuclear 'deterrence' and 'compellence' in the Western conception.¹⁴

However, the Chinese scholars do not distinguish between nuclear 'deterrence' and 'compellence' and often tend to conflate the two. The 2011 PLA volume on military terminology defines 'deterrence' as "the display of military power or threat of use of military power, in order to compel an opponent to submit".¹⁵ China's leadership perceives it to be analogous to the Western concept of coercion which encompasses defensive and aggressive actions. Thus, for a long time after China's first nuclear test, its leadership refrained from using the term deterrence in describing its military strategy. The leadership's opposition to the strategy of deterrence was reflected in the 1998 Defence White Paper, whereby it condemned the nuclear weapons states for accepting the concept of nuclear deterrence.

Following the test of its first atomic bomb, the Chinese government declared that it had developed "nuclear weapons for defence and for protecting the Chinese people from US threats to launch a nuclear war" and that it "will never at any time or under any circumstances be the first to use nuclear weapons." After Mao's death, Deng Xiaoping first articulated the Chinese conception of deterrence by stating in a public speech that "if you want to destroy us, you have to suffer a little retaliation."¹⁶ The Chinese leadership has believed that an act of slight revenge, as opposed to a reciprocated retaliation, makes the adversary afraid. Thus, China maintains a small arsenal that serves as a restraining force to discourage its adversaries from acting rashly.

China's leaders conceive a limited role of its nuclear weapons. Historically, China has dealt with weapons of mass destruction with caution. Sun Tzu in *The Art of War* wrote: "The highest form of generalship is to thwart the enemy's plans; the next best is to prevent the alliance of the enemy's forces; the next is to attack the enemy's army in the field, and the worst of all is to besiege cities." Thus, while nuclear weapons seemed to alter the methods of combat, the Chinese leadership continued to believe that they serve no war-fighting purpose. Moreover, through the 1960s, the lack of financial resources, and technological constraints did not allow China to think otherwise. The theory of a 'few weapons' afforded it the freedom from intimidation from its nuclear adversaries and served the purpose of creating fear within its adversaries. It was, however, only in the 2006 Defence White Paper that China officially began to change its stance on the strategy of deterrence. In the paper, Beijing accepted deterrence as its policy. It noted that the objective of China's Second Artillery Force is "to deter other countries from using or threatening to use nuclear weapons against China". Since then, China has continued to state deterrence as a strategy in the Defence White Papers that have followed.

China's conception of nuclear deterrence is based on the concept of "minimum means of reprisal", as phrased by Nie Rongzen, whereby it seeks to maintain a survivable retaliatory nuclear strike capability.¹⁷ However, as the US began to develop anti-ballistic missile systems following its abandonment of the Anti-Ballistic Missile (ABM) Treaty in 2002, China responded to the challenge by modernising its nuclear weapons capabilities to ensure that its small strategic nuclear arsenal continued to be reliable. The guiding principle for China's nuclear deterrence thereon has been to resist intimidation by the adversary's nuclear weapons by striving to acquire similar capabilities.

China's Threat Perceptions Post-Cold War

By the 1990s, China's leaders had adjusted to the view that a major war was unlikely to occur. They had begun to believe that China's national security environment had stabilised and was headed towards a long period of peace. This optimism sustained into the turn of the century when its leaders declared that the first two decades of the 20th century would provide China with significant strategic opportunities that it must grasp.¹⁸ Indeed, China has made significant

strides in its economic growth in the period following the end of the Cold War. From the 1990s, it has consistently made 10 per cent annual Gross Domestic Product (GDP) growth, owing much to the liberal international economic order that existed in that period.¹⁹

China's relations with the US also transitioned from being defined by zero-sum thinking, wherein China held that any country that is not its friend is an adversary, to a more complex relationship involving both cooperation and suspicion.²⁰ The vicissitudes of their relations shaped the nuclear dynamics in this period. To wit, the salience of nuclear weapons dramatically increased when the states seemed to get involved in a conflict and rapidly subsided when they engaged in some form of cooperation.²¹

With regards to Russia, China often views the developments in its nuclear programme with caution. Although Beijing and Moscow could have been allies following the rise of the US after the end of the Cold War, their relations suffered a blow when the Russian military newspaper issued a nuclear threat against China during their border conflict of 1969.²² Notwithstanding, despite Russia's sizable nuclear arsenal and competitive delivery capabilities, China views it as a declining power that will not be able to sustain its large inventory of nuclear weapons or invest in advanced technology in the coming times.²³

Further, China remains concerned about Japan's potential acquisition of nuclear weapons as it possesses a large stockpile of separated plutonium and the technological expertise. Japan has made claims over the disputed Senkaku/Diaoyu Islands. While its Parliament passed a resolution in 1967 to never produce, procure, or store nuclear weapons in the future, China remains sceptical of such promises and believes that Japan might use nuclear coercion to gain leverage over the issue. As far as India is concerned, Beijing views New Delhi as a peripheral threat, but it denies it publicly.²⁴ Lora Saalman notes that the possibility of deploying nuclear-armed DF-21 in northwestern and southwestern China and of the dual-capable DF-26 missiles in southwestern China and Xinjiang "indicate that South Asian contingencies and deterrence are a factor within China, even if not always in open Chinese-language analysis."²⁵ Notwithstanding, China has sought to counter the challenge posed by India by adopting a two-pronged strategy of sporadically initiating border skirmishes in order to maintain tactical pressure on India and aiding its adversary Pakistan in developing and enhancing its nuclear weapons

capabilities, often through the violation of the terms set by the non-proliferation regime. These strategies are discussed further in the fifth chapter.

In its first Defence White Paper released in 1998, China's leaders paid heed to the development of a relatively stable international security environment. It stated that the region of the Asia-Pacific had grown stable but pointed out that hegemonism and power politics remain the primary source of threats to world peace and stability. It further argued that the Cold War mentality and its influence still have a currency; the enlargement of military blocs and the strengthening of military alliances have further added factors of instability to international security.

When the US identified the Taiwan Strait region as one of the seven possible nuclear weapons targets in its 2002 Nuclear Posture Review (NPR), China termed the US military presence and its bilateral military alliances in East Asia, along with its plans of deployment of the Theatre Missile Defence (TMD) system as a harmful development. During this time, the US also began working on its Ballistic Missile Defence (BMD) systems and improving the precision strike capabilities of its conventional long-range missiles to target China's nuclear assets.

In the 2005 Defence White Paper, the Chinese leadership raised concerns regarding the complicated security factors in the Asia-Pacific, which included the reinforced military presence of the US. It also raised concerns regarding the constitutional overhaul in Japan, which, it argued, was leading to readjustments in Tokyo's military and security policies and developments in its missile defence system for future deployment. It stated that such developments were leading China to enhance its nuclear counter-attacks capabilities. In the several Defence White Papers that followed, China reiterated its concerns regarding the US interference in its neighbourhood. The 2013 Paper stated that China would keep an appropriate level of readiness in peace-time. Further, it added that it would combine peace-time needs with war-time needs and maintain vigilance at all times to deter the enemy from using nuclear weapons against China.

During this time, China also heeded a change in India's conventional posturing. The *Science of Military Strategy* (2013) pointed towards a transformation from India's passive defence-type thinking towards a pre-emptive strike-type disciplinary deterrence, which focusses on initiating an

attack before the enemy does, to “win a high-tech limited conventional war under conditions of nuclear deterrence”.²⁶ Beijing’s assessment of New Delhi is likely to be based on the signing of the Indo-US nuclear deal in 2008; the successful testing of the Agni V missile; and gradual enhancement in India’s conventional capabilities, which in quantitative terms match these of China. In the current times, it is also likely to include the formation of the Quadrilateral Security Dialogue involving the US, Japan, Australia, and India; the increased engagements between Washington DC and New Delhi; and a demonstrable boldness in India’s handling of the border crises, namely Chumar, Doklam, and Galwan Valley in 2014, 2017, and 2020 respectively.

China’s Thinking on Nuclear Non-Proliferation and Disarmament

When China was developing nuclear weapons in the 1950s, it supported the Soviet policies and proposals on arms control. However, as the Sino-Soviet relations got embittered by the late 1950s, China withdrew its support to the Soviet Union in negotiations for the Limited Test Ban Treaty (LTBT). The treaty banned atmospheric testing which threatened to constrain China’s nuclear weapons programme. To deflect the pressure for signing the LTBT, China offered alternate arms control proposals, including creating nuclear weapons-free zones in Africa and a world summit to discuss the “complete prohibition of nuclear weapons”.²⁷

On the day China tested its nuclear weapons, the Chinese government issued a statement proposing the global comprehensive prohibition of nuclear weapons through their systematic destruction. It remarked that it was compelled to develop nuclear weapons due to the persistent nuclear threats and blackmail it faces.²⁸ China condemned the existence of nuclear monopolies and criticised the US and the Soviet Union for forcing the agenda of non-proliferation even as they continued to significantly aggrandise their own nuclear capabilities. Following the tests, China dropped its campaign for a nuclear weapons-free zone in Asia and instead laid out a proposal for a summit of world leaders to discuss the prohibition of nuclear weapons. Further, China put forward its policy of No First Use (NFU), whereby it stated that it would not be the first to use nuclear weapons at any time or under any circumstances in a conflict. It urged the US and the Soviet Union to accept the NFU proposal. Jeffery Lewis in *Paper Tigers* has argued that China’s policy of NFU, more than offering assurance to

the other nuclear weapons states, supported China's claims that a larger nuclear inventory—as possessed by the US—has little coercive value.²⁹

The international environment for China changed in 1976 when it developed formal diplomatic relations with the US. During this time, the Chinese deputy foreign minister also held successive consultations with his Soviet counterpart that restored channels of dialogue between the two countries. During these diplomatic interactions, China stressed for planning the course of global disarmament. In 1983, it sent its first ambassador for disarmament affairs. In 1986, China presented two proposals on nuclear and conventional disarmament for the first time at the UN General Assembly, pointing out that the US and Soviet Union had special nuclear and conventional disarmament responsibilities.

The collapse of the Soviet Union in 1991 had put an end to the great power competition. The risk of another world war was tremendously reduced. The states began adjusting their military strategies according to the new order. Lewis notes that as the US and Russia intermittently engaged in disarmament negotiations and made some progress in reducing the size of their nuclear arsenals, China found itself in a complicated position regarding the global nuclear arms control and disarmament initiatives. China came under pressure by the mainstream non-proliferation regime to step out of its nuclear secrecy and participate in the global nuclear disarmament efforts. It complied with those efforts whenever it reduced the arms race between Russia and the US in the hotspots in China's neighbourhood.

In 1992, China officially joined the mainstream non-proliferation regime by signing the Nuclear Non-Proliferation Treaty (NPT). It had opposed the treaty for several decades as it previously held the view that all countries have the same right to develop nuclear weapon capabilities. The signing of the NPT was a marked shift in China's thinking on nuclear non-proliferation; after condemning the then non-nuclear proliferation regime for nearly four decades for monopolising the possession of nuclear weapons, it ultimately integrated itself within the global nuclear order created by it. China also officially declared that it would report to the International Atomic Energy Agency (IAEA) of any export to, or import from, non-nuclear weapons states involving nuclear materials of one effective kilogramme or above.³⁰ In 1996, China signed the Comprehensive Test Ban Treaty (CTBT) but never ratified it; Beijing issued a

statement that reiterated its position for the complete prohibition and thorough destruction of all nuclear weapons.³¹

At the turn of the century, China began to realise that its goal of achieving comprehensive disarmament was unrealistic as nuclear weapons had become a cornerstone of its national security.³² Instead, China has been subtly empathetic towards North Korea on the US' issue with Pyongyang's nuclear weapons programme. In many non-official statements, the Chinese leaders have downplayed the security challenge posed by North Korea's weapons programme.³³ Similarly, China has diverged from the stance taken by the mainstream non-proliferation regime on Iran's nuclear programme, which has included a series of economic sanctions; instead, both Beijing and Tehran have friendly relations and cooperate in areas, including energy, trade, and military technology.

Emerging Contours in China's Nuclear Thinking

By 2017, the US military footprint had expanded well into South Korea, where it has deployed the Terminal High Altitude Area Defence (THAAD), a globally transportable anti-ballistic missile defence system. In 2019, the US evinced plans to deploy medium and intermediate-range ground-based missiles in the Asia-Pacific region. The announcement resulted from the US' withdrawal from the Intermediate-Range Nuclear Forces (INF) agreement which it had signed with the erstwhile Soviet Union in 1987. The deployment of these missiles would allow the US to encircle China effectively; further, any potential counter-force use of such missiles against China poses a threat to the survivability of its nuclear weapons.

For China, these developments not only challenge its nuclear deterrent capabilities but also disrupt the regional balance of power. In the 2019 Defence White Paper, China stated that its nuclear capabilities remain a strategic cornerstone in safeguarding its national sovereignty and security. Subsequently, it has responded to these challenges by adopting a hedging strategy that has resulted in a sharp accretion in its nuclear capabilities.³⁴ In the last few years, China has rapidly modernised its nuclear weapons capabilities and significantly expanded the range of its ICBMs to surpass the range of the US ICBMs. It has also incorporated new penetration capabilities such as HGVs, decoys, or MIRVs to counter the US BMD systems.³⁵

Notwithstanding, it seems that China's leaders continue to believe that nuclear weapons are akin to paper tigers that are meant to scare people and do not determine the outcome of a war. To wit, while China continues to modernise its nuclear weapons to remain a nuclear power to be reckoned with, it remains committed to its principles of NFU, whereby it pledges not to be the first to use nuclear weapons at any time or under any circumstances. In 2006, Air Commodore Jasjit Singh, an Indian military strategist, argued that the "expressed rationale is that China has been lagging behind other nuclear weapons possessing states, particularly the United States". Therefore, Beijing's goal would be to narrow that gap in the coming years.³⁶

Regardless, there have been noticeable changes in China's thinking on the strategy of nuclear deterrence and non-proliferation. With regards to nuclear deterrence, it has come a long way from condemning the practice of nuclear deterrence played by the nuclear weapons states during the Cold War to adopting the strategy of nuclear deterrence as a means of protecting its national security interests. In the earlier times, its leaders held that nuclear deterrence does not depend on immediate and precise counter-attack capability, but on the existence of the capacity to conduct nuclear retaliation. In contemporary times, however, its leaders seek to respond to China's threat perceptions by keeping China's nuclear weapons at an "appropriate level of readiness". This change in thinking has been continuously reflected in China's national Defence White Papers wherein it has emphasised the need to improve its nuclear quick-response capacity and nuclear strategic-warning capacity.³⁷

Interestingly, there may also be variations in what China perceives as 'unacceptable damage'. In the past, Mao had stated, "We have a very large territory and a big population. Atomic bombs could not kill all of us.... What if they killed 300 million of us? We would still have many people left".³⁸ Manpreet Sethi, an expert on nuclear strategy, points out that the level of the threshold of 'unacceptable damage' may have moved lower given the decrease in the sufferings and loss of lives in inter-state wars—hence, reduction in their tolerance level; a better educated, informed, and digitally connected populace; and, lastly, large scale economic achievements.³⁹

China's thinking on non-proliferation has been directly influenced by its changing perceptions of the global security situation. It has ranged from

resisting the non-proliferation efforts led by the US in the 1950s and 1960s for monopolising the possession of nuclear weapons to joining the non-proliferation regime as the security environment in East Asia turned in China's favour in the 1990s. However, despite its active participation in various non-proliferation programmes, there have been instances where China has either condoned the possession of nuclear weapons or proliferated nuclear weapons to its strategic partners when it aligns with its security interests.

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2. MATURING NUCLEAR ARSENAL AND STRATEGY

At present, China's threat perceptions are largely shaped by the US and, to a lesser degree, by its peripheral adversaries, namely India, Japan, and South Korea. The offence-defence spiral between the US and China has caused Beijing to continually recalibrate its deterrence concepts and upgrade its operational capabilities over the years. In recent times, the development of the US Conventional Prompt Global Strike (CPGS) weapons along with the presence of its Ballistic Missile Defence (BMD) systems is propelling China to modernise its nuclear arsenal. China has introduced hypersonic missiles and Multiple Independently Reentry Vehicle (MIRV) payloads to counter the security challenges posed by the US. Such developments, in turn, have a destabilising effect on China's neighbourhood as it raises the threat perceptions of its regional adversaries. However, as discussed in the previous chapter, despite the rapid modernisation of China's nuclear arsenal, the tenets of its nuclear policy, including "No First Use" (NFU) and "minimum means of reprisal"¹ seem, thus far, to have remained unchanged.

Evolution of China's Nuclear Strategy: From Mao to Deng

As discussed in the previous chapter, much of China's nuclear weapons planning and operations has a basis in Mao Zedong's nuclear thinking. In the early 1940s, he asserted that an atomic bomb was only a paper tiger used to scare people, suggesting thereby that nuclear weapons would not lead to the destruction of humanity but would remain an extension of politics. This thinking was rooted in his conception of 'People's War', wherein he held the view that success in warfare depended on the strength of the people instead of weapons. However, at the same time, he was cognisant of the salience of advanced strategic weapons for national security and contended that "to lag behind means to be exposed to invasion".

Mao had decided to build the nuclear weapon during China's confrontations with the US during the 1950s and early 1960s, when the latter first signalled a possible nuclear use against China's territories. Initially, the Chinese leadership decided to exercise greater caution against the American nuclear threat. However, the relations between Beijing and Washington DC grew tense when the latter incorporated Taiwan into its defence network. The formalisation of the US–Taiwan Defence Treaty and the passing of the Formosa Resolution that sought to protect Taiwan from further aggression, led the Chinese leadership to issue urgency to its strategic military programme.

When China first tested its nuclear weapon in 1964, its official statement declared:

China is developing nuclear weapons not because we believe in the omnipotence of nuclear weapons and that China plans to use nuclear weapons. The truth is exactly to the contrary in developing nuclear weapons. China's aim is to break the nuclear monopoly of the nuclear powers and to eliminate nuclear weapons. ... The development of nuclear weapons by China is for defence and for protecting the Chinese people from the danger of the US' launching a nuclear war. The Chinese Government hereby solemnly declares that China will never at any time and under any circumstances be the first to use nuclear weapons.²

For the better part of China's nuclear weapon's history, its leaders' thinking regarding nuclear weapons remained highly ideological. John W. Lewis and Xue Litai in *China Builds the Bomb* note that China's leaders believed that the mere existence of nuclear weapons would make China's adversary think twice before striking the country with a nuclear weapon. The 1969 confrontation with the Soviet Union, wherein China managed to deter Moscow from launching a surgical attack, reinforced that belief.³ Another view that prevailed at that time was that nuclear weapons were meant to address nuclear threats and not to deter a nuclear attack. As noted in the previous chapter, the Chinese leadership equated nuclear deterrence with a policy of coercion and perceived it to be a form of aggression. For these reasons, Mao decided to build a small arsenal only for self-defence. Insufficient financial resources and technological capabilities

also had put quantitative restrictions on China's nuclear armoury. The policy of NFU, besides its ideological underpinnings, also reflected the reality of China's small and highly vulnerable nuclear arsenal. It did not have enough missiles or nuclear material to destroy an adversary state's nuclear assets. Moreover, any such launch against a nuclear weapons possessing state would provoke unbearable nuclear retaliation.⁴

The leadership from Mao Zedong to Marshal Nie Rongzhen continued to limit the scale of China's nuclear arsenal to 'minimum retaliation means' and provided no further details.⁵ Thus, even as the Second Artillery was formally established on July 1, 1966, China did not have an explicit nuclear strategy for the next two decades. The political chaos that lasted over a decade (1966-76) due to the Cultural Revolution slowed the pace of the development of operational and targeting plans in the Second Artillery.

Mao's influence on China's strategic thinking began to dissolve after his death in 1976. Jeffery Lewis notes that Deng Xiaoping's thinking was more rational compared to that of his predecessor, Mao. He viewed the international environment as peaceful and, thus, focussed on economic development instead of preparing for war.⁶ Improved relations with the US in the 1980s led Deng to conclude for the time that global or imminent war would not take place. Deng foresaw a violent clash with Vietnam and India, which led the Central Military Commission (CMC) to prepare for local wars and limited conflicts. Several texts, including the *Science of Second Artillery Campaigns*, were also released at this time. Between 1979 and 1981, the Second Artillery convened twice to materialise new work regulations. In 1983, several academic units, namely the Academy of Military Sciences and a committee for academic research, were established to formulate 'science of operations' and 'operational principles and rules' for missile units.

They further added that China's short but disastrous war with Vietnam in 1979 drove home that the People's Liberation Army (PLA) could not fight as an integrated force in a local war. Challenges from its neighbours, especially Vietnam, India, and Japan, which were developing advanced conventional weapons, caused the Chinese strategists to think about the possibilities of a conventional local war. Additionally, China faced challenges from the demonstration of superior US capabilities in the Gulf War in conjunction with

the declarations of Taiwanese independence. In conjunction with the threat from superior US military capabilities, these local military challenges offered the Chinese strategists the incentive to arm some missiles with nuclear warheads and develop operational concepts and a formal nuclear strategy.

Modern China's Nuclear Thinking: Post-Deng Era

The operationalisation of nuclear weapons gained momentum during the leadership of Jiang Zemin and Hu Jintao. The concept of combining 'multiple means' became prevalent under the leadership of Jiang between 1989 and 2004. It included nuclear as well as conventional forces to strengthen deterrence.

In the first Defence White Paper released in 1998, the Chinese leaders heeded the development of a relatively stable international security environment. It stated that the region of the Asia-Pacific had grown stable but pointed out that hegemonism and power politics remained the primary source of threats to world peace and stability. It further noted that the Cold War mentality and its influence were still prevalent, and the enlargement of military blocs and the strengthening of military alliances contributed to the instability of international security.

The identification of the Taiwan Strait region as one of the seven possible nuclear weapons targets by the US in the 2002 Nuclear Posture Review (NPR), along with its plans of deploying the Theatre Missile Defence (TMD) system and the improvements in the precision strike capabilities of its conventional long-range missiles raised China's threat perception. As a result, from 2006 onwards, Hu pursued a self-defensive nuclear strategy in order to 'subdue' the enemy without fighting a battle. In the 2006 Defence White Paper, Beijing officially began to accept deterrence as its policy and announced that the objective of China's Second Artillery Force is "*to deter other countries from using or threatening to use nuclear weapons against China*". Since then, China has continued to state deterrence as a strategy in the Defence White Papers that have followed.

The 2013 Science of Military Strategy described the goal of China's nuclear weapons in the following words:

When China first decided to develop nuclear weapons, it was to break the nuclear powers' nuclear monopoly and was the archetypal existential deterrent

strategy. The development of nuclear weapons since then has also abided by the recognition of “you have [them], and I have them too,” i.e., the existence of nuclear weapons is itself deterrence. Under the new historical conditions, it is still the nation’s strategy, and the basic goal of the nuclear struggle to better exercise the existential function of nuclear weapons and to contain nuclear threats and the outbreak of nuclear war.⁷

In the assessments by Lewis and Litai, China’s pursuit of “deterrence of a nuclear war and limited nuclear retaliation,” is governed by the following five principles:

- Oppose nuclear blackmail: Deter the enemy from starting a nuclear war, and thwart and neutralise the enemy’s nuclear deterrent and blackmail.
- Gain mastery by striking only after the enemy has struck first: at no time, be the first to use nuclear weapons, and, if the enemy strikes, authorise only limited nuclear retaliation.
- Centralise command: The CMC alone can decide on and direct the employment of nuclear missiles. The Second Artillery must carry out the CMC’s orders strictly and correctly.
- Strictly protect the missile units: Ensure the survivability of the missiles needed for the counter-attack.
- Strike only key targets: Choose only strategic targets in the enemy’s homeland for effective nuclear retaliation.⁸

China’s Nuclear Force Structure

At present, China’s nuclear force consists of modernised Intercontinental Ballistic Missiles (ICBMs), new Ship Submersible Ballistic Nuclear missiles (SSBNs), and an improved strategic force to minimise the chances of a disarming first strike. This section focusses on the current size, composition and nature of the Chinese nuclear force and its management. It focusses primarily on the People’s Liberation Army Rocket Force (PLARF), which is responsible for China’s missile-based nuclear operations and the storage and maintenance of nuclear warheads. This section also briefly discusses the role of the People’s Liberation Army Navy (PLAN) and the People’s Liberation Army Air Force (PLAAF), which are likely to play a secondary role in nuclear operations in the coming years.

The Second Artillery/PLARF

The Second Artillery was created on July 1, 1966, using units from the artillery that was equipped with the short-range missiles supplied by the Soviet Union and from a department of the Ministry of Public Security that was a forerunner to the paramilitary People's Armed Police. Lewis notes that when the Chinese leadership decided to field tactical missiles, there was a debate amongst China's strategic planners on whether to deploy them with the regular armed forces or the Second Artillery. The latter was chosen as it had the required proven leadership, management, and logistical systems. The Second Artillery made its first public appearance in the National Day parade in October 1984 and began fielding conventional missiles in the early 1990s.

The Chinese Defence White Paper released in 2008 described the Second Artillery as "a strategic force under the direct command and control of the CMC" that is "mainly responsible for deterring other countries from using nuclear weapons against China and for conducting nuclear counterattacks and precision strikes with conventional missiles".⁹ Further, as a result of reforms carried out on December 31, 2015, the name of the Second Artillery was changed to the PLARF, and its status was elevated from a branch to a service. In the official discussions, the Second Artillery (henceforth PLARF) is now listed together with the tri-service of the People's Liberation Army, namely the PLA, the PLAAF, and the PLAN.¹⁰

The PLARF is constituted by six bases, or armies, which are numbered between 51–56. Each base is led by an officer equal in grade to a corps leader, and each of the bases is responsible for subordinate launch brigades and support regiments. Additionally, the PLARF oversees Base 67 (earlier known as Base 22), which maintains the stockpile of nuclear warheads. The PLARF leadership also oversees an engineering base formed in 2012 and is responsible for tunnelling, facility installation and disaster response. Each of the six bases, except for Base 52, is responsible for deploying either ballistic or cruise missiles and has between three and six subordinate brigades. Base 52 operates conventional missiles and has approximately nine missile brigades. In terms of hierarchy, the command trickles down from the base to brigades, battalions, companies, and platoons.¹¹

The PLARF is known to be managing both conventional and well as nuclear missiles. In the 1980s, the CMC ordered the Second Artillery to operate

under the ‘Dual Deterrence and Dual Operations’ doctrine, which was designed in response to the perceived changes in modern warfare. The *Science of Second Artillery Campaigns* document released in 2004 explained this strategy as follows:

In the late 1980s, the Central Military Commission assigned the Second Artillery Force the mission to build and develop a conventional guided-missile force. Especially after the Gulf War, the PLA, under the correct leadership of President Jiang Zemin, formulated the military-strategic guidelines of the new era. To meet the needs of future high-tech local wars, the Central Military Commission issued the new task of “dual deterrence and dual operations” and set up a new conventional guided-missile force.

The rationale for this strategy was the effectiveness of the combination of both conventional and nuclear operations in deterring China’s adversaries.¹² However, an internal firewall exists wherein campaign commanders manage the conventional battlefield missiles, and the CMC directly controls the nuclear missile forces.

Command, Control and Communications

China’s nuclear command and control is highly centralised, with its top political and military leaders making all the important decisions. All decisions about nuclear force employment are taken by the CMC, and the PLARF executes its orders.

Gill, Mulvenon, and Stokes note that the central command and control centre is located in Xishan in the hills west of Beijing. The communication with the six launch bases is passed through the PLARF Command Headquarters and its communications regiment. Once the top leaders at the political level—who have ultimate authority—reach a consensus, the commission’s chairman uses its power to issue an order to use nuclear weapons. However, it might be the case that such a decision might need consensus building with the CMC and other senior military personnel.¹³

According to Lewis, whenever the CMC issues orders, the PLARF goes into a higher-level readiness and prepares for a nuclear counterattack to deter an enemy. China maintains a de-mated stance in peace-time and

keeps its first generation of ballistic missiles unfuelled and its solid-fuelled, road-mobile missiles in a garrison. However, during an alert, these units either move to hardened underground locations to ride out an attack or to camouflaged locations.

Of late, China has improved its communications command automation capabilities. It has laid thousands of miles of fibre optic cable and deployed mobile command systems and “integrated command platforms” to enhance its joint campaign command and control and operations.¹⁴ However, as Lewis notes, communication using radio, television and the Internet is used to publicise the step of placing China’s nuclear forces on alert.

Strategic Missiles

Historically, China has based its nuclear deterrence on its surface-to-surface intercontinental ballistic missiles. China first planned to test the Dong Feng (DF), meaning East Wind series, the DF-1, DF-2, DF-3, in October 1959. The medium-range DF-2 was successfully tested in 1962 and with a live nuclear warhead in 1964. The DF-3 was abandoned, and the DF-1 was made a successor of the DF-2, thus, leading towards the plans to develop an ICBM which culminated in 1975; the DF-1 subsequently became the DF-3. In the 1960s, China proposed the development of the DF-4 and DF-5.¹⁵ These missiles together form China’s first-generation ballistic missiles. The DF-4 was the first effort at staging, and it used the DF-3 as the first stage. The DF-5 was the integration of all of China’s technological advancements, which ultimately culminated into an ICBM, with the first successful test in 1971. The first of the SLBM Julang series, namely JL-1, was first tested in 1982 along with its land-based variant, the DF-21. In 1985, the CMC outlined the plans for the second generation, where the JL-2 and DF-21 were to replace the DF-3; the DF-31 and the JL-3 were to replace the DF-4; and the DF-41 was to replace DF-5. Notwithstanding, China has decided to retain the DF-4 and DF-5 ICBMs with some modifications.¹⁶

In 2006, China launched its ICBM DF-31 with a range of 7,300 km to complement its existing silo-based DF-5 and enhance the survivability of its weapons. The following year, it added its improved variant, the DF-31A, having a range of 11,200 km.¹⁷ The DF 41, which was showcased at the 70th anniversary

of the People's Republic of China, has a range of 12,000 km, and much like the DF-5B and DF-31A(G) ICBMs, is believed to have the capacity to carry either multiple warheads or a single warhead and multiple jammers, penetration aids and decoys.

As per the *2020 Military Balance*, China's operational missiles consists of the following:

- 1 ICBM bde with DF-4
- 2 ICBM bde with DF-5A
- 1 ICBM bde with DF-5B
- 1 ICBM bde with DF-31
- 2 ICBM bde with DF-31A
- 2 ICBM bde with DF-31A(G)
- 2 ICBM bde with DF-41
- 4 IRBM bde with DF-26
- 2 MRBM bde with DF-16
- 2 MRBM bde with DF-17 with HGV
- 6 MRBM bde with DF-21A/E
- 2 MRBM bde with DF-21C
- 2 MRBM bde with DF-21D
- 3 SRBM bde with DF-11A/DF-15B
- 2 GLCM bde with CJ-10/CJ-10A/CJ-100
- 2+ SSM bde (forming)
- 12 JL-2 (CH-SS-N-14) strategic SLBM

Nuclear Warheads

As mentioned earlier, the PLARF oversees Base 67, which is responsible for storing and transporting warheads and training units in warhead handling and maintenance.¹⁸ It is estimated that China currently possesses 290 warheads. As per the assessments of the Federation of American Scientists, China has about six types of nuclear payload assemblies, namely, 15-40 kiloton (kt) fission bomb, 20 kt missile warhead, 13 megaton (mt) thermonuclear missile warhead, 3 mt thermonuclear gravity bomb, 4-5 mt missile warhead, and, lastly, 200-300 kt missile warhead. Additionally, it is suspected that China possesses some 150 tactical nuclear warheads for use

on its short-range ballistic and, most likely, cruise missiles.¹⁹ China currently uses thermonuclear warheads with large yields and little use of plutonium to reduce the mass of the warhead. In total, China conducted 45 nuclear tests until it signed the Comprehensive Nuclear Test Ban Treaty (CTBT) in 1996—albeit it never ratified it. At present, China ostensibly conducts sub-critical tests to ensure the viability of its weapons. As per a Pentagon report, Beijing has enough nuclear materials to double its warhead count without the production of any new fissile material.²⁰ There is a widespread belief that China has ceased the production of weapon-usable fissile material.²¹

Storage and Logistics

China is known to have constructed a vast network of underground tunnels dubbed as China's 'underground Great Wall' to protect its limited nuclear arsenal. As per the Chinese news sources and the assessments by Phillip Karber from Georgetown University that emerged in 2009 onwards, China has made over 3,000 miles of complicated tunnels to host about 3,000 nuclear weapons.²² These tunnels are known to be hundreds of metres underground in mountainous areas. They are not connected but are scattered all across China.²³ Some Chinese military experts have cited that these underground tunnels provide the PLARF with a credible second-strike capability.²⁴ It has been suggested that the US and Russia based satellite surveillance capabilities, along with the US' long-range precise conventional strikes capabilities, raise concerns about the survivability of China's silo-based DF-5s and its cave-based DF-4s; therefore, the underground tunnels offer protection to its small nuclear force. As per an assessment by the *Bulletin of Atomic Scientists* in 2013, the underground tunnel system functions mainly as a missile-launch base and offers invisibility the same way the ocean hides the ballistic-missile submarine.²⁵ It also states that all necessary actions for the launch can be done in the tunnels, and the rail lines and trucks can move the missiles and the related equipment and personnel. Further, these tunnels provide logistical support and house command and control facilities. It is to note, however, that the solid motor rockets and warheads may be vulnerable to vibrations and humidity in the tunnels; any changes in those condition may affect the efficiency of the weapons.

In mid-2021, over 200 silos were reported by independent experts at the Federation of American Scientists and James Martin Centre for Non-proliferation Studies in Monterey through satellite image analyses. However, analysts believe that those silos may be decoys and may never be populated as China is worried about preemptive attacks by the US BMD and may hide a small number of nuclear warheads across the silos to complicate US targeting plans.²⁶

China's Nuclear Naval Assets

China developed its Xia submarine and Julang 1 (JL-1) SLBM in the mid-1980s. The status of the Xia class submarine is unclear; however, as per the US intelligence assessments, it is not in deployment. Unlike the Xia class submarines, the newer Jin-class submarines are quieter and, therefore, the Chinese leadership appears to be seriously considering these for nuclear deterrence. Currently, China operates a fleet of 4 Jin-class nuclear-powered ballistic missile submarines, and each is designed to carry up to 12 JL-2 SLBMs—a modified version of the DF-31. The JL-2 is thought to have a range of 7,200 km.²⁷

China's 2015 Defence White Paper emphasised the importance of maritime power and the need to abandon the traditional mentality that land outweighs the sea. This view has developed due to the deployment of the US missile defences as they can take trajectories far from the US strategic missile defences positioned at Fort Greely, Alaska.²⁸

The PLAN controls China's sea-based nuclear assets; however, the PLARF is purportedly responsible for China's sea-based nuclear forces.²⁹ It is also unclear if China will maintain a continuous deterrence with constant patrolling. Further, although there are systems in place regarding communication with ballistic submarines, not much is known about the communication infrastructure.

China's Nuclear Air Assets

The PLAAF currently is not known to play a strategic role; however, air delivery systems have been used in the early nuclear tests. The fielding of the DH 10s, which are long-range air-launched cruise missiles, may suggest a policy change to nuclearise the PLAAF. The US annual report to Congress, *Military and Security Developments Involving the People's Republic of China:*

2020, has also pointed out that the PLAAF might be reassigned with a nuclear counter-attack mission as the new H-6N bomber may carry nuclear-capable air-launched ballistic missiles.³⁰ China is also expected to unveil its long-range Xian H-20 stealth bomber, which, according to the US Defence Department, has an estimated range of more than 8,500 km and is similar to the American B-2 bomber.³¹ Once it enters service, the H-20 would form a part of China's nuclear triad.

China's Nuclear Posture and its Implications

Tong Zhao notes that China pursued 'uncertain deterrence' before developing nuclear retaliation capabilities in the mid-1980s. However, of late, there has been an attempt to increase the threshold of nuclear self-sufficiency and move towards 'assured deterrence' as China feels increasingly challenged by the US strategic capabilities.³² Such a shift can be attributed to three factors. First, deterioration in China's external security environment; second, China's rise and strategic ambitions; third, increase in China's resource capabilities. China's external threat perceptions mainly stem from the US' activities in its neighbourhood. The growing emphasis within the US to develop the conventional CPGS weapons and its BMD systems' presence also aggravate China's security challenge. The former allows the US to attack high-value targets or fleeting targets at the start of, or during, a conflict; the latter, on the other hand, consisting of its National Missile Defence (NMD) and advanced Theatre Missile Defence (TMD) in East Asia, allows the US to intercept an incoming adversary missile.

The expiry of the 31-year-old Intermediate-Range Nuclear Forces (INF) Treaty that was signed between the erstwhile Soviet Union (now Russia) and the US to ban their short and intermediate-range land-based ballistic missiles, cruise missiles, and missile launchers in 2019 further raises new security concerns among China's leaders about the potential deployment of such missiles in its neighbourhood. Additionally, the US has been selling arms to Taiwan and sending its navy and coast guard ships into waters claimed as part of China's sovereign territory. Many experts in China see these moves by the US as a means to peer deep into China and extract sensitive military information in order to degrade China's security.

The Defence White Paper entitled “China’s National Defense in the New Era” released in July 2019, reflects China’s strategic concerns. It states that international strategic competition is on the rise. Further, it argues that the adjustments in the national security and defence strategies of the US have undermined global strategic stability. It has led to intensified competition among major countries that have further pushed for additional capacity in nuclear, outer space, cyber and missile defence, and thereby undermined global strategic stability.

The Defence White Paper reiterated China’s nuclear policy in the following statement:

China is always committed to a nuclear policy of no first use of nuclear weapons at any time and under any circumstances, and not using or threatening to use nuclear weapons against non-nuclear weapons states or nuclear weapons-free zones unconditionally. China advocates the ultimate complete prohibition and thorough destruction of nuclear weapons. China does not engage in any nuclear arms race with any other country and keeps its nuclear capabilities at the minimum level required for national security. China pursues a nuclear strategy of self-defence, the goal of which is to maintain national strategic security by deterring other countries from using or threatening to use nuclear weapons against China.

In the months following this statement, China introduced its modernised nuclear arsenal including the potentially dual-use DF-17 HGV that follows an unpredictable trajectory and travels at speeds exceeding Mach 5 (6,100 km an hour) and can penetrate the US defence systems. In 2019, China introduced its ICBM DF-41 that offers an operational range exceeding 14,000 km. It enables China to reach the US within the timeframe of thirty minutes. This range allows China to surpass the longest US ICBM LGM-30 Minuteman range that is reportedly 13,000 km. The British think-tank, International Institute for Strategic Studies (IISS), has reported that the DF-41 can carry MIRVs or jammers and penetration aids. The Chinese Communist Party-run *Global Times* claims that the DF-41 can carry about ten independently targetable nuclear warheads. Some experts suggest that the purpose of the MIRVs is to ensure

penetration of the US ballistic missile defence system rather than maximising its warhead capacity.

Furthermore, China has simultaneously engaged in nuclear entanglement, which involves 'entangling' or mixing its conventional weapons technologies with its nuclear weapons and its associated command and control systems. By deliberately mixing the two capabilities, states attempt to create uncertainties regarding the adversary's intended target, thereby raising the risk of nuclear escalation. Nuclear entanglement is, therefore, used for added deterrence against an adversary. China has entangled its nuclear weapons by deploying dual-use weapons and the co-mingling of both nuclear and conventional missile forces. Its DF-26 Intermediate-Range Ballistic Missile (IRBM), DF-21 Medium-Range Ballistic Missile (MRBM), along with possibly the DF-17 Hypersonic Glide Vehicle (HGV), can carry both conventional and nuclear payloads, and, therefore, can cause warhead ambiguity.³³

Nuclear entanglement can be risky; during the 'fog of war'; any mischaracterisation of a non-nuclear weapon as a nuclear one could potentially lead to nuclear escalation. For instance, Hans M. Kristensen notes that an adversary might target a DF-26 battalion, perceiving it as a conventional one. However, Chinese decision-makers may conclude it to be a counter-force nuclear attack if any of those DF-26 launchers were carrying out a nuclear role and may retaliate by using nuclear weapons. China's hypersonic missiles also carry similar risks; they follow an unpredictable trajectory and travel at speeds exceeding Mach 5 (6,100 km an hour), and, therefore, can cause destination and warhead ambiguity. An adversary may perceive an incoming hypersonic missile as a nuclear one and immediately issue a retaliatory strike under 'use-or-lose' pressures.

As noted in the previous chapter, there remain fundamental differences in the way China and the US perceive nuclear escalation. The former remains sceptical about controlling nuclear escalation once nuclear weapons are used, whereas the latter assumes that nuclear escalation could be controlled in its planning for nuclear operations. To illustrate, China does not seem to have an 'escalate to de-escalate policy' like the US, wherein it plans to use nuclear weapons first to forestall defeat in a conventional military conflict. It may lead the US to "overestimate the likelihood that China would use nuclear weapons and underestimate the scale of a Chinese retaliatory nuclear strike".³⁴ Such a

difference in thinking can create greater instability during a crisis and lead to an accidental nuclear deterrence breakdown.

Of late, there also seems to be a shift towards developing space-based early-warning reconnaissance capabilities to detect a boost-glide weapon shortly after launch. It may potentially pave the way for a Launch on Warning (LOW) or Launch Under Attack (LUA) nuclear posture. Although China keeps its nuclear weapons de-mated and dispersed, it is, nevertheless, financially and technologically capable of developing and deploying such systems. Any move in that direction, especially given China's ambiguous nuclear weapons programme, could heighten the potential for a false alarm and may have disastrous consequences.

Finally, with regards to the regional nuclear dynamics, Jasjit Singh has noted that an increase in China's capabilities may cause it to become more assertive with the risk that it may resort to coercive policies and, thus, pose a different type of challenge to India.³⁵ In the light of China's nuclear modernisation, the challenge for India is to enhance its nuclear capabilities to maintain credible deterrence against Beijing. In the domain of sea-based deterrence, Monika Chansoria, an expert on Asian security, notes that China's strides in its naval nuclear capabilities have "resulted in New Delhi hot on Beijing's heels, by undertaking sustained efforts to develop the Indian Navy". She notes that such pursuits toe the lines of China's limited deterrence doctrine and India's credible minimum deterrence doctrine; without any maritime protocol agreement, "the pessimistic scenario could readily turn into an arms race and a security dilemma in the Indian Ocean".³⁶

Future of China's Nuclear Posture

The US' CPGS weapons, along with its BMD systems—which act as a sword and shield, respectively—significantly challenge China's nuclear deterrence. These developments have propelled China to take on a hedging strategy that involves a sharp accretion in its capabilities, including MIRVed and hypersonic missiles, and an assertiveness for risks. These developments have, in turn, turned out to be destabilising for China's neighbourhood as it raises threat perceptions among its regional adversaries. There are also concerns regarding China's proliferation of these nuclear capabilities to Pakistan. Notwithstanding, while China moves ahead with these developments, there is now an incipient debate

in China on increasing its warhead count. There are also concerns, especially in the US, regarding China's possible move towards LOW and changes in the NFU status.

There is a strong possibility that China's warhead count may increase to enable its MIRV capable missile as each of them would carry up to 10 nuclear warheads. Moreover, China also seems to have enough fissile material to facilitate the expansion. The US annual report to Congress has suggested that China's nuclear warhead stockpile would at least double in size as China expands and modernises its nuclear forces. It adds that the number of warheads on China's land-based ICBMs is expected to grow to roughly 200 in the next five years.³⁷ Such a move may cause a shift away from China's minimalist force posture.

Further, the report has also suggested that China is seeking to keep at least a portion of its force on a LOW posture. It claims that Russia plans to assist China in developing a missile-attack early warning network, including ground-based radars and potentially extending to space-based sensors. Additionally, China already possesses several ground-based large phased array radars. These systems combined could support a missile early warning role.

However, it seems unlikely that China would alter its alert levels. Manpreet Sethi notes that this allows Beijing to maintain a high moral ground on nuclear issues and put others on the defensive.³⁸ Moreover, China has adequate confidence in its second-strike capability to signal certainty of nuclear retaliation. Thus, China would continue to buttress its second strike through the development of asymmetric capabilities.

Finally, for the given reasons above, China is unlikely to deviate from its long-standing policy of NFU. Its leadership continues to view nuclear weapons as an extension of politics, and not as war-fighting weapons. Further, unlike the US, China does not have the 'escalate to de-escalate policy', wherein it plans to use nuclear weapons first to forestall defeat in a conventional military conflict. With its vast, hardened underground locations and emerging sea leg to hide its nuclear arsenal, China, instead, seems to signal to the US that it can survive a first strike and use the surviving MIRV and HGV capabilities to penetrate US BMDs.

Notes

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3. THE EAGLE VERSUS THE DRAGON: INTENSIFYING US-SINO NUCLEAR COMPETITION

As noted in the previous chapters, China's nuclear weapons programme grew out of the need to deter any potential nuclear coercion and the use of nuclear weapons by the US and, to some extent, the Soviet Union. By the mid-2000s, China was on the verge of achieving the goal through the deployment of its road-mobile, solid-fuelled ICBMs. However, advances in US strategic capabilities focussed on limiting damage, namely the CPGS weapons, along with the presence of its BMD systems, posed new challenges for China as they undermined its deterrence.

China has sought to rebalance its deterrence by developing more asymmetric, competitive and 'assured retaliation' capabilities combined with risky elements of a strategy involving nuclear ambiguity. Currently, the Sino-US deterrence dynamics are marked by various asymmetries in terms of the size of their nuclear arsenals, counter capabilities, and strategies. Such dynamics remain in sharp contrast with the US-Russia nuclear relations, which are symmetrical in these three aspects.

This chapter traces the origin and the evolution of the Sino-US nuclear dyad and assesses the current and the emerging contours in their nuclear relations. Cojoined to this effort is an attempt to bring out the parallel nuclear thinking in Beijing and Washington DC that guides these dynamics. Lastly, the chapter assesses the possible changes in China's nuclear forces and the prospects of arms control agreements with regards to the US.

Origins of the Sino-US Nuclear Dyad

As discussed in the previous chapters, China initially developed nuclear weapons as a response to its confrontations with the US during the 1950s and

early 1960s, when the latter first signalled a possible nuclear use against China's territories. These confrontations chiefly included the Korean War (1950-53) and the Taiwan Strait crisis (1954 and 1955). While Beijing was able to pose a substantial challenge to the US in these conflicts, the leadership in China suspected that Washington D.C. would not take that challenge lightly and would fight back. They also suspected that the US would begin to view China as its adversary and seek pretexts to directly hit mainland territory or even engage in a nuclear confrontation.

The End of the Korean War

The first nuclear threat came during the end of the Korean War when US President Dwight Eisenhower signalled a possible nuclear use against the Chinese territories if "rapid progress toward a negotiated settlement was not made".¹ John W Lewis and Xue Litai have noted that Eisenhower believed that a combined strategy of warnings and blandishments was necessary to make the Chinese leadership hasten the Korean War's end. The leadership in China, at this juncture, decided to exercise greater caution against the American nuclear threat. As a result, Beijing engaged in several negotiations with the US, including the exchange of the sick and wounded prisoners of war. In response to the US nuclear threat, the Chinese leadership ramped up construction fortifications such as frontline battlefields and anti-atom shelters, to signal the Chinese preparations.

The Taiwan Crisis

Following the Korean War, the US had begun to believe that China's revolutionary expansionism would spread across Asia and threaten vital American interests in the region. The White House Document titled "US Policy Towards Communist China"² released in November 1953 perceived China as a formidable power possessing capabilities and laid out a strategy for the attrition of those capabilities and the impairment of Sino-Soviet relations. The document also recognised Taiwan as an essential asset of the US in the Far East, following which it incorporated Taiwan into its defence network. Such actions led the Chinese leadership to inject urgency into its strategic military programme as it perceived Taiwan's developments as the US' resolve to fight a nuclear war against China.

In the summer of 1954, the US attempted to initiate an open nuclear confrontation with China by sending two nuclear-capable carrier aircraft into the East China Sea. Lewis and Litai note that by such a move, the US sought to test the Chinese defences. Further, in a press statement in August that year, US Secretary of State John Foster Dulles declared that the US would finalise a military treaty with Taiwan and use force to prevent the Chinese conquest of Taiwan. A week later, China's then Foreign Minister Zhou Enlai, responded by declaring China's intent to liberate Taiwan in a widely distributed governmental report. The leadership in the US, however, believed that the Chinese lacked the military means to take actions against Taiwan, and, therefore, saw China's intent as political rather than military.

Notwithstanding, Lewis and Litai reveal that China's leadership perceived talks of a defence pact between Taiwan and the US as a move of aggression and sought to respond aggressively. China began to open heavy artillery firing over the offshore Taiwanese islands of Quemoy in September 1954, and later in November, it began to use its planes in the bombing of the Dachen Islands. In retaliation, the Taiwanese nationalist forces seized several Chinese bound ships, including a Soviet oil tanker.

Eisenhower formalised the defence treaty with Taiwan in January 1955 and passed the Formosa Resolution that sought to protect Taiwan from further aggression. Subsequently, the US halted taking further steps to bolster its military forces in Taiwan and began to count on the right to use nuclear weapons as a means to defend Taiwan's offshore islands. The Chinese leadership perceived the Formosa Declaration as the US' resolve to fight a nuclear war against China. Consequently, the Chinese leadership issued urgency to its strategic military programme and began acquiring nuclear weapons.

Early Sino-US Nuclear Dynamics

The Chinese leadership's decision to develop nuclear weapons was aimed to counter the US security challenge and safeguard Beijing's national interest. As noted earlier, Mao was keen on restoring China's international position and destroying its adversaries' 'nuclear monopoly'. In 1954, Mao had argued, "We also need the atom bomb. If our nation does not want to be intimidated, we have to have this thing."³ Before the tests, there seemed to be two rationales for China's

decision to acquire nuclear weapons: first, to defend against nuclear blackmail and nuclear war; second, to safeguard national security and sovereignty.

The Chinese leadership held that a threat of a bit of revenge would be enough to deter an adversary. Mao had asserted, "Have some achievement, and be fewer but better".⁴ Insufficient financial resources and technological capabilities had also put quantitative restrictions on China's nuclear armoury. Following the first Chinese nuclear tests on October 16, 1964, Mao had stated that atomic bombs should not be taken casually, as their use would amount to a crime. At this point, the Chinese leadership did not wholly disclose its strengths and resources, and kept information on its nuclear weapons capabilities vague to safeguard its interests.

At the time of the Chinese tests, the US intelligence did not know how China had acquired enough weapons-grade uranium for a bomb. A 'research memorandum' from the State Department's Office of the Director of Intelligence and Research on November 2, 1964, stated: "Our pre-October 16th estimates did not anticipate that [China] had the capability of producing the U-235 isotope".⁵ Notwithstanding, the Joint Chiefs of Staff's assessments following the tests suggested that there was a belief in the US that the nuclear weapon acquisition by China would not alter the power relations among the major states or the balance of military power in Asia for an indefinite future.⁶

Following the first tests, the Chinese government declared that it had developed "nuclear weapons for defense and for protecting the Chinese people from US threats to launch a nuclear war" and that it "will never at any time or under any circumstances be the first to use nuclear weapons."⁷ This also reinforced the US' viewpoint. As discussed in Chapter II, for the better part of China's nuclear weapons' history, its leaders' thinking regarding nuclear weapons remained highly ideological.⁸ They believed that the mere existence of nuclear weapons would make China's adversary think twice before striking their country with a nuclear weapon. The prevailing thinking during that time was that nuclear weapons are to address nuclear threats and not to deter a nuclear attack. The Chinese leaders equated nuclear deterrence to a policy of coercion and perceived it to be a form of aggression.

During this time, China also lacked the war-fighting capabilities that the US employed including the SLBM Lockheed UGM-27 Polaris and the

ICBM Boeing LGM-30 Minuteman-I. For instance, the Chinese leadership from Mao Zedong to Marshal Nie Rongzhen continued to limit the scale of China's nuclear arsenal to 'minimum retaliation means' and provided no further details. Even as the Second Artillery was formally established on July 1, 1966, China did not have an explicit nuclear strategy for the next two decades. It was only in the 1970s and early 1980s that the groundwork of China's nuclear operationalisation had begun to take place when several academic units, namely, the Academy of Military Sciences, along with a committee for academic research, were established to formulate a 'science of operations' and 'operational principles and rules' for missile units.⁹

Although China had started to deploy a limited number of Dong Feng (DF) missile series, namely the DF-4 and DF-5 ICBMs, between 1981 and 1982,¹⁰ its relations with the US improved in that period, which led Deng to conclude that global or imminent war would not occur. Thus, in the 1990s, the Chinese leadership instead focussed on building economic might and made 10 per cent annual Gross Domestic Product (GDP) growth owing to the establishment of the liberal international economic order.

Emergence of Sino-US Nuclear Competition

Even as the US has maintained a military presence in China's neighbourhood since the start of the Cold War in the form of extension of the US nuclear umbrella to Japan and South Korea, along with deployment of anti-missile units in South Korea and Guam Islands, the operational aspects of the Chinese nuclear strategy received a momentum when the US demonstrated superior capabilities in the Gulf War. The declarations of Taiwanese independence provided further impetus to the operationalisation of China's nuclear weapons programme as Beijing began to claim that the US had been secretly providing support to Taiwan's independence. Consequently, China began to develop sophisticated command-and-control mechanisms and assign roles for its nuclear and conventional missiles to support peace-time diplomacy, manage military crises, and pursue combat readiness.

China's threat perceptions were further triggered following the 2002 Nuclear Posture Review (NPR) release, wherein the US identified the Taiwan Strait region as one of the seven possible nuclear weapons targets. During this time, the US

also improved its conventional long-range missiles' precision strike capabilities to target China's nuclear assets. China termed the US military presence and its bilateral military alliances in East Asia and its plans to develop and deploy the Theatre Missile Defence (TMD) system as a negative development. In the 2005 Defence White Paper, the Chinese leadership raised concerns regarding the complicated security factors in the Asia-Pacific, pointing out that the US was reinforcing its military presence. It stated that developments such as these had led China to enhance its nuclear counter-attack capabilities. In the several Defence White Papers that followed, China reiterated its concerns regarding the US interference in its neighbourhood. Further, as a result of superior conventional capabilities against China, US President Barack Obama in his 2009 Prague speech spoke about his intentions of reducing the role of nuclear weapons to that of solely deterring nuclear attacks in his second term—even as on the declaratory level, Washington DC has not taken the 'No First Use' (NFU) pledge.¹¹ However, such considerations arose out of the US' confidence in its conventional capabilities, further putting China on the defensive.

US CPGS and BMD Systems: The Sword and the Shield

Tong Zhao, an expert on China's nuclear policy, suggests there has been an attempt in Beijing to increase the threshold of nuclear self-sufficiency and move towards 'assured deterrence' as China feels increasingly challenged by the US strategic capabilities, namely, the growing emphasis in the US to develop the CPGS weapons and BMD systems.¹² The CPGS capability, which can include long-range ballistic missiles or boost-glide systems and scramjet-powered hypersonic cruise missiles, allows the US to attack high-value targets or fleeting targets at the start of, or during, a conflict; the BMD, on the other hand, consisting of its National Missile Defence (NMD) and advanced Theatre Missile Defence (TMD) in East Asia, allows the US to intercept an incoming adversary missile. Caitlin Talmadge, a scholar at Georgetown University, suggests that the motive behind the US' enhancement of its ability to limit damage in an all-out nuclear war with China is to make Beijing worry that if it starts a crisis that raises nuclear escalation, Washington DC would have a higher tolerance to bear those risks than China.¹³

Lora Saalman, an expert on China's nuclear weapons programme, notes that "the Chinese analysts view CPGS as part of a larger US effort to achieve 'absolute security', with BMD as the shield and CPGS as the sword, such that Washington is able to act pre-emptively".¹⁴ Chinese leaders and strategic experts fear that in a potential conflict, the US may use its CPGS weapons to destroy a fair share of China's nuclear forces and use its BMD systems to intercept the surviving weapons that Beijing may want to use. There is also a more significant concern that such a situation may make Beijing vulnerable to nuclear blackmail by Washington DC.

THAAD and the Issue of Nuclear North Korea

The US efforts to contain North Korea's nuclearisation also have implications on the Sino-US nuclear relations: China has lent political and economic support to North Korea since 1950. China is interested in North Korea as it offers a buffer with South Korea, which hosts 29,000 US troops and marines and US missile defences.¹⁵ Even as the US has stated that its missile defence in South Korea, namely, the Terminal High Altitude Area Defence (THAAD), a globally transportable ballistic missile defence system, is aimed at North Korea's missile threat, China is concerned that it can be relocated/refocussed against its territories. It also fears that THAAD's X-band radar can look deep into China if configured to 'look mode'.¹⁶ While both China and the US prefer a non-nuclear North Korea there seems to be a difference in how the US and China seek to resolve this nuclear issue: Jennifer Lind argues that while Washington D.C. sees North Korea as "a dangerous rogue state that broke international law to acquire nuclear weapons", Beijing sees North Korea as "motivated by insecurity."¹⁷

In 2006, China supported the UN Security Council Resolution 1718, which imposed sanctions on Pyongyang. China has also advocated for the Six-Party Talks' resumption, a multilateral framework to denuclearise North Korea. However, many in China argue that the US should stop military exercises with South Korea that frighten North Korea, provide security assurances to Pyongyang, and withdraw military forces from South Korea.¹⁸ In sharp contrast, state officials and experts in the US have argued that China's punitive steps have been somewhat restrained. On several occasions, they have accused China

of circumventing sanctions, especially as there has been a ten-fold increase in bilateral trade between 2000 and 2015.

China's Nuclear Modernisation

In response to the expanded US military footprint well into South Korea, where it deployed the THAAD, China stated in the 2013 Defence White Paper that it would maintain an appropriate level of readiness in peace-time. Further, it added that it would combine peace-time needs with war-time needs and maintain vigilance at all times to deter the enemy from using nuclear weapons against China.

The US has been concerned about the Chinese nuclear challenge to its interests in the Indo-Pacific region, especially as Beijing is not constrained with the Intermediate-Range Nuclear Forces (INF) agreement, which was signed between the US and the erstwhile Soviet Union in 1987 to eliminate all their nuclear and conventional ground-launched missiles between the range of 500 - 5,500 km. According to Ramesh Thakur, without being party to the INF Treaty and having 95 per cent missiles in the intermediate range, China can effectively target forward-deployed US forces in the Indo-Pacific region.¹⁹ As a result, the US withdrew from the INF Treaty in August 2019 and has evinced plans to develop and station ground-launched intermediate-range cruise missiles in Guam, Japan, South Korea, and northern Australia in order to reach deep into China's interior. A potential counter-force use of such missiles against China poses a threat to the survivability of its nuclear weapons. Beijing has reacted to such developments by cautioning the Indo-Pacific countries against permitting INF-range missiles to be deployed on their territory.

For China, deployment of the intermediate-range missiles would not only challenge its nuclear deterrent capabilities but also disrupt the regional balance of power. Thakur argues, "US refusal to acknowledge mutual vulnerability and efforts to enhance damage-limitation and long-range precision strike capabilities signal a higher nuclear risk threshold". He suggests that such actions reflect a form of classic security dilemma wherein "one side's defense-cum-deterrence preparedness to bolster national security is perceived by the other side as strengthened offensive capability and hence a threat to its security".²⁰

As a corollary, China has responded to these challenges by adopting a hedging strategy that has caused a sharp accretion in its nuclear capabilities. Over the years, China has rapidly modernised its nuclear weapons capabilities. As discussed in the previous chapter, China has significantly expanded the range of its ICBMs to surpass the range of the US ICBMs. It includes new penetration capabilities such as HGVs and MIRVs to counter the US BMD systems. In 2019, China introduced its ICBM DF-4I that offers an operational range exceeding 14,000 km. It enables China to reach the US within the timeframe of 30 minutes. This range allows China to surpass the longest US ICBM LGM-30 Minuteman with a reported range of 13,000 km.²¹ China has also introduced its potentially dual-use DF-17 HGV that follows an unpredictable trajectory and travels at speeds exceeding Mach 5 (6,100 km an hour) to penetrate the US defence systems.

Current and Emerging Implications

The US CPGS and BMDs remain a predominant concern in Beijing's strategic calculations and a cause of China's nuclear modernisation. There is also a greater concern that such a situation may make Beijing vulnerable to nuclear blackmail by Washington DC. To overcome those fears, China has adopted a strategy of 'nuclear entanglement' to increase the survivability of its nuclear assets against a decapitating strike by the US. The implications of nuclear entanglement by China have been discussed in the previous chapter. Notwithstanding, the US annual report to Congress, *Military and Security Developments Involving the People's Republic of China: 2019*, remarked that the co-mingling could "complicate deterrence and escalation management during a conflict". It warned that "a potential adversary attack against Chinese conventional missile force-associated Command and Control (C2) centres could inadvertently degrade Chinese nuclear C2 and generate nuclear use-or-lose pressures among China's leadership".²²

It is also worth noting that there also remain fundamental differences in how China and the US perceive nuclear escalation. As noted in the previous chapter, the former remains sceptical about controlling nuclear escalation once nuclear weapons are used, whereas the latter assumes that nuclear escalation may be controlled in its planning for nuclear operations. To wit, China does not

seem to have an 'escalate to de-escalate policy' like the US, wherein it plans to use nuclear weapons first to forestall defeat in a conventional military conflict. It may lead Washington DC to "overestimate the likelihood that Beijing would use nuclear weapons and underestimate the scale of a Chinese retaliatory nuclear strike".²³ Such a difference in thinking can create greater instability during a crisis and contribute to an accidental nuclear deterrence breakdown.

Future of China's Nuclear Posture and Policy Towards the US

The aggrandisement of China's nuclear force could cause the US to follow a two-pronged approach. First, it is expected to put more pressure on Beijing to enter into a trilateral arms control agreement with Washington DC and Russia—most likely the New START (Strategic Arms Reduction Treaty). Since its withdrawal from the INF Treaty, and with the ongoing talks about the New START extension, the US has insisted that China enters into a trilateral arms control agreement with Washington DC and Moscow.²⁴ Second, it might adopt a hedging strategy and invest in strategic bombers, nuclear attack submarines, command and control assets; it may bolster its alliances with Japan, South Korea, and Australia and build deeper military ties with the Philippines and India; and, lastly, it might increase its presence in Guam.

Beijing may increase its warhead count to cater to its MIRV capable missiles as each of them would carry up to ten nuclear warheads. Moreover, China also seems to have enough fissile material to facilitate expansion. The US annual report to Congress, *Military and Security Developments Involving the People's Republic of China: 2020*, has suggested that China's nuclear warhead stockpile would at least double in size as it expands and modernises its nuclear forces.²⁵ Also, the number of warheads on China's land-based ICBMs is expected to grow to roughly 200 in the next five years. Such a move could indeed cause a shift away from Beijing's minimalist force posture.

China is expected to continue developing asymmetric capabilities to buttress its second strike, which includes ensuring survivability and penetrability in the face of the US challenge. These could include, for instance, the greater manoeuvrability of the DF-21D missiles to make it difficult for the US BMDs to intercept them while enhancing the precision of their munitions which makes it easier to target moving enemy vessels with them.²⁶ However, China's focus is

going to remain on building high-quality nuclear capabilities at the minimum level for maintaining its national security.

There are growing concerns within the US that China may abandon its NFU policy.²⁷ However, the ambiguity in China's NFU policy could be attributed to its perceived threat that the US could use conventional weapons to attack China's nuclear assets. Notwithstanding, China's limited ambiguity over its NFU may be ridden with risk as it could raise the US suspicions that China might abandon the policy altogether in a crisis. It may cause the US to enhance the development of the new triad and plan for conventional preemptive strikes on China's nuclear arsenal, thus "confirming Beijing's fears that Washington seeks absolute security at its expense". China may, therefore, find itself in the arms race that it sought to avoid through limited ambiguity over no-first-use.²⁸

Further, the US 2020 annual report to Congress has suggested that China is seeking to keep at least a portion of its force on a Launch on Warning (LOW) posture, including investment in silo-based forces while building more survivable mobile platforms.²⁹ It says that Russia plans to assist China in developing a missile-attack early warning network, including aiding the development of ground-based radars and potentially extending to space-based sensors. China already possesses several ground-based significant phased array radars. These systems combined could support a missile early warning role. However, such a shift in the posture seems unlikely, as the existing status allows China to maintain the high moral ground on nuclear issues and put the US on the defensive.³⁰

It is worth noting that many within China are suspicious of any form of arms control agreement with the US or Russia. They argue that the leadership in Washington DC is scapegoating China to dissolve the existing US–Russia nuclear arms control agreement. In January 2020, the Chinese Foreign Ministry spokesperson Geng Shuang argued, "The US constantly makes an issue of China on this to dodge and shift its responsibilities for nuclear disarmament. China is firmly opposed to that".³¹ Many in China also argue that China's stockpile of 320 nuclear warheads is disproportionate to the US stockpile of 5,800 warheads. They suggest that the US would have to cut down to a matching level in order to initiate any arms control dialogue.³² However, some hawkish voices, such as the editor-in-chief of the *Global Times*, Hu Xijin, has argued that "China needs to expand the number of its nuclear warheads to 1,000 in a relatively short time and

procure at least 100 DF-41 strategic missiles.” However, it is unlikely that China would dramatically increase its arsenal, or that the US would reduce its arsenal to match China’s level. Thus, the issue of arms control remains improbable in the current times.

Finally, with regards to Southern Asia, the nuclear competition between China and the US pulls India and Pakistan into an offence-defence spiral as both these nuclear weapons states are located in China’s vicinity and have overlapping nuclear dyads: India faces a nuclear challenge from China, whereas Pakistan faces a threat vis-a-vis India—a ‘security trilemma’, wherein one state’s actions to defend against another state have the effect of making a third state feel insecure. Thus, any change in the nuclear capabilities, doctrines or postures of the US and China inevitably disturbs the strategic nuclear balance among India, China, and Pakistan, and stimulates a chain of strategic rebalancing. For instance, China’s nuclear modernisation renders Indian nuclear assets vulnerable to preemptive strikes. As India explores its options to overcome the strategic challenges from China, Pakistan would inevitably face a security dilemma and seek to match up with its modernisation efforts, such as developing MIRV capabilities.

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4. SOUTHERN ASIA UNDER CHINA'S NUCLEAR SHADOW

While India and Pakistan are often regarded as the protagonists in the nuclear dynamics of Southern Asia, the role of China in the region is no less critical. Beijing's nuclear relations with both these actors are of different nature and purpose: with New Delhi, it appears to share a stable nuclear dyad owing to their symmetrical nuclear postures, even as both sides face varying degrees of threats from one another; with Islamabad, it shares deep strategic relations whereunder it has supported Pakistan in developing both nuclear weapons and conventional capabilities to counter India.

This chapter has two purposes: first, it attempts to analyse the consequences of China's nuclear capabilities and posture on the Southern Asian nuclear dynamics; second, it delineates China's nuclear strategy towards India and Pakistan and analyses its implications on regional stability. The chapter begins by reviewing concepts such as the security trilemma and strategic nuclear chain to explain how China's nuclear equations with the US set off a chain of security dilemmas in Southern Asia. Next, it analyses China's nuclear dynamics with India and Pakistan and highlights how they generate instability in the region. Finally, it uses the model of the strategic nuclear chain to assess the prospects of arms control and strategic stability in the region.

Theoretical and Contextual Background

China's nuclear threat perception and its subsequent nuclear modernisation emerge from its bilateral relationships, "where the US is rightfully characterised as the 'heavyweight' in its security calculations, and India is the peripheral aggravator."¹ Therefore, to understand the nuclear dynamics in Southern Asia, it is essential to take into consideration the nuclear dynamics between China and the US. As noted in the previous chapter, Beijing's decision to acquire nuclear weapons was driven by the issuance of a nuclear threat by Washington D.C. in

the early 1950s. These threats had aimed to coerce the Chinese leadership to end the Korean War and prevent Taiwan's conquest.² In the present context, the nuclear dynamics between the two are driven by the development and deployment of BMD systems and long and medium-range missiles by the US, and its strategic partnership with other nuclear and nascent nuclear states in China's neighbourhood.

With regards to Southern Asia, China shares tense relations with India, which mainly stem from longstanding unresolved border demarcations. Both countries have differing perceptions over the 3,488 km of the Line of Actual Control (LAC). Further, China lays claims over 80,000 sq km of the Indian state of Arunachal Pradesh. As a result, the two countries went to war in 1962 and continue to engage in low-level border confrontations. Despite many rounds of negotiations between special representatives of both sides, the territorial issues remain unresolved.

China does not publicly recognise India's nuclear weapons as a threat to its national security. However, it covertly feels challenged by them, particularly the indigenously developed nuclear-enabled long-range Agni-series missiles that have a range of over 5,000 km, capable of reaching any part of China.³ The timely deescalation of the border confrontations and the absence of nuclear rhetoric in their relations indicate the existence of deterrence by India.

John W. Lewis and Xue Litai posit that China's leaders' perception of challenges is not necessarily based on situations that pose a direct threat to its security; it could often be situations that can be potentially detrimental to its security interest. In the case of Southern Asia, China began to recognise India as a security challenge when the latter gained a decisive victory against Pakistan in the 1971 War, which resulted in the liberation of East Pakistan (now known as Bangladesh). The war had demonstrated tremendous improvements in India's conventional capabilities compared to its performance in the 1962 China-India War. In the immediate aftermath of the India-Pakistan War of 1971, Beijing began to aid Islamabad in developing its nuclear capabilities, whereby it sought to complicate India's security environment. Indian defence expert Siddharth Ramana suggests that by proliferating to Pakistan, "China can make use of its proxy in instigating a nuclear conflict in South Asia, wherein the affected parties would be Pakistan and India, with China attempting to emerge

unscathed". He refers to the Chinese aversion to the Pakistani foreign minister's requests to guarantee nuclear protection 1998 to suggest that Beijing finds Islamabad as an extended deterrence proxy "more practical than a recipient of its nuclear umbrella".⁴

Over the last decade and a half, China's threat perceptions have been elevated due to India's strengthened strategic relations with the US, which took momentum with the signing of the Indo-US nuclear deal in 2008. It has been further reinforced with the formation of the informal Quadrilateral Security Dialogue, known as the Quad, consisting of China's adversarial states, namely, Australia, Japan, India, and the US. China has sought to respond to these developments by fortifying its relations with Islamabad by aiding it in its nuclear weapons programme as well as launching several infrastructural projects within Pakistan that have military implications for India.

This chapter seeks to suggest that the nuclear dynamics of Southern Asia, which traditionally involves hostile relations between India and Pakistan, gets impinged upon by the nuclear relations between the US and China. Such an overlapping of deterrence relationships has been termed as the 'security trilemma', wherein actions taken by one state to defend against another state have the effect of making a third state feel insecure.⁵ In Southern Asia, given the Indo-China rivalry, the modernisation efforts by the US and China pull India into an offence-defence spiral. Indian strategic expert Manpreet Sethi suggests that as India is involved in a separate nuclear dyad with Pakistan, Islamabad faces an extended security dilemma. The complex interrelation of multiple dyads gets morphed into a strategic nuclear chain, wherein changes that occur in the nuclear capabilities, doctrines or postures of the US and China inevitably disturb the strategic nuclear balance among India, China, and Pakistan.⁶

Analysing the Individual Dyads

As far as India and Pakistan are concerned, their hostilities are rooted in the partition of British India and get manifested in contestation over the state of Kashmir. The two countries have fought wars on four occasions, namely, in 1949, 1965, 1971 and 1999, in which New Delhi repeatedly proved its conventional military superiority. As a result, India's strategy has been to maintain the regional status quo whereby it seeks to maintain its military, economic and normative

superiority. In contrast, Pakistan seeks to draw the regional power balance in its favour, and, therefore, follows a revisionist strategy.

Islamabad views India's nuclear weapons as an existential threat and, thus, uses its nuclear weapons to maintain a strategic parity vis-a-vis India. China has, in turn, exploited Pakistan's insecurity by providing it with material and technical assistance. In order to deter a conventional war with India, it keeps its nuclear threshold low by not pledging a 'No First Use' (NFU) and has frequently engaged in the tactic of nuclear brinkmanship. Many in India argue that such tactics aim to wage covert war in Kashmir,⁷ and to continue its terror activities over the Indian territories under the broader threat of using nuclear weapons.⁸ In other words, "the nuclear weapons provide Pakistan with the deterrence required to make asymmetric attacks credible and a cost free strategic option".⁹

China and India

China's first nuclear tests in Lop Nur in 1964, which came close on the heels of the Sino-Indian War of 1962, heightened India's threat perceptions. New Delhi initially took to a diplomatic recourse to achieve universal nuclear disarmament to stabilise its security environment. For instance, in 1965, India, along with several other states, moved Resolution 2028 in the UN General Assembly to halt the spread of nuclear weapons. However, the lack of support from the nuclear weapons possessing states led India to back out of the negotiations.

India conducted a Peaceful Nuclear Explosion (PNE) in 1974, a few years after its war with Pakistan, which saw the US and China backing Islamabad.¹⁰ During the war, the US sought to issue a nuclear threat to India by moving the nuclear enabled USS *Enterprise* into the Bay of Bengal. Following India's PNE in 1974 tests, reports of Pakistan's efforts to acquire nuclear weapons along with the evidence of China's collaboration in Pakistan's nuclear weapons began to surface.¹¹ Notwithstanding, as India's nuclear programme was far from becoming weaponised at this point in time, China seldomly publicly discussed India's nuclear programme; however, it firmly maintains that India is not a legitimate nuclear weapons state as New Delhi is not a signatory to the Nuclear Non-Proliferation Treaty (NPT) and, therefore, has diplomatically forestalled several of India's efforts to join the Nuclear Suppliers Group (NSG).

The Sino-India power struggle continues to get manifested in their border and territorial disputes. Jasjit Singh has argued that “if China uses military power in accordance with its 20-year doctrine of fighting (and winning) local border wars, it is much more likely to pursue a limited war for goals like ‘teaching lessons’.”¹² On similar lines, Monika Chansoria has noted, “Beijing appears intent at keeping the border dispute alive as a tactical pressure point against India. China seems to be awaiting an opportune moment in which the existing military asymmetry with India will widen, and Beijing will be positioned to bring the dispute to a close on its own terms.”¹³

Even as the border skirmishes have been a routine in their relations, there was a brief detente mid-1980s onwards when several border management agreements, such as the 1993 agreement on “Maintenance of Peace and Tranquillity Along the LAC in the India-China Border Areas”. However, in recent times, there have been recurring instances of high-level border confrontations between the two. The confrontations in Chumar and Doklam in 2014 and 2017 respectively involved military standoffs that lasted several weeks. The Galwan Valley military clashes in 2020 resulted in heavy mobilisation and unprecedented killing of several soldiers on both sides. These clashes have caused the breakdown of the several border management mechanisms that held the peace at the LAC for several decades.

Despite deep-seated hostilities and heated border confrontations, the nuclear component does not seep into their security relations. Several experts have offered explanations for the quiescence on the nuclear front. Some suggest that the appearance of stability within the China-India nuclear dyad comes from similarities in their nuclear postures. Vipin Narang notes, “China and India have both adopted assured retaliation postures. Each relies on a small but secure and survivable nuclear force, arrayed for an assured retaliatory strike against their primary opponents’ strategic targets. Both have paired a declaratory no-first-use policy with operational procedures that make the first use of nuclear weapons unlikely. Nevertheless, both assure nuclear retaliation should they sustain a nuclear hit, or adversaries must assume, if a level of unacceptable conventional damage were sustained”.¹⁴

Rajesh Basrur and Kartik Bommakanti have also listed similarities in the nuclear strategies of China and India.¹⁵ These include, first, the adoption of the

policy of minimum deterrence whereby both countries prefer a relatively small number of warheads and delivery platforms; second, their shared lack of interest in nuclear war-fighting, and, hence, no proclivity for keeping nuclear weapons ready for combat; third, preference for a non-offensive posture of non-deployed weapons for reducing the potential for rapid spiralling of risk during tense times; fourth, having their doctrines and force postures crafted around the concept of NFU; fifth, both having used nuclear weapons as instruments for coercion; and, finally, both sides choosing to conduct a small number of nuclear tests, which remain far less than those of other major nuclear powers.

In a differing perspective, several Chinese scholars attribute the quiescence on the nuclear front to India's limited nuclear capability, defensive posture, and lack of intention to go to war. Although in public statements, China continues to dismiss both India and Pakistan as legitimate nuclear weapons states as neither has signed the treaty on the NPT, several experts and scholars in China rebut India's rationale for developing nuclear weapons—that is, is to deter a nuclear war with China. They argue that the purpose of India's nuclear weapons is to achieve prestige and status.¹⁶

This chapter suggests that it is neither the similarities in the nuclear posture and policies that provide stability in their nuclear dynamics, nor is it India's limited nuclear capabilities. As noted earlier, China faces a security challenge from India that stems from New Delhi's conventional and nuclear capabilities and strengthened relations with Beijing's adversaries. China has crafted its nuclear strategies to counter India's challenge, several of which have a destabilising effect on regional security.

First, China does not recognise India as a legitimate nuclear weapons state as it is not a signatory to the NPT. Its non-acceptance of India as a legitimate nuclear weapons state leads to the ambiguity related to Beijing's policy of NFU towards New Delhi. China dropped the word 'unconditional' from its nuclear posture in 1995 and added conditionality to its NFU policy, thereby making it applicable only to the NPT member states or nuclear weapons-free zones.¹⁷ In 2010, China reiterated that it continues to adhere to the policy of no-first-use of nuclear weapons at any time and in any circumstances, and made the unequivocal commitment that under no circumstances will it use or threaten to use nuclear weapons against non-nuclear weapons states or nuclear weapons-free zones.

Brahma Chellaney notes that “the shift from an unconditional to a conditional NFU posture effectively left out only India, Israel and Pakistan. The policy change, however, could not be directed at close ally, Pakistan, or even Israel, with whom Beijing has collaborated in military-technology projects. The shift appeared aimed at sending a message to New Delhi. The reversal from China’s earlier policy effectively excludes India, and, therefore, raises security concerns for New Delhi.¹⁸ The ambiguity relating to China’s NFU policy towards India generates a fear of a first strike. It may potentially trigger counter-measures by New Delhi, such as the development of BMDs in order to safeguard Indian cities, industrial towns, and nuclear assets, thus, creating an offence-defence spiral.

By way of not recognising India as a legitimate nuclear weapons state, China has also sought to prevent New Delhi’s entry into the various constituents of the non-proliferation regime, such as the NSG. Such a stance by China also prevents any prospects of confidence building dialogues between Beijing and New Delhi. In the past, adversarial nuclear weapons states, such as the US and Russia, have been part of several bilateral and multilateral agreements designed to prevent or reduce nuclear ambiguities and suspicion. A lack of dialogue on nuclear arms control and risk reduction between China and India fuels mistrust that often creates instability within the dyad.

Second, even as Beijing and New Delhi are not engaged in any arms race, the rapid modernisation in China’s nuclear force, albeit vectored against the US, puts pressure on its nuclear dyad with India. As discussed in the previous chapters, China has responded to the US ballistic missile defence systems by modernising its nuclear arsenals to allow them to penetrate the US defence shields. China’s modernisation of nuclear weapons includes the HGVs, multi-warhead missiles, and MIRV ballistic nuclear missiles. The MIRV capability is particularly destabilising as it allows a ballistic missile to send several separately targeted nuclear warheads. It is a preferred choice of weapon for not only escaping a BMD shield but also destroying an adversary’s nuclear assets, especially as it can take several warheads to destroy one silo-based missile.

China’s nuclear modernisation heightens the vulnerability of India’s nuclear assets and triggers an offence-defence spiral within the dyad. M. Taylor Fravel and Evan S. Medeiros suggest that deploying the MIRV warheads increases the options available to China for using its nuclear weapons against its adversaries,

including India.¹⁹ One of the possible options with China is the preemptive use of MIRV missiles to destroy India's nuclear assets. Such options available to Beijing raise India's threat perception. Beijing's exclusion of India from its NFU further lends credibility to the possibility of a decapitating strike by China. In recent times, China's strides in its naval nuclear capabilities have caused India to make sustained efforts to develop its navy. Chansoria has noted that such pursuits toe the line of China's limited deterrence doctrine and India's credible minimum deterrence doctrine, which can readily generate an arms race and a security dilemma in the Indian Ocean.²⁰

Thirdly, in contrast to China's public rhetoric about India's nuclear weapons, the *Science of Military Strategy* (2013) throws some light on China's current assessment of India's nuclear and conventional strategy. It recognises that there has been a transformation from India's passive defence-type thinking towards a preemptive strike-type *disciplinary deterrence*, which focusses on initiating an attack before the enemy does, and to "win a high-tech limited conventional war under conditions of nuclear deterrence".²¹ It also noted that "[India's] nuclear strategic concept is to discourage the United States, deter China, and deal with Pakistan. Of these, deterring China is its focus, because it thinks that only by deterring China will it be able to deal with Pakistan and have the possibility of 'discouraging' the United States."²²

In response to the burgeoning military and strategic strength of India post its defeat by China in 1962, Beijing has been seeking to strike a balance of power vis-a-vis New Delhi through establishing strategic relations with Islamabad. To this end, China has contributed significantly towards Pakistan's nuclear weapons and ballistic missile programmes, which will be discussed in detail in the following section. China's proliferation to Pakistan is destabilising for Southern Asian security as Islamabad keeps its nuclear weapons in an offensive posture against India. In recent times, the signing of the Indo-US nuclear deal in 2008, the successful testing of the Agni V missile, the formation of the Quadrilateral Security Dialogue involving the US, Japan, Australia and India, and increased engagement between Washington DC and New Delhi, have caused unease in China.

Notwithstanding, China has responded to these developments by investing heavily in infrastructure projects in Pakistan that come under its Belt and Road

Initiative (BRI), thereby strengthening its relations with Islamabad.²³ As a part of the project, China has constructed the China-Pakistan Economic Corridor (CPEC) to strengthen its relations with Islamabad. The CPEC has become an irritant in India-Pakistan relations as it passes through Pakistan occupied Indian territory in Kashmir. The BRI project in Pakistan also involves a deep-water naval port at Gwadar. China has deployed submarines to the Gwadar port. It is expected that it would use the port for military purposes in the future.²⁴

China and Pakistan

Pakistan had leaned towards the US in the initial years of the Cold War and served as its strategic ally by becoming a part of the Southeast Asia Treaty Organisation (SEATO), as well as Central Treaty Organisation (CENTO). However, it was only in the aftermath of the Indo-China War of 1962 that Beijing and Islamabad came forward to forge strategic relations. The primary objective of the alliance was to deter India's attempts to go to war with either of the countries by creating the fear of a two-front theatre. In China's thinking, the India-Pakistan tensions serve Beijing's strategic interest as it keeps India embroiled in a security quagmire and, thus, keeps it from competing with Beijing.²⁵

Jonah Blank notes, "The most important service Pakistan provides is its mere existence".²⁶ He suggests that "having a strong adversary on India's western flank helps prevent a challenge from Asia's other rising nuclear-armed power with a billion-plus population." China's nuclear strategy has been to assist Pakistan to develop nuclear deterrence against India. Additionally, by such a strategy, China has sought to contain the US expansion in Southern Asia, strengthen its relations with the Islamic world, and thereby secure its energy interest in that region.

China's assistance to Pakistan goes to the extent that it passed on the entire design of the nuclear weapon test of 1966 to A.Q Khan, the key scientist in Islamabad's nuclear weapons programme, in 1982.²⁷ Gordon Corera has remarked that while in the past a few states have helped with nuclear weapons technology, there has been no history of a country handing over the complete design of a nuclear weapon to an ally. He posits that the entire design spared Pakistan the difficult work in developing and miniaturising a weapon and the

diplomatically risky task of carrying out the nuclear test.²⁸ In the early 1980s, China also provided Pakistan with weapons-grade uranium that could power two nuclear devices. Further, in 1988, China handed over its M-11 short-range ballistic missiles to Pakistan, which the latter has used to develop nuclear-capable missiles.²⁹ In 1992, the transfer of the missile parts of the M-11 was spotted by the US intelligence and resulted in heavy sanctioning and a two-year freeze on high technology sales to China. In 1995, China sold 5,000 ring magnets to Pakistan for its high-speed gas centrifuges, which reportedly helped the latter to double up the production of its highly enriched uranium. The export of ring magnets was strictly controlled under the terms of an international agreement with the International Atomic Energy Agency (IAEA) as they are used in gas centrifuges to extract weapons-grade enriched uranium from uranium gas.³⁰

The military-technological transfers between China and Pakistan, however, have not been one way. During the initial years of the Cold War, Pakistan gave China access to several US and Western military technologies that Beijing's scientists reverse-engineered. A US Department of State report titled *Pakistan and Communist China Strengthen Cooperation* released on December 4, 1968, alleged that the Pakistan Army had provided China with access to US F-104 supersonic fighter aircraft through the violation of the acceptance agreement with the Pentagon. Khan had also assisted China in its centrifuge enrichment programme with the expertise he had by working as a scientist at the European Uranium Enrichment Centrifuge Corporation (URENCO).³¹ However, the transfers from China significantly outweigh those from Pakistan.

The US turned a blind eye towards such transfers when China's relations with the Soviet Union began to sour in the 1970s. During this period, India also fought a war with Pakistan in 1971 and conducted its first peaceful nuclear explosion in 1974. During the peak of tensions of the Indo-Pak War of 1971, Pakistan's President Yahya Khan had played the role of a broker in the forging of their relations by arranging for a meeting between the then US Foreign Secretary Henry Kissinger and Zhou Enlai.³² Following the meeting, the US offered tacit approval of the transfer of its military technologies to China through Pakistan. In 1982, the Central Intelligence Agency (CIA) had made the sales of AN/ALR-69 radar warning system to Pakistan contingent on Islamabad transferring these sensitive technologies to Beijing.³³

The US' approval of the indirect transfer of its technologies to China via Pakistan ended with the end of the Cold War. In a reversal of its policies, the US levied several sanctions on China and Pakistan through the 1990s to curb their nuclear transfers. The sanctions on China were rolled back when Beijing—albeit a non-member—assured Washington DC that it would follow the Missile Technology Control Regime (MTCR) guidelines that limit the proliferation of missiles and missile technology. However, China continues to transfer nuclear weapons technology to Pakistan through narrow interpretations of the guidelines.³⁴ It is argued that Pakistan has reverse-engineered China's Dong Feng-11 (DF-11) to produce several new nuclear-capable missile systems, including the Shaheen I, II, and Ababeel missiles.³⁵

China has been involved in Pakistan's civil nuclear programme. Based on a 1991 bilateral nuclear cooperation agreement, China built the first reactor, namely, a 325MW plant called Chashma I at the Chashma complex in Punjab in 2000 and the Chasma II plant in 2011. Additionally, in 2009, after becoming a member of the NSG, China finalised the sale of two more reactors, namely, Chashma III and Chashma IV. However, the sales came under scrutiny as the NSG guidelines do not allow members to supply nuclear technology to countries that have not signed the NPT. Notwithstanding, China constructed the units even as the matter remains unresolved with the NSG.³⁶

In contemporary times, the relevance of the strategic partnership between China and Pakistan has been reinforced due to the recent developments in India's security posture and foreign relations, particularly the strengthening of US-India relations and the crystallisation of the naval Quad that counters China in the Indo-Pacific.³⁷ India has also demonstrated a bolder posture in its pursuit of national security. It was evident when the Indian Air Force crossed the de facto border in the disputed region of Kashmir and carried out surgical strikes against terrorist training camps in the vicinity of the town of Balakot in Pakistan in 2019.³⁸

The consequences of China's nuclear transfers to Pakistan on regional nuclear stability have been two-fold: first, as discussed earlier, China's nuclear transfers have been in contravention of export control agreements such as the MTCR and NSG, which are vital in ensuring nuclear stability as they facilitate confidence-building between adversarial states. Through the subversion of such

agreements, China's proliferation to Pakistan has added mistrust in its relations with India.

Second, while it has been one of China's strategies to arm Pakistan with nuclear weapons to complicate India's security, the assistance to Pakistan has often gone beyond providing it with the means to develop minimum nuclear deterrence against India. Beijing has, in effect, aided Islamabad in catching up in an arms race against New Delhi. One of the latest transfers by China includes the sale of a highly sophisticated, large-scale optical tracking and measurement system to aid Pakistan in developing MIRV capabilities.³⁹ As mentioned earlier, Pakistan uses the tactic of nuclear brinkmanship, whereby it keeps its nuclear threshold low and frequently issues nuclear threats to New Delhi to deter a conventional attack. Such a tactic is potentially destabilising if not met with restraint from India.

From Dyads to Strategic Nuclear Chain

Nuclear weapons are a cornerstone of the security of China, Pakistan, and India; For China, nuclear weapons allow Beijing to counter the threat from the US and, to a lesser degree, Russia and India, and, at the same time, contain Washington DC's influence in Asia. For India, they guarantee against any possibility of nuclear blackmail or coercion to ensure its nuclear security within a nuclearised and conflict-prone neighbourhood. For Pakistan, they provide strategic parity with India and deter the possibility of a conventional conflict.

China's nuclear deterrence is to a greater degree hinged upon the US' nuclear capabilities and posture. The US' deterrence also interacts with the nuclear posture of Russia. With China being a critical player in the Southern Asian nuclear dynamics, any advancement or change in the nuclear posture within any of the dyad concerning the US, China, and Russia inevitably disturbs the strategic balance in Southern Asia.

As noted, developments in US ballistic missile defence systems have caused China to deploy HGVs and MIRVed missiles to penetrate the US defence shield. These changes in the Sino-US strategic equation trigger a security dilemma in New Delhi as it renders Indian nuclear assets vulnerable to preemptive strikes by China, as Beijing doesn't have nuclear Confidence Building Measures (CBMs) with India and continues to have an NFU status vis-à-vis New Delhi. Further, as

India explores prospects of counter-measures to China's nuclear modernisation, Pakistan would inevitably face a security dilemma and attempt to catch up. In order to complicate India's security, China actively aids Pakistan to develop and modernise its nuclear capabilities. China does so to challenge India's dominance in the region and to pose a two-front strategic challenge. In this way, the individual dyads forge into a complex and interrelated strategic nuclear chain.

The phenomenon of the strategic nuclear chain can also be used to assess the prospects of nuclear arms control agreements among China, India and Pakistan. Beijing has an asymmetric nuclear force and capabilities with regards to Washington DC and New Delhi: its primary nuclear competition remains with the US, which is ahead in its nuclear capabilities vis-à-vis India. Further, China's nuclear force remains much smaller than that of the US and Russia; therefore, it has been reluctant to engage with the latter two in the New START (Strategic Arms Reduction Treaty). It is also unlikely that China would engage in any nuclear CBMs with India until it recognises the latter as a de facto Nuclear Weapons State (NWS). There is a possibility of resistance from India as well: New Delhi has complained about unfair treatment by the non-proliferation regime and, therefore, has remained out of treaties such as the NPT and CTBT.⁴⁰ However, there is a possibility that India's enhanced nuclear capabilities and its credible deployment against China might force Beijing to engage in risk reduction measures.⁴¹

Much like the dynamics of deterrence, the prospects of arms control measures are interrelated. They need to be initiated amongst China, Russia and the US to be able to trickle down to the China-India dyad. The prospects of arms control and disarmament remain bleak until the US and Russia make concessions to pull China into an agreement, and, similarly, after that, make adjustments to have India and Pakistan follow suit.

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5. CONCLUSION

The analogy of nuclear weapons to paper tigers seems to hold true in the minds of China's strategic thinkers. The goal of China's nuclear weapons has been—and remains—to narrow the technological gap it perceives regarding the US. Thus, even as Beijing continues to modernise its nuclear weapons to become a nuclear power to be reckoned with, it remains committed to its principles of NFU, whereby it pledges not to be the first to use nuclear weapons.

China's nuclear relations with the US present a perfect illustration of the classic 'security dilemma', wherein one state's deterrence enhancement is seen as a strengthening of offence capabilities by its adversarial state, causing both to enter an offence-defence spiral. The intensification of their dyad in the present times can be attributed to three factors: first, deterioration in China's external security environment; second, China's rise and strategic ambitions; third, increase in China's resource capabilities. Consequently, China's posturing towards the United States has evolved from a 'recessed posture' until the Gulf War to a posture of 'assured retaliation' in the mid-2000s. In recent times, it has turned more competitive and aggressive due to changes in the US strategic capabilities, namely its CPGS weapons and BMD systems, which significantly challenge China's nuclear deterrence.

Notwithstanding, China's attempt to reach parity in terms of nuclear weapons technology and maintain deterrence against the US is taking a destabilising turn. The current state of the Sino-US nuclear dyad carries the risk of deterrence breakdown as well as strategic instability in China's neighbourhood. The former set of risks arises from China's asymmetric thinking, capabilities, and posturing vis-a-vis the US; the latter arises from the inevitable changes in the strategic calculations of the regional nuclear powers that are in a dyad that China.

To wit, in the attempt to offset the capability gap, China has been developing asymmetric capabilities to enhance its second strike, which include

ensuring survivability and penetrability. China has rapidly modernised its arsenal to include MIRV capable and HGV capabilities. MIRVs are a preferred choice of weapon for not only escaping a BMD shield but also destroying an adversary's nuclear assets, especially as it can take several warheads to destroy one silo-based missile. Additionally, China has been engaging in the tactic of nuclear entanglement—that is, mixing its conventional weapons technologies with its nuclear weapons and their associated command and control systems—to create uncertainties regarding the adversary's intended target. Such strategies carry the risk of miscalculation that could lead to an inadvertent escalation.

In recent times, there have been concerns, especially within the US, regarding China's transition to a Launch on Warning (LOW) posture—at least for a portion of its nuclear force. However, it seems unlikely that China would alter its alert levels as it allows it to maintain a high moral ground on nuclear issues. With its vast, hardened underground locations and emerging sea leg to hide its nuclear arsenal, China, instead, seems to signal to the United States that it can survive a first strike and use the surviving MIRV and HGV capabilities to penetrate its BMDs. There is a strong possibility that China's warhead count may increase to enable its MIRV capable missile as each of them would carry up to ten nuclear warheads; however, the increase in China's warhead count is not expected to be significant. Thus, in terms of its strategy, China is likely to continue to buttress its second strike by developing asymmetric capabilities.

Beijing's nuclear modernisation triggers a security dilemma for New Delhi as the two are involved in protracted border conflicts and have a history of war. In the case of MIRVs and HGVs, it increases the options available to China for using its nuclear weapons against Delhi, especially in a preemptive strike. Any attempt by India to redraw the strategic balance vis-à-vis China would pull the former's adversary Pakistan into an offence-defence spiral. This way, the overlapping of dyads triggers a chain of reactions. Further, China also has an inconspicuous involvement in the nuclear dynamics in the region; it perceives India as a peripheral threat and responds to it through a two-pronged strategy involving: first, periodically engaging in border skirmishes to maintain

tactical pressure against New Delhi; second, aiding Pakistan in developing and enhancing its nuclear weapons capabilities.

While the nuclear element remains absent in the Sino-India border confrontations, owing to their common policy of NFU, China's nuclear proliferation to Pakistan often involves contravention of export control agreements such as the NSG. China's assistance to Pakistan has often gone beyond providing it with the means to develop minimum nuclear deterrence against India. Beijing has, in effect, aided Islamabad in catching up in an arms race against New Delhi. Pakistan uses the tactic of nuclear brinkmanship, whereby it keeps its nuclear threshold low and frequently issues nuclear threats to New Delhi to deter a conventional attack. Such a tactic is potentially destabilising if not met with restraint from India.

The future of global strategic nuclear stability would, to a significant extent, depend on the easing of the US and China strategic tensions, which is ultimately contingent on the arms control initiatives they agree to take. However, considering the current disposition of the Sino-US nuclear dyad, China is unlikely to enter into a trilateral agreement with the United States or Russia. Similarly, as regard to Southern Asia, China's denial of India's nuclear weapons status and New Delhi's mistrust of the non-proliferation regime are unlikely to yield an arms control agreement between the two. The monograph suggests that given the complex interrelation of the deterrence dynamics, arms control measures need to be initiated among China, Russia, and the US to be able to trickle down to the China-India dyad.

The mounting strategic tensions between the nuclear weapons possessing states and the bleak prospects of any form of arms control agreements among them is likely to turn the nuclear competition between China and its adversaries more intense in the coming times. China is expected to respond to the emerging challenges by continuing to take on a hedging strategy that involves developing asymmetric capabilities to counter balance the US and becoming more assertive with risks. China is also likely to continue initiating border skirmishes and transferring sophisticated nuclear capabilities to Pakistan to complicate India's security and, thus, offset a portion of the strategic challenge it perceives from New Delhi.

