

China on Arms Control, Nonproliferation, and Strategic Stability

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Introduction

China and the United States view each other as potential adversaries with mixed motives and divergent value systems, yet both can benefit from cooperation to reduce the risk of war, avert arms races, and prevent proliferation or terrorist access to weapons of mass destruction. The two countries have more common interests, fewer ideological differences, and greater economic interdependence than the United States and the Soviet Union had during the Cold War. In principle, arms control broadly defined, i.e., cooperation to reduce the likelihood of war, the level of destruction should war occur, the cost of military preparations, and the role of threats and use of force in international relations, could be at least as important in this century as it was in the last. In practice, though, China's rise as a strategic power has not been matched by a corresponding increase in the kinds of cooperative agreements that helped keep the costs and risks of superpower competition from spiraling out of control. Why not?

American experts often assert that China sees no value in cooperative constraints that would limit its own military capabilities and behavior. Elbridge Colby, the Deputy Assistant Secretary of Defense for Strategy and Force Development early in the Trump administration, opined that the Chinese were “uninterested in meaningful steps toward the kind of nuclear risk-reduction measures” developed by Washington and Moscow.¹ Lt. General Frank Klotz, a top nuclear policy official in the Obama administration, concurred that “China does not appear the least bit interested...in formal discussions on ways to limit or reduce its own nuclear weapons.”² The Hudson Institute's Richard Weitz went further, denouncing China's arms control and nonproliferation policies as a prime example of its “free-riding at the world's expense.”³

It is true that as China's strategic capabilities have advanced, narrowing the gaps with U.S. and Russian capabilities, China has remained reluctant to join their agreements limiting long-range nuclear forces and banning intermediate-range missiles. It has resisted some U.S. requests for more transparency about its nuclear, space, and cyber programs, while responding positively to other queries. It would be wrong, though, to conclude that China wants the political, economic, and military benefits of being a superpower without any responsibility for cooperative risk reduction. China has long championed forms of arms control that enjoy broad international support but are unacceptable to the United States. It has been constructively engaged in cooperative nonproliferation efforts even as it remains critical of coercive counter-proliferation. It has also advocated for, and consistently exercised, more strategic restraint than it often gets credit for even in recent years.

This chapter argues that because China's strategy rests on different assumptions about security and nuclear deterrence than U.S. strategy does, its ideas about arms control are different, too. China has historically put more value on broad declarations of intent, behavioral rules, and self-control, while the United States has prioritized specific quantitative limits on capabilities, detailed verification and compliance mechanisms, and operational transparency. When progress has occurred, it has not been because China finally matched the United States in some military capability, or because Chinese officials and experts “learned” to think about arms control like their American counterparts do. Rather, it has happened when Chinese leaders believed that the United States and other countries with nuclear weapons were moving toward its ideas about security cooperation--hopes that have repeatedly been disappointed.

This chapter draws on a range of sources, including official Chinese government statements and actions, authoritative Chinese publications, and writings by influential Chinese arms control experts and American analysts who interact regularly with their Chinese counterparts. Before assessing Chinese positions on specific arms control issues, this chapter surveys different U.S. and Chinese assumptions about international relations that shape their approaches to security cooperation. The second section reviews key points of continuity and change in China's approach to arms control during and immediately after the Cold War, focusing on three issues: nonproliferation, confidence-building measures, and the Comprehensive Test Ban Treaty as it affected China's own nuclear capabilities. The third section considers how security policies pursued by the United States under George W. Bush and Barack Obama influenced Chinese attitudes toward arms control. It also explores how advances in space, cyber, and other non-nuclear strategic capabilities have compounded the challenges for U.S.-China security cooperation caused by different conceptions of nuclear deterrence. Contrary to claims that China is "just not interested" in arms control, some progress was made during the Obama years, but differences in U.S. and Chinese approaches to arms control precluded major breakthroughs.

Understanding Chinese attitudes toward security cooperation has gained added importance under the Trump administration for two reasons. Trump's national security strategy depicts China and Russia as equally capable antagonists facing the United States in a "new era of great power competition," so the feasibility and desirability of mutually beneficial cooperation with China have become more urgent questions. Trump officials have also linked the continuation of U.S.-Russia strategic arms control to China's willingness to join agreements like the Intermediate-range Nuclear Forces (INF) Treaty and the New START accord. Whether or not these officials are genuinely interested in negotiating nuclear accords with China, their ability to do so has been greatly complicated by the Trump administration's trade war with China and its antipathy towards arms control agreements negotiated by previous U.S. administrations, most of which include or impact China.

The costs and risks of coercive competition will keep growing until both sides accept that they outweigh whatever benefits might accrue from trying to maximize power and freedom of action in a tightly interconnected world. Therefore, the conclusion summarizes lessons about Chinese arms control attitudes and actions over time that could be used to improve the prospects for cooperation when U.S.-China relations improve. It argues that instead of resuming unproductive efforts to convince the other side to change how it thinks about security cooperation, the United States and China should seek out small steps that each views as beneficial according to its own strategic logic. If they build confidence by honoring those commitments over time, they may gradually be able to cooperate in more ambitious ways despite continued differences in interests and ideas about international security.

Assumptions Underlying U.S. and Chinese Approaches to Arms Control

Americans often assume that China's historically small nuclear arsenal was due to its economic and technological underdevelopment compared with the Cold War superpowers, and that as China becomes a global power, its nuclear forces and other strategic capabilities will rival those

of the United States and Russia. If so, the key question is whether China will use those capabilities in ways that threaten its neighbors and challenge the global status quo, or be a “responsible” great power that cooperates with other countries to reduce nuclear risks and manage other global problems. Early in the Obama administration, Deputy Secretary of State James Steinberg posed this question. He put the onus on China to provide “strategic reassurance” by being more transparent about how it intends to develop and use its nuclear, space, and cyber capabilities--or leave other countries to assume the worst, and plan accordingly.⁴

Those who assert that China should be more receptive to U.S. proposals for transparency, confidence-building measures, and arms control agreements assume that they reflect widely accepted principles and decades of successful practice. Such confidence that U.S. proposals represent the right way to cooperate ignores the history of heated debates among U.S. policymakers and experts about nuclear arms control. It discounts dissatisfaction among arms control supporters about what Washington and Moscow accomplished during the Cold War, and what they have done together since then, compared with residual and (re)emerging problems in their security relationship. It also overlooks some fundamental differences in U.S. and Chinese thinking about international relations, strategic stability, and nuclear deterrence that lead to two internally consistent, but different ways of thinking about security cooperation that can exacerbate mistrust and frustration even during time periods when U.S. and Chinese officials have both been genuinely interested in working together.

Li Bin, a Tsinghua University professor and leading Chinese arms control expert, attributes the problem to underlying assumptions about international relations. He argues that Americans see security in terms of “threats” that can be kept at bay by convincing potential adversaries that the costs of attack would outweigh the gain. Chinese officials and experts think in terms of security “challenges.” They seek to mitigate vulnerabilities and minimize risky situations that arise for internal or external reasons. For example, if China’s understanding of some technology lags behind other countries’, the more advanced country could use that capability in a way that deliberately exploits a Chinese vulnerability or has unintended negative consequences for China.⁵ Thus, one motivation for many of China’s nuclear, space, cyber, and missile defense projects is to avoid “technological surprise” by learning about advanced technologies that the United States has mastered or is trying to develop. Another is to gain a seat at the table in future international discussions about how the capabilities should be used.⁶

U.S. and Chinese conceptions of power also differ even among “realists” who see maximizing relative power as the key to advancing national interests. American realists think in terms of a hierarchy of power tools, with military capabilities at the top; economic resources in the middle; and various types of “soft power”--political, social, and normative--near the bottom. China’s concept of Comprehensive National Power is more like a pie chart, with military, economic, and socio-political wedges of different sizes. American realists assume that national leaders will spend whatever economic resources are required to acquire more military power than potential rivals have, and that they will violate social norms and political principles to increase wealth or keep a valuable ally. Chinese decision makers give more equal weight to military, economic, and political considerations. This explains why they have kept military spending at about 2 percent of a rapidly rising GDP for the past three decades even though China could afford a larger nuclear arsenal and faster conventional military modernization. It also explains why the Chinese care

much more about declaratory policy and normative principles regarding the use of nuclear weapons than they do about relative capabilities.

Since Chinese strategists do not see nuclear weapons as the apex of a power pyramid, they have a much narrower conception of their utility than many American strategists hold, and correspondingly smaller nuclear requirements. The 2018 U.S. Nuclear Posture Review argues that the United States needs a large and diverse arsenal to deter nuclear and non-nuclear attack, assure allies and partners, achieve U.S. objectives and limit damage if deterrence fails, and hedge against an uncertain future.⁷ Chinese leaders have consistently maintained that China has a purely defensive nuclear posture and only needs “the minimum means of retaliation” to deter nuclear coercion and attack.⁸ They have been equally insistent that China will never make nuclear threats to deter non-nuclear attacks, nor use nuclear weapons first, nor try to gain a military advantage by retaliating rapidly and reciprocally to any sized nuclear attack.⁹ This self-imposed restraint is central to China’s self-perception as the most responsible of the major nuclear powers, even without legally binding constraints on its nuclear forces.

This limited role for nuclear weapons in Chinese policy does not reflect the belief held by many Americans that nuclear weapons render great power war obsolete. Chinese military planners have consistently prioritized having conventional capabilities to prevent or defeat a large-scale conventional invasion (and preclude independence for Taiwan) rather than assuming that a small nuclear arsenal could deter any type of attack. Mao believed that the outcome of war would be determined by the people’s level of commitment, not just the quality and quantity of weapons. Therefore, Chinese political leaders have always expressed confidence that their country could successfully defend itself against conventional aggression by a more capable country without resorting to nuclear weapons first.¹⁰

Chinese writings about “limited deterrence” and its pursuit of some counter-force capabilities do not indicate movement from a concept of deterrence based on assured retaliation to one based on damage limitation,¹¹ like the one that underpins current U.S. thinking about arms control and strategic stability.¹² Authoritative Chinese military publications write about retaliatory use of nuclear weapons against military targets, but the objective of such “key point counterstrikes” is to demonstrate resolve in an effort to deter further nuclear attacks on China, not to gain a war-fighting advantage.¹³ Chinese strategists assert that if another country used a few nuclear weapons against China, it could retaliate in a limited way without uncontrolled escalation leading to mutual annihilation.¹⁴ This assumption rests on philosophical convictions rather than practical experience, though. Acquiring nuclear weapons has not changed the traditional Chinese belief that top military commanders can skillfully manage the course of a war to achieve their political objectives at an acceptable cost. Since Chinese leaders have not historically made nuclear threats for bargaining leverage, they have less experience with misperceptions, miscommunications, and near-misses during nuclear crises than the superpowers gained during the Cold War.¹⁵

American and Chinese ideas about strategic stability reflect different conceptions of power and political relationships. Americans typically analyze different forms of strategic stability and the likelihood of deterrence failure, crisis escalation, or arms racing in techno-military terms.¹⁶ They focus on the distribution of military capabilities; the characteristics of weapons systems; the quality of command, control, communication, and intelligence capabilities; the detection

probabilities of verification arrangements; and so on. The impact of economic factors are secondary, with realists and mercantilists seeing them in zero-sum terms as contributing to the overall power balance, and liberals hoping that positive-sum interactions in the economic sphere reduce the likelihood of war by increasing shared interests that would be damaged in a conflict.¹⁷

Chinese leaders care deeply about maintaining stability, broadly defined as harmonious relations at home and abroad, more for the sake of continued economic growth and Communist Party control than urgent concerns about nuclear war. So long as Chinese security experts remain confident that the United States cannot neutralize China's nuclear retaliatory capability through some combination of offense and defense, they assume a low risk of nuclear attack despite U.S. military superiority. This helps explain why China has not (yet) undertaken a major quantitative nuclear build-up in response to U.S. advances in long-range precision conventional weapons and missile defense.

Chinese assessments of strategic stability consider the overall context of U.S.-China political relations to matter more than the specific details of the military balance.¹⁸ Chinese authors often prefer terms like "strategic reassurance" or "strategic trust" to "strategic stability" because of its mechanical connotations. Chinese policymakers and security experts often complain that they cannot figure out what type of relationship the United States wants to have with China, or how the U.S. political system and decision-making processes produce specific policy outcomes that affect China. They want strategic reassurance from the more powerful United States even more than the United States wants it from China.

Some Chinese strategic analysts have used the concept of Comprehensive National Power to argue that increasing complex interdependence--a web of cross-cutting political, economic, and security interests--is more important for strategic stability than how many weapons each side has. This fits with depictions of harmonious international relations where China's "peaceful rise" is mutually beneficial, rather than threatening to other countries.¹⁹ Of course, combining strategic and economic issues in stability dialogues between senior U.S. and Chinese officials also fits China's concept of comprehensive national power and lets China use its economic advantages for leverage on security issues. This view of strategic stability also suggests that President Trump's current efforts to get better terms of economic engagement with China by imposing sanctions risks having a more destabilizing effect on U.S.-China political and military relations than someone who thinks about economic deals in purely transactional terms might realize.

American and Chinese experts see transparency connected to strategic stability in different ways. Americans typically assert that transparency about capabilities and behavior will enhance strategic stability by increasing predictability, reducing uncertainty about potential adversaries' current and planned military forces, and providing reassurance or early warning of a surprise attack. This is in keeping with Western political ideas about citizens using information to hold their elected officials accountable and private entities needing it to ensure that contractual obligations are fulfilled. Willingness to provide very sensitive information is often used to judge whether a political candidate, company, or country has honest intentions. When American officials make extensive transparency a prerequisite for security cooperation with a potential adversary, they typically depict this demand as necessary for confidence that the other side will comply with its commitments. Yet, there is a long history of Americans calling for greater

transparency because they want to “open up” a closed country like the Soviet Union, or gain intelligence about the number and location of weapons, troops, or other assets.²⁰

Americans often declare that Chinese officials are categorically opposed to U.S. requests for greater transparency due to a cultural bias towards secrecy or a strategic assessment that “transparency is a tool of the strong to be used against the weak.”²¹ David Shambaugh notes that the People’s Liberation Army (PLA) is “actually quite transparent about a wide range of subjects in Chinese-language publications,” but these sources are rarely used by American scholars or translated into English.²² This reflects a lack of interest in trying to understand the Chinese in their own terms, rather than in words and concepts that are more familiar to Americans.

In an effort to increase transparency and confidence by lowering language barriers, China initiated a joint project involving representatives from the five countries that can have nuclear weapons under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) who translated information related to arms control, nonproliferation, disarmament, and nuclear energy into English, Russian, Chinese, and French.²³ The resulting glossary will have practical utility, but it does not get at deeper philosophical differences.

To explore the deeper differences, the Union of Concerned Scientists assembled a group of U.S. and Chinese arms control experts to discuss how each side thought about transparency and how China might satisfy Western desires for greater transparency in ways that fit its own culture and interests. They observed that Chinese culture values a different form of transparency because it holds that obligations to behave in particular ways reflect the general nature of relationships more than the details of specific contracts. The Chinese are less interested in knowing how many weapons with what characteristics are in which locations than they are in figuring out whether the United States sees China more as a potential adversary or as a partner in global trade and problem-solving. The priority placed by Chinese officials and security experts on transparency of intentions makes no first use (NFU) and other declarations of peaceful intent much more meaningful to them than they are to U.S. officials and experts. A key finding was that Western “refusal to at least acknowledge” the legitimacy of Chinese views on transparency and the great weight they attach to declarations of intent “may be responsible for many of the difficulties in the bilateral relationship.”²⁴

There is a consensus among Chinese security experts that verification is an “integral part” of designing and implementing arms control treaties,²⁵ but what is acceptable in the context of a legally binding agreement may not be acceptable as a stand-alone “transparency” measure. During negotiations on a Comprehensive Test Ban Treaty (CTBT) in the 1990s, China did not question the importance of including both an international monitoring system (IMS) based on various forms of remote sensing and on-site inspections. When China took a different position on verification that the United States did, it generally reflected Chinese concerns about the asymmetry between a small number of countries, including the United States, with extensive and technologically advanced national intelligence capabilities versus the vast majority, including China, who would be highly dependent on the international verification system. China argued unsuccessfully that the IMS should include imagery satellites, while the United States saw this as unnecessarily expensive because it already had its own reconnaissance satellites. China also

advocated for more restrictive rules for initiating an on-site inspection (OSI) out of concern that powerful countries might misuse verification arrangement for espionage purposes.

In short, whether or not China supports a particular form of security cooperation is not a reliable indicator of whether it values peaceful relations, supports arms control, and is a “responsible” great power rather than is a dangerous, expansionist state. China’s attitude toward a given measure depends on whether it seems to be in China’s interest given how its decision-makers think about security, power, nuclear weapons, and strategic stability, and what type of domestic and international environment they are operating in at that particular point in time. Some forms of security cooperation that American policymakers and experts consider mutually beneficial given their own ideas about international security and their own country’s domestic and international environment may not appear that way to their Chinese counterparts, and vice versa.

This suggests that academic debates about whether China’s security policies are designed to advance national interests and increase relative power like any other country in its position would do, or if they are different in important ways because of China’s unique strategic culture, rest on a false dichotomy. China is no more or less inherently peaceful than the United States is; instead, both make choices about competition or cooperation based on the strategic logic that informs policymakers’ thinking about what they are trying to do and how they can best advance those objectives. Of course, that does not mean that everything Chinese officials and experts say about arms control should be taken at face value, any more than one should believe everything that American officials say. The more consistency there is between words and actions across issues and over time, and as adapted for changing contexts, though, the more valid the explanations are likely to be.

Continuity and Change in Chinese Views on Nuclear Arms Control

Interpreting China’s positions on arms control in light of these different assumptions about security, power, stability, and nuclear weapons makes it easier to understand why some Chinese positions have changed and some have stayed the same as China opened to the outside world, integrated into global markets and institutions, and became a strategic power. This section looks first at changing Chinese attitudes towards nonproliferation, because one of the earliest objectives of U.S.-Soviet arms control was to prevent China from acquiring nuclear weapons. Major changes in China’s domestic context, particularly the reform and opening up policy adopted in the late 1970s, and in the international environment, especially the ending of the Cold War, gradually convinced China to engage constructively in a wide range of arms control initiatives, including some forms of nonproliferation. The second part of this section examines various voluntary arms control efforts to relax tensions, reduce suspicion, correct misperceptions, and avoid or manage crises so that they would not spiral out of control. Both Beijing and Washington aspired to transform the overall security relationship by doing relatively simple things, like getting top officials from their two militaries together on a regular basis. Each hoped that they could change the other’s behavior more quickly and extensively than they were willing and able to change their own behavior, causing frustration on both sides. The third part focuses on China’s decision to make the major concessions needed for successful negotiation of the

Comprehensive Nuclear Test Ban Treaty and on why China decided to accept major constraints on its own nuclear weapons then, but has not agreed to do so again.

Nonproliferation. China's ambivalence about arms control and nonproliferation as practiced by the United States dates back to the 1950s, when the superpowers were starting to think seriously about how they might both benefit from limited cooperation to reduce the costs and risks of nuclear deterrence. Before then, the superpowers had been competing for favorable international opinion by advocating mutually incompatible approaches to what was then called General and Comprehensive Disarmament. They justified their own nuclear and conventional military build-ups as necessary because the other side would not accept their requirements for disarmament. Most of the world was relieved when the three countries that already had nuclear weapons, the United States, Soviet Union, and United Kingdom, stopped this cynical game and started negotiating a ban on nuclear tests in 1958. The People's Republic of China (PRC) disliked the shift in focus from comprehensive nuclear disarmament to limited arms control because it assumed that the main motivation for prohibiting nuclear tests, but not nuclear weapons, was to preserve the Big Three's nuclear monopoly in the face of Chinese and French efforts to join the nuclear club.²⁶ Yet the PRC lacked the diplomatic standing to object because Taiwan represented China in the United Nations at that time.

Chairman Mao had authorized a full-scale effort to get nuclear weapons in 1955, during a confrontation with Taiwan over two small offshore islands that the United States had pledged to defend with nuclear weapons. He decided that his country needed its own nuclear weapons to fend off coercion by the United States and subordination by the USSR. He also asserted that by demonstrating that a developing country could acquire nuclear weapons, China might persuade the superpowers to abolish nuclear weapons as the only alternative to global proliferation. China took great national pride in overcoming numerous obstacles in order to master the technology, including lack of indigenous expertise, Western export controls, and loss of Soviet nuclear assistance in 1959. Mao's revolutionary rhetoric and his nonchalant references to nuclear weapons as "paper tigers" worried the Kennedy administration enough that it considered preventive military action. Khrushchev was not interested in cooperating with the United States against China at the time, partly because the United States was not equally concerned about France's nuclear ambitions, and partly because Khrushchev accurately anticipated that Mao would be "more restrained" once he had nuclear weapons.²⁷

When China conducted its first nuclear test in 1964, it tried to reconcile its advocacy for comprehensive nuclear disarmament with its development of nuclear weapons by insisting that the superpowers' refusal to give up their nuclear weapons left China no choice but to have them too, and promising to be more "responsible" than they were. To underscore that it only wanted a few nuclear weapons for purely defensive purposes, China made an unconditional no first use declaration that "at no time and under no circumstances would China be the first to use nuclear weapons."²⁸ It refused to sign the 1968 Nuclear Nonproliferation Treaty even though it qualified as a nuclear weapon state because its two-tiered structure discriminated against other developing countries. China offered peaceful nuclear cooperation to them, but not help acquiring nuclear weapons. Although China had split with the USSR by then and was trying to "build a coalition of radical forces in the Third World against the 'U.S. imperialism' and the 'Soviet revisionism,'"²⁹

it recognized that further proliferation would complicate its long-term objective of global nuclear disarmament.³⁰

China became more active in multilateral arms control fora as its diplomatic isolation ended. Involvement in organizations like the Conference on Disarmament required more people in China to develop nuclear expertise and interact with foreign scientists, diplomats, and military representatives.³¹ The PRC delivered its first speech on disarmament to the U.N. General Assembly in 1971, the year it took back representation of China from Taiwan. China reiterated its call for complete nuclear disarmament, and insisted that the two countries with the most nuclear weapons should take the lead, starting with their own unconditional NFU pledges. After China re-established normal diplomatic relations with the United States (1979) and the USSR (1982), it toned down its objections to the NPT and publicly pronounced its “three no’s policy”-- no advocating, encouraging, or engaging in nuclear proliferation.³²

China continued to criticize the superpowers for taking small steps to slow their arms race rather than renouncing nuclear threats and committing to nuclear disarmament. When the Cold War arms race was near its peak in 1982, China said that if the superpowers reduce their nuclear arsenals by half, and permanently stopped nuclear weapons testing, improvement, and production, then China would end these activities, too, and join subsequent negotiations for further reductions in nuclear arms. This “three stops and one reduction” proposal followed another step that China wanted all nuclear states to take: an unconditional multilateral NFU pledge.³³ The Soviet Union did make a NFU declaration that year, but did not make corresponding changes to its operational plans and training to match China’s level of consistency. The United States put no more faith in the Soviet pledge than it did in the Chinese one, and maintained that it needed the nuclear option to deter the Soviets from using their superior conventional military force to overrun Europe.

China’s improving relations with the superpowers led Chairman Deng Xiaoping to shift the focus of national attention from security to economic growth because a large world war was unlikely in the next 20 years. China’s 1978 Reform and Opening Up policy changed the emphasis of fissile material production from military to civilian uses and the motivation for civilian nuclear cooperation from geopolitics to economics.³⁴ Chinese military expenditures fell from 4.6 to 2.1 percent of gross national product between 1978 and 1984, reflecting the new assessment that large-scale world war was not likely in the near term.³⁵ The leadership authorized numerous ministries, including the one responsible for China’s nuclear program, to establish foreign trade companies and become more self-supporting. As a new entrant into the global nuclear energy market, China approved some deals that more established suppliers rejected, including exporting nuclear power plants to Pakistan and small research reactors to Iran. It also sold heavy water to India in the 1980s, despite the tense state of Sino-Indian relations after their 1962 border conflict.

In the early years of economic restructuring, the Chinese government lacked the motivation, the knowledge, and the legal authority to control dual-use nuclear exports by its foreign trade companies. That slowly changed for a mix of cooperative and coercive reasons. To attract foreign capital, apply for financial aid, and participate in global markets, China had to adopt standard practices, including regular and reliable reporting of data that had previously been withheld from the Chinese public and kept secret from the rest of the world.³⁶ It began bilateral

negotiations with the United States on a nuclear cooperation agreement in 1981 which necessitated disclosure of some Chinese nuclear information. This led to China joining the International Atomic Energy Agency in 1984, which required gathering and providing sensitive information about nuclear exports to international authorities. Participation by Chinese nuclear industry leaders in IAEA meetings socialized them about accepted practices for export controls.

Opening its economy to foreign trade made China more vulnerable to sanctions. This increased U.S. leverage to dissuade China from nuclear trade outside of IAEA safeguards. China gradually became more cautious about nuclear commerce, avoiding controversial deals when it calculated that the potential cost of U.S. sanctions for allegedly violating nonproliferation norms would outweigh whatever economic benefits China might get from that transaction.³⁷ Thus, China's own experience with international efforts to change its proliferation-related behavior is consistent with its position that constructive engagement with countries like Iran and North Korea is more likely to have a positive impact over time than sanctions alone.

After lengthy debate, Chinese leaders finally decided that changed security circumstances warranted joining the NPT in 1992. The United States had made NPT membership a condition for full implementation of the nuclear cooperation agreement it signed with China in 1985. China's nuclear industry was eager for the government to take this step. Economic benefits from increased access to U.S. nuclear technology, though, were not enough to convince China to join the NPT before the superpowers made major changes to their own nuclear weapons policies.

By 1992, Washington and Moscow had taken a number of steps that gave China good reasons to believe that the superpowers were moving towards its assumptions and preferences regarding nuclear weapons and arms control. The United States and Soviet Union issued a joint declaration in 1985 recognizing that a "nuclear war cannot be won and must never be fought," and renouncing efforts to gain military superiority. To China, this sounded like an endorsement of its position that nuclear weapons should only be for a retaliatory form of deterrence. The superpowers committed in 1987 to eliminate all of their intermediate-range nuclear missiles. They agreed to large cuts in long-range nuclear weapons in the 1991 Strategic Arms Reduction Treaty, and started working on START II. Finally, U.S. and Russian leaders made parallel unilateral commitments in 1991 to return all land- and sea-based non-strategic nuclear weapons to their own territories, including removing nuclear artillery and bombs from South Korea and tactical warheads from ships and subs in the Pacific.

China had also come to see proliferation, particularly by India, more as a global security problem than a form of resistance by developing countries to great power hegemony. Egypt, Vietnam, North Korea, Saudi Arabia, and a number of other developing countries had signed the NPT in the 1980s. Their endorsement despite the NPT's two-tiered structure increased its legitimacy in China's eyes. The upsurge of support for the NPT also made membership increasingly important for China's image as a responsible nuclear power.³⁸

China took other arms control and nonproliferation steps in the 1990s that fit its strategy of focusing on economic growth in a more peaceful regional and global security environment. It joined the Biological Weapons Convention in 1984, twelve years after that treaty opened for signature. China signed the 1993 Chemical Weapons Convention on the first possible day. China

joined the Zangger Committee, the coordinating body for nuclear export controls in 1997. It pledged not to export ballistic missiles that could carry weapons of mass destruction in 1994, and not to help any country develop missiles covered by the Missile Technology Control Regime in 2000, although major questions remained about Chinese compliance with these commitments.

Confidence-building Measures. As the primary driver of arms control efforts during the Cold War, the United States was mainly interested in reducing nuclear risks through legally binding constraints on capabilities--ceilings, then reductions for existing nuclear arsenals and prohibitions on new countries acquiring nuclear weapons. It also engaged in various forms of behavioral arms control with the Soviet Union--agreed rules that proscribed some operational practices, like provocative naval maneuvers that could cause a collision (the 1972 Incidents at Sea Agreement) and prescribed others, like establishing a dedicated hotline that the presidents could use to facilitate crisis communication. It likened such confidence-building measures (CBMs) to “arms control junk food”--satisfying in the short-term, but much less substantial than capabilities-based arms control because intentions and behaviors could change much more quickly than capabilities could.³⁹ It considered other types of behavioral arms control, particularly NFU pledges, to be pure propaganda: popular with public opinion, perhaps, but completely unreliable.

This began to change in the late 1980s, in part because the sequence of confidence-building measures that began with the 1975 Helsinki accord, gained momentum with the 1986 Stockholm accord, and led to the Organization for Cooperation and Security in Europe (OSCE) were credited with alleviating suspicions and helping to transform security relations at the end of the Cold War. Although there was much less history of cooperative security in Asia, China began to apply some of these lessons to its own security challenges in the 1990s. It resolved a number of long-standing territorial disputes and developed mechanisms to manage remaining ones more cooperatively. It reached border demarcation agreements with twelve neighboring countries, making concessions to countries that seemed comfortable with the status quo, but taking a more hardline approach with countries like India that China saw as revisionist.⁴⁰ China ratified the U.N. Law of the Sea Convention in 1996. It used this and other diplomatic mechanisms to dampen disputes with Japan and several Southeast Asian countries over ownership of islands by facilitating joint economic development while not conceding sovereignty claims.

In addition to settling border disputes with Russia and other former Soviet republics, China also negotiated several confidence-building measures (CBMs). Some mirrored agreements previously developed by the superpowers (e.g. their 1963 Hotline agreement and their 1994 agreement not to target nuclear weapons at each other) or by the OSCE (e.g. notification and observation of large military exercises in border areas). Others went beyond precedents set in those contexts, at least in symbolic ways. China and Russia paired their 1994 non-targeting pledge with a reciprocal no first use commitment. Their Agreement on Prevention of Dangerous Military Activities included proscriptions already adopted by the U.S. and Soviet militaries, such as prohibitions on eye-damaging lasers and electronic jamming that interfered with command and control networks during peacetime. It also added some positive prescriptions, such as safeguards against accidental missile launches and use of early-warning systems to prevent each other's ships, planes, and helicopters from inadvertently straying too close to the other side's territory.⁴¹

China's willingness to negotiate CBMs with Russia encouraged the United States to re-initiate military-to-military discussions after a series of dangerous interactions between U.S. and Chinese naval forces, the 1995-96 Taiwan Strait crisis, and recurrent complaints about U.S. military aircraft encroaching on Chinese airspace. Military-to-military contacts and U.S. arms sales to China had been occurring irregularly since 1980. They were pursued when the United States wanted to improve its relationship with China for various reasons. They were suspended when one side wanted to protest an action by the other. Examples include the 1989 killings of pro-democracy protestors in Tiananmen Square and the 1995 speech by Taiwan's president at Cornell University that precipitated the Taiwan Strait crisis.

Resumption of military-to-military exchanges with China was part of a broader effort by some top officials in the Clinton administration, including Defense Secretary William Perry, to develop a new type of relationship with former Communist adversaries based on principles of cooperative security.⁴² Whereas the most urgent objective with Russia was to help it reorient the huge nuclear, biological, and conventional military programs inherited from the Soviet Union to much smaller, more purely defensive capabilities without creating new security risks in the process, the main objective with China, and other countries in the Asia-Pacific region, was to prevent an incipient arms race.⁴³ As part of this larger effort, the Clinton administration began a new U.S.-China Lab-to-Lab program, which brought together scientists to discuss technical issues and do demonstration projects related to shared arms control and nonproliferation objectives.⁴⁴ It also created a Joint Defense Conversion Commission to help Chinese military plants redirect productive capacity to civilian products, like electric cars and air traffic control.

Kurt Campbell and Richard Weitz argue that U.S.-China military-to-military cooperation in the 1990s was disappointing because both sides tried to use this narrow form of engagement to change the other's behavior more broadly. The Clinton administration hoped to convince China "of the correctness of the U.S. worldview on such issues as military transparency, international law, and China's need to participate more actively in multilateral security institutions."⁴⁵ China not only sought U.S. policy changes on Taiwan, export controls, and military sales, but also wanted a more equal political relationship overall.

Different assumptions about the confidence-building process also generated misunderstandings that left both sides dissatisfied. The American side assumed that confidence and trust could develop through successful cooperation on specific functional issues. The Chinese side believed that improving mutual understanding through dialogue that clarified strategic intentions and mutual commitment to general principles for a peaceful relationship would create the confidence needed for specific cooperative undertakings.⁴⁶

The two militaries did agree in 1998 to start holding annual consultations between naval and air forces operating in close proximity, to stop routinely targeting strategic nuclear weapons at each other, and to set up a presidential hotline. The following year, though, China suspended military-to-military interactions to protest the U.S. bombing of the Chinese embassy in Belgrade during a NATO military operation undertaken after China and Russia blocked the UN Security Council from authorizing an intervention into the Kosovo conflict.⁴⁷ The United States had become much less optimistic about what it could accomplish through military-to-military interactions. It made little effort to convince China to resume consultations and other activities.

One problem involved lack of reciprocity on actions that fit the U.S. agenda, but not the Chinese one. Since the U.S. side believed that greater transparency about capabilities and operations would reduce misunderstandings, misperceptions, and uncertainty, U.S. military officers gave detailed briefings, shared publications, and offered visits to sensitive sites, hoping for the same in return. The Chinese did take a number of steps that were unprecedented for them, even if other countries were already much more transparent, including publishing the first official White Papers on Security (1995), Arms Control (1996), and Defense (1998). They also allowed high-ranking U.S. military personnel to visit a number of installations that no American had gone to before. Americans thought such steps were “minimal and marginal,” though, in comparison to what the United States wanted to see and was willing to show China.⁴⁸

The PLA mistrusted U.S. motives for military-to-military exchanges, which it assumed were to collect intelligence, intimidate China with shows of U.S. strength, and improve Chinese attitudes towards U.S. policies and practices. Chinese officials deemed it too dangerous and embarrassing for a much weaker country to reveal equally sensitive information about its own capabilities. They also wanted the United States to be more understanding of cultural differences regarding transparency and not expect China to change so fast. Some American experts acknowledged a degree of truth to the reasons China gave, but thought they “mask a fundamental reluctance to open up the Chinese military establishment to foreign scrutiny... (which) breeds suspicion.”⁴⁹

True believers in cooperative security like Perry were frustrated. In a speech at China’s National Defense University, Joint Chiefs of Staff Chairman John Shalikashvili told the PLA that unless it provided information on a “fair and equitable basis,” efforts to improve relations would fail.⁵⁰ Without rapid and dramatic transparency gains to show from cooperative military-to-military engagement, the Clinton administration shifted to a containment-oriented approach. It used military-to-military dialogues to underscore what U.S. “red lines” were, and what could happen if the Chinese crossed them. It also took actions in the region that it considered “unrelated” to confidence-building with the PLA, but that deepened Chinese suspicions about U.S. strategic intentions, such as maintaining Cold War troop levels in Asia, selling advanced missiles and an early-warning radar to Taiwan, and intensifying military cooperation with Japan, including on theater missile defense.⁵¹

Campbell and Weitz assess that this tougher approach worked to “disabuse Chinese military and political leaders of any belief that the United States was in invariable decline or lacked the will or capacity to counter adventurism.” They credit it and the “decisive U.S. victory, under NATO auspices, in the 1999 Kosovo campaign with deterring China from directly challenging the United States over Taiwan, nonproliferation, or other issues.”⁵² The unintended effect, though, may have reinforced Chinese suspicions that the United States’ true objective was not mutual confidence-building but intimidation through shows of U.S. strength, and thus decreased Chinese willingness to share sensitive security information.

U.S. conservatives wanted to terminate any exchanges that could provide useful information about U.S. technologies and operational practices to the Chinese military.⁵³ In the 1999 Cox Committee report and elsewhere, critics charged China with using every means at its disposal, including espionage, to learn how the United States was using information technology to spur its

“revolution in military affairs.” They assumed that China was, and always would be dependent on outsiders for defense technology innovations. Therefore, they hoped that if the United States ended any form of cooperation that could help the PLA improve its nuclear weapons, ballistic missiles, or other military capabilities, the United States would always be able to advance its high-tech weapons systems faster than China could close the technological gap on its own.⁵⁴

In 1998, Congress began to impose legislative limits and oversight requirements on U.S.–China military-to-military interactions and other forms of cooperation that might give the PLA militarily useful information. The National Defense Authorization Act for 1999 tightened export control processes in ways that essentially ended U.S. companies’ ability to launch commercial satellites at much lower rates by using Chinese rockets because U.S. experts had participated in several launch failure investigations and provided information that could also be relevant to Chinese ballistic missiles.⁵⁵ The National Defense Authorization Act for 2000 contained a lengthy list of military operations, information, capabilities, and facilities to which no PLA personnel could be exposed, including all nuclear and military space operations, Defense Department laboratories, and any arms sales or military-related technology transfers (Sec 1201). The United States continued to press China to be more transparent about defense expenditures, military operations, and other sensitive subjects, while severely curtailing joint activities intended to increase mutual understanding, develop professional relationships, prevent crises and arms races, and provide economic benefits to both sides.

Strategic Arms Control. The process that led to China’s acceptance of the first legally binding constraint on its own nuclear deterrent followed a similar arc. The 1996 Comprehensive Test Ban Treaty (CTBT) prohibited nuclear explosions, including those used to develop new weapons designs and ensure the safety and reliability of existing weapons. China moved from opposition to a stand-alone ban on nuclear tests, to gradual engagement in multilateral negotiations, to cautious optimism about the declining salience of nuclear weapons in the post-Cold War world, then to disappointment caused by a backlash in the United States against security cooperation with China and arms control writ large. This history is worth remembering when people complain that China is “free riding” on global nonproliferation efforts, or declare that “Asia is a region that has no history of arms control agreement, (and) there aren’t incentives for arms control agreement.”⁵⁶

China’s initial opposition to a stand-alone test ban treaty softened after Mikhail Gorbachev announced a moratorium on Soviet nuclear testing in 1985 as one of his early moves to end the nuclear arms race. In 1986, China voluntarily ended atmospheric testing and joined ad hoc discussions among scientific experts of technologies for test ban verification. The United States neither reciprocated the Soviet moratorium nor supported a negotiating mandate for the Conference on Disarmament (CD) during the Reagan and George H.W. Bush administrations. This meant that China could burnish its peace-loving image by saying that it was willing to participate in multilateral test ban treaty negotiations without expecting them to start any time soon.

That changed in 1992, when Congress mandated a U.S. testing moratorium and directed the next administration to seek a multilateral agreement ending nuclear tests by 1996. The timing caught China in the middle of a series of underground tests needed to maintain confidence that it still

had a secure retaliatory capability despite improvements made to the superpowers' counterforce capabilities in the 1970s and 1980s. China wanted to improve the survivability of its small nuclear force by shifting from liquid-propellant missiles in silos to solid-propellant missiles in a mobile basing mode, which required miniaturized warheads with a higher yield-weight ratio than those China already had. It needed to add modern safety features to prevent accidental warhead detonation. It was also considering whether the resurgence of U.S. interest in missile defense sparked by Reagan's Strategic Defense Initiative and Republican efforts to end the 1972 U.S.-Soviet Antiballistic Missile (ABM) treaty would eventually lead China to join the other four NPT nuclear weapons states (NWS) by deploying missiles that carried multiple warheads.⁵⁷

Because the CD works by consensus, it made sense for China to participate actively in the test ban treaty negotiations from the start, rather than joining near the end as it did with the 1992 Chemical Weapons Convention. It proposed provisions that suited its beliefs about nuclear security, such as commitments by all nuclear weapons states not to threaten or use them against non-nuclear countries, and not to use them first against each other. It also opposed proposals that would hurt China's national interests, such as prohibiting "peaceful" nuclear explosions for economic development or permissive criteria for on-site inspections.

The harder decision for China was whether to drag negotiations out until it had completed its planned test series, or participate "constructively"--i.e., make compromises and drop unpopular positions quickly enough to meet a target completion deadline that would preclude some important developmental tests. Alastair Ian Johnston used this question to assess whether Chinese officials had fundamentally changed their worldview and embraced cooperative security, or if they merely made tactical adaptations to advance their national interests and increase their relative power in the aftermath of the Cold War. Although he found that China had developed an arms control community with transnational links to the same nongovernmental groups that had influenced Gorbachev's "new thinking," Johnston expected that Chinese officials would still "free ride" on superpower arms control for realpolitik reasons. Based on evidence through the fall of 1995, he predicted that China would cooperate in negotiations enough to improve its image and foster a peaceful international environment conducive to economic growth, but not commit to a comprehensive test ban in 1996 if that would constrain its ability to develop a more flexible deterrent.⁵⁸

China defied Johnston's prediction about "free riding" by making several major concessions during the final year so negotiators could meet their deadline. It dropped its initial linkage to a multilateral NFU agreement and its call for a peaceful nuclear explosion (PNE) exemption. It compromised on criteria for authorizing OSIs. It also agreed to let states use "national technical means" of verification (NTM--a euphemism for reconnaissance satellites, remote seismic monitoring systems and other non-human ways of information about treaty compliance) in addition to data from the International Monitoring System for OSI requests, even though only a few countries had sophisticated NTM. China held firm, along with many other states, on stringent requirements for entry-into-force, including ratification by India, Pakistan, and Israel, and the five nuclear weapons states recognized by the NPT. It committed to a nuclear testing moratorium from the day it signed the CTBT, though, rather than reserving the right to keep testing until the treaty entered into force, reflecting the political cost China paid to continue testing while the negotiations were underway.

According to experts from China's nuclear weapons laboratory and the PLA, cutting short the planned sequence of tests had a more negative impact on China than it did on the other NPT NWS. China had only conducted 46 nuclear tests by 1996, compared with 1,030 by the United States, 715 by the USSR/Russia, 210 by France, and 45 by Britain (which also got test data from the United States). The less historical test data a country has, the harder it is to make small modifications in the core of a nuclear weapon and have confidence that it will work properly without explosive testing. If China could not test again, "it would half or at least slow the development of essentially new nuclear weapons," such as warheads with higher yield-to-weight and volume ratios that would be compatible with multiple independently targetable re-entry vehicles (MIRVs) for long-range missiles, a technology the other four NPT NWS had already mastered.⁵⁹

Ending nuclear tests also raised concerns about China's relative ability to maintain the safety and reliability of its existing nuclear stockpile. In addition to having fewer experienced weapons designers and less test data than the other NWS, China also had less money for routine stockpile surveillance (the main methods used by other countries to confirm reliability), less sophisticated scientific equipment, and less powerful computer simulations.

China's decision to sign the Test Ban Treaty in 1996 was not evidence of "learning" to value arms control and cooperative security in the same way that the United States and Russia did. Instead, it reflected Chinese officials' assessment that the end of the Cold War created both an opportunity and an imperative to "make greater efforts to promote world peace and development"⁶⁰ because the superpowers were moving toward China's ideas about minimal deterrence. They had essentially met the "three stops and one reduction" criteria, so China decided that it, too, needed to take a major step to advance the nuclear disarmament agenda, even though the United States still refused to make a NFU pledge and Russia had revoked its promise in 1993. Ending nuclear testing had always been a top priority for non-nuclear weapons states, so China needed to advance that objective to be a "responsible major power" in the eyes of other developing countries. Most importantly, Chinese officials concluded that further testing was not necessary for an arsenal that could deter threats or use of nuclear weapons in a post-Cold War world where arms control and cooperative security would play a bigger role than before.⁶¹

Many expectations that informed China's decision to sign the CTBT soon proved to be unfounded. It wanted to do cooperative stockpile stewardship projects with the United States, but congressional opposition to nuclear weapons-related cooperation with China ruled that out.⁶² It had hoped that international pressure would compel India to sign the Test Ban Treaty despite its dissatisfaction with the treaty text and the process used to open it for signature over India's objections, but India and Pakistan each conducted a series of nuclear tests in 1998. The May 1999 bombing of the Chinese embassy in Belgrade precipitated a re-evaluation of China's nuclear deterrent needs. The United States now looked like a global hegemon prepared to intervene militarily without Security Council approval, and use force in ways that directly hurt China's interests.⁶³ Shortly thereafter, the U.S. Senate voted against Test Ban Treaty ratification.

The one major consideration that remained true through the end of the Clinton administration was U.S. support for the ABM treaty despite pressure from Republicans for rapid deployment of

a national missile defense system. In September 2000, Clinton decided against authorizing a national missile defense system that would exceed what the ABM Treaty allowed. He assessed that the technology was not ready, and that deploying a few interceptors of unknown capability could have a net negative effect on national security if Russia and China responded by deploying more offensive missiles.⁶⁴ Soon after taking office, though, George W. Bush announced the U.S. withdrawal from the ABM treaty, and ramped up efforts to integrate national and theater missile defense into a comprehensive global system of “layered defenses,” capable of intercepting “missiles of any range at every stage of flight.”⁶⁵

Despite these negative developments, China has remained committed to the CTBT, maintained its moratorium on nuclear testing, contributed to building the verification system, and promised to ratify the Test Ban Treaty as soon as the United States does.⁶⁶ In other words, although it took a long time and a series of small steps before China’s political and military leaders were ready to sign the CTBT, they have upheld that cooperative commitment even though incentives to test again quickly increased after China signed the accord. The same pattern holds for China’s decisions to join the NPT and tighten nuclear export controls, and to become somewhat more transparent about its military doctrine, defense budget, and conventional force operations. Part of what China learned from these experiences, though, was that the United States’ democratic system of government made it a much less reliable cooperative partner. Congress could prevent the president from ratifying a major multilateral accord, and a new leader could quickly repudiate a foundational treaty on which all other strategic arms control agreements rested.

China and Arms Control in the Twenty-first Century

China’s current positions become more understandable in the light of its own security concepts and its historical experiences with nonproliferation, confidence-building measures, and arms control. They should also be evaluated in the context of recent U.S. policies, many of which have been uninterested in, and sometimes contrary to, the kinds of cooperative actions, processes, and agreements with which China is most comfortable. During the George W. Bush years, China largely reverted to arms control positions it had taken during the Cold War because the United States seemed more interested in being the world’s sole superpower than in cooperative security. The Obama era was more confusing for China, because parts of his team enthusiastically endorsed the president’s Prague agenda for eventual nuclear disarmament at the same time that a broader cross-section of officials in the administration and in Congress favored making a military, political, and economic “pivot” to Asia in a comprehensive strategy to counter China’s growing power. During that period, neither China nor the United States showed the level of interest in arms control that they had exhibited during the 1990s, but they did make some progress together not only on nuclear issues, but also on cybersecurity and space.

George W. Bush administration. China’s evaluation of its security environment deteriorated after George W. Bush took office because of its more unilateralist approach to security. The Bush administration’s Nuclear Posture Review made coercive prevention, not stable mutual deterrence, the central principle for U.S. policy. It called for the development of new, more “usable” nuclear weapons and redefined the strategic triad so the offensive leg included both nuclear and precision-guided conventional capabilities sized for use in various immediate- and

near-term contingencies that included scenarios involving China.⁶⁷ This stoked Chinese fears that as the sole superpower, the United States would rely more heavily on nuclear threats and unilateral military action than it had when counter-balanced by the USSR.

Numerous Bush administration actions revived Chinese suspicions that the United States did not really see arms control as a means to “enhance the security of all countries...[but as] a tool for stronger nations to control weaker ones...[so they could] optimize their own armament in order to seek unilateral security superiority.”⁶⁸ The administration rejected U.S.-Russian arms control as an outmoded relic of the Cold War, withdrew from the ABM treaty in 2002, and replaced the START process with easily reversed self-restraint.⁶⁹ Secretary of State Colin Powell tried to reassure China that the United States only planned to build a limited missile defense against a potential proliferator like North Korea or Iran. Yet, the ambitious U.S. plans for missile defense presented in other contexts seemed sized to neutralize many more strategic weapons than China currently had or planned to develop.⁷⁰ The United States also began explicitly pursuing a highly ambitious form of unilateral space dominance that contradicted the principles of peaceful cooperation and reciprocal strategic restraint in the 1967 Outer Space Treaty and other international agreements. The new U.S. goal amounted to the ability to use space assets to find, track, target, and help destroy any potential threat on earth, and to prevent other countries from using space in ways that potentially threatened U.S. interests.⁷¹

The Bush administration preferred coercive counterproliferation to cooperative nonproliferation agreements like the NPT that included arms control obligations for countries with nuclear weapons. Coercive counter-proliferation eschews non-discriminatory rules in favor of different standards for countries that the United States considers “responsible” nuclear states or allies. The Bush administration was undecided about China in this regard: the Deputy Secretary of State gave a major speech asserting that it was time for China to become a “responsible stakeholder” in global governance, which it defined in ways that went beyond being more transparent to include adopting more market-oriented economic policies and more democratic practices.⁷² Coercive prevention also relies on secrecy, export controls, sanctions and other denial strategies to thwart the assumed desire of “hostile” states and terrorist groups to obtain weapons of mass destruction and associated technologies. The 2003 Iraq War – initiated by the United States without Security Council approval, and over the objections of close allies – demonstrated what the United States was willing to do if it suspected (rightly or wrongly) that a hostile state might be secretly trying to acquire dangerous dual-use technology or material.

China took on its first nonproliferation leadership role in early 2003 when the Bush administration requested its help with North Korea. As the United States was preparing for war with Iraq, it was also ratcheting up pressure on North Korea. North Korea responded by announcing plans to withdraw from the NPT. China wanted to avoid both North Korean proliferation and U.S. military action on the Korean peninsula, so it organized a trilateral meeting in hopes of preventing disruptive actions by either side while inching toward a diplomatic resolution. Those talks deadlocked before they formally began because North Korea wanted to resume bilateral negotiations with the United States while Bush prohibited anyone on the US delegation from any type of bilateral meeting with their North Korean counterparts.⁷³

China eventually convinced the United States and North Korea to accept a Six Party format, with Russia, Japan, and South Korea joining them around a hexagonal table. The meetings in Beijing went nowhere so long as the United States insisted that North Korea must completely, verifiably, and irreversibly destroy all of its dual-use nuclear capabilities before the United States would discuss any other issues. In frustration, North Korea declared in 2005 that it had nuclear weapons. Despite strong Chinese efforts at dissuasion, North Korea corroborated that claim with its first nuclear test the following year, giving China only 20 minutes advanced notice. This led Beijing to work more closely with Washington. It also convinced the Bush administration to adopt a more flexible position, beginning bilateral talks with North Korea and replacing its demands for complete capitulation with a phased sequence of steps pairing nuclear restraint with political reassurance and energy assistance. The new diplomatic approach was only partly successful, but it did slow North Korea's nuclear progress without military action.⁷⁴

The United States did not reciprocate China's help constraining North Korea's nuclear program when China tried to keep constraints on India's nuclear program in place. India wanted the Bush administration to drop sanctions imposed after India's nuclear tests and change U.S. law and Nuclear Suppliers Group practice so that it could engage in nuclear trade that could help India produce enough fissile material for 50 weapons a year.⁷⁵ The 2006 U.S.-India civilian nuclear deal demonstrated use of U.S. power to exempt India from restrictions on nuclear trade with countries that had not signed the NPT, which weakened the global nonproliferation regime in a way that was particularly problematic for China.⁷⁶ This reinforced the view among many Chinese analysts that sanctions might sometimes have a role to play in arms control, but were often times imposed or lifted by "hegemonic powers like the United States in a discriminatory, self-serving, and ultimately fruitless fashion."⁷⁷

China did not react to the Bush administration's unilateralism by leaving any of the arms control agreements or organizations it had joined when the United States was an enthusiastic supporter. Yet, it no longer needed to do more than reiterate its NFU policy and negative assurances to non-nuclear weapons states in order to be seen as a more responsible nuclear power than the United States. With the United States actively blocking rather than leading multilateral efforts to negotiate the types of arms control agreements that China favored, it also had little incentive to invest much diplomatic energy or technical expertise in this sphere. China did vote for UN Security Council Resolution 1540, which directed all member states to take steps to prevent non-state actors from acquiring weapons of mass destruction. First, though, it insisted on the removal of language that the United States or other countries acting on their own could have invoked to justify the preventive use of force. China did not join the Bush administration's main multilateral counter-proliferation mechanism, the Proliferation Security Initiative. It maintained that interdiction of ships suspected of illicitly carrying weapons of mass destruction or related materials should require Security Council approval or some other formal international legal authority.⁷⁸ This was a sensitive subject for China. In 1993, before the CWC entered into force, the United States stopped and searched a Chinese ship suspected of taking chemical weapons to Iran based on faulty evidence.⁷⁹

When China showed initiative on arms control, the United States assumed it had ulterior motives. China and Russia tried to initiate negotiations in the CD on the "Prevention of an Arms Race in Outer Space" (PAROS), but Bush officials insisted that there was no arms race in space,

and thus no need for negotiations.⁸⁰ They believed the popular PAROS resolution was meant to make the United States look aggressive and to preclude space-based missile defense, the one mode that might eventually work against missiles launched from deep inside these two large countries. Bush officials also presumed that China was trying to get public relations benefits by professing support for Fissile Material Cut-off Treaty (FMCT) negotiations while preventing them from starting by insisting that PAROS negotiations must begin at the same time. When China agreed in 2003 to a program of work for the CD that included FMCT negotiations and ad hoc discussions of topics related to PAROS, the Bush administration announced that it could no longer support the existing mandate for FMCT negotiations.⁸¹

From China's perspective, cooperative constraints on military space activities and fissile material production are logically linked. Chinese leaders saw their country's space program as increasingly important to China's comprehensive development strategy, so U.S. export controls and political restrictions that essentially ended all U.S. space cooperation with China were a major problem. More broadly, Bush administration aspirations for "full-spectrum" U.S. military space dominance, including space-based missile defense, force projection, and control over which other players could use it for what purposes threatened China's economic, technological, political, and security objectives.⁸²

China had stopped producing highly enriched uranium and plutonium in 1987, when the superpowers reached agreement on their first nuclear arms reduction treaty. It never officially announced a moratorium on fissile material production for weapons as the other NPT NWS did, though. China's relatively small stock of fissile material was more than enough for the nuclear modernization program underway during the Clinton administration. It would be inadequate, though, for the ten-fold increase in nuclear weapons that some Chinese experts thought would be necessary to preserve a limited retaliatory deterrent if the Bush administration fulfilled its ambitious plans for a multi-layered missile defense system.⁸³ If the United States refused to negotiate some constraints on its military space and missile defense programs to help address China's "legitimate security concerns," then China also wanted to keep its options open until it could assess the magnitude of the "challenge" it faced and the best way to address it.

By 2006, some American strategists claimed that the United States was on the cusp of regaining "nuclear primacy" because of its dramatic technological advances, Russian nuclear decline, and China's "glacial pace" of nuclear modernization.⁸⁴ Their computer modelling suggested that it could use its nuclear and precision conventional weapons in a disarming first strike against China's or Russia's long-range nuclear weapons, with missile defenses "mopping up" whatever small number of nuclear warheads survived the initial attack. They maintained that the United States had achieved "immense strategic benefits" from its nuclear primacy in the early years of the Cold War, in the form of both bargaining leverage and confidence in war plans. They noted that nuclear primacy could embolden the United States to take more risks and behave more aggressively, and that nuclear vulnerability could incentivize China and Russia to take steps that increased crisis instability. Nevertheless, they argued that if an objective of U.S. security policy was to maintain global preeminence, preclude the rise of a peer competitor, and prevent lesser powers from challenging the United States in critical regions, then the "benefits of nuclear primacy might outweigh the risks."⁸⁵

Li Bin and Nie Hongyi assessed how China-U.S. strategic stability was affected by U.S. efforts to design more “usable” nuclear weapons, shift nuclear-armed submarines from the Atlantic to the Pacific, deploy layered missile defense, and develop space-based radars for continuous tracking and targeting of mobile missiles. These actions were not needed to dissuade China from trying to become a peer competitor; it already prioritized economic development over high rates of military spending, which it blamed for the Soviet Union’s downfall. To the extent that they made Chinese missiles more vulnerable, Li Bin and Nie Hongyi doubted that would incentivize China to deploy a much larger long-range arsenal. Instead, it would discourage China from being more transparent about how many nuclear weapons it had, where they were located, and what their alert status was. The authors concluded that China could take relatively easy and inexpensive steps to maintain its limited retaliatory capability, but that arms control would be preferable for several reasons.⁸⁶

Li Bin and Nie Hongyi did not think that the United States would deliberately attack in the mistaken belief that it could neutralize China’s deterrent. They feared, though, that “blind confidence” could convince U.S. leaders to take more risks and make more nuclear threats, increasing the chance of an inadvertent nuclear war. They knew China would experiment with various military capabilities that the United States was developing in order to avoid “technological lagging,” and worried that U.S. reactions could cause an asymmetrical arms race. They also warned about a negative form of nuclear learning. Whenever U.S. officials and nuclear experts engaged in strategic dialogues, they justified the United States’ unwillingness to make a NFU pledge by arguing that it would be rational for any nuclear-armed state to escalate rather than lose a conventional war. Li Bin and Nie Hongyi worried that these Track II interactions were weakening some Chinese strategists support for NFU, writing that this “academic propagandizing objectively weakens the confidence of Chinese scholars in the nuclear taboo.”⁸⁷

China’s January 11, 2007 test of a kinetic energy weapon against one of its own defunct satellites spurred the destabilizing dynamics that concerned Li Bin and Nie Hongyi. It also amplified the effects of increased mistrust on both sides due to the shortage of cooperative mechanisms to reduce the misunderstandings. The Bush administration interpreted the test as evidence that China intended to neutralize U.S. military superiority by attacking vulnerable satellites used for imagery, targeting, missile defense, and many other purposes. But the test utilized technology that China had started exploring in response to Reagan’s Strategic Defense Initiative; it was the next logical step in a lengthy process of technology development more than a deliberate challenge to the United States in space.⁸⁸

China’s 2007 test of an anti-satellite (ASAT) weapon similar to ASAT tests conducted decades earlier by the superpowers did parallel its 1964 test of a nuclear weapon after years of nuclear arms racing and nuclear threats from the superpowers in symbolizing a deep commitment not to let technological inferiority leave China vulnerable to coercion or attack in space. The Bush administration’s ambitions for U.S. military space dominance, and Congress’ ban on space-related cooperation with China, threatened all aspects of China’s power because its space program had become a major driver for technological development and economic growth, as well as a source of political prestige. Eric Hagt argues that China went ahead with its own ASAT test after years of pressing for PAROS negotiations, not because it was a hypocrite but because it wanted to deter U.S. attacks on China’s growing number of space assets.⁸⁹ The Bush

administration's argument that new restrictions on space weapons were not needed because the United States was not in an arms race there with a peer competitor may have also convinced China to try a "peace through strength" strategy in this domain.

Even if neither side really had aggressive motives in space, both relied on worst-case assumptions, because the PLA's large role in China's space program was not transparent, key parts of U.S. space doctrine and spending were classified, and U.S.-China military-to-military interactions rarely occurred during the Bush administration. American proponents of space dominance used the Chinese ASAT test as a reason for the United States to redouble its efforts. A year later, the United States demonstrated how easily it could convert a missile defense interceptor into an anti-satellite weapon when it used one aboard an Aegis cruiser to shoot down a failed American spacecraft that posed an extremely small risk of becoming a public health problem when it fell back to earth.⁹⁰

Two proposals for cooperative steps to enhance space security also failed in 2008. The United States and its allies ridiculed the draft treaty on the Prevention of Placement of Weapons in Outer Space that Russia and China circulated at the CD because it would prohibit space-based missile defense, but not the ground-based direct-ascent ASAT weapon that China had just tested.⁹¹ The Code of Conduct drafted by the European Union looked equally one-sided because it defined responsible behavior in space to rule out debris-generating actions, unless undertaken to address urgent health and safety concerns.⁹²

The Obama Administration. The newly elected Obama administration responded to this deteriorating security environment by calling for a "reset" of U.S.-Russia relations, including a renewed commitment to nuclear arms control and disarmament. It also re-oriented U.S. proliferation policy from coercive counter-proliferation towards "strategic patience" with North Korea and negotiations based on NPT principles with Iran. With China, the United States had less of an arms control legacy to return to, and more concern about the military, economic, and political advances that China had made during the Bush years.

Obama administration officials disagreed amongst themselves and with influential members of Congress about how much and what type of security cooperation the United States should pursue with China, and what to offer in return. Key U.S. players not only wanted China to join future strategic arms reduction talks and accede to the US-Russian treaty banning all intermediate-range missiles, but also to follow international norms for maritime behavior, be more transparent about its intentions in space, and stop engaging in various types of cyber attacks. At the same time, they were reluctant to weigh seriously the merits of making a mutual NFU pledge with China, or explicitly acknowledge mutual nuclear vulnerability. They were unwilling to negotiate legally binding limits on missile defense, military space activities, or cyber operations. They were also unable to ratify the Comprehensive Test Ban Treaty or the Law of the Sea Convention.

Any of these steps would have reassured China that the Bush administration had been an aberration that delayed, but did not derail, progress toward a new global security context in which nuclear weapons were much less important in great power relations than they had been during the Cold War. That could have made China more receptive to U.S. arms control proposals. Despite the mutual frustration, though, more progress was made on nuclear, space,

and cyber cooperation than is recognized by Americans who insist that China is “just not interested” in arms control. Rather than proposing any such concrete measures, the Obama administration’s China policy offered an amorphous tacit bargain: it would not try to thwart China’s rise if China provided credible reassurance that its “growing global role will not come at the expense and security of others.”⁹³ Unfortunately, the United States and China had very different conceptions of credible reassurance.

The Obama administration tried to use an elevated and broadened strategic and economic dialogue between the two countries to reduce misunderstandings, increase transparency, build confidence, promote responsible behavior, and foster reciprocal restraint. To indicate openness to Chinese perspectives and concerns, it offered to discuss strategic stability “without any content on what that would require.”⁹⁴ Yet, each side had such different starting assumptions about security that their high-level dialogue was like “chickens talking with ducks.”⁹⁵

Discussions about nuclear deterrence, strategy, and arms control never got past basic issues of declaratory policy. The Obama administration’s nuclear posture review (NPR) tried to reassure China, and the world, that the United States was returning to a more restrained nuclear doctrine than its predecessor enunciated.⁹⁶ Yet, interagency debates, fueled in part by congressional opposition and allied concerns about major nuclear policy changes, limited how far the NPR went on questions of greatest interest to China. The 2010 NPR said that the “fundamental purpose” of U.S. nuclear weapons was to deter nuclear attack, leaving open other possible uses while promising to work towards a world in which that would be their “sole purpose.” It also added an important negative security assurance, that the United States would not use nuclear weapons first against NPT NWS in good standing, without ruling out first use against China, Russia, North Korea, and Iran.⁹⁷

China received much more attention in the 2010 NPR than it had in previous versions. Chinese experts were sensitive to implications in U.S. writing on strategic stability and arms control that their country was a “little Russia,” rather than a major power whose nuclear and security policies rested on very different premises from Russia’s. One such U.S. concern involved classical arms race instability--i.e., whether a wealthier China would race to catch up with the United States militarily. Yet China had a long-standing policy of not trying to match or outpace U.S. nuclear capabilities, not only because Chinese strategists believed that having the “minimum means of reprisal” would deter a nuclear attack, but also because they blamed arms racing for the Soviet Union’s collapse. Chinese experts worried more about other sources of instability, particularly that U.S. advances in missile defense and precision-guided conventional weapons would accelerate Chinese research on underlying technologies, like guidance systems, and on asymmetrical counter-measures, such as anti-ship ballistic missiles, and that China’s efforts to prevent a “science surprise” would provoke a U.S. counter-reaction.⁹⁸

Chinese experts agreed with language in the NPR about the importance of cooperative steps to avoid crisis instability. They assumed, however, that China’s “peaceful rise” would preclude the frequent, intense crises of the Cold War, and thought that adopting mutual NFU policies would obviate pressure for nuclear escalation.⁹⁹ At the same time, though, Chinese experts began to openly debate whether China should threaten to retaliate with nuclear weapons in the event of a U.S. precision conventional attack that compromised its nuclear deterrent or spread radioactive

contamination, even though that would violate China's categorical NFU pledge. Fiona Cunningham and Taylor Fravel argue that the Chinese government is using ambiguity to deter a type of attack that Chinese experts already consider highly unlikely because they do not want to waste money building more nuclear weapons to assure a survivable deterrent, but this reinforces American doubts about whether China's NFU pledge really applies in other circumstances, too.¹⁰⁰

Chinese arms control experts were intrigued by Obama's vision of a nuclear-free world, but skeptical for many reasons. Some questioned whether his main motive was to end shared nuclear risks or to enshrine U.S. hegemony by reducing nuclear arms and demanding greater transparency while refusing limits on vastly superior US conventional military power and missile defense. They noted that the modest reductions in New START would not decrease the threat to China because the United States was reassigning more nuclear submarines to the Asia-Pacific region. Given how hard it was to get Senate approval for a treaty whose biggest effect was to restore verification for a 1550 limit on deployed strategic warheads, Chinese experts doubted that the president could push through ratification for more significant reductions. They also saw a sharp contradiction between Obama's pledges to work toward a nuclear weapons-free world and his plan to spend \$180 billion over the next ten years rejuvenating the entire US nuclear triad and supporting infrastructure to ensure that the U.S. nuclear deterrent could last for many more decades.

Chinese officials in wanted to start a nuclear-focused Track 1 dialogue by getting the United States to acknowledge mutual vulnerability and discuss the stabilizing effects of a reciprocal NFU pledge. Their consistent emphasis on NFU caused their American counterparts to doubt that they would get the real story about China's nuclear doctrine from its diplomats and Ministry of Defense personnel. The Americans wanted senior Chinese officers from the Second Artillery, which operated China's land-based missiles, to participate in the dialogue because, as discussed above, U.S. experts often misinterpreted references to "limited deterrence" in Second Artillery training materials as evidence of a Chinese shift from a purely retaliatory nuclear posture to a "damage limitation" form of deterrence. Chinese political leaders, who establish doctrine and make key decisions for the military, were reluctant to send military officers with little experience interacting with foreigners to an official governmental dialogue. They also objected strenuously to U.S. suggestions that China reveal the exact number of current and planned nuclear weapons in its arsenal in the opening round of a Track 1 dialogue. Frustrated, the Obama administration decided in March 2011 not to participate in nuclear talks led by the Chinese Foreign Ministry and to let US officials continue attending an annual Track 1.5 dialogue on strategic nuclear relations only in a private capacity.¹⁰¹ The Track 1.5 Pacific Forum yielded some interesting ideas by the end of the Obama administration, such as equitable but asymmetric pledges by the United States to maintain the credibility of China's deterrent and by China to keep its nuclear arsenal small, but the two sides never managed to agree on the participants or agenda for a Track 1 nuclear dialogue.¹⁰²

The Obama administration did seriously consider officially acknowledging mutual nuclear vulnerability with China. Senior members knew this would mean a lot to their Chinese counterparts, and did not expect to incur big political costs at home or with allies by talking openly about something these officials accepted as a fact of life. Such a statement would also

make U.S. reassurance that missile defense was not meant to weaken China's deterrent more credible. Neither the uniformed military nor the civilian leaders at the Department of Defense objected. The main concern in interagency meetings was that the Chinese government would pocket the concession and provide nothing in return. Therefore, the Obama administration decided to use the prospect of eventually getting such an acknowledgment as an inducement for China to include senior military officials with nuclear responsibilities in strategic stability talks, something that never occurred.¹⁰³ Those military-to-military interactions that did occur during the Obama administration focused primarily on conventional confidence-building measures, such as maritime rules of the road and advanced notification for major military exercises.¹⁰⁴

Near the end of Obama's second term, his security team discussed making a NFU pledge as one of many options for advancing his Prague agenda. The president and vice president thought that the United States could safely take this step because they had high confidence that the U.S. military could deter and defend the United States and its allies against non-nuclear threats without resorting to nuclear weapons, but DOD voiced objections about alliance politics. The NFU option was dropped after a leak to the *Washington Post* prompted Japanese objections that China might misinterpret such a policy shift as evidence of decreased commitment to Japan's defense.¹⁰⁵ It is much more likely that Chinese officials would have welcomed an American NFU declaration as evidence that the United States finally agreed with them about the limited utility of nuclear threats, which would have made strategic stability talks more productive.

China did play a constructive role on several other nuclear risk reduction initiatives during the Obama years. It continued trying, without much success, to convince both North Korea and the United States to make reciprocal concessions. The Six-Party talks broke down shortly after Obama took office, possibly because South Korea had elected a hard-line president just before the Bush administration left office. China eventually persuaded North Korea to return to the table, but Kim Jong-il died before the Six-Party talks could resume. A tit-for-tat cycle ensued with North Korea conducting increasingly provocative satellite launch, nuclear weapon, and missile tests, which spurred U.N. sanctions and US-ROK military exercises, which led to more defiant actions by the DPRK and more missile defenses by the United States and Japan.

The United States criticized China for not using enough economic and political leverage to stop these North Korean activities, while China complained that the Obama administration's "strategic patience" policy refused to address North Korea's legitimate security concerns because it believed that sustained pressure would eventually cause regime collapse.¹⁰⁶ Secretary of State John Kerry tried to incentivize China to "crack down hard enough" to make North Korea's new leader give up his nuclear ambitions by suggesting that outcome would reduce the United States' need for a "robust forward leaning posture of defense."¹⁰⁷ Chinese experts worried not only that phased deployment of missile defense would eventually impact China's deterrent, but also that the same sensor network being developed to track and target in-coming missiles could also be used to facilitate conventional offensive strikes, including the type of disarming first strike discussed by Lieber and Press.¹⁰⁸ Nearly three years passed without North Korea conducting another nuclear test, with no effect on U.S. plans announced in early 2013 to increase the number of ground-based interceptors it had in Alaska and send another forward-based X-band radar to Japan. North Korea's January 2016 nuclear test, though, prompted South Korea to announce that

it would finally agree to host a U.S. theater-range missile defense system, including a radar that China feared could track its ICBMs and undermine its deterrent.¹⁰⁹

China participated in the Nuclear Security Summit process orchestrated by the Obama administration, gradually doing more to protect nuclear and radiological materials and prevent nuclear terrorism. It completed several joint projects with the United States, including establishing a nuclear security center of excellence in Beijing and converting a miniature neutron source research reactor from highly enriched uranium fuel to low enriched uranium. After being one of the more passive participants in the earlier summits, China had a “burst of activity” at the final summit in 2016, joining other countries which had already pledged to undertake various sets of steps known as “gift baskets,” and making a number of other commitments.¹¹⁰ That led to China playing an “outsized role” in a multinational project to replace HEU with LEU in a research reactor in Nigeria to ensure that a terrorist organization like Boko Haram could not steal weapons-grade material from a poorly guarded site.¹¹¹

Other forms of U.S.-China cooperation to reduce nuclear risks were constrained by congressional concerns that China might gain some type of military benefit or transfer U.S.-origin technology or material to a country like North Korea. The defense laboratories and facilities that control most of China’s weapons-usable fissile material and all of its nuclear weapons remained unable to formally participate in any nuclear security activities with their U.S. counterparts. Some members of Congress also opposed the 2015 renewal of a Reagan-era agreement that provided the legal basis for peaceful nuclear cooperation with China, including completion of a sale made in 2007 by Westinghouse of four advanced AP1000 reactors worth \$8 billion. They were concerned not only that China could use some of the technology transferred as a condition of that sale to improve its naval nuclear reactors, but also that China planned to build its own version of this design for export, taking market share away from the United States and potentially selling dual-use goods to North Korea or other proliferators.¹¹² These concerns led to policy changes by the Trump administration in October 2018 that significantly reduced U.S. nuclear trade with China, including a new presumption of denial for requests related to small modular reactors, new technology transfers, and entities competing for sales with U.S. firms.¹¹³

China also agreed to some modest transparency and confidence-building measures to provide reassurance about how it would use its rapidly advancing capabilities in two other strategic domains that Steinberg mentioned: the cybersphere and outer space. China, like Russia and a number of other non-Western countries, would prefer that international cooperation related to information and communication technologies (ICT) enhance “information security”—i.e., greater government control over both content and infrastructure in their territory.¹¹⁴ This led to many heated debates in multilateral fora with the United States and other countries that supported cooperation based on the free flow of ideas across borders, protections for privacy and intellectual property, and a multi-stakeholder approach to Internet governance. China participated in the process that produced agreement in the United Nations on some very high-level principles for ICTs, including that sovereignty applies to ICT activities and infrastructure inside a state, that international law is applicable in cyberspace, and that human rights should be respected there. Not surprisingly, though, China is much more likely to invoke the first principle while the United States is much more supportive of the other two.¹¹⁵

The most significant bilateral cybersecurity agreement was reached during President Xi Jinping's state visit to the United States in September 2015. The two leaders agreed that neither country would conduct or condone cyber-enabled theft of intellectual property, including trade secrets and other confidential business information, for the purpose of providing a competitive advantage to their own companies or commercial sectors.¹¹⁶ This commitment led to a notable decrease in economic cyber espionage by Chinese entities against U.S. firms that lasted at least through mid-2018, although that type of activity did not stop completely.¹¹⁷ The agreement did not, however, cover cyber espionage for intelligence or military purposes, something that both sides often do to better understand the other's capabilities.¹¹⁸

China responded to international opprobrium about its 2007 debris-generating ASAT test in several ways during the Obama years. Efforts to restore its reputation as a "responsible" space power started with self-restraint, including promising not to conduct that type of test again.¹¹⁹ Subsequent tests of the same interceptor used in the 2007 ASAT test were announced in advance, characterized by China as missile defense tests, and done against suborbital targets in ways that did not generate long-lasting space debris.¹²⁰ China declined to support the European Union's efforts to get international agreement on a Code of Conduct for Outer Space Activities because it was not included in the EU's drafting process. It did participate constructively, though, in both the U.N. Group of Governmental Experts on transparency and confidence building measures in space and the U.N. Committee on Peaceful Uses of Outer Space's Working Group on the Long-term Sustainability (LTS) of Outer Space Activities--reportedly even taking Russia to task for blocking consensus on a report recommending that all space-faring countries follow additional best practice guidelines that members of the LTS working group had agreed on in 2018.¹²¹

Those members of the Obama administration and Congress who were most concerned about China becoming a near-peer competitor placed no stock in Chinese space diplomacy. They assessed that China's so-called missile defense tests were really intended to advance its ASAT capabilities (accusations that the Chinese and Russians had made about U.S. missile defense tests for decades). They also asserted that the Obama administration's efforts to induce reciprocal restraint from China and Russia regarding the development of offensive military space capabilities had been an abject failure, necessitating a return by the United States to the more offensive orientation toward space security pursued by the Bush administration. A top level strategic space portfolio in the summer of 2014 review led to a partial re-orientation of the Obama administration's space security strategy, with increased funding for capabilities to defend U.S. satellites and attack space assets used by adversaries to gain a military advantage. The Trump administration has taken this reorientation much further, including by establishing a Space Force as a first step toward a new military service, and reviving efforts to deploy missile defense interceptors in space, which (if it ever became economically and technologically feasible) might enable boost-phase defense against ICBMs launched from the interior of China.

Viewing China's advances in space in the context of choices it has made about nuclear weapons suggests that the United States may be over-reacting because it does not understand China's motives or intentions. One oft-cited example of threatening Chinese advances in space is work on maneuvering satellites and other technologies that could be used for legitimate purposes, like servicing a satellite on orbit or removing space debris, and that also have potential ASAT applications. Another involves a 2013 launch of a high altitude rocket for what China called a

“scientific mission,” which U.S. officials consider a test of technology that could someday be used to destroy extremely important and expensive satellites that were previously considered beyond the reach of potential adversaries. Given that the United States already has, or is actively working on, comparable technologies, though, both programs could be intended primarily to explore what is possible, avoid “technological surprise,” and enhance China’s status as an advanced space power, rather than being dedicated weapons-development programs. To the extent that U.S. military mission statements about being able to control who can use space for what purpose have convinced Chinese leaders that they need to be able to hold U.S. space assets at risk in order to deter U.S. attacks on Chinese satellites, the nuclear example suggests that China could be satisfied with a relatively limited ASAT capability used only for retaliatory purposes.¹²²

There are some tantalizing hints that the space component of the Obama administration’s strategic stability dialogue with China made some progress along these lines before being cut short by the 2016 election. The first meeting of the official U.S.-China civil space dialogue occurred in June 2015, followed by a Space Security Exchange in May 2016. That timing indicates that the Obama administration decided to move away from its original policy of reciprocal restraint in space before discussing in any detail with China what reciprocal restraint meant to both sides.

The U.S. official responsible for space security had had some earlier informal conversations with his Chinese counterpart on the margins of multilateral meetings, trying to interest him in the types of space transparency and confidence building measures (TCBMs) favored by the Obama administration. In late 2014, the Chinese finally implemented one such measure by providing the telephone number for a point of contact at the Beijing Institute for Telecommunications and Tracking to the part of the U.S. military that provides warnings when its space situational awareness system indicates an elevated risk of collision between two space objects.¹²³ The Joint Space Operations Center (JSPOC) still did not provide China with the same level of detailed analytical information it gives US and allied satellite operators so they can make a more informed decision about whether the risk of a collision that could destroy their satellite and generate lots of long-lasting debris outweighed the cost of moving the satellite into a safer position. But at least JSPOC no longer had to transmit notifications through the State Department and the Chinese Ministry of Foreign Affairs to reach the Chinese space agency.

This small step led to conversations about other ways the two countries might cooperate to minimize space debris. The United States proposed making a joint statement that the two countries would refrain from kinetic-energy ASAT tests and other military activities likely to create long-lived space debris. The PLA was reportedly interested in reducing space debris because it is increasingly reliant on satellites. It was uncertain, though, about pledging not to conduct debris-generating ASAT activities because the U.S. military is better prepared to disable or destroy a satellite without smashing it into thousands of pieces, and because the United States was not willing to also rule out using satellites for purposes, like comprehensive missile defense, that China found particularly threatening. The most that could be done in the remaining months of the Obama administration was a vague commitment coming out of the September 2016 presidential visit that space debris was a serious problem and the two sides would intensify cooperation to address the challenge. The PLA eventually decided to support such a joint

declaration, despite the disadvantages for them. The Chinese government reached out to the Trump administration in the spring of 2017, but top Trump officials were not interested.¹²⁴

Conclusion

This review should put to rest claims that China is categorically uninterested in arms control or other forms of cooperation to reduce nuclear risks. Some American officials and experts who make that assertion are opposed to arms control themselves but want to blame China and Russia for the absence of agreements. Others are familiar with, and supportive of U.S.-Russian arms control agreements like INF and New START, but know little about what China has done in a wide range of multilateral arms control forums. Both groups also overlook or discount the many ways in which China has consistently demonstrated more nuclear self-control than either the United States or Russia.

It would be more accurate to say that China, like other countries, is interested in arms control when its leaders think that the political, military, and economic benefits of a particular measure outweigh the costs and risks, *and* that they make those calculations using very different assumptions about international relations, nuclear deterrence, and arms control than their American or Russian counterparts do. In other words, the debate about whether China is becoming more like other great powers or will always be different for cultural reasons is a false dichotomy because all countries make decisions about what mix of competition and cooperation will best advance their interests using whatever strategic logic or logics have greatest sway over policymakers' calculations at that time.

The assumptions that have informed Chinese views on arms control, nonproliferation, and strategic stability have been much more consistent over time than the strategic logics that have shaped U.S. policies on these issues. Chinese positions on specific issues, like the NPT and the CTBT, have changed when the context has shifted in ways that make cooperation more attractive from their point of view. Engagement and positive inducements have historically increased Chinese interest in cooperation more than threats and sanctions have, which explains why the Chinese think that the former will also be more effective than the latter with countries like Iran and North Korea. The most important impetus for Chinese shifts towards greater cooperation, though, have been arms control advances made by Washington and Moscow that seem consistent with Chinese assumptions about nuclear weapons and international relations, and that make Chinese leaders feel that they need to do more, too, to burnish their image as the most responsible nuclear weapons state.

The Trump administration has taken a number of actions that make the context much less conducive to constructive engagement with China on arms control, nonproliferation, and strategic stability. Its repudiation of the nuclear deal with Iran, the Paris climate agreement, and the INF treaty make the United States seem like an unreliable negotiating partner that cannot be trusted to honor its commitments. Its depiction of China as a strategic adversary and great power competition as the central problem for U.S. national security strategy frames all interactions between these two countries in zero-sum terms. And, its decision to launch a trade war with China greatly reduces whatever moderating effects economic interdependence have had on the

U.S.-China security relationship. The two countries may still engage in transactional cooperation on issues like North Korea's nuclear program when their interests are aligned, but even that will become more difficult if the United States refuses to provide any sanctions relief in return for North Korea's suspension of nuclear and long-range missile tests until it acquiesces to the United States' definition of complete denuclearization.

Over time, though, the economic costs and security risks of unconstrained competition are likely to become increasingly obvious to leaders on both sides. When the context becomes more conducive to cooperation again, progress will be much more likely if Americans have used the intervening time to learn about the underlying assumptions that shape Chinese preferences and policy choices. U.S. policymakers do not need to embrace these ideas themselves, but they do need to take them seriously as the starting point for Chinese thinking about what forms of cooperation would reduce nuclear risks and enhance strategic stability. And, if U.S. officials want their Chinese counterparts to provide more reassurance about how China intends to use its nuclear, space, and cyber capabilities, then they need to provide more meaningful reassurance on the issues of greatest concern to China. Chinese interest in arms control would increase if U.S. officials accepted mutual vulnerability with China as an enduring fact of life, clarified what if any circumstances would be extreme enough for the United States to use nuclear weapons first, and took concrete actions to increase Chinese confidence that the evolution of U.S. missile defense will neither erode China's nuclear deterrent nor delude American leaders into taking big risks in Asia because they no longer care about minimizing the risk of inadvertent nuclear war. Lastly, the United States and China should seek out small steps that each views as beneficial according to its own strategic logic. If they build confidence by honoring those commitments over time, they may gradually be able to cooperate in more ambitious ways despite continued differences in interests and ideas about international security.

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¹ Elbridge Colby, quoted in "China's Nuclear Submarine Plans Raise Concerns over Bilateral Dialogue," *Congressional Quarterly News*, November 3, 2014.

² Lt. Gen Frank G. Klotz and Oliver Bloom, "China's Nuclear Weapons and the Prospects for Multilateral Arms Control," *Strategic Studies Quarterly* (Winter 2013): 7, http://www.airpower.au.af.mil/apjinternational/apj-c/2014/2014-3/2014_3_02_klotz-E.pdf.

³ Richard Weitz, "When it Comes to Nonproliferation, China has been a 'Free Rider,'" *World Politics Review*, August 19, 2014. <https://www.worldpoliticsreview.com/articles/14010/when-it-comes-to-nonproliferation-china-has-been-a-free-rider>.

⁴ James B. Steinberg, "Administration's Vision of the U.S.-China Relationship," Keynote Address at the Center for a New American Security, Washington, D.C., September 24, 2009, <https://2009-2017.state.gov/s/d/former/steinberg/remarks/2009/169332.htm>.

⁵ Li Bin, "Differences between Chinese and U.S. Nuclear Thinking and their Origins," in *Understanding Chinese Nuclear Thinking*, eds. Li Bin and Tong Zhao (Washington, D.C.: The Carnegie Endowment for International Peace, 2016), 3-18.

⁶ Gregory Kulacki and Jeffrey G. Lewis, "A Place for One's Mat: China's Space Program, 1956-2003," American Academy of Arts and Sciences, 2009.

⁷ Office of the Secretary of Defense, *Nuclear Posture Review*, February 2018, vii.

⁸ Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, MA: MIT Press, 2007).

⁹ Xu Weidi, "China's Security Environment and the Role of Nuclear Weapons," in *Understanding Chinese Nuclear Thinking*, eds. Li Bin and Tong Zhao (Washington, D.C.: The Carnegie Endowment for International Peace, 2016), 19-43.

¹⁰ Li Bin, "An Analysis of China's Nuclear Strategy," *World Economics and Politics* 9 (2006): 16-22.

¹¹ For the contrary view, see Alastair Iain Johnson, "China's New 'Old thinking': The Concept of Limited Deterrence," *International Security* 20, no. 3 (Winter 1995/96): 5-42.

¹² Nancy W. Gallagher, "Rethinking U.S.-China Security Cooperation," CISSM working paper, August 2014, <http://www.cissm.umd.edu/publications/classifying-cyber-events-proposed-taxonomy>.

¹³ M. Taylor Fravel and Evan S. Medeiros, "China's Search for Assured Retaliation," *International Security* 35, no. 2 (Fall 2010): 76-77.

¹⁴ Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation," *International Security* 40, no. 2 (Fall 2015): 13-14.

¹⁵ Tong Zhao and Li Bin, "The Underappreciated Risks of Entanglement: A Chinese Perspective," in *Entanglement*, ed. James A. Acton (The Carnegie Endowment for International Peace, 2017), 47-75.

¹⁶ Elbridge A. Colby and Michael S. Gerson, eds., *Strategic Stability: Contending Interpretations* (Carlisle, PA: Strategic Studies Institute, 2013).

¹⁷ Thomas J. Christensen, "Fostering Stability or Creating a Monster? The Rise of China and U.S. Policy toward East Asia," *International Security* 31, no. 1 (Summer 2006): 81-126.

¹⁸ Lu Yin, "Reflections on Strategic Stability," in *Understanding Chinese Nuclear Thinking*, eds. Li Bin and Tong Zhao (Washington, D.C.: The Carnegie Endowment for International Peace, 2016), 127-142.

¹⁹ Lora Saalman, "Placing a Renminbi Sign on Strategic Stability and Nuclear Reductions," in *Strategic Stability: Contending Interpretations*, eds. Elbridge A. Colby and Michael S. Gerson (Carlisle, PA: Strategic Studies Institute, 2013), 350-355.

²⁰ For an early critique of the "peculiarly American ideology" that an open world is a safe world and that U.S. efforts to make Soviet military activities more transparent are not threatening to the USSR, but are in both countries' interests, see Hedley Bull, *The Control of the Arms Race*, 2nd ed. (New York: Praeger, 1965), 191.

²¹ Kevin Pollpeter, *U.S.-China Security Management: Assessing the Military-to-Military Relationship* (Santa Monica, CA: RAND Corporation, 2004), xiv.

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- ²² David Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects* (Berkeley: University of California Press, 2002), 347.
- ²³ The glossary is available at <http://pircenter.org/media/content/files/13/14313989580.pdf>.
- ²⁴ Gregory Kulacki, "Chinese Perspectives on Transparency and Security," Union of Concerned Scientists, January 13, 2003.
- ²⁵ Lora Saalman, "How Chinese Analysts View Arms Control, Disarmament, and Nuclear Deterrence after the Cold War," in *Engaging China and Russia on Nuclear Disarmament*, eds. Cristina Hansell and William C. Potter (Monterey Institute of International Studies: April 2009), 58.
- ²⁶ Fan Jishe, "Nuclear Nonproliferation: China's Thinking and Practices," in *Understanding Chinese Nuclear Thinking*, eds. Li Bin and Tong Zhao (Washington, D.C.: The Carnegie Endowment for International Peace, 2016), 197.
- ²⁷ William Burr and Jeffrey Richelson, "Whether to 'Strangle the Baby in the Cradle': The United States and the Chinese Nuclear Program, 1960-64," *International Security* 25, no. 3 (Winter 2000-2001): 71.
- ²⁸ Statement by the Government of the People's Republic of China," *People's Daily*, October 17, 1964.
- ²⁹ Joseph Tse-Hei Lee, "China's Third World Policy from the Maoist Era to the Present," *Global Asia Journal*, paper 3 (2008), 5, http://digitalcommons.pace.edu/global_asia_journal.
- ³⁰ Fan Jishe, "Nuclear Nonproliferation," 198-200; and Guo Xiaobing, "China's Understanding of the Threat of Proliferation," in *Understanding Chinese Nuclear Thinking*, eds. Li Bin and Tong Zhao (Washington, D.C.: The Carnegie Endowment for International Peace, 2016), 172.
- ³¹ Fravel and Medeiros, "China's Search," 72; and Alastair Iain Johnston, "Learning Versus Adaptation: Explaining Change in Chinese Arms Control Policy in the 1980s and 1990s," *The China Journal* 35 (January 1996): 38-43.
- ³² Wang Jia, "China's Views on the Road Map to Nuclear Disarmament," in *Understanding Chinese Nuclear Thinking*, eds. Li Bin and Tong Zhao (Washington, D.C.: The Carnegie Endowment for International Peace, 2016), 106.
- ³³ Zhenqiang Pan, "A Study of China's No-First-Use Policy on Nuclear Weapons," *Journal for Peace and Nuclear Disarmament* 1, no. 1 (2018): 126.
- ³⁴ Hui Zhang, "Why China Stopped Making Fissile Material for Nukes," *The Bulletin of Atomic Scientists*, March 15, 2018.
- ³⁵ Deng Xiaoping speech to Central Military Commission in 1985, quoted in Fan Jishe, "Nuclear Nonproliferation," 201.
- ³⁶ Kulacki, "Chinese Perspectives on Transparency and Security."
- ³⁷ Fan Jishe, "Nuclear Nonproliferation," 200-204.
- ³⁸ Evan S. Medeiros, *Reluctant Restraint* (Palo Alto, CA: Stanford University Press, 2007), 71-73.
- ³⁹ Strobe Talbott, *Deadly Gambits* (New York: Vintage Books, 1985), 323.
- ⁴⁰ Nie Hongyi, "Explaining Chinese Solutions to Territorial Disputes," *Journal of International Politics* 4, no. 2 (December 2009): 487-523.
- ⁴¹ Ming-Yen Tsai, *From Adversaries to Partners? Chinese and Russian Military Cooperation after the Cold War* (Westport, CT: Praeger, 2003), 98.
- ⁴² Ashton B. Carter, William J. Perry, and John D. Steinbruner, *A New Concept of Cooperative Security* (Washington, D.C.: The Brookings Institution, 1992).
- ⁴³ Harry Harding, "Cooperative Security in the Asia-Pacific Region," in *Global Engagement*, ed. Janne E. Nolan (Washington, D.C.: Brookings, 1994), 443.
- ⁴⁴ Nancy Prindle, "The U.S.-China Lab-to-Lab Technical Exchange Program," *The Nonproliferation Review* (Spring-Summer 1998): 111-118.
- ⁴⁵ Kurt Campbell and Richard Weitz, "The Limits of U.S.-China Military Cooperation: Lessons from 1995-1999," *The Washington Quarterly* 29, no. 1 (Winter 2005-2006): 170.
- ⁴⁶ David Finkelstein and Jonathan Unangst, "Engaging DoD: Chinese Perspectives on Military Relations with the United States," CRM99-0046.90 (Arlington, VA: CNA Corporation, 1999); Pollpeter, *U.S.-China Security Management*.
- ⁴⁷ The United States insisted it was an accident, but China believed, with good reason, that it was not. See John Sweeney, Jens Holsoe, and Ed Vulliamy, "NATO Bombed Chinese Deliberately," *The Guardian*, October 16, 1999. <https://www.theguardian.com/world/1999/oct/17/balkans>
- ⁴⁸ Shambaugh, *Modernizing China's Military*, 343.
- ⁴⁹ Shambaugh, *Modernizing China's Military*, 345.
- ⁵⁰ General John M. Shalikashvili, "U.S.-China Engagement: The Role of Military-to-Military Contacts," speech at PLA National Defense University, May 14, 1997.

-
- ⁵¹ Jane Perlez, “Mindful of China, U.S. Agrees to Weapons Deal for Taiwan,” *New York Times*, April 18, 2000. <https://www.nytimes.com/2000/04/18/world/mindful-of-china-us-agrees-to-weapons-deal-for-taiwan.html>.
- ⁵² Campbell and Weitz, “The Limits,” 182-183.
- ⁵³ Bill Gertz, “Military Exchange with Beijing Raises Security Concerns,” *Washington Times*, February 19, 1999.
- ⁵⁴ Thomas J. Christensen, “Posing Problems without Catching Up: China’s Rise and Challenges for U.S. Security,” *International Security* 25, no. 4 (Spring 2001): 8.
- ⁵⁵ Robert D. Lamb, “Satellites, Security and Scandal: Understanding the Politics of Export Control,” CISSM working paper (January 2005).
- ⁵⁶ Madelyn Crendon, remarks at Brookings Institution Panel “Falling Apart: The Politics of New START and Strategic Modernization,” January 7, 2019, 38 in transcript at https://www.brookings.edu/wp-content/uploads/2019/01/fp_20190107_new_start_transcript.pdf.
- ⁵⁷ Xiangli Sun, “Implication of a Comprehensive Test Ban Treaty for China’s Security Policy,” Stanford University Center for International Security and Arms Control, June 1997.
- ⁵⁸ Johnston, “Learning versus Adaptation.”
- ⁵⁹ Xiangli Sun, “Implications of a Comprehensive Test Ban Treaty,” 3-4.
- ⁶⁰ Zao Yunhua, “China and the CTBT Negotiations,” Stanford University Center for International Security and Arms Control, December 1998, 6.
- ⁶¹ Xiangli Sun, “Implications of a Comprehensive Test Ban Treaty,” 11.
- ⁶² Zou Yunhua, “China and the CTBT Negotiations,” 26-30.
- ⁶³ Wu Riqiang, remarks on panel entitled “Why is China Modernizing Its Nuclear Arsenal?” Carnegie International Nuclear Policy Conference, March 24, 2015.
- ⁶⁴ Charles Glaser and Steve Fetter, “National Missile Defense and the Future of U.S. Nuclear Weapons Policy,” *International Security* 26, no. 1 (Summer 2001): 40-92.
- ⁶⁵ Missile Defense Agency Director General Kadish, quoted in Steven A. Hildreth, “Missile Defense: The Current Debate,” CRS report RL311 (updated July 19, 2005). 4.
- ⁶⁶ This is credible because China ratified the CWC immediately after the United States did on April 25, 1997.
- ⁶⁷ Excerpts from classified Nuclear Posture Review provided to Congress on December 31, 2001, <https://fas.org/wp-content/uploads/media/Excerpts-of-Classified-Nuclear-Posture-Review.pdf>.
- ⁶⁸ Chinese government official quoted in Hui Zhang, “China and a Fissile Material Cutoff Treaty,” *Journal of Nuclear Material Management* 30, no. 4 (Summer 2002): 54.
- ⁶⁹ Steven Miller, “Skepticism Triumphant: The Bush Administration and the Waning of Arms Control,” *La Revue Internationale et Strategique* (May 2003). <https://www.belfercenter.org/publication/skepticism-triumphant-bush-administration-and-waning-arms-control>.
- ⁷⁰ Michael O’Hanlon, “Double Talk on Missile Defense,” Brookings Op Ed, July 31, 2001.
- ⁷¹ Nancy W. Gallagher and John D. Steinbruner, *Reconsidering the Rules for Space Security*, American Academy of Arts and Sciences (2008), http://www.amacad.org/publications/space_security.pdf.
- ⁷² Robert B. Zoellick, “Whither China: From Membership to Responsibility?” remarks to National Committee on US-China Relations, New York City, September 21, 2005.
- ⁷³ Fu Ying, “The Korean Nuclear Issue: Past, Present, and Future,” John L. Thornton China Center at Brookings Strategy Paper 3, May 2017.
- ⁷⁴ Jonathan D. Pollack, *No Exit: North Korea, Nuclear Weapons, and International Security* (London: International Institute for Strategic Studies, 2011), 133-156.
- ⁷⁵ Jim VandeHei and Dafna Linzer, “U.S., India Reach Deal on Nuclear Cooperation,” *Washington Post*, March 3, 2006. <http://www.washingtonpost.com/wp-dyn/content/article/2006/03/02/AR2006030200183.html>.
- ⁷⁶ Jagannath P. Panda, “China’s Posture on the Indo-US Nuclear Deal,” Institute for Defence Analyses and Studies, October 10, 2007, https://idsa.in/idsastrategiccomments/ChinasPostureontheIndoUSNuclearDeal_JPPanda_101007.
- ⁷⁷ Saalman, “How Chinese Analysts View Arms Control,” 60.
- ⁷⁸ Mark J. Valencia, “The Proliferation Security Initiative: A Glass Half Full,” *Arms Control Today* (June 2007), https://www.armscontrol.org/act/2007_06/Valencia.
- ⁷⁹ Patrick E. Tyler, “No Chemical Weapons Aboard China Ship,” *The New York Times*, September 7, 1993. 4.
- ⁸⁰ Statement by Ambassador Robert T. Grey, Jr. to the CD, Geneva, February 15, 2001.
- ⁸¹ “Fissile Material Negotiations in the Conference on Disarmament,” UNIDIR Briefing Paper, version 2, updated February 2011.
- ⁸² Joan Johnson-Freese, *Space as a Strategic Asset* (New York: Columbia University Press, 2007), 197-232.
- ⁸³ Zhang, “China and a Fissile Material Cutoff Treaty,” 51.
- ⁸⁴ Keir A. Lieber and Daryl Press, “The Rise of U.S. Nuclear Primacy,” *Foreign Affairs* (March/April 2006): 42-54.

-
- ⁸⁵ Lieber and Press, “The Rise of U.S. Nuclear Primacy,” 54.
- ⁸⁶ Li Bin and Nie Hongyi, “An Investigation of China-U.S. Strategic Stability,” originally published in Chinese in *World Economics and Politics*, no. 2 (2008). Translation by Gregory Kulacki is available at <https://www.ucsusa.org/sites/default/files/legacy/assets/documents/nwgs/Li-and-Nie-translation-final-5-22-09.pdf>.
- ⁸⁷ Li Bin and Nie Hongyi, “An Investigation of China-U.S. Strategic Stability,” 9.
- ⁸⁸ Kulacki and Lewis, “A Place for One’s Mat.”
- ⁸⁹ Eric Hagt, “China’s ASAT Test: Strategic Response,” *China Security* (Winter 2007): 31-51.
- ⁹⁰ Noah Shachtman, “Experts Scoff at Sat Shootdown Rationale,” *Wired.com* (February 15, 2008). <https://www.wired.com/2008/02/fishy-rationale/>
- ⁹¹ Find the document at <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G08/604/02/PDF/G0860402.pdf?OpenElement>
- ⁹² Council of the European Union, “Council Conclusions and Draft Code of Conduct for Outer Space Activities,” Brussels, 3 December 2008, 16560/08, <http://register.consilium.europa.eu/pdf/en/08/st17/st17175.en08.pdf>.
- ⁹³ Steinberg, “Administration’s Vision of the U.S.-China Relationship.”
- ⁹⁴ Brad Roberts, former Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy, in presentation at the Stimson Center on August 26, 2013, quoted in Gregory Kulacki, “U.S. Shares Responsibility for Lack of Dialog with China on Nuclear Weapons,” *Allthingsnuclear.org*, October 16, 2013.
- ⁹⁵ Gregory Kulacki, “Chickens Talking with Ducks: The U.S.-Chinese Nuclear Dialogue,” *Arms Control Today* (October 2011). 15-20.
- ⁹⁶ Department of Defense, “Nuclear Posture Review Report,” April 2010, https://dod.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf.
- ⁹⁷ “Nuclear Posture Review Report,” April 2010. 15-16.
- ⁹⁸ Quoted in Lora Saalman, *China and the U.S. Nuclear Posture Review*, Carnegie-Tsinghua Center for Global Policy, February 2011, 25.
- ⁹⁹ Saalman, *China and the U.S. Nuclear Posture Review*, 6-7.
- ¹⁰⁰ Cunningham and Fravel, “Assuring Assured Retaliation,” 21.
- ¹⁰¹ Gregory Kulacki, “Chickens Talking with Ducks” and Ralph A. Cossa, et al., “US-China Strategic Nuclear Relations: Time to Move to Track 1 Dialogue,” *Pacific Forum Issues & Insights*, 15:7, 2015.
- ¹⁰² Christopher Twomey, et al., “The U.S.-China Strategic Dialogue Phase IX report,” Naval Postgraduate School and Center for International and Strategic Studies, December 2016.
- ¹⁰³ Private communication with senior Obama administration official, October 17, 2014.
- ¹⁰⁴ U.S. Fact Sheet for President Obama’s Bilateral Meeting with President Xi Jinping, September 3, 2016.
- ¹⁰⁵ Tomoko Kurokawa, “Determinants of the Nuclear Policy Options in the Obama Administration: An Interview with Jon Wolfsthal,” *Journal for Peace and Nuclear Disarmament* 1, no. 2 (2018): 500-503.
- ¹⁰⁶ Fu Ying, “The Korean Nuclear Issue,” 20.
- ¹⁰⁷ Michael R. Gordon, “Kerry in China to Seek Help in Korea Crisis,” *The New York Times*, April 13, 2013. 1.
- ¹⁰⁸ Christopher P. Twomey and Michael S. Chase, “Chinese Attitudes towards Missile Defense,” in *Regional Missile Defense from a Global Perspective*, eds. Catherine M. Kelleher and Peter Dombrowski (Palo Alto, CA: Stanford University Press, 2015), 202-204.
- ¹⁰⁹ Jaganath Sankaran and Bryan L. Fearey, “Missile Defense and Strategic Stability: Terminal High-altitude Area Defense (THAAD) in South Korea,” *Contemporary Security Policy* 38, no. 3 (2017): 321-344.
- ¹¹⁰ Hui Zhang, “China’s Nuclear Security: Progress, Challenges, and Next Steps,” Project on Managing the Atom Report, March 2016, <https://www.belfercenter.org/sites/default/files/files/publication/Chinas%20Nuclear%20Security-Web.pdf>; and “China Makes Significant Nuclear Security Pledges at 2016 Summit,” Nuclear Security Matters blog post, April 8, 2016, <https://www.belfercenter.org/publication/china-makes-significant-nuclear-security-pledges-2016-summit>.
- ¹¹¹ Aaron Mehta, “How the U.S. and China Cooperated to Get Nuclear Material Out of Nigeria--and Away from Terrorist Groups,” *Defense News*, January 14, 2019. <https://www.defensenews.com/news/pentagon-congress/2019/01/14/how-the-us-and-china-collaborated-to-get-nuclear-material-out-of-nigeria-and-away-from-terrorist-groups/>.
- ¹¹² Mark Holt and Mary Beth D. Nitikin, “U.S.-China Nuclear Cooperation Agreement,” Congressional Research Service, May 6, 2015.
- ¹¹³ Kelsey Davenport, “U.S. Restricts Nuclear Trade with China,” *Arms Control Today*, November 2018. <https://www.armscontrol.org/act/2018-11/news/us-restricts-nuclear-trade-china>.

¹¹⁴ See, for example, the informal translation of the April 30, 2015 agreement between Russia and China on “Cooperation in the Field of International Information Security” in Annex 2 of Theresa Hitchens and Nilsu Goren, “International Cyber Information Sharing Agreements,” CISSM Report, October 2017.

¹¹⁵ For a more extensive analysis of agreements reached and controversies unresolved by the U.N. Group of Governmental Experts in the Field of Information and Telecommunications, see Theresa Hitchens and Nancy Gallagher, “Building Confidence in the Cybersphere: A Path to Multilateral Progress,” *Journal of Cyber Policy* 4, no. 1 (April 2019): 4-21.

¹¹⁶ FACT SHEET: President Xi Jinping’s State Visit to the United States, September 25, 2015.

¹¹⁷ “Redline Drawn: China Recalculates its Use of Cyber Espionage,” Fireeye Special Report, June 2016; and National Counterintelligence and Security Center, “Foreign Economic Espionage in Cyberspace,” <https://www.dni.gov/files/NCSC/documents/news/20180724-economic-espionage-pub.pdf>.

¹¹⁸ Herb Lin, “What the National Counterintelligence and Security Center Really Said about Chinese Economic Espionage,” *Lawfare*, July 31, 2018. <https://www.lawfareblog.com/what-national-counterintelligence-and-security-center-really-said-about-chinese-economic-espionage>.

¹¹⁹ Dingli Shen, “A Chinese Perspective on China-United States Cooperation in Space,” *Space and Defense* (Winter 2009): 72.

¹²⁰ Brian Weeden, “Through a Glass Darkly: Chinese, American, and Russian Anti-satellite Testing in Space,” Secure World Foundation, March 17, 2014.

¹²¹ Theresa Hitchens, “Forwarding Multilateral Space Governance,” CISSM Working Paper, August 2018.

¹²² For a critique of alarmist U.S. interpretations of Chinese views on military uses of space that is based on an analysis of the textbook used to train soldiers and officers responsible for China’s nuclear and conventional missile forces, see Gregory Kulacki, “An Authoritative Source on China’s Military Space Strategy,” Union of Concerned Scientists, March 2014.

¹²³ Frank Rose, “Safeguarding the Heavens: The United States and the Future of Norms of Behavior in Outer Space,” Brookings Foreign Policy Brief, June 2018.

¹²⁴ Personal communication with former senior Obama administration official, October 16, 2018.