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North East Asia: A Nuclear Gordian Knot?

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April 2009

Executive Summary

Northeast Asia is not a tranquil region. Relationships characterised by trust and confidence are scarce. Moreover, the scars of the recent past co-exist with sensitivities entrenched by centuries of experience.

Nuclear weapons have been an essential part of the strategic culture and of the fabric of security in Northeast Asia since 1945. Even though its monopoly of these weapons was short-lived, the US came quickly to, and still holds, the view that "because of their immense destructive power, nuclear weapons deter in ways that simply cannot be duplicated by other weapons', and was prepared to lean heavily on the Bomb to support its posture of entering into demanding security obligations to states on the far side of the Atlantic and Pacific oceans. Nuclear weapons and long-range means of delivery compensated for distance and geography, and for imbalances in available conventional forces. Nuclear postures also supported the preference to protect the very selective possession of these weapons.

China's decision to acquire the Bomb probably reflected the judgement that recognition and acceptance as a major world power could otherwise remain out of reach. In addition, China repeatedly encountered attempts by the US to wield its nuclear capability coercively and that countervailing nuclear assurances from the Soviet Union were unreliable, ineffective and, ultimately, politically intolerable. China has never asked as much of the Bomb as the United States has. China gave an unqualified pledge of no-first-use of nuclear weapons on the day it became a nuclear weapon state and its arsenal is broadly consistent with a posture of minimal deterrence.

The intent to engineer further major reductions in nuclear arsenals en route to the abolition of these weapons needs to be fully cognizant that, particularly in Northeast Asia, this course is not without risk. In the current and foreseeable regional circumstances, a number of bilateral relationships have characteristics that could give rise to the sort of acute anxieties that would actually trigger interest in nuclear weapons, and do so in countries with relatively strong capabilities to acquire them.

The situation on the Korean peninsula recommends itself as the necessary starting point. This matter is urgent because the peninsula has provided the most recent instance of nuclear proliferation with the potential to ignite or re-ignite similar instincts in neighbouring Japan and the ROK. In addition, however, the peninsula constitutes a rich example of the interwoven nuclear and conventional capabilities,

postures and policies that compromise the 'fabric' of security. Extracting the Bomb from the security equation on the Korean peninsula can be expected to offer lessons to guide approaches to other complex situations, both in Northeast Asia and elsewhere.

Introduction

Nuclear weapons have been an essential part of the strategic culture of North East Asia since 1945. Apart from their first (and only) use in anger against Japan in August 1945, the North Pacific witnessed numerous US atmospheric tests as it refined its fission and fusion bomb technologies. Nuclear weapons have, of course, been a relatively invisible component of the military posture of the states concerned. Nuclear weapons have always been subject to uniquely restrictive arrangements in respect of their physical security and authorisation for their movement, deployment and use. Unlike conventional military systems that are frequently put on display and tested to send political signals, the presence of nuclear weapons is usually left to be inferred from the presence of their delivery systems, highly secure storage facilities and, perhaps, the conduct of routines or training peculiar to these special weapons. This low profile has been underscored by what has happened to the most visible aspect of these weapons. Today, the most recent photograph of the iconic mushroom cloud—should Beijing be willing to share it—will be nearly 30 years old (China conducted the last atmospheric test in October 1980).

This comparative invisibility almost certainly belies the pervasive influence these weapons have had on the character of security arrangements in Northeast Asia (as well as Europe and elsewhere). It is worth contemplating that in the years immediately after WWII, the United States both promptly demobilised its immense wartime military formations and assumed demanding security obligations to a large number of states on the far side of the Atlantic and Pacific oceans. These arrangements defined the post war international order, and endure to this day, but it would not be going too far to suggest that Washington could not have contemplated these arrangements in the absence of nuclear weapons and the capacity to deliver them over very long distances. Even though its monopoly of these weapons was short-lived, the US came quickly to, and still holds, the view that "because of their immense destructive power, nuclear weapons deter in ways that simply cannot be duplicated by other weapons", and was prepared to lean heavily on the Bomb to underpin its security assurances to distant allies.[1] Nuclear disarmament is not simply a matter of gingerly extracting nuclear weapons from the extant mosaic of military capabilities and security postures that exist in or which could be brought to bear in the region and expecting everything else to remain unchanged. The states involved will seek confidence that their security and other interests can be as well provided for without the bomb as with it.

[1] The passage quoted is taken from an official US document released in 2008. See, *National Security and Nuclear Weapons in the 21st Century*, a report released jointly by the Secretary of Energy (Samuel W. Bodman) and the Secretary of Defense (Robert M. Gates), Washington DC, September 2008.

The following pages endeavour to identify and characterise the primary elements of the nuclear weapon sub-structure to the prevailing order in Northeast Asia. This is an essential precursor to thinking about how the states involved can be persuaded to prefer managing their internal affairs and their external relationships without the Bomb.

The story of the nuclear relationship between the United States and the Soviet Union, the so-called central nuclear balance, is so well known that it will not be rehearsed here. This relationship exemplified both the effectiveness of nuclear weapons in instilling caution in the behaviour of major powers and the extraordinary risks that were run to secure that discipline and restraint. If either state miscalculated (as with the Soviet attempt to deploy nuclear-tipped missiles in Cuba) or events escalated too quickly (as in the Yom Kippur Arab-Israeli war) the superpowers faced the challenge of making deterrence work in the context of an on-going crises, and found that to be a profoundly sobering experience. In addition, there were the occasional glitches with the elaborate early-warning and command and control systems that attended the nuclear arsenals that could have sparked a catastrophe before there was time to engage political crisis management capacities.

The comments that follow address the Northeast Asian region directly but draw heavily on the rich legacy of the former central nuclear balance and its remnant dimensions that still linger.

Nuclear Intersections: China and America

Over the 60 years since its founding, the People's Republic of China has continuously been among the states that the US has sought to restrain and deter with its nuclear forces. The US–China nuclear story is of particular interest because it was so completely overshadowed by the central US–USSR nuclear balance and because China's position in US nuclear plans (the Single Integrated Operational Plan or SIOP) has changed over time in illuminating ways. Furthermore, the US–China relationship is now widely characterized as the world's most important bilateral relationship, adding further salience to the nuclear history that these two countries have shared.

There are several aspects to the US-China nuclear story that are of interest and relevance to our present purpose (the story is set out in more detail in Annex A) First, the US has always asked a great deal of the Bomb to support its interests and aspirations. China, in contrast, has asked relatively little although more, perhaps, than its policy pronouncements tend to suggest. We know that nuclear threats played in the margins of the Korean War and of the two serious crises over Taiwan in 1954–55 and 1958. We also know that Chairman Mao was unimpressed by Soviet skittishness regarding conflict with the US and came to feel that assurances about extended nuclear deterrence implicit in the 1950 Sino–Soviet security treaty were of limited value. As a result, it is generally thought that Mao came to the view that nuclear weapons were indispensible to restoring China to its proper place in the world, eventually committing China to a nuclear weapon program in January 1955.

Second, China's position in US planning for nuclear war makes clear that decisions about nuclear targeting are driven by deep instincts that remain substantially immune or respond very slowly even to changes in the political environment that most

observers would characterize as 'fundamental' or representing a 'paradigm shift'. For the first 20 years of the nuclear era China was tied to the Soviet Union. The US assumed that in all contingencies that might lead it to contemplate the use of nuclear weapon, China and the Soviet Union would be together on the 'other side'. More than half a decade passed after the Sino-Soviet split in 1959–60, before the SIOP was amended to accommodate the fact that these adversaries were no longer allies and capable of independently generating contingencies that could give rise to a nuclear response.

Similarly, US-China re-engagement in 1971–72 is typically assess as a seminal event driven, pre-eminently, by shared concerns about the Soviet Union, but a full decade passed before the SIOP was amended to delete China as a primary nuclear target. China continued to be the subject of lesser strike plans by the nuclear forces the US maintained in 'reserve' but it was no longer the subject of a tailored 'major attack option' for the alert nuclear forces. The Reagan administration even went so far as to direct the Pentagon to plan to provide security assistance to China in the event of Soviet aggression.

The glacial response of the SIOP to the climate of relations among the major powers worked in the other direction as well. In 1997, with the Cold War receding into history, the Clinton administration resolved to intensify its engagement of China, and China itself beginning to exhibit its own policy decision to redouble its efforts to provide reassurance about its expanding power, China was re-instated in the SIOP as primary nuclear target. An educated guess as to how this came about might be that the use of military force against protesters in Tiananmen Square in June 1989 was the initial trigger for the US to reconsider China's demotion in the SIOP in 1982 and that a net assessment of events and developments over the years to 1997 did not overturn this instinct.

China was the last of the original group of five major powers to acquire the Bomb. When it detonated its first device in October 1964, China promptly declared an unqualified policy of no-first-use of nuclear weapons and to not use or threaten to use nuclear weapons against non-nuclear weapon states under any circumstances. China has not deviated from this declaratory position over the ensuing 45 years.[2]

China's nuclear weapon development program received decisive help from the USSR in its early stages, particularly on uranium enrichment technology. This assistance evaporated in the late 1950s as relations with Moscow deteriorated. Evidently, however, by 1964, China had amassed strong scientific and technical capacities in the nuclear weapon field. It progressed more quickly than its four predecessors from atomic to hydrogen weapons (less than 3 years) and to robust, miniaturized warheads that could be mounted on a missile. China's sixth test in June 1967 involved the launch of a nuclear-tipped ballistic missile that travelled 1000 km into the Lop Nor test range, and the detonation of the warhead.

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[2] For an analysis of the Chinese perspective on nuclear weapons and deterrence see (1) Major General Pan Zhenqiang (ret), "China's Nuclear Strategy in a Changing World Strategic Situation", in *Unblocking the Road to Zero*, Henry L. Stinson Centre, Washington DC, March 2009 and (2) Yao YunZhu, "Chinese Nuclear Policy and the Future of Minimum Deterrence", *Strategic Insights*, September 2005, Center for Contemporary Conflict, Naval Postgraduate School, Monterey, California.

China has been cautious and deliberate about the development of its operational nuclear arsenal. It has never divulged any information whatever on the numbers and variety of its nuclear systems. American estimates, driven primarily in the early days by the assessed capacity of its fissile material production facilities (which were visible to satellites) consistently ran ahead of observed deployments. China's declared nuclear posture supported a minimal deterrent or an assured capacity to inflict some measure of nuclear damage in a retaliatory strike. Moreover, as a latecomer to the business, China was well placed to see where technology was driving the superpowers. In particular, missile accuracies were improving so quickly that delivery systems that were immobile and slow to launch were too vulnerable to be worth acquiring in significant numbers. Furthermore, it seems reasonable to infer that China's leaders recognized the folly of encouraging either or both superpowers to view it as a potential nuclear challenger.

In short, a number of considerations combined to produce an arsenal of modest dimensions (possibly in the order of 200–400 weapons) and subject to a gradual or natural pace of technological development. Since 1981, China has deployed a full-range ICBM capable of holding targets throughout the USSR/Russia and the US at risk. This is a liquid-fuelled missile – immobile and slow to launch—and the number deployed has peaked at 20, all with a single 3.3 megaton warhead. China's first solid fuel ICBM is believed to have become operational in 2008 and deployments are ongoing.

One consequence of the ability to target the US homeland has been the occasional 'unofficial' comment from senior PLA figures that the price the US may pay for coming to Taiwan's defence could include the loss of some US cities to Chinese nuclear weapons.[3] Analysts have also inferred from these comments that the posture of' 'no first use' is subject to critical debate in Chinese military circles. These comments could be seen as a signal from Beijing that its stance on the question of independence for Taiwan has factored in the possibility that Washington may still regard Taiwan as a recipient of END assurances.

Inevitably, of course, in simple capability terms, China's nuclear forces cast an influential shadow that has long extended across states like Japan and India as well as Russia and the US. Moreover, China's professional military literature suggests strongly that it has thought about how it would use its nuclear weapons to advance its strategic objectives in the extreme circumstances in which these considerations would arise, and that US bases in Guam, Japan, and South Korea could be priority targets.[4]

At the present time, China's nuclear forces appear to be growing, albeit slowly. In addition to the new solid-fuel ICBM, it appears that China may have mastered the difficult technologies that make up a submarine-launched ballistic missile system. China deployed one such vessel in 1986 but there is no evidence that it ever became operational. A successor system may now be in serial production. If this is confirmed, it will constitute a net addition to China's nuclear retaliatory forces. It is

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[3] See Bill Gertz, "Chinese general shakes nukes at US", *Washington Times*, 16 July 2005, which reports on such comments from 1995 and 2005.
[4] See, for example, Larry M. Wortzel, "China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning", US Army War College, Strategic Studies Institute, May 2007.

also a development that has been widely forecast because it is the most survivable strategic nuclear delivery system, because it is the supreme embodiment of technological prowess, and because China has been both a vocal critic of ballistic missile defences and sceptical about Washington's assurances that it does not intend its missile defences to degrade the deterrents forces of the other recognized nuclear weapon states.

For most of the nuclear era, the recognised nuclear weapon states, including China, have endorsed nuclear disarmament as an ultimate objective. Quite naturally, China has said that it would not engage in processes intended to achieve this objective so long as the superpowers maintained arsenals that were so disproportionally large compared to its own. More specifically, China has maintained that it will not participate in key preparatory steps like a treaty to end the production of weapon-grade fissile material in the absence of stronger assurances that its nuclear deterrent will not be undermined by the development and deployment of more effective missile defences, especially space-based systems that, in principle, could prove highly effective. China's preconditions for substantive engagement in any process of nuclear disarmament are therefore that the American and Russian arsenals be cut to levels broadly comparable to its own and that a treaty be negotiated to prevent an arms race in outer space.

Extended Nuclear Deterrence (END)

East Asia is also an arena in which the United States has practiced the art of extended nuclear deterrence (END). Nuclear deterrence is extended by means of a nuclear weapon state declaring that the security of a particular foreign country is as important as the security of its own homeland and would be defended by all the means at its disposal, including the use of nuclear weapons. Extended deterrence has a twofold purpose: to deter potential aggressors and to reassure the recipient state, not least to dissuade it from acquiring an independent nuclear weapon capability. Given that assurances of extended nuclear deterrence expand the range of contingencies that could result in the use of nuclear weapons against the provider of those assurances, the US has been parsimonious in granting them.

In early 1950, less than a year after the US committed itself comprehensively to the defence of western Europe through the formation of NATO, Washington signaled that, in Asia, only Japan qualified as a vital American interest. The exigencies of the Korean War resulted in South Korea and eventually Taiwan being added to the list.

All of America's formal allies are covered by END assurances, and judgements can be made whether particular countries are de facto allies. The US Secretary of Defense, Robert Gates, claimed recently that some 25 *allies and partners* relied on the American nuclear umbrella for their security rather than develop a nuclear deterrent of their own.[5]

[5] Robert M. Gates, speech on nuclear deterrence at the Carnegie Endowment for International Peace, Washington DC, 30 October 2008. We saw earlier that Gates is an advocate of retooling the US nuclear arsenal, including via the Reliable Replacement Warhead, to better ensure its reliability and effectiveness over the longer term.

For the US, the considerations that contribute to a preparedness to offer END assurances include the strategic importance of the recipient country which, in turn, embraces the identity of the country or countries that might wish to at least weaken the recipient's ties to the US and strengthen its responsiveness to their own interests. Further, the military geography of the recipient state and its environs, the balance of conventional military power in that arena, the presence or absence of nuclear weapons among potential adversaries are also important as these factors shape how quickly a crisis could arise and slip into the use of force, and how far up the scale of military force the adversary may be prepared to go. Finally, the importance to US strategic interests that END recipients be content with the US nuclear umbrella rather than resolve to develop their own nuclear deterrent has been an important consideration.

Clearly, END assurances can range from the soft and implicit to the louder and more explicit. Beyond a formal security treaty, the credibility of such assurances is obviously shaped by the quality of the overall relationship, not least perceptions that shared strategic interests and assessments are resilient to the shocks and distractions that buffet any bilateral relationship. In relatively benign circumstances, such as those enjoyed by Australia and New Zealand, a security treaty and a robust bilateral relationship have been deemed sufficient for END assurances to be considered operative. In Northeast Asia, in contrast, the circumstances have been more stressful and unstable. END assurances have been intensified through the regular or continuous deployment of US naval and/or air power assets in proximity to the recipient, the basing of such forces (and ground forces) in the recipient state, and equipping these forces with sub-strategic nuclear weapons. Finally, as the END provider, the US can, in periods of tension, exercise the option to make statements clearly recognized by all players as reaffirmations of the security pledge.

To state the obvious, the preference is to have deterrence work pre-emptively. To restore or rebuild deterrence in the context of a crisis—when the potential for mis-assessment, missed signals, over-reaction and so on is so great—is difficult and very dangerous, especially, of course, if the end of the road is defined by nuclear weapons. All three US allies in Northeast Asia have to some significant degree been recipients of 'full strength' END assurances. In addition, Taiwan is perhaps the clearest example of the practice of calibrated statements being issued in periods of tension which is an indication both of the special sensitivities involved and of Taiwan's rather unique status since the US-China rapprochement in the 1970s.

Japan

Japan probably qualifies as the most prominent and conspicuous consumer of extended nuclear deterrence from the US. Japan surged from the ruins of defeat in WWII to emerge in the 1970s as the second largest economy in the world with first class industrial and technological capacities. It committed to a widescale nuclear power generation program and secured acceptance of its case to acquire the full nuclear fuel cycle, that is, large scale capacities to enrich uranium and to re-process spent fuel for plutonium. Japan's stated ambition has been to achieve greater energy independence by bringing breeder reactor technology to maturity ('breeders' are fuelled by plutonium and generate more of this material than they consume). Japan has had pilot-scale enrichment and reprocessing facilities since the late 1970s and full-scale facilities on both fronts will become operational in the near future. In the

meantime, Japan has been reprocessing its spent reactor fuel in the UK and France for many years. At the present time, Japan has over 2 tonnes of HEU and 44.7 tonnes of plutonium, of which 38 tonnes is stored outside Japan.[6]

Japan also has its own space launch program (and has, for example, deployed a small constellation of indigenous intelligence satellites) which provides it with a de facto long-range missile capability. Japan is widely regarded as having perhaps the shortest fuse to a deliverable nuclear arsenal of all the non-nuclear weapon states, a fact that senior Japanese figures have alluded to on many occasions. Given the strong and widespread preference, especially in East Asia, that Japan rely on the US nuclear deterrent rather than acquire its own, it seems likely that both American and Japanese strategists reasoned that these circumstances—although adequately justified by the scale of Japan's nuclear energy program—would also discourage pressure on Japan's security interests.

Moreover, Japan was politically and geographically isolated. There have been no counterparts in East Asia to NATO or the EU, the two institutions that proved invaluable in re-integrating Germany into the family of states. Despite these circumstances, Japan has never wavered from its preference to rely heavily on its alliance with the US to address its defence and wider security concerns. Japan has never generated any serious or sustained concern that it would look to nuclear weapons to break this dependency.[7] Indeed, Japan has even leveraged its alliance with the US to respond to both domestic and regional pressures to limit the size and visibility of its conventional forces, and it has done this in the face of a long standing American preference for greater burden-sharing in the security arena. Tokyo's informal commitment to limit defence expenditure to 1% of GDP has now endured for decades. .

America's security commitment to Japan has underpinned its forward posture in Asia throughout the postwar period. Its nuclear capacities obviated any requirement to consider the indefinite deployment to Japan and its environs of persuasively large (and very costly) conventional forces although the Korean War helped delay initial US plans for a drawdown. At the end of WWII, the US had a handful of unassembled fission bombs. The building of an operational nuclear arsenal did not begin until around 1948/49. B-29 bombers were deployed to Guam in 1950 to add credence to the debate in Washington on whether it should exercise the nuclear option in Korea. Over the next 15 years Guam based or supported long-range bombers and ballistic missile submarines in addition to storing sub-strategic weapons.[8] After Guam, it is

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[6] Emma Chanlett-Avery & Mary Beth Nikitin, *Japan's Nuclear Future: Policy Debate, Prospects, and US Interests,* Congressional Research Office, 19 February 2009.

[7] Japan has taken great care to ensure the transparency of its nuclear power program, including meticulous collaboration with the IAEA during the design and construction phases of all its facilities. That said, Japan has conducted at least two major internal reviews of its policy toward nuclear weapons—in the mid-1960s and again in the mid-1990s. On each occasion, the status quo was reaffirmed.

[8] Guam's importance as an operational or support base for nuclear delivery systems declined during the 1960s as longer range missiles and an increasingly exclusive focus on the Soviet Union made its geographic location less valuable. This trend was reversed in the in the 1990s. Guam now hosts strategic bombers on a rotational—but nearly continuous—basis; it has been made the homeport for several SSNs, and some US Marines are being relocated from Okinawa to Guam as part of the effort to lower the US military profile on the Japanese island.

likely that Okinawa (where US bases enjoyed extra-territorial status) became the second location for the forward deployment of nuclear weapons.

US dependence on the Bomb and Japanese dependence on the US naturally generated alliance management problems. These were never as acute as in Europe, perhaps because the perceived threat from the Soviet Union was much less acute in East Asia, the Sino–Soviet bloc proved to be short-lived, and China (after the split with the USSR) remained weak. In Europe, the US found it extremely difficult to stay on the razor thin line of a preparedness to risk nuclear war that Europeans found reassuring rather than either lacking in credibility or reflecting an alarming propensity to 'have it out' with the Soviet Union on European soil. Still, Japan became a keen student of policy trends and currents in Washington and sensitive to indications that its interests may receive more or less sympathetic attention. Although Washington has managed these sensitivities with considerable care and skill, most observers, it could be said, including in Japan, have assessed that these arrangements translated into Japan's influence in regional and global affairs always falling conspicuously short of what its economic weight and technological prowess suggested should be the case.

With the end of the Cold War in 1989–91, the game changed quite radically for both Japan and the US. Washington's pressure on Tokyo to take greater responsibility for its defence and security agenda, an undercurrent in the bilateral relationship since the early 1950s, intensified quite markedly. Japan's inability or unwillingness (depending on which side of the Pacific you come from) to participate in the liberation of Kuwait (Desert Storm) attracted strident and undiplomatic criticism from the US. US plans in the early 1990s to cut its defence budget by 30% and to drastically shrink its forward-deployed forces in both Europe and the Northeast Asia generated anxiety in Japan as well as elsewhere in East Asia. By the mid-1990s these ructions had been intensified by perceptions that the familiar patterns of order and stability in East Asia were about to undergo a far-reaching transformation to accommodate a powerful China. Today, these perceptions are greatly intensified, first because the unipolar period has been unceremoniously curtailed by the experiences under the Bush administration and, second, by the spectacular stumbling of the US economy (and, indeed, of the American economic model).

The US alliance and END has delivered Japan more than 60 years without a serious threat to its sovereignty or significant coercive pressure on its political or economic freedom of action. Japan has been unsettled by the coincidence of China's explosive re-emergence as a major power, America's successive strategic and economic misfortunes and the persistence of North Korea's nuclear program. Japan, of course, is conscious of residual Korean (both North and South) resentment from the days of its colonial rule of the peninsula. Both Korea's have stated publicly at various times that they still regard Japan as a potential security threat, and usually associate these statements with Japan's latent capacities to develop nuclear weapons. Japan, equally, is concerned that it would be a primary target if North Korea developed warheads that could be placed on a missile or if a future unified Korea retained a nuclear weapon capability. Japan is investing heavily in land and sea-based ballistic missile defence capabilities, and doing so in close collaboration with the US. Many Chinese security analysts are sceptical that the threat from North Korea is driving the US and Japanese BMD programs, suspecting that the real purpose is to degrade China's nuclear deterrent.

The prospect that these several geostrategic forces will also include significant reductions in US strategic nuclear capability could intensify Japanese concerns to the point of generating a powerful instinct that its long-term interests demanded securing the greatest possible autonomy in providing for its security, including an independent nuclear deterrent. Several commentators have observed that the effective taboo on public discussion of this issue appears to have been broken.[9] In view of Japan's inherent capacity to proliferate quickly if driven to that point, it would be prudent for Washington in particular, but also other relevant capitals, to anticipate these concerns and manage them carefully.

Taiwan and the Republic of Korea

In contrast to Japan, both of the other recipients of American END assurances in Northeast Asia have tilted at acquiring their own nuclear weapons. In the case of **Taiwan,** which hosted US tactical nuclear weapons from around 1958, China's first nuclear test in October 1964 appears to have triggered interest in at least bringing Taiwan's capacities closer to having the option of an independent nuclear capability. Taiwan was a single party state at the time, and continued to express the objective of being restored as the government of all China. As pointed out in Annex A, nuclear threats played in the margins of two serious crises in the Taiwan Straits in the 1950s and American management of these crises included the concern that its small ally might be prepared to spark a US–China war to advance its interest in dislodging the government in Beijing.

Taiwan's primary interest lay in developing its expertise to re-process irradiated uranium to extract plutonium. It acquired a research reactor from Canada (similar to the one that India used to acquire its initial stock of fissile material) and set up a nuclear research facility run by the military (Institute for Nuclear Energy Research or INER) that conducted laboratory-scale experiments on re-processing (so-called 'hot cells'). By 1974, the year in which US nuclear weapons were withdrawn from Taiwan pursuant to a 1972 agreement between President Nixon and Chairman Mao, the US intelligence community assessed that Taiwan could assemble sufficient plutonium for a Bomb in about 5 years.

The issue intensified in the period 1976–78, with Washington commissioning new intelligence estimates, sending in teams of US inspectors (who also picked up signs of a clandestine effort to enrich uranium), and making repeated political demarches that secured repeated presidential assurances that no bomb program was underway. Washington also pressured prospective European suppliers of reprocessing facilities to support its interest in stopping Taiwan's nascent Bomb program.[10] The issue re-surfaced abruptly a decade later in 1988, probably as a result of what the US learnt

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[9] See again Emma Chanlett-Avery & Mary Beth Nikitin, *Japan's Nuclear Future: Policy Debate, Prospects, and US Interests, and also Brad Glosserman, "Japan peers into the abyss", PacNet Newsletter, 21 March 2008.*

[10] William Burr (ed), *National Security Archive Electronic Briefing Book No.221*, posted 15 June 2007. This archive assembles declassified US documents, including intelligence assessments and diplomatic cables.

from the defection of a senior military official in the INER. As a result, a new pilot reprocessing facility was dismantled and the research reactor shut down.[11]

The limited but persistent Taiwanese endeavours to build their Bomb-related expertise was perhaps more suggestive of an interest in extracting a reaffirmation of US assurances on Taiwan's security in the aftermath of the US–PRC rapprochement than of a race to get the Bomb. Still, the episode demonstrates the extraordinary vigilance that Washington had to sustain (over and above IAEA processes) to check and ultimately stop Taiwan's program.

As regards Taiwan and END, there are a number of contradictory considerations. In the 1950s, the US repeatedly indicated that it was prepared to risk war with China to deter Taiwan's forceful re-incorporation and, at one remove, signalled that this may not exclude the use of nuclear weapons. It concluded a mutual security treaty with Taiwan in 1954 and deployed US forces to the island. Over the years 1958–74 (that is, both before and after China became a nuclear weapon state), it also deployed sub-strategic nuclear weapons on Taiwan. In other words, Taiwan was the recipient of full strength END assurances.

Since the US and China established full diplomatic relations in 1979 (and, necessarily, the US ceased to recognize Taiwan as a sovereign entity) the picture has become markedly more nuanced. In a move without precedent, the US-Taiwan security agreement was replaced with an act of Congress, the Taiwan Relations Act, which continued to convey strong US opposition to the use of force to change the status quo between the island and the mainland, and which supported the sale of armaments to Taiwan's armed forces. Washington gravitated toward a strategy that came to be described during the Clinton administration as one of *strategic ambiguity*. The declared objective was to encourage restraint and acceptance of the status quo on both sides of the Taiwan Straits by keeping Taipei less than fully confident that the US would intervene on its behalf, and Beijing less than fully confident that it would not.

The most serious test of this strategy occurred in 1995–96 when Beijing used large-scale military exercises in the Taiwan Straits and, ultimately, missile tests to aim points north and south of the island in an apparent effort to discourage Taiwan's electorate from endorsing a pro-independence candidate for president. Washington responded by assembling two carrier battle groups in waters well to south of Taiwan but making clear that this had been done to provide the option of proceeding to the straits if the mainland and Taiwan could not defuse the situation. In due course, the situation was defused without the US doing anything further with its forces in the region.

The George W. Bush administration was initially critical of *strategic ambiguity,* and, in 2001, the President made his well-known remark that the US 'would do whatever it takes to help Taiwan defend itself'. Even this statement, however, is open to divergent interpretations. The phrase 'whatever it takes' could be read like another common observation—that 'all options are on the table'—as a diplomatic signal that

[11] William Burr, *The Taiwanese Nuclear case: Lessons for Today*, Proliferation Analysis, Carnegie Endowment for International Peace, 9 August 2007.

vital US interests are engaged and that these will be defended by all the means at its disposal. Equally, the phrase 'help Taiwan defend itself' is open to the interpretation that the US will certainly aim to ensure that Taiwan would not lack armaments and munitions but that the direct involvement of US forces should not be regarded as a given. It is noteworthy that, a few years later, the Bush administration found itself openly chastising Taiwan's leadership for contemplating steps that would alter the status quo.

Whatever conclusions, if any, the different leadership groups in Washington have come to over the years regarding END assurances to Taiwan, the common instinct has been to keep the issue as murky as possible and to conduct relations with Taipei and Beijing with an eye to ensuring that the need for clarity never arises.

As a final observation, it was noted earlier that senior Chinese military personnel have occasionally observed that the price the US may have to pay for coming to Taiwan's defence could include the loss of one or two major US cities to Chinese nuclear warheads. This could be seen as a signal from Beijing that its stance on the question of independence for Taiwan has factored in the possibility that Washington may still regard Taiwan as a recipient of END assurances.

In the case of **South Korea**, the interest in nuclear weapons took a serious turn in 1970, possibly in response to President Nixon's 'Guam doctrine' speech in 1969 exhorting allies to not lean so heavily on the US and develop their national defence capabilities. In the case of South Korea, the Nixon speech was the backdrop to the withdrawal of a full division of US troops (26,000 personnel). The US had first deployed tactical nuclear weapons to South Korea in 1958 to help make the credibility of its security assurances less sensitive to movements in the balance of conventional forces, whether through US withdrawals or North Korean expansion. The North, in fact, steadily increased the size of its armed forces from 350,000 at the time of the Korean War to over one million by the early 1990s. The US offset the growing numerical inferiority of South Korean and forward-deployed US forces by making clear that it could directly engage and defeat a North Korean invasion with tactical or battlefield nuclear weapons while also deterring the USSR and China with strategic nuclear weapons and discouraging them from (again) endorsing or assisting Pyongyang in such a venture. Indeed, some official US language indicated that US tactical and strategic nuclear capabilities linked to the Korean peninsula were both directed at discouraging major power adventurism on the Korean peninsula and only secondarily at deterring North Korea.[12]The US even agreed to arrangements whereby its forces in the South were interspersed with South Korean forces in the narrow corridor between Seoul and the DMZ so as to maximize the risk for the North that any kind of offensive would engage American forces and ensure US involvement in the conflict. These arrangements are in the process of being undone, with all US forces relocating to bases south of Seoul while South Korean forces are being trained and equipped to take over the time-urgent functions previously assigned to US forces (especially finding and destroying the many hundreds of heavy artillery pieces that North has deployed within range of Seoul.

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[12] Lee Jae-Bong, *US Deployment of Nuclear Weapons in 1950s South Korea and North Korea's Nuclear Development: Toward the Denuclearisation of the Korean Peninsula*, The Asia Pacific Journal Vol. 8-3-09.

In 1970, South Korea still had a military dictatorship committed, nominally at least, to the objective of unifying the peninsula by force. As with Taiwan, the South Koreans elected to take the plutonium/reprocessing path but with the added cover of a major commitment to nuclear power generation. The US nonetheless brought extreme pressure to bear to close off this avenue to fissile material, including persuading the French in 1975 not to proceed with the delivery of a reprocessing plant that Seoul had contracted for. South Korea joined the NPT in April 1975 but resented the fact that its interest in possessing the complete nuclear fuel cycle was denied while the same interest in Japan was indulged. Suggestive activities on both the enrichment and reprocessing fronts continued in South Korea into the early 1980s and again in 2000 but were not indicative of a coordinated program.[13]

It can also be noted that in 1991, the South Korean government had taken the initiative to propose a denuclearization agreement to the North. The agreement, signed in January 1992, committed the parties not to test, manufacture, produce, receive, possess, store, deploy or use nuclear weapons, and to not acquire enrichment or reprocessing capabilities. Declassified US diplomatic reporting suggests that South Korea was not attracted to including the ban on enrichment and reprocessing and did so only because of heavy pressure from Washington.[14] In a key supporting move, the US announced in October 1991 that it would withdraw all its nuclear weapons in South Korea as part of a joint global US/USSR initiative to bring all land and sea-based sub-strategic weapons back to their respective homelands. The 1992 agreement envisaged further negotiations to develop a reciprocal inspection regime to verify compliance but these and, indeed, the agreement as a whole were overtaken by North Korea's discomfit with its transparency obligations to the IAEA and the onset of the first nuclear crisis in 1993–94.

Since these times, the tide of events has moved relentlessly against the DPRK. South Korea has leveraged its strong economic success to expand and modernize its armed forces while the North has found its massive conventional forces to be a crippling burden. In addition, both its giant Socialist benefactors conspicuously distanced themselves from Pyongyang in the early 1990s by establishing diplomatic relations with the South, and embracing the market economy internally and externally. The North's options have shrunk dramatically but rather than follow the example of China and Russia it has, it would seem, committed to nuclear weapons to protect its freedom to perpetuate its current political, economic and social arrangements.

China's Relations with Russia and India

China committed to the Bomb because it judged that one could not become a great power without it, and, specifically, to resist US nuclear coercion and to escape reliance on the Soviet Union for this service. Ironically, for its first 25 years as a nuclear weapon state, China found that it was the Soviet Union that was the more threatening but it would seem that the US was re-instated in this role after the Cold War ended. Today, the Russia–China relationship probably has characteristics rather similar to the US–China one in the 1972–89 period, two states that are like-minded on

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[13] Daniel A. Pinkston, *South Korea's Nuclear Experiments*, Center for Nonproliferation Studies, Monterey Institute of International Studies, 9 November 2004.

[14] Robert A. Wampler (ed), *North Korea and Nuclear Weapons: The Declassified US Record*, National Security Archive Briefing Book No.87, 25 April 2003.

a range of contemporary issues but with limited indications of a transformation in deep-seated attitudes toward one another. Both Russia and China retain capabilities to target the other with nuclear weapons and both almost certainly take it for granted that this is in the fact the case.

China and India, similarly, are both presumptive great powers with a stressful past. They fought a war in 1962 and the resulting territorial disputes remain unresolved. This experience, along with China's nuclear test in 1964 and an unreliable relationship with the United States, was sufficient to drive India into a strategic partnership with the Soviet Union, then China's declared adversary. Perhaps in response, China played a decisive role in ensuring that Pakistan could match India's demonstration of a nuclear weapon capability in May 1998. Today, China-India engagement is proceeding apace, but it is likely that China embraced this course to make it harder for the US to cement India into the role of a latent counterbalance to China. A prudent working hypothesis would be that strategic rivalry over the longer term remains a prospect that both China and India take very seriously. This makes it unlikely that India—and as a consequence, Pakistan—would contemplate any action on nuclear arms control and disarmament independently of China.

The Way Forward

Northeast Asia is conspicuously lacking in relationships of trust and confidence. In fact, the region is a labyrinth of relationships that range downward from open hostility and upwards from sensitive, hesitant and suspicious. In most cases, these attitudes have deep historical roots. In most cases, too, events in the recent past have exposed these deep-seated attitudes, often in a manner linked in some fashion to nuclear weapons. The list is rather striking:

US: Russia
China:– US, Japan, Russia, India;
DPRK:– ROK, Japan;
DPRK + ROK: – Japan;
DPRK + ROK: – China;
Russia:–Japan
Taiwan – China;

America's strong engagement with the region, especially since 1945, is widely credited as having been the decisively important stabilising factor that has, inter alia, underpinned the region's economic dynamism. This US-based order has coped with significant transformations, especially as regional states became viable economies and correspondingly more confident and independent in determining their foreign and security policy settings. The latest and probably most far-reaching of these transformations, the rise of a powerful China, is well-established but still incomplete.

America's role has been pervasive: subtle and intangible as well as concrete and forceful. The US has been a key market, an ally; an adversary, the provider of a general security umbrella (not least in respect of dependable sea lines of communication), the provider of specific instances of extended nuclear deterrence and of forward-deployed conventional air/sea/land forces, and the 'go to' country when potentially serious challenges to stability arose. As we have seen above, America's

position and role in Northeast Asia has certainly dampened and, on occasion, blocked nuclear proliferation pressures, but US objectives, and regional outcomes, have been far broader than the non-proliferation of nuclear weapons.

All of this suggests that the lowering of the US nuclear profile in Northeast Asia needs to be approached with some care. It is almost certainly the case that broader trends and developments will continue to compel changes in this direction. It would be prudent, however, to be alert to indications that, in addition to the erosion of America's preponderance of economic and financial clout, and of the continued stress that on-going military operations will have on confidence that it can bring overwhelming conventional military power to bear when needed, the prospect that it will also surrender its decisive edge in nuclear weapons could give rise to anxieties that prove difficult to contain. It might be seen as a case of judicious guidance of these wider forces to arrive at arrangements that provide the strongest underpinning for peace and stability over the longer term, arrangements that would be far more attractive than those that might emerge if 'natural forces' alone are allowed to shape the outcome.

The denuclearisation of the Korean peninsula would be a major accomplishment. This matter is urgent because the peninsula is the most recent instance of proliferation with the potential to ignite or re-ignite similar instincts in neighbouring Japan and the ROK. In addition, however, the peninsula constitutes a rich example of the capabilities, postures and policies that compromise the 'fabric' of security. It might almost be characterised as a clinic in which to explore the challenge of extracting the nuclear component while also strengthening perceptions of security and stability on the peninsula and not eroding these perceptions elsewhere in the region.

We saw above that the US endorsed the proposed denuclearisation agreement between Seoul and Pyongyang in 1991 on the condition that it include a ban on enrichment and reprocessing.[15] That endorsement reflected a willingness to withdraw the remaining 100-odd tactical nuclear weapons deployed on ROK territory, something that the US went on to do under a joint global initiative with the Soviet Union. Clearly, the end of the Cold War, the substantial build-up and modernisation of ROK forces and very probably an assessment that the North Korean regime would not long endure allowed Washington to be sufficiently confident about stability on the peninsula to proceed with the withdrawal of its tactical nuclear weapons. Nearly two decades later, the North has acquired a rudimentary nuclear weapon capability and it has intimated that, in addition to verifying the absence of US nuclear weapons from South Korea, its agreement to denuclearisation could require that the US explicitly desist from extending nuclear deterrence to the ROK. Over the same period, the US has further reduced its forces stationed in South Korea and is engaged in redeploying

[15] The US recognized in the early 1970s that the spread of national capacities to acquire fissionable material, though legitimised under the NPT, would place great stress on the non-proliferation regime. Experience since that time has confirmed that the proliferation of these capacities stretches inspection capabilities while still leaving ample scope for suspicions to breed. This experience, and common sense, suggests that a sustained process of nuclear diminution leading to disarmament will not be feasible alongside national capacities to make fissile material. An essential component of such a process will be to get to the point where all fissile material is produced in internationally owned and operated facilities. An early commitment to this objective would dampen further proliferation of fissile material production facilities.

them away from the DMZ, bringing to an end the ‘tripwire’ posture that was deemed in the past to be desirable.

To extend this discussion is to engage in speculation. This is rarely helpful, but a peek into the possibilities can usefully illustrate the sensitivities that nuclear diminution and disarmament can expose. It should probably be taken for granted that the termination of END assurances will become a formal part of the DPRK’s negotiating position. This will not necessarily be a show-stopper for Washington, although the US will take particular care to ensure that the arrangements it agrees to on the Korean peninsula will not undermine the confidence of other partners in an alliance relationship with the US. If the US and the ROK are prepared to consider terminating END assurances, it can be expected to be subject to two conditions. Firstly, under its extant negative security assurance, the US undertakes not to use or threaten to use nuclear force against states that do not have nuclear weapons and which do not conduct military operations in association or alliance with a nuclear weapon state. The DPRK has formal security ties with Russia and China, both nuclear weapon states. One condition, therefore, is likely to be that both Russia and China take steps with the DPRK that match the formal withdrawal of END by the US in respect of the ROK. Secondly, it is likely that the US will require that the two Koreas agree to reconfigure and/or redeploy their conventional forces to reduce the risk of short-warning offensives (or surprise attacks), along the lines of the 1989 agreement on conventional forces in Europe.

It should perhaps also be anticipated that the DPRK will press for the withdrawal of all US forces from the ROK as a condition for complete denuclearisation. Unless Seoul chooses to support such a demand, the US is likely to view it as a precedent that it would prefer not to set, at least in the context of an agreement negotiated with third parties. A key purpose in resisting such a demand would be to reassure Japan that the core questions of extended nuclear deterrence and the forward-deployment of US conventional forces will remain exclusively a matter to be determined between Washington and Tokyo. Reconciling Japanese interests with a determined process of nuclear diminution leading to disarmament is likely to prove to be an even more delicate and consequential challenge, one that is likely to require substantive supportive actions from all or most of the states of Northeast Asia..

<u>ANNEX A</u>: Nuclear Intersections: China and America[16]

Over the 60 years since its founding, the People's Republic of China has continuously been among the states that the US has sought to restrain and deter with its nuclear forces. In more recent times, since it deployed a full-range ICBM in the early 1980s, and typically during periods of tension with Taiwan, senior Chinese officials (usually from the PLA) have noted that China also targets the US with its nuclear weapons. China is very guarded about its nuclear posture but, prior to acquiring ICBMs, it would have been presumed on the basis of capability and China's internal debates on strategy and doctrine, that it targeted US bases in Guam, Japan, South Korea and the Philippines in addition to Japan per se, the Soviet Union/Russia and India.

The US–China nuclear story is of particular interest because it was so completely overshadowed by the central nuclear balance and because China's position in US nuclear plans has changed over time in illuminating ways. Furthermore, the US–China relationship is now widely characterized as the world's most important bilateral relationship, adding further salience to the nuclear history that these two countries share.

For one state to signal to another, through a combination of capability and often Delphic political statements, that their relationship needs to be managed in the knowledge that any resort to force to settle disputes could escalate to the use of nuclear weapons naturally speaks volumes about the most deep-seated perceptions these states have of one another. The use of nuclear force is the most ultimate of sanctions imaginable, and the most dangerous if the other side also has these weapons. For such a threat to be posed, however discreetly, implies a deep-seated conviction that the other state probably has the interest and the actual or potential capability to harm one's vital interests. Moreover, it suggests that confidence in the other party's willingness and ability to resolve disputes on core issues through compromise and win-win outcomes is not strong, at least not strong enough to support dispensing with the nuclear threat.

The Early Days

The communist victory in China's civil war, while certainly not the American preference, appears initially to have been neither a major shock nor a source of great anxiety to Washington. The record suggests, rather ironically, that Washington fully expected Beijing to move against Taiwan in 1950 (or 1951 at the latest) and that Washington did not consider it had a dog in that fight. Events, of course, took a different turn. An important consequence of the communist victory was that the US and China had no diplomatic relations nor, indeed, any reliable channel of communication. Mao Zedong was convinced that the US posed an immediate threat to his revolution and pressured the Soviet leadership for a security pact to dissuade US intervention, a pact that was concluded in January 1950.

The Sino-Soviet security pact naturally hastened the turning of the tide in Washington and diminished the chances of a US–China relationship that was differentiated from

[16] The basic reference on this issue is Hans M. Kristensen, Robert S. Norris & Matthew G. McKinzie, *Chinese Nuclear Forces and US Nuclear War Planning*, The Federation of American Scientists & the Natural Resources Defense Council, November 2006.

that with the Soviet Union, America's essentially declared 'cold war' opponent. Within a year, US–China relations descended into poisonous enmity when the Korean War became a US–China war from October 1950. What the US did not know at the time was that Mao was a full party to the decision to take the South by force. [17] Stalin made his support for Kim Il Sung's eagerness to take this step conditional on Mao's approval. He also stated plainly to both allies that in the (unlikely) event the venture went badly they should be aware that the Soviet Union had no intention of getting into any conflict with the US and that the outcome would therefore depend entirely on North Korea and China. Had Washington been aware of this, it is reasonable to suppose that the knowledge would have influenced its assessments on whether and how to proceed in Korea after the North's forces had effectively been defeated.

As it happened, President Truman positioned the (then) rather modest 7th Fleet in the Taiwan Straits the day after North Korean forces invaded the south. Washington had promptly decided that to allow so blatant a violation of international law and convention to go unchallenged could set a very costly precedent. Having made this determination, Truman accepted advice that it would be prudent to preclude the complication of either Chinese government viewing a war in Korea as an opportunity to revisit China's civil war. No evidence has emerged to suggest that Mao anticipated that the Korean venture might complicate (or worse) the re-incorporation of Taiwan and that he knowingly took this risk. What seems more likely is that Mao overstated both America's enmity toward communist China and the centrality of China in America's geopolitical calculations. Mao saw the US as having both Japan and Taiwan as springboards from which to attack China and that the obvious priority was the US forces that by the end of October 1950 were north of Pyongyang and approaching the Yalu river. A further possibility is that Mao may have assessed that bringing all of the Korean peninsula into the communist bloc was really important to Stalin and that, if China was unsupportive, Stalin might reconsider the support and assistance he had promised Mao when China moved against Taiwan.

Inevitably, given the near defeat of US/coalition forces by a very small country, the further reversals followed by a prolonged stalemate after the PLA 'volunteers' entered the war, there were discussions in Washington that leaked into the public domain on whether and how the Bomb could be brought to bear. The Korean theatre offered neither civilian/industrial nor military targets worthy of a Bomb, that is, with any prospect of usefully shaping the course of the war, so the Washington discussions extended to the option of targeting the adjacent areas of China that supported its war effort. During the presidential election campaign in 1952, the Republican candidate (Eisenhower) alleged that the Truman administration had allowed itself to be intimidated by the Bomb and that clearer, unemotional thinking was needed to capitalize on America's continuing effective monopoly of this new weapon. In May 1953, news leaked that the Eisenhower National Security Council had considered six scenarios for ending the war, most of which included using nuclear weapons within and beyond the Korean peninsula. The armistice agreement was concluded later that year and the official Pentagon history of the conflict concluded that that these threats to employ nuclear weapons had 'the desired effect'.[18]

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[17] See John Lewis Gaddis, *We Now Know: Rethinking Cold War History*, Oxford University Press, New York, 1997, pp.54–84.

[18] Natural Resources Defence Council*, US nuclear threats: Then and now*, Bulletin of Atomic Scientists, September/October 2006, pp.69–71.

For his part, Mao took note of Soviet skittishness regarding conflict with the US, and of the fact that extended nuclear deterrence Soviet-style was something of a fiction.[19] He engaged in some gamesmanship of his own, labelling the US a 'paper tiger' and suggesting, for good measure, that China had the mass of population and territory to render even nuclear punishment nugatory.

By 1951, at the latest, the die between the US and China had been cast. China, along with the East European states that now lay behind the 'iron curtain', was viewed as inseparable from the USSR in America's emerging strategy of containment and the attendant resolve to threaten the use of nuclear force to deter and, if necessary, defeat overt coercion against vital western interests. The term, *Sino–Soviet bloc,* crept into use as shorthand for the enemy, and the Bomb became a frontline weapon given that the US and its European allies had no expectation of matching the 175 divisions that the USSR was believed to have retained after the end of WWII.

In Northeast Asia, a speech by US Secretary of State Acheson in January 1950, signalled with rather careless clarity that only Japan was regarded by the US as a 'vital' interest. But the force that crossed the informal border at the 38th parallel on the Korean peninsula was not a loose formation of anti-Japanese resistance fighters that underpinned Kim Il Jung's leadership in the north. It was an army with tanks, artillery and other heavy weapons which could only have come from the USSR. Washington simply, and promptly, concluded that this scenario fell outside the parameters of Acheson's speech a few months earlier, and resolved that it could not be allowed to succeed. Before the end of 1950, it was clear that America's vital interests in Northeast Asia had expanded beyond Japan to include Korea and that Taiwan was on the way to inclusion.

Testing the Utility of the Bomb

In 1954/55, and again in 1958, China tested the US commitment to Taiwan by using calibrated conventional military power against islands that were close to the Chinese mainland (so close that they could be bombarded by artillery from Chinese territory) but which were administratively part of Taiwan and garrisoned by Nationalist forces. The proximate trigger in 1954 was Washington's agreement to consider Taiwan's long-standing request to conclude a mutual security agreement, a step naturally seen in Beijing as a decisive new development in Washington's preparedness to be disdainful of its sovereignty. The islands in question—Quemoy and Matsu—presented a nightmarish defence challenge for Taiwan and the US. Washington was cognizant of the political psychology that attended the strategy of global containment of the USSR and its allies, that if its resolve was brought into question, even in a secondary arena, it could provoke a challenge in a core area that it would have no

[19] The North Korean offensive pushed the South Korean forces all the way down to an enclave around the port of Pusan before the South Koreans established a coherent defensive perimeter and halted the advance. Mao is reported to have thought that the South Korean position was so fragile, and that US/UN forces had still to arrive in any numbers, that even relatively modest supplementation of North Korean capabilities by the USSR would have tipped the scales toward a communist victory. Instead, when the North Korean advance stalled near Pusan, Stalin promptly withdrew all the Soviet personnel providing strategic, operational and tactical services to the North Koreans to eliminate the risk that Soviet support would be exposed in some undeniable manner.

choice but to resist. A powerful instinct had formed in Washington (and, clearly, in Moscow) that, in the nuclear era, making deterrence work in the context of a crisis was altogether too hazardous. It was imperative that deterrence work pre-emptively. The mutual caution that this instinct produce broke down most spectacularly in 1962 but the Cuban missile crisis in October of that year had the effect of powerfully reinforcing that instinct.

Equally, Washington harboured concerns that Taiwan might see a war between the US and China as serving its interests, at least to the extent of dislodging an unpromising status quo, and was to that extent an ally whose propensity to act responsibly could not be presumed. Washington postured and signalled with rhetoric and the deployment of naval assets as it manoeuvred between these competing imperatives, that is, to avoid arousing great expectations in Taipei while at the same time convincing Beijing that it would contest any attempt to seize the islands. An unmistakable part of this process involved not completely disguising the Pentagon view that active defence of the islands was not feasible without the use of tactical nuclear weapons against facilities on the Chinese mainland that would support any assault.[20]

Although the first crisis endured for eight months (September 1954–April 1955), and the second for two months (August–October 1958), the Chinese in both instances confined their offensive to artillery barrages and limited skirmishing with fighter aircraft (although US accounts suggest the trigger in 1958 was China's movement of troops into Fukien province opposite Taiwan). The US was equally cautious as it tried to assess how far Beijing was prepared to go, working up from conspicuous reinforcement of its naval presence in the Taiwan Straits, through sharpening rhetoric on its determination to resist any attempt by China to occupy the islands, and finally permitting US vessels to escort the supply convoys on which the islands depended. It is worth noting that both these crises predated the era of reconnaissance satellites, although it is possible that the US used its high-altitude U-2 reconnaissance aircraft (which became operational in 1956) in 1958 to look for indications that China was contemplating an invasion of the islands.

In 1954/55, Mao was again disappointed with Moscow's extreme caution about confronting the US and it is widely believed that China's formally commitment to acquire its own nuclear weapons was made in January 1955. In 1958, the Soviet leader, Nikita Krushchev did write, twice, to President Eisenhower, warning him that Moscow would regard an attack on China as an attack on the USSR. These messages, however, came as the crisis was ebbing and the gesture could not overcome the wider, and mutual, disaffection that was building up between Moscow and Beijing and which exploded in 1959 into a schism that would endure for the next 30 years.

America and the Bomb

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[20] See M.H Halperin, *The 1958 Taiwan Crisis: A Documented History (U),* Memorandum, RM-4900-ISA, Rand Corporation, December 1966 (selectively declassified in June 1975). For a joint US/Chinese examination of the several crises that have arisen between the two countries, including those over Taiwan, see Michael D. Swaine & Zhang Tuosheng with Danielle F.S. Cohen, *Managing Sino-American Crises: Case Studies and Analysis*, Carnegie Endowment for International Peace, Washington DC, 2006.

For several years after the end of WW2, the momentum of the US nuclear weapon program fell away practically to zero. The American nuclear arsenal at this time numbered in the tens, and most of the weapons were not assembled. As late as the Berlin crisis in the latter months of 1948, Washington sought to underline its resolve by deploying B-29 bombers—the aircraft that had become synonymous with the Bomb since Hiroshima—to the UK. Washington had no Bombs to put in them so it was content to send B-29s that had not been modified to deliver nuclear weapons (although only specialists could spot the differences).

The Berlin Crisis of 1948, the formation of NATO in April 1949—which saw the US assume stringent security obligations to allies an ocean away from America but very close to the putative enemy—and the sooner-than-expected arrival of the Soviet Bomb in August 1949 saw some coherence restored to the productions and stockpiling of nuclear weapons. By 1950, the US arsenal compromised some 200 weapons. In the same year, Truman approved development of the hydrogen bomb, and the feasibility of this weapon was confirmed in November 1952. It had become apparent that even sophisticated variants of the original fission weapons could not achieve yields much in excess of 100 kilotons (or about 8 times the destructive force of the Hiroshima bomb). H-bomb yields, on the other hand, were for all practical purposes, unlimited and these devices proved to be highly amenable to reductions in size and weight. The standard gauge for nuclear weapons went from the kiloton (1000 tons of TNT equivalent) to the megaton (one million tons of TNT equivalent). The deployment of operational systems with multi-megaton warheads became routine for both superpowers. The yield of the standard warhead on China's longer-range missiles is believed to be 3.3 megatons.

This time, with the sense of a global struggle with Soviet-led international communism deeply entrenched and America committed to the large-scale peacetime redevelopment of its conventional and nuclear forces, there was to be no holding back. The US had demobilized rather extravagantly after Japan's surrender and until well into the 1950s found itself playing a global security role with relatively modest conventional forces and, perhaps unconsciously, putting a lot of faith in the Bomb. America's nuclear arsenal expanded and diversified very rapidly as, in addition to weapons for long-range bombers, all the services acquired nuclear variants of some of their conventional weapons. The numbers went from the low hundreds in 1950 to over 18,000 by 1960 and encompassed aircraft-delivered bombs, warheads for surface-to-surface, surface-to-air and air-to-air missiles, landmines, sea-mines, torpedoes, depth charges and artillery shells.

In these early days, the development of nuclear strike plans was a somewhat ad hoc process dominated by the regional Commanders in Chief with a relatively thin over-arching coordination process at the national level. A question that arose relatively quickly, including in response to events that involved China, was who could responsibly be authorised to use nuclear weapons. Events in Korea and in the Taiwan Straits repeatedly led America's military leadership to point out that some political objectives or commitments would require the US commander to be authorized to use tactical nuclear weapons as and when he considered it operationally appropriate.

President Truman developed a healthy respect for the Bomb, accepting that it represented a decisive break in the normal trajectory of military technology, and

eventually becoming uncharacteristically philosophical about whether this weapon could be reconciled with the conduct of international affairs along traditional lines. His successor, Dwight Eisenhower, had essentially the same concerns but was equally conscientious in projecting the public line that the Bomb had to be viewed simply as 'another weapon' in the arsenal. Eisenhower's intent, rather clearly, was to bolster deterrence by denying any sense of intimidation that could, in turn, lead an opponent to discount the risk that the US might use this capability. Behind closed doors, however, Eisenhower resisted his own logic that the Bomb was 'just another weapon' and was loath to compromise the president's exclusive authority to authorize its use.[21]

It can safely be assumed that some kind of operational plans for the use of nuclear weapons were drawn up during the darker days of the Korean war, and that these plans were progressively modified as the task transformed from shaping outcomes on the battlefield to that of deterring aggression by large and very proximate conventional forces (and even larger allied forces in neighbouring China and the USSR) across an international border that was essentially arbitrary – that is, it was not a natural boundary with some defensive attributes. Much the same can be presumed to have occurred in response to the Taiwan crises in 1954/55 and 1958. Over the course of the 1950s, US sub-strategic or tactical nuclear weapons spread to Guam (1951), Okinawa (1954: where US bases had extra-territorial status until the islands reverted to Japanese control in 1972), South Korea (1958), Taiwan (1958) and the Philippines (1957) and totalled around 2400 by the early 1960s.

Institutionalising nuclear deterrence

The first US attempt to develop a declaratory position on the use of nuclear weapons stemmed from the early days of the Eisenhower administration and acquired the short-hand label of 'massive retaliation'. Under the doctrine of massive retaliation, the US declared that large-scale aggression against its vital interests would be countered by the full-scale use of nuclear weapons against targets in the Soviet Union and its allies (China and the East European states) that would bring the aggression to an early end. The target mix under 'massive retaliation' (and under a plethora of specific military plans that were drawn up from 1945 onwards) has proven to be surprisingly durable. Top priority was assigned to the destruction of the Soviet capability to make and deliver nuclear weapons. Then came the industry targets deemed to have the strongest correlation with the capacity to sustain a large offensive with conventional forces (petroleum, power generation, iron and steel) and the transportation capacities needed to move and supply these forces. It was noted that pursuit of these objectives would also involve the destruction of political and administrative centres and of internal communication capacities.

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[21] M.H Halperin, *The 1958 Taiwan Crisis: A Documented History(U)*, and Walter Pincus, "Eishenhower Advisors Discussed Using Nuclear Weapons in China", Washington Post, 30 April 2008. The Pincus article was driven by the declassification of a full history of the 1958 Taiwan crises of which the Halperin study was a part. The compromise that took shape in the later 1950s was that a theatre commander could authorize the use of nuclear weapons if he determined that the delay involved in securing presidential endorsement would put US forces at unacceptable risk. In addition, however, this pre-delegation of authority to use nuclear weapons was confined to weapons that would detonate in the upper atmosphere and on or over the high seas. Weapons that would strike ground targets in another country required presidential authority at all times.

A point of particular interest for our present purpose is that China was regarded as indistinguishable from the Soviet Union, that is, it was presumed that China would be a full party to those circumstances that would trigger massive American nuclear retaliation.

In 1960, the procedures and processes in the US associated with giving practical effect to nuclear deterrence underwent a defining reform. The Single Integrated Operational Plan (SIOP) took shape in December 1960 and provided for a more streamlined, coherent and disciplined process of identifying targets, determining the urgency of their destruction and devising the optimum way of using the weapons and delivery systems available to achieve the stated objectives. Among other things, the SIOP established a central Joint Strategic Target Planning Staff and tried to eliminate the double and even triple coverage of some targets in both Europe and the Far East because regional commanders failed to coordinate their planning. SIOP 60 continued to envisage a single massive nuclear response, China continued to be regarded as an appendage of the USSR but the authority of regional commanders to develop their own plans for possible regional contingencies was curtailed and the nuclear capabilities under their command were harnessed more closely to the SIOP.

The new Kennedy administration shared the increasingly prevalent view that posturing US nuclear forces for a single massive strike lacked credibility and therefore weakened deterrence. The new thinking favoured giving the US president some options between surrender and a holocaust, in particular, to discourage the explicit targeting of population centres and perhaps using the threat to target cities as an incentive to negotiating an end to the conflict. The propensity to disaggregate and to search for additional options also led to a reconsideration of the unity of the 'Soviet 'bloc'. The US was of course aware of the ideological and policy disputes that had accumulated between Moscow and Beijing over the course of the 1950s, and of the apparent open rift in 1959 when thousands of Soviet personnel in China were abruptly withdrawn. Although Washington was very cautious about assigning strategic significance to this development (and probably did not fully accept it until the mid-1960s), SIOP 62 did begin the practice of more clearly distinguishing target sets in China and the East European states from those in the Soviet Union.

By this time, work on quantifying the outer boundaries of nuclear threats (or an attempt to answer the question of 'how much is enough?') had to begun to settle around the figure of 70 percent of the enemy's urban/industrial base.[22] SIOP 62 included 79 urban/industrial targets in China. Of these, 49 were deemed to be urgent which meant that the US military was required to ensure that these targets could be struck with delivery systems that were on continuous alert and able to respond immediately to any presidential order. The alert US nuclear forces in the Pacific arena at this time comprised both strategic (i.e. long range) systems like B-47 and B-52 bombers and increasing numbers of ICBMs and SLBMs together with tactical fighter-bombers, nuclear-capable short range ballistic and cruise missiles, and nuclear

[22] This figure was not a political/psychological assessment of how much prospective loss of life and destruction would deter another government. It happened that the distribution of people and industry in the Soviet Union was such that, beyond 70 percent, the destructive effect of additional bombs became subject to sharply diminishing returns. The usefulness of the figure lay in helping to dampen military demands for more bombs.

artillery based in Korea, Okinawa and Taiwan (although not all these tactical systems were deployed at all these locations).

No particular effort was made in 1962 to ensure that a nuclear strike on China or the Soviet Union could be carried out with minimal risk that the other country might confuse it with an attack upon itself and react accordingly. The underlying assumption was still that, in circumstances that gave rise to the possibility of a nuclear response, China and the USSR would both be on the 'other' side. The possibility that China could independently generate a nuclear contingency was not recognized in US nuclear targeting plans until SIOP 66, by which time China had become (in October 1964) the fifth state to test a nuclear device. The changes involved were far from trivial. Delivery platforms, particularly the expanding force of ballistic missile submarines (SSBN), had to be assigned new patrol areas so that the combination of range and missile trajectory could be clearly identified by the Soviet Union as directed against China, not themselves.[23] As indicated earlier, this change could be said to have signified acceptance by the US that the Sino–Soviet split was genuine and enduring and therefore had to be accommodated in its planning for strategic nuclear deterrence. China was still, at the level of gut instincts, an adversary with a secure place in the SIOP.

The Sino–Soviet split was the first illustration of an enduring phenomenon: a SIOP that was conspicuously unresponsive even to major changes in the global political arena. There has clearly been a disposition in the US to reflect long and carefully even on transformational changes before accepting that these changes needed to be reflected in America's nuclear targeting plans.

The next milestone in the US–China saga was the resumption of direct political contacts in 1972 when President Nixon visited China and, ultimately, of full diplomatic relations in 1979.[24] Over the second half of the 1960s, as the US became heavily committed to, and bogged down in, Vietnam, the Soviet Union began a substantial build-up of conventional and nuclear forces in its eastern regions adjacent to China and, through its intervention in Czechoslovakia, signalled a willingness to impose compliant behaviour within the Socialist camp (the so-called Brezhnev doctrine). China and the Soviet Union, while cooperating reluctantly in supporting North Vietnam, actually came to blows in a series of significant border clashes in 1969. Not long afterwards, the US and China discreetly sounded one another out on the prospects of re-defining their relationship.

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[23] Technological developments in the SSBN/SLBM arena were rapid and consequential and allowed these warheads to progressively assume primary responsibility for meeting SIOP objectives with respect to China. The initial Polaris SLBM, with a range of about 2000 km, was deployed in Western Pacific from 1964 to 1981. The force stabilised at 10 boats with a total of 480 warheads. The Polaris missile was considered too inaccurate to reliably destroy hardened point targets so these weapons were assigned to larger, softer targets like industrial facilities and command, control and communication centres (so-called countervalue targets). From 1981, Polaris boats were replaced by boats carrying the Trident C-4 missile which had better counterforce capabilities and a range around 8000 km. The Trident force in the Pacific initially stabilised in 1987 at 8 boats carrying 192 missiles and 1500 warheads. The current standard SLBM, the Trident D-5, has the most powerful missile warhead in the US arsenal (475 KT) and accuracy that matches that of land-based missiles, that is, it can be assigned to the full spectrum of strategic targets, including hardened point targets.

[24] Henry Kissinger's elaborate (and very personal) account of how the Nixon visit came about can be found in Henry A. Kissinger, *White House Years*, Little Brown & Company, Boston, 1979, pp.684–787.

The opening to China came at a time of renewed ferment in the strategic nuclear business. The US had perfected the technologies involved in placing multiple independently-targetable warheads on its missiles which promised a new era of abundance for the targeting staff a decade after missile numbers had been essentially frozen. In addition, there was a renewed push for widening the nuclear options available to the president both to make deterrence stronger through raising the credibility of threats to use nuclear weapons and to offer some prospect that a nuclear war could be terminated before the full 'assured destruction' capabilities on both sides were put to use. China, by this time, had operational nuclear weapons. None could reach the US, but it had a modest number of medium range nuclear missile systems that could target the eastern regions of the Soviet Union, India, Japan, and US bases in Taiwan, South Korea and the Philippines. These nuclear delivery systems naturally became new, priority targets. Even so, the expansion in the targeting of China was startling, with Kissinger reportedly observing in 1971 that the US had and would retain for the foreseeable future a disarming first strike capability against China. Where SIOP 62 assigned 79 warheads to China, SIOP 72 had 600 warheads assigned to China, 200 of which came from the 1700 sub-strategic warheads that the US still had deployed on Guam and allied territory in the western pacific.[25] Nuclear-capable tactical fighter/bomber aircraft based in South Korea, Okinawa and the Philippines could be placed on Quick Reaction Alert which involved parking nuclear-armed aircraft on the end of the runway.

Despite the irritant of essentially irreconcilable differences over Taiwan and of China doing little to ease or shorten America's agony in Vietnam, the shared interest in containing the Soviet Union proved decisive in sustaining the new relationship and drove it in the direction of a de facto alliance. The US began sharing its intelligence on Soviet military developments in the regions adjacent to China, information that China was incapable of generating itself. In 1979, when the US lost important intelligence-gathering capabilities in Iran, China allowed replacement facilities to be stationed on its territory. [26] By this time, Pacific Command and some of the security agencies in Washington had began to argue that China's policy settings had changed fundamentally, specifically, that far from being implacably opposed to the US presence in the Western Pacific, Beijing now viewed it as a valuable counter to Soviet, Vietnamese and North Korea adventurism as well as a bulwark against a revival of Japanese military power. Against this background, they questioned the wisdom of continuing to regard China as a primary target in the SIOP when the US knew that all of China's capabilities, including its still modest nuclear forces, were directed against the Soviet Union.

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[25] In 1972, Nixon accepted a demand from Mao that the nuclear weapons the US had deployed to Taiwan since 1960 be withdrawn. The remaining weapons, about 25, were withdrawn in 1974, along with their delivery aircraft. Also in 1972, Okinawa reverted to Japanese control and the US bases there lost their extra-territorial status. US nuclear weapons were withdrawn in compliance with Japanese law. Later, in 1977, in the context of ASEAN policies on nuclear weapons, the US withdrew the nuclear weapons it had deployed at its air and naval bases in the Philippines. This left South Korea as the only foreign location in the East Asian region where US nuclear weapons were deployed. This practice was not terminated until 1991 and involved the withdrawal of about 60 aircraft-delivered bombs and 40 artillery shells.

[26] See James Mann, *About Face: A history of America's Curious Relationship with China, from Nixon to Clinton,* Alfred A. Knopf, New York 1998, especially pp.51–65.

China removed as a primary nuclear target

Eventually, in 1982, the SIOP was amended to delete the Major Attack Option directed at China. A MAO involved a planned strike, or series of strikes, by the nuclear forces that the US kept on continuous alert. Specific Chinese capabilities, notably those for power projection, continued to be addressed in smaller strike plans assigned to the Strategic Reserve Forces (those not on continuous alert).[27] A decade after Nixon's transforming visit, China became the first state to be demoted as a priority nuclear target in the SIOP. The next iteration of the SIOP, in October 1983, was the first in which the MAO's were directed exclusively at the Soviet Union. In the same year, the Pentagon was directed to plan to be able to provide security assistance to China in the event of Soviet aggression, a striking illustration of how far the US–China relationship had come and also of the centrality of the Soviet challenge in this transformation.

As before, there were other significant developments that seemed to cut across the very basic instincts that informed the shape of the SIOP. The Reagan administration resolved to correct what it contended had been a cumulatively significant shift in the balance of power in favour of the Soviet Union over the previous decade, eventually rolling out the Strategic Modernisation Program centred on the Peacekeeper (MX) ICBM, the Strategic Defense Initiative or Star Wars, and plans to roughly double the US navy to 600 ships. China was seemingly heartened by these developments. Deng Xiaoping used them (along with Moscow's fateful decision to invade Afghanistan) to reinforce his contention that the Soviet Union was reliably check-mated, giving China an indefinite window of opportunity to relax its security effort and give top priority to rebuilding its economic capacity. At the same time, the Reagan administration determined in 1982–83 (that is, coincident with the changes to the SIOP) that the US was attaching undue importance to its relations with China and giving China too many opportunities to shape developments in its favour. The decision to be somewhat more distant to and agnostic about China coincided with growing Chinese confidence as the 1980s unfolded that the threat from the Soviet Union had dissipated and that China's need for a strong relationship with the US, at least in security terms if not in the economic arena, was less compelling. As the discipline of the Soviet threat weakened, US–China policy differences began to grow wider, not least in respect of nuclear and missile proliferation activities involving Iran and Pakistan.

The Cold War ends

The end of the Cold War and the break-up of the Soviet Union in 1989-91 fractured the central nuclear balance as the nucleus of the international security order. The abrupt demise of what was in effect, if not in intent, a condition of mutual assured destruction on hair-trigger alert was an unqualified relief. The fallout for US–China relations was less positive. Immediately before the curtain fell on the Soviet Union and the Cold War, the tragic events in Tiananmen Square on 4 June 1989 caused widespread shock and disappointment. The developments in Tiananmen Square were

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[27] There was a continuous process of transition of particular nuclear systems from the alert force to the reserve force and back again. An SSBN, for example, when it completed its transit from its home port to the ocean areas from which it could reach its designated targets became part of the alert force. At the same moment, the boat that it was replacing and in transit back to the home port reverted to the reserve force. Analogous arrangements applied to strategic bombers and land-based strategic missiles.

reportedly the most watched event in US television history and made the management of US–China relations a prominent factor in US domestic politics for years afterwards. Washington put the relationship in the political freezer with an arms embargo and a suspension of high-level contacts so Washington and Beijing had to manage the challenges of the early post-war years with a bilateral relationship that was strained and volatile.

America's security community took as its new starting point that China was first and foremost an authoritarian communist state and that it would be prudent to view any prospects or aspirations it had to resume its place as one of the world's great powers in this light. The end of the Cold War gave new visibility to the fact that China's program of 'reform and opening up' had gained genuine traction but China's lure as a market was qualified from the outset by the view that economic success would bring political influence and military power that was very likely to be directed against US interests. Moreover, events and policy choices in the early 1990s seemed to reinforce the likelihood that the US and China would approach one another in the expectation that their relationship would be characterized by intensifying rivalry and even antagonism.

China resented what it saw as a US 'milking' the Tiananmen incident for years in the UN Human Right Commission, in the context of trade privileges, and its new willingness to breach the spirit of the 1982 bilateral communiqué regarding restraint on arms sales to Taiwan (President Clinton proceeded with plans to sell 150 F-16s to Taiwan). China would also have taken note of the neo-conservative security philosophy that had been constructed in the Pentagon in 1991–92 (when Dick Cheney was Secretary of Defense) and of the stunning demonstration in the first Gulf war that America's capacity to give effect to this neocon prescription might be very real indeed. Beijing would have taken heart from the bitterness of the US-Japan trade dispute in the early 1990s, and the fact that it threatened the political and security relationship, only to be alarmed when the US and Japan agreed in April 1996 to give their alliance a new and indefinite lease of life as well as to encourage Japan to expand its defence and security horizons.

For its part, Washington saw a China that was notably more assertive on Taiwan and in prosecuting its extravagant territorial claims in the South China Sea; a China that continued to display a weak commitment to restraining nuclear and missile proliferation; a China that had a new security relationship with Russia and was stridently critical of the unipolar structure of the international scene, a China with a truly phenomenal economic momentum, and a China that had begun to invest seriously in modernizing its armed forces. The low point came in March 1996, when China resorted to blatant military coercion to try to discourage Taiwan's voters from supporting the pro-independence candidate for president Lee Teng-hui. When China supplemented the large-scale military exercises it was conducting in the Taiwan Straits with ballistic missile tests to aim points to the north and south of the island, the Clinton administration pointedly deployed two carrier battle groups to waters south of Taiwan. It was more an instance of indirect gunboat diplomacy but it was still the closest thing to a US–China military standoff in nearly 40 years (since the Taiwan crises of 1958).

President Clinton had taken a hard line on China during the campaign in 1992, and carried this attitude into his first term in office. The Clinton administration committed to a policy of 'engagement' with China, although it was initially a highly conditional policy setting. Moreover, the administration encountered fierce and sustained pressure from the Republicans (who controlled the Congress for most of Clinton's presidency) for an even more combative posture toward China. In his second term, Clinton resolved that the US would focus more closely on Asia and, in particular, on building a more positive and constructive relationship with China. This ambition was essentially derailed by the Monica Lewinsky affair but, closer to our present purpose, this new policy setting for the management of relations with China proved incapable of diverting the more elemental considerations that had taken root since Tiananmen.

China re-instated as a primary nuclear target

In November 1997, President Clinton signed Presidential Decision Directive 60 (PDD 60) which addressed US policy regarding the use of nuclear weapons. PDD 60 abandoned the notion articulated under Reagan in the early 1980s that US nuclear forces should aspire to win nuclear wars, including protracted nuclear wars and reasserted the posture of deterrence through punishment (i.e. retaliation). A second feature of PDD 60 was that China was re-introduced into the mainstream of the SIOP—that is, with its own major attack option—and to put an even broader range of targets in China at risk from US nuclear weapons. As indicated above, the most recent numerical reference point mentioned in the open literature is the 600 weapons set aside for China in SIOP 72. There is also reference to a further expansion of the nuclear target set in China as the US effort to build more selective options into their strike plans took concrete form in the 1972–74 period (culminating in the so-called Schlesinger doctrine that informed National Security Decision Memorandum 242 of January 1974).

The Bush administration introduced additional innovations through its 2001 Nuclear Posture Review. It envisaged a new strategic triad that combined (and in the view of some, dangerously blended) conventional and nuclear strike forces, broadened the range of contingencies that might attract a US nuclear response, and directed the targeting staff to expand its skills beyond pre-planned strike packages to include a capability to quickly devise and implement an appropriate response to whatever contingency the political leadership deemed warranted a nuclear response. The Bush administration also continued to reduce the nuclear forces to comply with START I limits (6000 warheads on 1600 delivery vehicles) and then to the unilateral limits set in the Moscow treaty of 1700–2200 'operationally available' warheads but with a substantial (and classified) number of warheads in a ready reserve status. Finally, in a move rather clearly related to China, the Bush administration over the period 2002–05, relocated 5 Trident SSBNs from their King's Bay homeport on the Atlantic ocean to Bangor on the Pacific ocean which is the first time since this strategic nuclear delivery system became operational in 1960 that Pacific deployments (a total of 9 boats) have outweighed those in the Atlantic (5 boats).