

# SPECIAL REPORT

A S P I

A shifting Asian nuclear order



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AUSTRALIAN  
STRATEGIC  
POLICY  
INSTITUTE

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September 2016

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### Acknowledgements

Ms Alice Slevison provided valuable research assistance to this report during the time she was a research intern here at ASPI. And the author wishes to acknowledge the substantive and useful comments provided by a peer reviewer on an earlier draft.

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# A shifting Asian nuclear order



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First published September 2016

Published in Australia by the Australian Strategic Policy Institute

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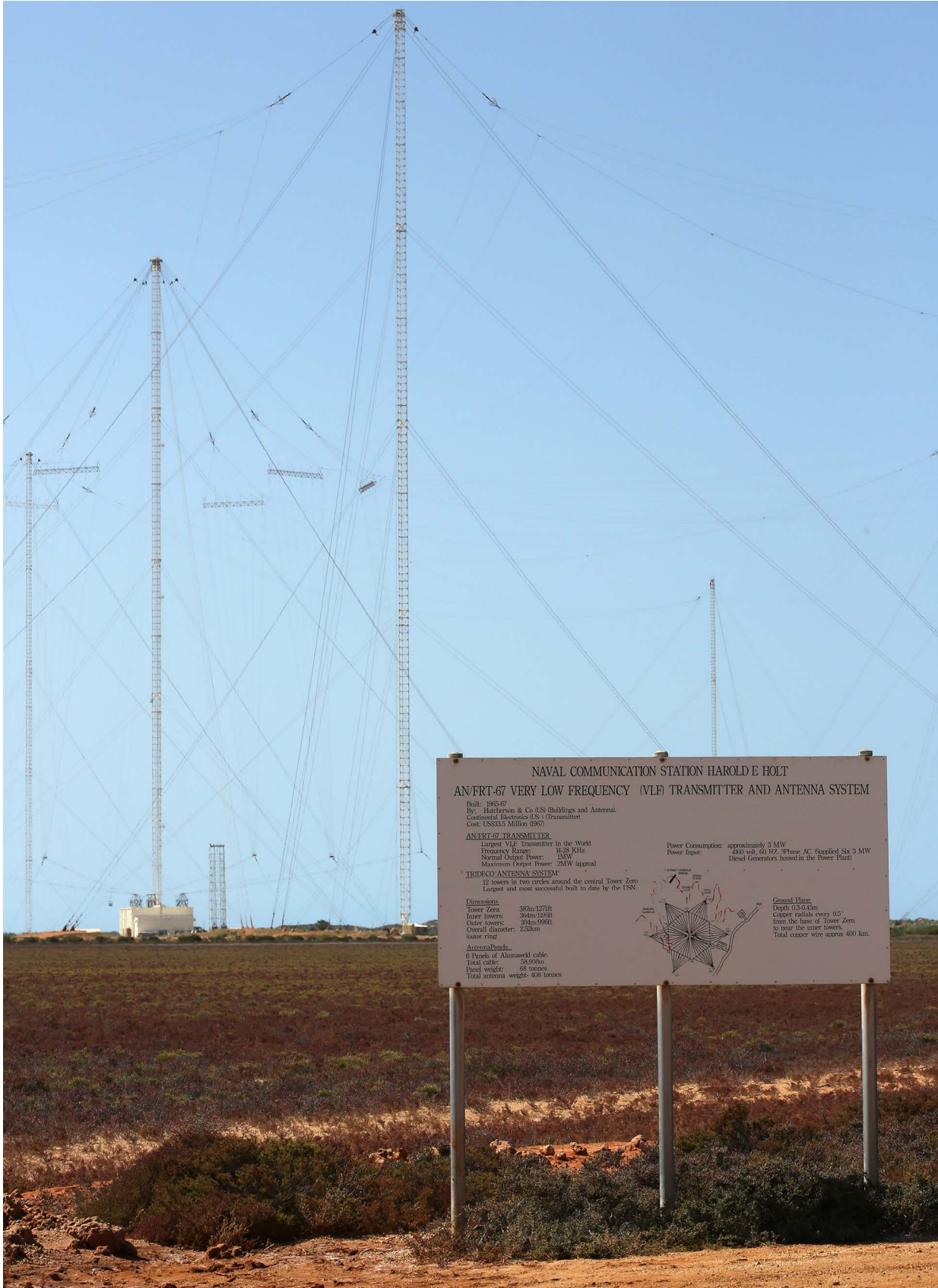
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Arrayed antennae at the Naval Communication Station 'Harold E Holt' in Exmouth, North West Australia. Photo courtesy Defence Department.

# EXECUTIVE SUMMARY

The Asian nuclear order is increasingly coloured by complexity and instability. It's an order that's still largely shaped by subregional drivers, national priorities and a code of voluntary restraint rather than by any region-wide 'managed system'. But geopolitical and technological shifts are pulling the order in new directions. Geopolitically, we're watching a new set of challenges unfold: in all likelihood, a more competitive relationship between the US and China; a greater determination in Pakistan to rely on nuclear weapons to offset India's rising power; Kim Jong-un's more obvious political endorsement of an accelerating North Korean nuclear program; and a set of worries among US allies—specifically Japan, South Korea and Australia—about whether US extended nuclear deterrence and assurance<sup>1</sup>, even if still on offer, will be effective instruments in a more multipolar region. Technologically, regional nuclear arsenals are becoming more sophisticated and capable—and so too are ballistic missile defences and conventional precision-strike options.

In a region of major power shifts, nuclear weapons can be a force for peace. By their nature they induce a degree of caution in strategic decision-making. Even in the South Asian case—the world's only case where two regional nuclear-armed enduring rivals confront one another—decades have now passed without a crossing of the nuclear threshold. But nuclear modernisation programs already underway across the region suggest that 21st-century Asia will be troubled over the long term by a set of persistent nuclear anxieties.

Australia's not well placed to bring about a unilateral reshaping of the Asian nuclear order. Even our ally, the US, believes we stand too far back from the Eurasian rimlands for our views on extended nuclear assurance to carry much weight. China, India, Pakistan and North Korea give our views even less attention. Of the four, our influence might be greatest in New Delhi, but so far the careful, patient operationalisation of the Indian nuclear arsenal makes India the nuclear-armed regional power with which we'd probably have the fewest concerns. We enjoy better access in Japan and South Korea—the two strongest latent nuclear powers—as US allies reach out to each other in a changing Asia. Moreover, our uranium-supply arrangements give us a voice in both capitals. But it's unlikely we could dissuade either from the sort of major strategic reorientation that would be implicit in any decision to build an indigenous nuclear arsenal.

In short, a long period in which nuclear weapons have played an understated role in Asian security might be coming to an end. If it is, Australia can do little to prolong it. At a minimum, we need to be thinking about how best to ensure Australia's security and freedom of manoeuvre in an Asia where nuclear weapons sit in the strategic foreground rather than in the strategic background. A policy of self-abnegation on our part—turning our back on nuclear weapons and the contribution they might make to national and regional security—would be largely ineffectual in making either Australia safer or the region more stable. Indeed, any abrupt Australian abandonment of US extended nuclear assurance might do more harm than good, not least by calling into question the durability and credibility of similar arrangements elsewhere, including in Northeast Asia.

We can't run away from the Asian nuclear order or shape it to our will. But we should do what we can to add ballast to the concepts of deterrence, crisis-stability and restraint in the years ahead. That means underlining the importance of the principle of voluntary restraint, and urging its formal codification between the region's two dominant nuclear powers, the US and China. It means, too, doing what we can to reinforce the critical norms of the

nuclear world: that nuclear weapons are not the standard equipment of the modern state; that they are especially dangerous, and merit special efforts to ensure their safety and security; and that they are weapons of last resort. Australia could usefully stimulate official discussion of the issues through a series of specific regional summits, with attendance at the ministerial level. Attendees at those summits should include representatives from the regional nuclear weapon states—including North Korea—and states enjoying extended nuclear assurances or having high nuclear latency. The summits' agendas should focus on order-building, not on an evangelical campaign against nuclear weapons.

Secondly, we can't ignore the dogs that don't bark in the night. We should do what we can to maintain and reinforce Southeast Asia's nuclear-weapon-free status. True, any sudden wave of nuclear proliferation is more likely further afield, in Northeast Asia, the Middle East or Europe. But we shouldn't take the non-nuclear status of our near neighbourhood for granted. Proliferation there would be of immediate strategic significance for us.

Thirdly, as other US allies in Asia look for ways to strengthen US extended nuclear assurances in the region, we'd be well advised to do the same. If the government hasn't already done so, it should begin a more comprehensive set of discussions with the US about the ways in which the ANZUS alliance might be strengthened in that regard. Australians aren't used to thinking of ANZUS as a nuclear alliance in 2016, but it has been one since at the least the 1960s. As Asian strategic transformation unfolds, it will be important to ensure that the nuclear side of our alliance remains relevant. That might include the introduction of nuclear sharing arrangements similar to those already existing in Europe.

Finally, even with such efforts, we must accept that nuclear weapons could spread quickly in Asia. Worries among US allies about the US's continued willingness to offer extended nuclear assurances—something previously taken for granted but now less certain—could be a particularly important driver of near-term regional proliferation. Such an outcome would leave Canberra with a series of complex and unattractive choices—not merely over how to respond to proliferation by US allies in Northeast Asia, but in thinking through what a fundamental shift in the regional order meant for Australia's own nuclear identity.



# INTRODUCTION

For decades, Asia has been characterised by a slow tempo of nuclearisation and relatively modest nuclear forces. Both factors signal the understated role that nuclear weapons played in the regional security order. Even the great powers played a modest hand in terms of that order. During the Cold War, the US and the USSR deployed fewer nuclear forces in Asia than they did in Europe, and saw the region as a secondary theatre of their larger strategic competition; it's unlikely either would have crossed the nuclear threshold because of developments specific to the region.

Since the end of the Cold War, we've seen the withdrawal of US theatre- and tactical-range nuclear weapons from the region, including from US ships and submarines under the Bush initiative of September 1991. In Asia, the US has gradually settled into a 'reachback' model of extended deterrence—one that keeps US nuclear warheads deployed on US territory instead of being forward-deployed on naval vessels or on the territories of its allies.

Alongside that constrained nuclear competition between the superpowers, history has witnessed gradual proliferation within the region by a small number of developing countries: in chronological order, China, India, Pakistan and North Korea. Even the largest of them, China, a recognised nuclear-weapon state under the Nuclear Non-Proliferation Treaty (NPT), has long underplayed its nuclear strength. After its nuclear test in 1964, it made haste slowly in the construction of a nuclear arsenal that numbered only a few hundred warheads. It refused to be drawn into a nuclear arms race with the two superpowers, and both its force structure and its targeting doctrine implied a high threshold for nuclear use.

India and Pakistan, both of which had built nuclear weapons well before their nuclear tests in 1998, also maintained only small arsenals. Some argued that their strategic relationship, perhaps best understood as an enduring rivalry, was tempered by the deployment of nuclear weapons.<sup>2</sup> True, the relationship remained brittle, and in the early days their nuclear arsenals—especially Pakistan's—looked vulnerable to surprise attack. But over time an element of caution became a more common feature of the rivalry.

North Korea always was the *enfant terrible* of the Asian nuclear order. It was by far the weakest and slowest of the Asian proliferators, its nuclear program limped rather than ran, and it saw that program as a mechanism for regime survival and blackmailing its neighbours. Still, its small number of nuclear devices seems to have done little to strengthen its sense of self-assurance.

It would be too much to describe that earlier Asian nuclear order as 'a managed system of deterrence'—one of the key pillars of William Walker's concept of nuclear order—since in many ways the different geographical parts of the order never properly tied together into one system. But a set of deterrence arrangements emerged and stabilised within the different subregions, and that was no mean achievement.

A similar observation might well be made about 'a managed system of abstinence', the second pillar of nuclear order. Policies of abstinence varied from subregion to subregion, with comparatively weak linkages at the regional level. And those policies turned largely upon a principle of voluntary restraint rather than upon any managerial structure. True, the region benefited from a growing pattern of US–Soviet arms control—though Asia was an

afterthought for much of it. Perhaps more importantly, all four regional proliferators were developing countries, with more pressing problems than the production of large nuclear arsenals.

Nuclear weapon states' policies of voluntary restraint were supplemented by an important set of proliferation withholds. Both Japan and South Korea, states that flirted with nuclear-weapons development programs, were content to remain as non-nuclear weapon states, beneficiaries of the US nuclear umbrella but not themselves autonomous nuclear powers. Taiwan similarly refrained from such a course, no doubt fully conscious of just how Beijing (and Washington) would interpret such a move. And between the two subregions—Northeast Asia and South Asia—most closely tied to nuclear deterrence arrangements, Southeast Asia remained something of a *terra nullius* for nuclear weaponry. Both the South Pacific Nuclear Free Zone and the Southeast Asian Nuclear-Weapon-Free Zone treaties built upon that status, attempting to preserve it.

In short, while the various elements of William Walker's nuclear order—a managed system of deterrence complemented by a managed system of abstinence—seemed a bridge too far for Asia, the region did exhibit a range of characteristics that we might think of as 'pre-management' and 'pre-systemic'. The question now, though, is whether that situation is changing. It's not that a fully-fledged nuclear 'system' has suddenly emerged in Asia. But deterrence relationships between the nuclear players seem to be unfolding in more complex patterns—reflecting the broader shifts in intra-regional relationships. As they do so, they bring into question the resiliency of current policies of abstinence. Putting the problem simply, transformational change across the Asian strategic order is raising new questions about the efficacy of existing deterrence policies and about the strategic merits of abstinence.

Muthiah Alagappa's edited volume, *The long shadow*, remains the classic study of the Asian nuclear order. It describes a nuclear age markedly different from that of the Cold War—one characterised by increased asymmetry, a larger role for ballistic missile defence, greater blurring of the nuclear/conventional distinction, growth in the number of nuclear weapon states, heightened concern about the possibility of nuclear terrorism, and renewed interest in nuclear energy.<sup>3</sup> An international nuclear order coloured less by the bipolar relationship between two superpowers and more by the multipolar relationships among a mixed group of powers is—by itself—likely to be both more complex and less monochromatic. By the time Alagappa's new characteristics are stirred into that order, a more complicated nuclear world unfolds.

The nuclear modernisation programs now proceeding apace across Asia do not by themselves suggest a greater prominence for nuclear weapons in strategic postures.

The nuclear modernisation programs now proceeding apace across Asia do not by themselves suggest a greater prominence for nuclear weapons in strategic postures; sometimes modernisation is about nothing more than continuing to be able to do tomorrow what could already be done yesterday. But those modernisation programs are unfolding not within a geopolitical and technological vacuum, but in an environment of power shifts and innovation.

We're certainly looking at a greater level of Russian tub-thumping on nuclear weapons. But does that mean the Russian leadership sees nuclear weapons as having a more prominent future role in Asia? In part, yes. Russian nuclear coercion, as it was in Cold War days, still seems primarily aimed at Europe, backed with statements affirming Moscow's right to deploy nuclear weapons in Crimea and Kaliningrad. But Russia's clearly nervous about China's rise, not least because of what it might mean for the security of the Russian Far East. One of Moscow's strongest incentives to violate—or even abrogate—the Intermediate-range Nuclear Forces Treaty (restricting land-based intermediate-range missiles) is its concern over the growth of Chinese power in Asia. Moreover, the resurgence in Russian intrusions into Japanese airspace—and the circumnavigation of Japan by two Russian strategic bombers in late January 2016—suggests Beijing isn't the only Asian capital in which Moscow intends its nuclear strength to be felt.

Still, Russia's probably not the best indicator of change in the Asian nuclear order: it's too Eurocentric in its thinking and strategic orientation. But the Russian case does point to the importance of broader power shifts as a factor bringing nuclear weapons into greater prominence in Asia. The US–China nuclear relationship provides a better barometer of regional change. It's an awkward relationship to judge, not least because it's so unlike the Cold War relationship between the US and the Soviet Union. As Ashley Tellis observes, the US–China relationship is not one between two largely satiated powers.<sup>4</sup> Add in China's sense of historical victimisation, its new sense of 21st-century entitlement and its reluctance to discuss its arsenal and policy settings and the situation becomes still more opaque.

The broader US–China strategic relationship isn't adversarial, but it's increasingly competitive. Against that backdrop, Chinese nuclear capabilities are becoming more sophisticated. The development of Chinese military power has been rapid in recent decades. And Chinese conventional capabilities—including conventionally armed ballistic missiles—already pose a set of threats along the eastern Eurasian rimlands that makes US allies anxious. Actions that the US might take there to better assure those allies risk, in turn, further exciting the bilateral competition with Beijing.

Of course, since the Asian nuclear order doesn't really tie together into one system, we need to look beyond the dominant bilateral nuclear relationship to get a feel for its principal characteristics. A second relationship that deserves to be revisited is the South Asian one. Pakistan is attempting to join the nuclear mainstream.<sup>5</sup> Ideally, it would like what India already has: an agreement that accords it nuclear respectability—albeit not formal recognition as a nuclear power under the NPT—and that doesn't leave it stranded in a position inferior to India's.

India realised some years back that the nuclear club consisted of two distinct groups: the five permanent members of the UN Security Council (the P5) and the 'others'. Those others included itself, Pakistan, Israel and North Korea. Ever since it's been working to rebrand itself as P5-like rather than other-like, using its gravitational weight to carve out a unique space for itself as the major nuclear power that hasn't signed the NPT. Doing so has required New Delhi to exercise a measure of restraint in its nuclear weapons program as it works to build a closer civil nuclear partnership with the US and nuclear suppliers. That effort's still a work in progress—the Nuclear Suppliers Group decided at its latest plenary in late June to continue discussions on the possible future membership of non-NPT states.

Pakistan's belatedly set off down the same track, seeing that its earlier demands for equivalence of treatment weren't bearing fruit and sensing that US reliance upon it was decreasing as US troops withdrew from Afghanistan. That provides a measure of hope that—over time—Islamabad might be drawn into a stronger system of abstinence under an agreement whereby it gains greater international recognition as a more 'normal' civil nuclear power.

But Pakistan's the most prolific nuclear weapon producer of recent times. Some analysts speculate that it might end up as the world's third-largest nuclear power. Its recent emphasis on the development and deployment of battlefield nuclear weapons has commentators worried, too. Systems such as the Nasr missile—range about 60 kilometres—suggest future command and control challenges of the sort that have long haunted short-range delivery systems. Just as importantly, they suggest a willingness on the part of the Pakistani leadership to use nuclear weapons first and early in a conventional conflict.

A third case study involves the North Korean nuclear program—a program that's now much more blatant than it was just a decade ago. North Korea's a leader in the regional trend towards a greater prominence for nuclear weapons in national strategic postures. Some of that prominence probably results from leadership changes in Pyongyang, but a large part surely results from strategic calculation. North Korea senses a power shift in its immediate environment—its loss of an economic competition with South Korea and the gradual ossification of its conventional military capabilities.

After five nuclear tests, we still know less than we would like about the North's nuclear program, and that ignorance includes major uncertainties about the pace and scope of weaponisation. Still, mid-level projections of the future size of the arsenal are worrying enough, especially when coupled to ongoing improvements in North Korean

delivery systems. Higher-end estimates, which are even more worrying, generally turn on the possibility of a so-far-undiscovered centrifuge facility—a scenario that’s, unfortunately, not far-fetched.

North Korea’s existing nuclear arsenal already poses an existential threat to some of its neighbours; a larger one with an improved delivery capability would be intended to emphasise its status and to pose an increasing threat to other targets at greater distances, including the US. The simple fact that the North Korean arsenal has proven difficult to cap in quantitative or qualitative terms doesn’t bode well for the future of regional policies of abstinence. Continued North Korean proliferation, especially if it were to become more vigorous, might also bring into question the whole issue of how to exercise effective deterrence over Pyongyang. Increasingly, it seems that only regime change in Pyongyang can reverse North Korea’s nuclear trajectory. But that takes us down a fraught path. Kim Jong-un has no children and thus no designated successor—a fact that can only make him more anxious about threats he thinks might be aimed at his leadership.

Fourth, and finally in our exploration of Asia’s nuclear order, it’s worthwhile looking at the durability of existing assurance mechanisms, given the important role that they play in Asia as part of the current system of abstinence. Is the US rethinking its own future nuclear role in Asia? Yes. True, the region’s not a core theme in the US nuclear modernisation program, but Washington’s conscious of the deep-level strategic shifts under way, and of what those shifts might portend for its own regional nuclear role.

Under the Obama administration, US thinking about extended nuclear deterrence and assurance has been evolutionary rather than revolutionary. Washington remains keen to lower the profile of nuclear weapons and ballistic missiles in regional strategic competitions. The administration has created dialogues with Japan and South Korea (respectively the US-Japan Extended Deterrence Dialogue and the US-Republic of Korea Extended Deterrence Policy Committee, recently renamed the US-Republic of Korea Deterrence Strategy Committee) intended to reassure its principal allies in Northeast Asia. And the limited deployment of ballistic missile defences is intended to take the ‘cheap shots’ off the table in relation to regional crises without provoking a wider strategic competition.

Meanwhile, the return of a more competitive Asian strategic environment has had the effect of—partially—muffling assurance worries in order to present a picture of more unified alliances. It would be a mistake, though, to conclude that the public muffling of those worries equates to their resolution. The reawakening of the nuclear debate in South Korea over recent years—particularly in the aftermath of Pyongyang’s fourth nuclear test—shows how resilient the worries are. Remarks by US presidential contender Donald Trump that he would be open to allowing Japan and South Korea to build their own nuclear arsenals can only reinforce those concerns. Moreover, allies continue to sense that the structure of the regional strategic environment is evolving—in particular through the emergence of a more multipolar strategic order—in ways that will bring greater challenges to the credibility of US extended nuclear assurances.

That’s one aspect of regional nuclear order in which Australia has a direct interest. Yes, our view of the topic tends to be a ‘big-picture’ one; as Brad Glosserman observed at the 2015 Carnegie Endowment conference, Canberra sees the problem ‘from 35,000 feet’. It’s certainly true that Australia doesn’t have the same sense of being a frontline state that Japan and South Korea have. And Australia is highly unlikely to break away from its US extended nuclear assurance while such assurances hold in the North Pacific. But nor is the issue as settled as some might imagine.

From all four case studies, we should be able to draw some conclusions about the future regional nuclear order. It’s important, of course, to get the baseline right: nuclear weapons have always cast long shadows in Asia. They induce caution and set boundaries.<sup>6</sup> It would be wrong to confuse restraint with irrelevance. In Asia, nuclear weapons are typically deployed in small numbers, but those small numbers count. Similarly, it would be wrong to think that all the region’s strategic challenges can be addressed simply by better management of the nuclear order. Asia’s being swept by an age of strategic transformation, an age when the adoption of game-changer strategies by both revisionist and status quo powers will be more common. It would be unusual if at least some of those strategies didn’t touch upon the nuclear field.

# THE US–CHINA NUCLEAR DYNAMICS

The US–China relationship is of central importance in defining the future Asian nuclear order. Both players are great powers, but their nuclear relationship—still markedly asymmetric—is experiencing all of the turmoil that a transformational strategic setting and rapid technological change are bringing to the broader order. Both countries will need to make special efforts to ensure that their bilateral deterrence relationship remains well managed. And both carry special responsibilities in relation to abstinence across the wider region. Those responsibilities seem likely to test China, which has traditionally been reluctant to constrain others—witness its hesitancy to use its policy options seriously to rein in the North Korean program, for example.

The news from the nuclear front line isn't all bad. Indeed, part of the good news is that there isn't a nuclear-charged front line between the two great powers. As Brad Roberts writes, the relationship between the US and Russia has long been complicated by the presence of nuclear weapons in the foreground, whereas the key challenge in the US–China relationship has been to keep nuclear weapons in the background.<sup>7</sup> That important difference between the two relationships has something to do with what Robert Ross once called 'the geography of the peace'<sup>8</sup> in East Asia—China's a continental power, the US a maritime one. But it also reflects a relationship tolerant of each other's important interests, a regional security environment that isn't purely bipolar, and an economic interdependence that seems to be helping to corral great-power tensions.

Still, the geography of peace is gradually breaking down. China's moving to become more than a continental power. And the US doesn't accept that it can maintain a position of primacy in Asia while moving to a position of offshore balancer. The nuclear relationship between the two great powers has traditionally been defined by asymmetry rather than symmetry, and that condition remains true today: China does not set out to compete directly with the US and Russia as a nuclear peer competitor. But if the emerging relationship isn't one of symmetry—and it won't be for a long time, if ever—it's certainly one marked by escalating strategic competition. Increasingly, there's an action–reaction dynamic to the nuclear relationship, which could pull it into unsettled waters. Beijing currently believes that it would be foolhardy to embark upon a nuclear arms race against the US, but its sense of historical grievance won't allow it to accept a permanent position of inferiority to the US—which makes its status in US eyes an important variable in the overall relationship.

Even a quick look at the two countries' nuclear arsenals highlights the marked disparities in size and composition. The US deploys a strategic triad of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and bomber aircraft that outnumbers China's at every point of comparison—across delivery vehicles, warheads and megatonnage. As a quick indication of the scope of those disparities, China's total number of nuclear warheads is probably less than one-sixth of the number of warheads that the US currently holds retired, but intact and awaiting dismantlement. (A recent estimate suggests there are more than 2,300 such US warheads, in addition to an active US nuclear stockpile of more than 4,600 warheads.<sup>9</sup>)

Against those disparities, China's ambition for some decades has been to deploy a lean and effective arsenal that could, in the final resort, inflict an unacceptable level of damage upon the US. That seems still to be its principal nuclear goal, despite it's being somewhat harder to achieve in an age of growing precision-strike and ballistic missile defence capabilities. But Beijing also seems to be increasingly interested in the role that nuclear weapons might play

in a regional conflict in Asia, whether against the US or others, and that's making it think more carefully about its range of intermediate nuclear options.

The bilateral nuclear relationship is an important one for the broader regional security environment. How the region's two great powers co-exist sends important messages about the dominant characteristics of the Asian nuclear order. In March 2013, Elbridge Colby and Abraham Denmark released a report from a Project on Nuclear Issues working group on the bilateral relationship.<sup>10</sup> It assessed that dynamics were relatively stable at the time because both powers would soon have the sort of nuclear force they wanted. But it worried about conventional-force imbalances and other sources of tension in the region and about the expansion of the quality and quantity of China's nuclear arsenal.

One important area of disagreement is whether the US should acknowledge a condition of mutual vulnerability between the two countries. Proponents believe that such acknowledgement would recognise a simple technological fact, and help to reassure Beijing that Washington does see it as a peer competitor—a prerequisite for drawing China into a better managed regional nuclear order. Detractors believe that any formal acknowledgement might well be read as a signal of appeasement in Beijing and wouldn't sit well with nervous allies.

Both arguments are true. But in 2016 the bilateral relationship seems more competitive than it was in 2013. The positive outcomes of the Sunnylands summit of June 2013 have dwindled over the intervening years. In that context it would probably be unwise for the US to concede nuclear peer status to China. Since the Chinese nuclear arsenal is still markedly smaller than its US counterpart, such a concession should be tied to behaviour—that is, to a set of signals that China values the nuclear order in ways similar to Washington. It might be hard for Beijing to send such a signal at the same time as it's leaning forward coercively in the South China Sea. Using such an indicator as a barometer of peer status isn't unique. Back in the late 1970s, Jimmy Carter's National Security Advisor, Zbigniew Brzezinski, claimed that 'SALT lies buried in the sands of the Ogaden', citing Soviet behaviour in the Horn of Africa as a fundamental impediment to bilateral nuclear arms control.<sup>11</sup> Given the strength of the internal debate in Washington about China's status, it's probably best to conclude that the US will hold to its current position: 'as a matter of policy, the United States neither accepts nor rejects mutual deterrence with China.'<sup>12</sup>

The issue of status is relentlessly sideswiped by the issue of technological churn. Both players are modernising their arsenals in ways that generate concern for the other. Quantitative expansion and qualitative modernisation is underway across China's nuclear arsenal, providing more intermediate- and second-strike options to the Chinese leadership, even though there's been no formal change in China's declaratory posture. Those options allow Chinese nuclear weapons to cast what Colby calls 'a darker shadow' across regional crises. On the other side of the equation, the US has in mind its own strategic nuclear modernisation program—one that will, over coming decades, update its ICBM, SSBN and strategic bomber forces and maintain the US's position as a first-tier nuclear player for the rest of the century.

China's missile modernisation covers both its land-based systems and the gradual introduction of a fleet of ballistic-missile-carrying submarines. We're witnessing two improvements to its land-based force: warheads carried in multiple independently targetable re-entry vehicles (MIRVs) and mobile missiles. So far, relatively small numbers of missiles are involved, but both developments suggest a determination to retain strategic nuclear strike capabilities in the face of an adversary's possible first strike. In the sea-based leg of its force, China has four Jin-class nuclear-powered ballistic missile submarines (SSBNs) currently being outfitted with JL-2 SLBMs—a capability that, in the view of the Office of the US Secretary of Defense, 'represents China's first credible, sea-based nuclear deterrent'.<sup>13</sup> Opinion is divided over whether patrols have yet begun with the JL-2 nuclear-tipped SLBMs on board,<sup>14</sup> but their deployment is only a matter of time. China has invested in a multi-decade effort to master SSBN and SLBM technologies, seeing them as a valuable guarantor of a secure second-strike capability.

So far, modernisation seems to be producing only a slow expansion of the total number of nuclear warheads in the Chinese arsenal; most estimates suggest that number still doesn't exceed about 250–300. Despite an estimate of 3,000 that circulated back in 2011—an estimate based on the scope of Chinese tunnelling activity and the growth in

missile numbers, rather than on the availability of fissile materials<sup>15</sup>—no US Government publication, for example, has given much endorsement to the figure. It would be reasonable to factor in a moderate expansion in Chinese warhead numbers in coming years. Obviously, if China’s moving towards placing multiple warheads atop certain classes of missiles, it’s probably going to deploy more warheads in the future than it has in the past.

But modernisation isn’t just about nuclear weapons. For example, China’s development of the DF-21—a ballistic missile with a manoeuvring warhead intended to target US aircraft carriers at sea—plays into the bilateral relationship at the level of grand strategy. If China can deny a large portion of the Western Pacific to major US surface ships, the importance of other forms of US assurance to Washington’s allies must surely increase. And if China can transfer its expertise in manoeuvrable warheads from its conventional missiles to its strategic nuclear force, that could help to counter US efforts in ballistic missile defence (BMD).

BMD is a sensitive issue for China. The intensity of Beijing’s reaction to the scheduled deployment of a US THAAD (terminal high-altitude area defence) battery in South Korea in the wake of North Korea’s latest nuclear and missile tests is testimony to its anxieties.

BMD is a sensitive issue for China. The intensity of Beijing’s reaction to the scheduled deployment of a US THAAD (terminal high-altitude area defence) battery in South Korea in the wake of North Korea’s recent nuclear and missile tests is testimony to its anxieties. It’s hard to know what might offset its concerns. In recent years, the US has tried to reassure China that long-range Chinese strategic missiles aren’t the target. The Americans have attempted to argue that North Korea’s capabilities are their target, and—given the limitations of the existing BMD systems—that’s probably true. But Chinese short-range and medium-range conventional missiles already threaten US allies and forces in theatre, and the sophistication of that threat is going up, not down. Beijing must be aware that the growth of Chinese missile capabilities is also a concern in Washington, so its judgement that North Korea is merely one driver of US BMD deployments in the Asian theatre is likely to be correct.

In short, it’s plausible that US BMD assets in theatre would have a growing capability against some fraction of the Chinese arsenal. Of course, that doesn’t mean they would achieve an effective defensive capability against China’s strategic assets anytime soon. Ballistic missile defences work best against shorter-range missiles, fired in small numbers and deploying only simple or no countermeasures. Once any of those three factors changes, interception becomes harder. If all three change, effective defence becomes impossible.

China’s concerns, though, don’t centre only upon the capabilities of regionally based interceptors. Regionally deployed Patriot units defend only a small footprint, and even the THAAD batteries don’t reach much further than a couple of hundred kilometres. Of more concern are the surveillance assets deployed as part of the units, in particular the AN/TPY-2 transportable X-band radar. Beijing fears that such radars, used in their forward-deployed role rather than their terminal defence one, might provide advanced early tracking data to other parts of the US global BMD system—thereby increasing the likelihood of successful defence against China’s small ICBM fleet over coming years.

For the near future, such concerns sound overblown. The AN/TPY-2 certainly has the capability to provide early tracking data on some Chinese launches, and it can readily transfer that data to other parts of the system. After all, one of its roles in South Korea would be to monitor North Korean long-range missile and satellite launches. But that data, by itself, probably isn’t going to be the key determinant in the successful interception of an ICBM. And China has a number of options of its own to improve the prospects for successful penetration, including the deployment of a more advanced suite of penetration aids atop its strategic missiles and, obviously, the installation of MIRVed

payloads. Some of those developments are already in train, suggesting that China's moving to ensure the continuing effectiveness of its strategic nuclear arsenal in coming decades.

Besides, it's unlikely the US would hold back completely from improving its defences against short- and medium-range missiles merely to accommodate China. Beijing appears to have arrived at a similar judgement: it's working hard to make sure that regional host countries, such as South Korea, don't agree to US deployment. And those efforts carry their own cost. They've certainly helped sour the relationship between Beijing and Seoul, which had been warming steadily in recent years.

Stabilising the strategic relationship between the US and China isn't just about finding an acceptable solution to the two countries' differing views of BMD. (In truth, it isn't just about resolving the broader nuclear differences.) In June 2013, Wu Riqiang argued that the key issues in the US–China nuclear relationship could be boiled down to just three: survivability, coercion and escalation.<sup>16</sup> Wu argued that China's force modernisation program is generally seen by Chinese analysts as enhancing force survivability, which is good for strategic stability, but generally seen by non-Chinese analysts as increasing the prospects for conflict escalation, which is bad for strategic stability.

The American nuclear arsenal is not fundamentally threatened by its much smaller Chinese counterpart. But the US does worry about coercion and escalation, as do the Chinese.

Survivability is certainly an issue for China, but rather less so for the US. The American nuclear arsenal is not fundamentally threatened by its much smaller Chinese counterpart. But the US does worry about coercion and escalation, as do the Chinese. Many types of scenarios might offer escalation ladders, but only a few of them lead plausibly to a potential crossing of the nuclear threshold. Some form of substantial strike on the Chinese mainland would probably be required for Chinese leaders to think about nuclear use. And even then escalation wouldn't be automatic, any more than the US would automatically resort to nuclear use after a conventional attack upon the US homeland. Some commentators have addressed the possibility of China deliberately 'escalating to de-escalate'—that is, crossing the nuclear threshold precisely to give Washington an incentive to find a common de-escalation path. But that's a high-risk strategy, since it would leave China's strategic fortune in the hands of the stronger nuclear power.

Wu Riqiang observes that much depends on how both Washington and Beijing think about the vexed issue of escalation. He cites the Schelling–Jervis argument that, in cases where both countries enjoy secure second-strike capabilities, the outcome of crises is shaped more by resolution than the balance of power. The upshot is a contest in resolve in which both parties automatically harden their positions. Still, Wu argues that such an approach doesn't reflect objective Chinese strategy. If so, the real test for the relationship is a management one rather than a contest in wills.

In that regard, it's worth considering some of the latest research on China's approach to crisis management. Alastair Iain Johnston's latest work<sup>17</sup> suggests that China is evolving a distinct set of crisis management principles and practices that might help to control escalation during conflict. But those principles and practices press up against established military concepts, the vigour of Chinese nationalism and an underdeveloped institutional framework:

The bottom line is that China has developed a relatively large body of research on crisis management, work that more or less endorses the principles and practices developed by many American experts during the Cold War ... Chinese experts have also developed concepts (e.g., nonwar military actions) and scenarios (e.g., border instability) that explicitly articulate roles for the PLA in crisis management distinct from its traditional war-fighting role. But there is also considerable tension between these principles and practices on the one hand and certain military operational concepts in China on the other. In addition certain biases—



hypernationalism and visions of Chinese exceptionalism—are in tension with crisis-management principles as well. Finally, crisis-management decision-making institutions, mechanisms, and procedures are still relatively underdeveloped.

Clearly, the stability of the US–China nuclear relationship is going to depend on more than good arsenal design. There’s an agenda of work in the relationship that can be tackled only by first-track nuclear dialogue,<sup>18</sup> and that’s something Beijing’s been reluctant to embrace, despite a higher level of participation in 1.5-track talks covering some of the core issues.

Moreover, the US–China relationship has to address subjects supplementary to the two countries’ own bilateral challenges. As the two great powers in Asia, the US and China have some responsibility for doing what they can to manage the broader regional order. In that regard, there’s one area where Washington would like to see much greater cooperation from Beijing in the nuclear field—that is, in cracking down on Chinese firms’ industrial assistance to other countries’ proliferation programs. The 2014–15 indictment of Chinese national Li Fang-wei (a.k.a. Karl Li; a.k.a. Karl Lee) by a US court is only the latest and most public case of such assistance.

Li Fang-wei’s not the Chinese equivalent of AQ Khan in terms of his individual contribution to nuclear proliferation. The level of damage done by Khan remains unique. But some argue that Li now ranks second on the list. He’s been instrumental in providing industrial assistance to Iran’s ballistic missile and nuclear program, using a range of front companies and concealed end-users.<sup>19</sup>

Li’s activities have been substantially documented elsewhere.<sup>20</sup> What’s most relevant here are the repeated attempts made by the US State Department since 2007 to engage Chinese Government assistance in bringing Li’s activities to an end, and the continuing reluctance of the Chinese Government to do so. It’s not that China doesn’t have a set of national controls on the export of such items; it’s that, for whatever reason, implementation of those controls is lacking.

Finally, where to from here? Brad Roberts sketches three possible alternative pathways: a ‘status quo’ pathway in which the relationship continues to unfold along the existing pattern; a more competitive, militarised pathway in which the bilateral nuclear relationship takes on more of the characteristics of the broader strategic competition; and a pathway characterised by greater cooperation and some elements of formal arms control despite ongoing nuclear modernisation by both countries.<sup>21</sup> Interestingly, he sees the first pathway as the least likely, suggesting that the relationship teeters between the more militarised, competitive path and the more cooperative, interactive one. Roberts doesn’t offer a judgement about which of the two is most likely, but he’s right that a more cooperative bilateral relationship is likely to drive a more cooperative nuclear relationship; a more competitive bilateral relationship, a more competitive nuclear one. Which pathway results will have a major bearing on the future regional nuclear order.

# WORRIES ON THE SUBCONTINENT

South Asia offers the world's sole case of an enduring rivalry between two nuclear-armed regional opponents. Moreover, India and Pakistan constitute two of the world's four nuclear weapon states outside the NPT. And that's without allowing for the fact that their bilateral relationship is regularly sideswiped by both countries' relations with China, Russia and the US. Further, Pakistani extremist groups augment an existing worry about insider threats. Those factors combine to make the South Asian nuclear problem a particularly difficult one.

Former US Defense Secretary William Perry recently listed the possibility of a regional nuclear war on the subcontinent as one of his five 'nightmare scenarios'.<sup>22</sup> Such concerns are driven in large part by the sense that the two countries' rivalry offers a live conduit to a nuclear exchange—a conduit that Pakistani extremist groups might well be able to exploit, both to foment conflict between the two and to entice Pakistan's nuclear weapons out of seclusion, making them more vulnerable to capture by radical groups.

But the news isn't all bad. Over 40 years have passed since India's 'peaceful' nuclear explosion in 1974. And over 25 years have passed since 1990, when—according to some analysts—China tested Pakistan's first nuclear weapon on its behalf at the Lop Nor nuclear test site.<sup>23</sup> Those years haven't solved the two countries' underlying strategic rivalry. But nor do they suggest that either side is champing at the bit to use nuclear weapons against the other.

Simple prudence is clearly one contributing factor, but a second is that both sides see nuclear weapons as having limited and specific utility. For India, nuclear weapons are a symbol of its great-power status, a guarantor of its strategic autonomy and a lever in its dealings with Islamabad and Beijing.<sup>24</sup> Over the past decade, India has been working to operationalise its nuclear force, perhaps stung by Ashley Tellis's brutal description of the Indian nuclear arsenal in 2001 as 'strategically active but operationally dormant'. Still, in terms of Kanti Bajpai's three schools of Indian nuclear thinking—rejectionists, pragmatists and maximalists<sup>25</sup>—it's clear from numbers of weapons alone that the maximalists aren't setting the agenda. India still deploys only a modest nuclear arsenal—and nothing like the 300–400 weapons the maximalists were pushing for 20 years ago.

The constraining forces that Tellis identified in his magisterial study on the Indian nuclear program, *India's emerging nuclear posture*, have all played a role in shaping decision-making:

India's emergence as a true nuclear weapon power will more likely be a slow, gradual and distinctive process, thanks to a number of factors—including India's traditional and highly publicized commitment to disarmament; its continuing economic and developmental constraints; its susceptibility to pressures emanating both from existing nuclear weapon states and from the global nonproliferation regime in general; its singular view of nuclear weapons as 'pure deterrents' rather than as war-fighting instruments; its unique civil-military system, which has few parallels in the Third World; and, finally, the fact that its adversaries' coercive capabilities, while significant, can be countered by a minimal, albeit not token, deterrent.<sup>26</sup>

Pakistani policymakers are frank about the nuclear doctrine underpinning their own program. As Foreign Secretary Aiziz Chaudhry said in Washington in October 2015, 'Our nuclear programme is one-dimensional: stopping Indian aggression before it happens. It is not for starting a war. It is for deterrence.'<sup>27</sup> That might be so, but in reality the Pakistani nuclear program—quite unlike its Indian counterpart—bears the hallmarks of military priorities, reflecting

both the prominence of military actors in shaping and guiding key decisions and a more compelling strategic need to leverage nuclear deterrence against a conventionally superior opponent. Pakistani strategists believe the growth of Indian conventional power raises the prospect that New Delhi may see an opportunity to fight a limited war under the nuclear umbrella.<sup>28</sup> Pakistan's new generation of battlefield nuclear weapons is intended principally to deter India from pursuing such a course, mainly by countering India's Cold Start doctrine—New Delhi's plan for rapid deployment of its conventional military strength in a conflict against Pakistan. In consequence, Pakistani nuclear doctrine has shifted from minimal deterrence to 'full-spectrum deterrence' in a deliberate attempt to ensure that India doesn't see the 'space' for a conventional conflict below the nuclear threshold.

Unfortunately, the strategic effects of a growing Pakistani arsenal and a more operationally ready Indian one are not all benign. Nuclear weapons are emerging as distinct and relevant military options within a bilateral relationship that remains delicate. And the concern that Pakistan feels about India—that it might attempt to fight a conventional war beneath the nuclear umbrella—is oddly similar to the concern that India feels about Pakistan. New Delhi worries that a Pakistan with a nuclear arsenal to protect it might be a more adventurous player than it would otherwise. At a minimum, a worrying pattern is unfolding: India, fearing extremist attacks against it, threatens to deploy its superior conventional forces against Pakistan; Pakistan, fearing a conventional war, threatens tactical nuclear escalation. As Toby Dalton and George Perkovich have recently observed, such a course of events would leave India with some difficult next steps on the escalation ladder.<sup>29</sup>

So how do the two arsenals compare today? It should be said at the outset that Pakistan isn't the sole determinant of India's nuclear arsenal, since New Delhi's primary strategic worry stems from China, not Pakistan. That said, the long-term enduring rivalry between India and Pakistan means there's a natural tendency to compare and contrast the Indian and Pakistani arsenals.

The most recently released report on Indian fissile stocks from the Institute for Science and International Security suggests that the Indian nuclear arsenal probably numbers somewhere between 75 and 125 nuclear weapons, giving a mid-point of perhaps 100 weapons.<sup>30</sup> Most estimates suggest that the Pakistani arsenal is probably a little larger than that, perhaps 110–130 warheads.

The US Congressional Research Service has recently published a nicely balanced assessment of the Pakistani nuclear weapon program.<sup>31</sup> Its authors estimate an arsenal of approximately 110–130 warheads, using both highly enriched uranium and plutonium as fissile material. They point to the steady expansion of the arsenal, the development of new nuclear weapons and the articulation of the doctrine of 'full-spectrum deterrence' as factors underpinning a sense of rising concern about the future of strategic stability on the subcontinent.

Pakistan currently relies upon both aircraft and missiles for its delivery systems. It uses modified F-16 aircraft for the air-based component of its arsenal, and a range of Hatf and Shaheen ballistic missiles to provide targeting options out to a range of perhaps 2,000 kilometres. It's working both to extend that range, the better to hold at threat more distant Indian islands, and to strengthen its nuclear capabilities in relation to short-range 'battlefield' systems. The Nasr—a road-mobile missile with a range of about 60 kilometres—sits at the core of those short-range efforts. Pakistan also has in development both ground-launched and air-launched cruise missiles, and appears to have begun thinking about a possible sea-based leg for its nuclear force.

It's the growth of the short-range missile systems that has some analysts particularly worried. A system such as the Nasr missile might be problematic in a crisis. Intended to blunt Indian conventional power, the missiles risk being overrun in a conventional conflict between India and Pakistan. Even if they aren't, India would have a strong incentive to neutralise them through pre-emptive attack, making for worrying escalatory options. Nasr deployment is clearly a 'threat that leaves something to chance', and therefore intended both to complicate Indian strategic planning and to advertise the dangers of instability on the subcontinent to a wider audience.

Both India and Pakistan are also working on making their arsenals more survivable, principally by the deployment of mobile missiles and SSBNs. With the gradual introduction of the Agni-V into its arsenal, India will have its first true ICBM capability, able to target Europe and China, although it seems unlikely that India would be aiming

nuclear-armed weapons at anyone other than China and Pakistan. At some stage in the future, either the Agni-V or its successor is likely to be MIRVed. India's working on MIRVing its missiles in order to allow it to remain competitive with China. It's also making a serious effort to diversify its delivery vehicle capabilities. Its SSBN program is the centrepiece of that diversification effort, but is some distance from offering a true operational capability. INS *Arihant* appears to be a technology demonstrator for a class of indigenously developed SSBNs, but operational deployment is probably still a decade or more away. At about 6,600 tonnes displacement, the *Arihant* is comparatively small for its purpose. (US Ohio-class SSBNs have a submerged displacement of almost 19,000 tonnes, and Russia's Typhoon-class SSBNs have a submerged displacement of 48,000 tonnes.)

The operational focus of India's arsenal is Pakistan and China. India already has an assured second-strike capability against Pakistan, but is some way off having one against China. Given the wave of modernisation currently underway in the Chinese arsenal, the capability gap between the two is probably growing rather than shrinking.

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For the managed system of deterrence and the managed system of abstinence on the subcontinent, a key question concerns the extent to which outside powers might succeed in drawing both South Asian nuclear powers into a broader regional order that exhibits more compelling evidence of restraint. The US is already encouraging Pakistan to exercise restraint on the issue of nuclear weapons. With India already partly corralled by its 123 agreement with the US,<sup>32</sup> persuading Pakistan to exercise restraint has to be the obvious follow-on step. That restraint might well involve both sides of the order: managing the system of deterrence better as a new wave of difficulties attends the expansion of the arsenal and its capabilities; and managing abstinence better by a more specific series of deliberate 'withholds'.

Will Pakistan be persuaded to head down such a path? The vigour of its weaponisation effort in recent years suggests an overt attempt to end-run the Indians on the nuclear side. And its statements at the UN about nuclear disarmament still show a Pakistan reluctant to take the first step towards a theme of nuclear abstinence while conventional force balances remain tilted in India's favour. It might be possible to draw the Pakistanis into some forms of restraint, but much would depend on the sweetener added to the deal to reward forbearance.

Toby Dalton and Michael Krepon's 2015 Carnegie paper unpacks the issues surrounding a 'normal' nuclear Pakistan.<sup>33</sup> The authors posit the choice before Pakistan between a recessed deterrent and membership of the mainstream on one hand and full-spectrum deterrence and instability on the other. In one sense, of course, Pakistan has already made that choice, opting for full-spectrum deterrence. Dalton and Krepon see that choice as ultimately unsatisfying for Pakistan's future. Yes, Pakistan has shown the capacity to build a larger and more diverse nuclear arsenal than India. But that 'victory' presupposes continued Indian forbearance and could quickly be erased if India were to devote greater resources and determination to its own nuclear arsenal. Moreover, Pakistan's superiority on the nuclear front can't readily be translated into the outcomes that Islamabad most wants: a stronger economy and greater international recognition.

It's not obvious that the logic of 'normality' is going to carry the day in Islamabad, though. Yes, Pakistan would like what India already has—recognition as a legitimate nuclear power and access to nuclear technologies and materials. It would welcome a stronger economy and greater international recognition, but there's not much evidence that

Pakistan's willing to retreat to the doctrine of recessed deterrence to gain those ends. Rather, its leaders probably hope to be rewarded for efforts they have already made to improve nuclear security.

That's an issue that typically surfaces in relation to the Pakistan nuclear arsenal, given the strength of extremist groups within and around the country. The growing threat from non-state groups is what Walker refers to as 'the expansion of the proliferation space'.<sup>34</sup> Such groups are even more prolific in the Middle East, where they have shown an ability to wrest control of geographical space from weak states. But in Asia the problem of such activities seems to centre on Pakistan. The problem's aggravated by the move within the Pakistani military towards smaller, tactical nuclear weapon systems, which are more likely to have warheads stored close by their delivery vehicles, more likely to be forward-deployed rather than bunkered during crises, and more likely to be commanded and controlled at lower ranks of the military than larger, strategic-level systems.

In fairness to Pakistan, Islamabad has been working for a number of years to improve the security of its nuclear technologies and weapon systems. Kerr and Nikitin argue that the real push to enhance security occurred back at the turn of the century, when a wave of events—including the 1999 Kargil crisis, the US response to the 9/11 attacks, the 2002 conflict with India at the Line of Control, and revelations about the proliferation activities conducted by AQ Khan and his network—made the Pakistani leadership more sensitive to the issue.<sup>35</sup>

Although it's comparatively easy to see the scenarios that might lead to a crossing of the nuclear threshold in the India–Pakistan case, it's harder to see the specific issues that might bring India and China into a nuclear exchange. There are points of friction between the two great powers but, as I've written before, the relationship tends to be one of a 'tempered rivalry'. Gaurav Kampani sees China's principal challenge to India as being primarily related to questions of status: 'Above all, the issue that most concerns Indian policy planners is China's potential to confine India to South Asia and deny it a great-power role and status commensurate with India's perceptions of itself as one of the world's great civilizations.'<sup>36</sup> Perfectly true, but are nuclear weapons an effective counter to that? They might have some role to play, but an India that aspires to great-power status in its own right needs to aim higher than at an operational nuclear arsenal.

# NORTH KOREA AND ITS NUCLEAR PROGRAM

North Korea's nuclear program has become more blatant in recent years. That can be seen in the quickening pace of nuclear and missile testing; the formal inclusion of North Korea's status as a 'nuclear state' in its constitution; the greater prominence given to the nuclear arsenal in public parades; the expansion of facilities generating fissile materials; and the most recent estimates about the rate of expansion of the arsenal. It might be seen most clearly of all in the explicit political endorsement that Kim Jong-un has given to the program in his regular and frequent media appearances at key tests. In a rather more backhanded way, it's also seen in the reaction of others: in the growing international concern about the program; in the willingness to impose tougher sanctions upon North Korea; in the higher level of interest in BMD in South Korea; and in a quickening debate about whether other countries in Northeast Asia might follow North Korea down the nuclear path.

As the program's become more prominent through leadership endorsement and strategic need, the prospect of ever achieving the international community's objective of complete, verifiable, irreversible dismantlement (CVID) seems to be receding. Reversal to the CVID level seems increasingly implausible, despite the continued use of such language in UN Security Council resolutions since 2006. Are there meaningful intermediate caps we might pursue to constrain quantitative or qualitative improvements, or is the horse now too long gone from the stable? Are there any specific doctrinal constraints we'd like to see on the North Korean arsenal? If so, what?

Surely one immediate priority must be to find some means of limiting the steady expansion and improvement of the North Korean arsenal. But how does the international community pursue those limits without implicitly recognising North Korea as a nuclear-armed state? Even if it did cede implicit recognition, is there a formula that Pyongyang could accept? For some years, Siegfried Hecker's suggested that we ought to put CVID to one side, at least temporarily, to pursue what he calls the three 'noes'—no more bombs; no better bombs; and no export. Between them, the three 'noes' all aim at containing key aspects of the North's arsenal: size, sophistication and proliferation. Hecker proposed trading the three 'noes' for three 'yeses': addressing North Korea's security concerns, its energy requirements and its economy. But no-one seems attracted to that deal. And in the years since 2010 when Hecker first suggested it, the North Koreans have conducted three more tests, have positioned themselves for a substantial growth in warhead numbers, and have probably made significant progress on warhead miniaturisation.

The arsenal has grown in fits and starts. We still know shockingly little about it, including the extent to which the North has been able to use both plutonium and highly enriched uranium (HEU) as fissile materials and the extent to which the warhead miniaturisation program has borne fruit. The five nuclear tests, overall, have been relatively unconvincing, but how convincing do they have to be? It might be too fastidious to judge the North Korean arsenal by the standards of efficiency and effectiveness that we might normally apply to a more advanced nuclear weapon state. Even an explosion the size of North Korea's latest test could still make a mess of downtown Seoul or downtown Los Angeles.

The growth in the nuclear arsenal must also be set against another factor: the deterioration of North Korean conventional power. As General Scaparrotti told the US Congress in April 2015,<sup>37</sup> the North Korean military posture along the DMZ is still large, present and dangerous. But it's no longer resourced as it once was. And that equates to a deterioration in North Korea's conventional capabilities. As its conventional capabilities ossify, Pyongyang's reliance upon its nuclear arsenal can only increase.

Where are we now? Well, if we use Siegfried Hecker's estimates in the *Bulletin of the Atomic Scientists* in January 2015, we could venture a rough guess about the current size of the arsenal. At that point, Hecker judged that North Korea probably had an arsenal of about 12 warheads equally divided between plutonium and HEU devices, and an annual production capacity of 'possibly four to six bombs'.<sup>38</sup> Crudely, let's add eight to 12 and deduct two for the most recent nuclear tests. The conclusion is that Pyongyang might have 18 weapons today.

Estimates vary, though. A couple of other useful studies appeared at about the same time as Hecker's. Two researchers for the US–Korea Institute at Johns Hopkins, Joel Wit and Sun Young Ahn, published an assessment of North Korea's future prospects.<sup>39</sup> They observed that Pyongyang was well placed to accelerate its nuclear program after a series of 'banner years' between 2009 and 2014. Their estimate of the size of the arsenal was a range of 10–16 warheads, which included 6–8 plutonium weapons and 4–8 HEU weapons. The authors outlined three possible scenarios for the future, quoted in full here:

1. Minimal Growth, Minimal Modernization: North Korea's stockpile grows slowly and technological improvements are minimal. The stockpile increases from a current low level of 10 weapons to 20 weapons by 2020. Further miniaturization is also minimal and yields of the weapons remain essentially 10 kilotons, the same as in the baseline stockpile.
2. Moderate Growth, Moderate Improvement: A continuation of North Korea's current trajectory. In this scenario Pyongyang's stockpile grows from current levels to 50 weapons by 2020, an increase of 212.5 percent. Further advances in miniaturization enable the North to mount warheads on a new generation of road-mobile intermediate-range ballistic missiles (IRBMs) and intercontinental ballistic missiles (ICBMs) as well as shorter-range ballistic missiles (SRBMs). Yields of existing weapons increase to the 10–20 kiloton range while new designs using both plutonium and uranium enter the stockpile and achieve 50 kiloton yields. The North may develop and partially test but not deploy an even more advanced single-stage thermonuclear design.
3. Rapid Growth, Rapid Improvement: North Korea's nuclear stockpile grows more rapidly than in the previous scenarios to 100 weapons by 2020, an increase of 525 percent. Significant advances are made in weapons designs allowing the North to deploy battlefield and tactical weapons if it chooses to do so. The average stockpile yield increases to 20 or more kilotons with an increasing number having yields of 50 kilotons. A one-stage thermonuclear device with a yield of 100 kilotons is tested but is too large to be deployed. Work is done on developing a two-stage thermonuclear device.

Calculations about the future growth of the North Korean arsenal turn heavily upon the availability of fissile materials. And that's a known unknown. Frankly, we don't know whether the North Koreans have a concealed uranium enrichment capability in addition to the plant they have already revealed at Yongbyon. If they did have such a capability, it wouldn't be especially surprising: after revealing their modern enrichment facility to Siegfried Hecker in late 2010, they must have figured that the plant would merely be added to the US target list in the event of an attack on the program. Nor would it be surprising that intelligence sources have failed to reveal a second plant: the historical record suggests that centrifuge facilities are notoriously difficult to detect.<sup>40</sup>

Interest has also been intense in the rate at which North Korea is improving its delivery vehicles. The successful launch of satellites into orbit by the Unha-3 long-range rocket in both December 2012 and February 2016 has contributed strongly to such interest. Over recent years, we've seen a steady flow of media reports that some in the Washington establishment are growing increasingly concerned that North Korea might already have the capability to target the continental US with a nuclear warhead carried by a long-range ballistic missile. There are divisions in Washington on that score, though. The conflicting estimates reflect doubts over whether the North has a missile system sufficiently reliable to conduct such an attack, whether the North has successfully miniaturised a nuclear warhead to the point where it would be deployable on an intercontinental missile, and whether that warhead could survive re-entry. There's a separate but related question, of course—whether Pyongyang cares about pursuing high-confidence solutions to those problems or is content with a more questionable system that might or might not work in extremis. North Korea might well calculate that a degree of ambiguity about its capabilities already plays in its favour.

Where are the limits for the North Korean program? In theory, Pyongyang should have in mind some ceiling for weapons production that accords with its nuclear doctrine. But what is North Korea's nuclear doctrine? If it intended to be able to attack a particular number of targets, that would be one thing. But if its real motive is to seed fear and concern among those it sees as its potential adversaries, the number might well be more open-ended.

Wit and Ahn argue that, given the conventional force imbalance on the Korean Peninsula, Pyongyang ought to be interested in more than a doctrine of assured retaliation; that is, it should be interested in nuclear weapons that offer real war-fighting options, just as Pakistan is. But constructing that sort of arsenal and integrating it with the North's existing conventional forces would be a challenge.

Optimists might find a small glimmer of hope in the declaration made by Kim Jong-un at this year's party congress, that 'North Korea will not use nuclear weapons against other nations unless its sovereignty is threatened, and will work toward non-proliferation and global stability.'<sup>41</sup> That's not exactly a no-first-use pledge, although some read it as such. Still, it might be about the limit of what North Korea can realistically undertake. Yes, the North Koreans might easily judge their sovereignty to be threatened by mere conventional-weapon attacks. But they would lose an important part of the deterrent aspects of their nuclear arsenal—and sound incredible to boot—if they were to give a full no-first-use pledge.

The problem, though, lies in knowing where the latest statement fits in regard to previous ones. In some ways, North Korea's nuclear doctrine seems to be the reverse of Pakistan's: Pakistan's is driven by military logic; North Korea's primarily by political pique. The latest example of that was the string of bellicose threats of potential nuclear use that emanated from Pyongyang during recent US – South Korean military exercises. See Kim Jong-un's injunction in early March 2016 that North Korea's nuclear weapons be maintained at a high state of readiness, able to be used at any time.<sup>42</sup> Still, we know so little about North Korea's command and control arrangements that it's hard to tell whether those statements alter anything and, if so, by how much. And, of course, precisely the same is true of the latest commitment made at the party congress.

The unremitting growth in North Korean capabilities also raises questions about what, if anything, can be done to slow that growth and ultimately reverse it. One awful possibility is that only regime change in Pyongyang could achieve such a turnaround—and such a change remains unforeseeable and potentially some decades distant. It will probably be impossible to gain much leverage against the North Korean nuclear program without China playing an important role. So far, an increasingly frustrated Beijing's been unwilling to apply sufficient pressure to Pyongyang to make it reconsider its nuclear choices. It worries that such pressure might contribute to regime instability in North Korea, and it calculates that such instability is a greater threat to its own interests than a North Korea equipped with a small nuclear arsenal. So far, there's little sign of that calculus changing. Even if it did change, Beijing would still find it difficult to force Pyongyang's hand on the nuclear issue. The North Koreans have made it clear that they have no intention of rolling back their program.

Compounding the difficulty of making any assessment about the future of the North Korean nuclear program is the difficulty of making any assessment about the future of North Korea itself. How likely is North Korea's continued survival as a separate entity? In South Korea, the Presidential Committee for Unification Preparation wrestles with the challenges that reunification would bring, conscious that unification should ideally proceed through voluntary, deliberate and peaceful means, but alert to the prospect that it might yet arise unexpectedly from crisis and conflict.

In the meantime, we face a growing conundrum: how do we deal with a North Korea that's simultaneously an impoverished state and an existential threat? We still don't have a solution to one of the most vexing issues in the Asian nuclear order, and the danger is growing. Pyongyang shuns options of unilateral restraint. And even its attachment to a managed system of deterrence is uncertain. Kim Jong-un is trying to offset strategic weakness by excessive bombast, and that's a worrying combination.



# EXTENDED NUCLEAR ASSURANCE AND ITS UTILITY IN ASIA

The US strategic policy that's normally understood as 'extended nuclear deterrence' is, in fact, a blend of four separate elements.<sup>43</sup> Those elements lie at the heart of the US's relationships with its principal allies and potential adversaries. Let's begin by clarifying the separate elements.

'Extended nuclear deterrence' is a fully-fledged deterrence policy: it's meant to deter potential adversaries from attacks on US allies or their vital interests. In this sense, the US nuclear arsenal, both strategic and non-strategic, is intended to compensate for an ally's lack of such an arsenal by 'extending' the deterrence benefits of US nuclear assets to the protection of allies. Deterring adversaries from attacking US allies is a key pillar of the existing global order.

The second element is 'extended nuclear assurance': by its provision of a nuclear umbrella to an ally, the US 'assures' that ally that its nuclear strategic needs can be met without the ally's development of an indigenous nuclear arsenal. Assurance of allies is—for the reasons explained in the Healey theorem<sup>44</sup>—a much more demanding challenge than deterrence of adversaries. Allies are more sensitive than adversaries to signals that US commitment might be less than wholehearted.

Alongside those two important elements of the policy sit two others, which are probably best seen as stabilising elements. Alongside extended nuclear deterrence sits an element that some—including Linton Brooks and Mira Rapp-Hooper—have called 'reassurance'. The US deters its adversaries but must, to a degree, simultaneously reassure them that its policies turn upon a rational basis of conflict management, escalation control and war termination. That element of reassurance of adversaries shares with the element of assurance of allies a set of signals that the US appreciates the vital interests of others, but the context of the reassurance task varies enormously from that of the assurance one.

Finally, alongside the US's extended nuclear assurance relationship with its allies sits an element we might call 'tethering'. The US has no interest in having its nuclear commitment determined solely by an ally's willingness to identify a particular interest as vital. So it uses its provision of an extended nuclear assurance as a tether upon an ally's excesses—something it would be less well placed to do if that ally possessed its own nuclear arsenal.

One element of tethering merits special mention. The strength of US commitment to an ally's defence allows it to threaten to withdraw that commitment if the ally crosses some particular behavioural threshold set by Washington—by developing its own nuclear arsenal, for example. All alliances have about them an element of tethering that's felt even at the conventional-force level. It's no real surprise that tethers also inhabit nuclear relationships.

So, what's happening in Asia? See Brad Roberts' observation from 2013: 'In Northeast Asia, extended deterrence and strategic stability have regained an importance not known since the darkest days of the Cold War. This is a natural result of developments in the security environment.'<sup>45</sup>

This is an area where Australia has a direct stake. Australians in 2016 don't automatically think of ANZUS as a nuclear alliance. But it has been one since at least the 1960s, when the US built in Australia a small number of critical facilities—at North West Cape, Pine Gap and Nurrungar—which related directly to the command and control of the US nuclear arsenal. Under the ANZUS alliance, Australia is the beneficiary of an assurance that the US is prepared

to defend vital Australian interests with nuclear weapons should the need arise. That assurance can be seen in Clause 2 of the Nixon doctrine in 1970. Its publication there was probably intended as an assurance to allies that US extended nuclear deterrence arrangements would continue to protect them even after they had signed up to the NPT as non-nuclear-weapon states. Confidential assurances of that kind had already been made to the Australian Government during the negotiation of the treaty.

Reaffirmation of that generic assurance to US allies has occurred periodically in US official defence documents during the intervening decades, most recently in the US Nuclear Posture Review Report of 2010 and the Quadrennial Defense Review 2014. But a shifting strategic environment during those decades has also sharpened a series of questions for both assurer and assured. What's the status of that assurance in the 21st century? Has it strengthened or weakened since the end of the Cold War? What effect, if any, has the rise of new Asian great powers had on the credibility of the assurance?

The US doesn't seem to have done anything overtly to strengthen its specific assurance to Australia: there's been no US presidential affirmation, for example, of the sort President Obama offered to South Korea; no regular bilateral extended deterrence dialogue of the sort offered to Japan and South Korea. I'm not aware of any special tours of the US strategic nuclear arsenal by Australian personnel similar to those offered to the Japanese and Koreans. The US extended nuclear assurance to Australia enjoys a low-profile existence and is a topic of serious discussion among only a small community of policymakers and academics.

The US thinks that Japan and South Korea constitute special assurance worries (see the Northeast Asian reference in the Roberts quote above) and believes that if those can be addressed then other assurance problems around the Asia-Pacific will fall into line. It's probably true that there are few scenarios in which we might imagine Australia proliferating—or, indeed, even experiencing the level of security worry that might drive a possible proliferation debate—without Japan and South Korea doing so first, for the simple reason that we sit further back from the Eurasian rimlands. For us to go first would require a specific local driver separate and distinct from the Eurasian great-power balances: an Indonesia that slides back into authoritarian government, undertakes aggression against its neighbours, and begins its own proliferation effort.

Some believe the threat of nuclear proliferation by US allies is overblown. Richard Samuels and James Schoff, for example, argue that Japan consciously manipulates the threat of nuclear breakout partly in order to keep the US in the game in Asia.<sup>46</sup> That's undoubtedly true, but risks depicting Japanese concerns about the durability of US extended nuclear assurance as a gigantic bluff. At heart, those concerns aren't a bluff; the thinking's tied to Japanese worries about marginalisation in Asia. Ultimately, holding Japan back from nuclear weapons means addressing those concerns. It also means addressing a second issue: that US assurances of extended deterrence need to remain plausible and credible as power relationships shift in Asia. Australia can do something about the first concern (marginalisation) but relatively less about the second (assurance credibility).

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American commitment to a robust nuclear modernisation program is obviously one of the signs that US allies in Asia are seeking. On that score, Washington is doing well. But there are fewer signs that Washington takes into account its extended assurance commitments when thinking about force structure. The usual US argument about theatre-range weapons is that US allies are protected by the full suite of US strategic nuclear weapons. That's true, but allies also typically figure that the size and shape of America's strategic arsenal has more to do with maintaining a peer relationship with Russia than it does with protecting allies. If the US had no extended nuclear assurance commitments at all, in fact, it's entirely possible that its strategic nuclear arsenal might well look the same as it does now.

Moreover, it's difficult for US allies in Asia to see the specific contributions that US ICBMs and SLBMs make to extended deterrence and assurance. An ICBM might indeed be used in support of an ally, but the most likely target areas would require the missile to overfly Russia with a nuclear warhead—an event that a US president would certainly think twice about on any day of the week. And SLBM use might well be unattractive for other reasons: a typical US SLBM is more highly MIRVed than its ICBM counterpart—indeed, probably too generously equipped with warheads for the purpose at hand, unless Washington chooses to deliberately deploy some SLBMs with only a couple of low-yield warheads. That means the bomber leg of the triad will probably remain the one most suited to extended deterrence missions. It's the one most exercised during crises, and the delivery platform for the B-61 bomb. Further, it has the added virtue of visibility: ICBMs and SLBMs will always be largely invisible and remote, but the bombers can be regularly flown when needs are most pressing.

On the other hand, there's no consensus in the US about the need to bring new tactical nuclear weapons into Asia. The debate, at least in its public form, has largely played out between think tanks and analysts. In May 2015, the Center for Strategic and International Studies' Project Atom report suggested there was a need for new deployments.<sup>47</sup> Clark Murdock, the lead author of the Project Atom study, argued for a renewal of US nuclear strategy and posture for the years 2025–2050. He noted that, without such renewal, nuclear weapons were likely to proliferate further and the credibility of US extended nuclear deterrence—and the assurance that US allies and friends drew from it—was likely to decline significantly. Murdock advocated a strategy called 'Measured Response', which would turn upon a better set of discriminate US nuclear options (to deter adversaries from crossing the nuclear threshold in order to offset US conventional superiority) and a more robust set of forward-deployed nuclear weapons to support those options.

From an ally's point of view, the merit of the Project Atom proposals is that the principal authors envisage two distinct US nuclear force structures: a strategic deterrent force based upon the traditional triad of ICBMs, SLBMs and long-range bombers; and an extended nuclear deterrent force based upon forward-deployed nuclear weapons and shorter-range land-based and carrier-based aircraft. That approach sets aside the notion that extended nuclear deterrence and assurance are mere afterthoughts for a US nuclear strategy focused almost exclusively on the strategic arsenal.

Others disagree. Van Jackson, for example, in the article he wrote for *The Diplomat* in early July 2015, summarised the reasoning behind the US's reluctance to go down the Project Atom track.<sup>48</sup> He argued that US tactical nuclear weapons have credibility problems of their own, meaning they shouldn't be seen as a silver bullet solution to a broader decline in the credibility of US extended nuclear deterrence. Moreover, he argued, they risk aggravating tensions in Asia by suggesting a lower threshold for US nuclear use, they would politicise alliances in Asia in much the same way that the intermediate-range nuclear force deployments in Europe did in the mid-1980s, and they would be superfluous to requirements, given the capacities already existing in the US strategic nuclear triad. In making those criticisms, Jackson noted that he's not opposed to extended nuclear deterrence, which he sees as 'a necessary evil' to prevent nuclear proliferation by US allies.

Both of those views have merit. Extended nuclear deterrence and extended nuclear assurance will always involve a careful balancing of commitments, strategy and posture by the US. But there's a need for Washington to provide fresh signals of commitment in Asia, not least because the structural environment is becoming more challenging. It's not that the US needs to forward-deploy in Asia the 7,000-odd tactical nuclear weapons that it deployed in Europe at the height of the Cold War. But it might need to deploy a hundred or so such weapons, perhaps using naval deployments as a ready means for shifting the same suite of weapons across the different alliance structures that it has in Asia.

Still, strengthening US extended nuclear assurances in Asia will probably require more than declaratory reaffirmations and a suitable force structure. Indeed, it might well be time for the US and its Asian allies to explore new ways of signalling greater resolve in relation to nuclear ties. US allies in Asia are increasingly considering whether NATO's nuclear-sharing arrangements might have applicability in their own region. Within NATO, those arrangements vary from member to member. Three NATO countries are nuclear-weapon states (the US, the UK and

France). Five (Belgium, Germany, Italy, the Netherlands and Turkey) store US forward-deployed nuclear weapons on their territories, and in relation to some of those weapons provide the aircraft required to deliver them. Seven others (the Czech Republic, Denmark, Greece, Hungary, Norway, Poland and Romania) support NATO's nuclear mission through what are called SNOWCAT operations (Support of Nuclear Operations With Conventional Air Tactics), such as aerial refuelling of nuclear strike aircraft. Twenty-seven alliance members—that is, all except France—participate in the Nuclear Planning Group, the alliance's senior body on nuclear matters.

A recent article by Michito Tsuruoka argues that US allies in Asia are not unfamiliar with the idea of nuclear burden-sharing.<sup>49</sup> Both Japan and South Korea have some experience of having US nuclear weapons forward deployed on their territories, though in Japan's case deployment actually occurred on Okinawa before the island was formally returned to Japanese administration in the early 1970s. US bases on mainland Japan hosted the non-nuclear components—aircraft and missiles—of nuclear weapon systems. Tsuruoka accepts that there was little in the way of 'sharing' arrangements in relation to US nuclear weapons in South Korea, but still makes a plausible case that Australia, through its hosting of US intelligence and command and control facilities, constitutes another point on the spectrum of nuclear burden-sharing. He sees accepting nuclear visiting, supporting the overall deterrence mission by capabilities such as missile defence, and participating in nuclear consultations as further, if less important, examples of burden-sharing.

A greater sense of burden-sharing and nuclear 'inclusion' might well be important in alleviating allies' concerns about the future credibility of US extended nuclear assurances. Still, it's unlikely to prove a complete answer. US allies have some specific concerns about US force modernisation and other issues, but their larger concern is usually that the US's relative strategic weight in Asia is slipping, and that force modernisation efforts by potential Asian adversaries are increasingly enabling long-range missile targeting of the continental United States. Both factors are typically seen as weakening the credibility of US extended nuclear assurances. As the regional strategic environment becomes one of multipolarity—uneven multipolarity, true, but still an environment with a number of power centres—the idea that the US would be prepared to run nuclear risks on behalf of its smaller allies gets harder to sell. David Lange, the former New Zealand prime minister, once wrote that extended nuclear assurances become less plausible the smaller the ally apparently being protected, and the rule might be even more true in multipolar environments than in bipolar ones.

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The growing vulnerability of the US homeland to nuclear-armed Asian adversaries—even North Korea—is also generally interpreted in Asia as a factor likely to induce greater caution on Washington's part in relation to conflicts within the theatre. Just as Washington was sometimes seen in Europe during the Cold War as reluctant to trade New York for Paris, so too the possible loss of a major US city in a nuclear conflict with an Asian aggressor would make—or at least should make—Washington keener to manage crises in Asia that might escalate to the nuclear level. Much the same, of course, can be said about the two countries most often seen as potential adversaries—but those countries aren't trying to retail extended nuclear assurances to allies and partners in the face of that vulnerability. In short, the credibility of such assurances is maximised by strategic primacy, diluted by mere equivalence, and devalued by strategic inferiority. The growing vulnerability of the US homeland doesn't automatically bring to an end the condition of US primacy in Asia, just as it didn't in Europe during the Cold War, but it does suggest that the risks to the US from nuclear intervention on behalf of an ally are going up.

Just as technological changes in regional nuclear arsenals are driving a new set of worries about the future Asian nuclear order, they are helping to propel a number of states towards a higher level of nuclear latency. As Mark Fitzpatrick argues in his recent book, ‘the expansion of sensitive fuel-cycle technologies—uranium enrichment and plutonium reprocessing—is perhaps the greatest proliferation concern today.’<sup>50</sup> For Fitzpatrick, nuclear latency can be a strategy pursued in its own right: it’s not merely the natural outcome of an independent civil nuclear sector, but a status that signals a potential strategic decision to both adversaries and allies. Japan, South Korea and Taiwan could all, in Fitzpatrick’s estimate, produce nuclear weapons within about two years (less in Japan’s case) of choosing to do so.<sup>51</sup>

Fitzpatrick is certainly correct that policymakers leverage the condition. Media reports suggest that US Vice President Joe Biden recently told Chinese President Xi Jinping that Japan could acquire nuclear weapons ‘virtually overnight’ if it chose to do so, and urged Xi to persuade North Korea to abandon its nuclear and missile programs.<sup>52</sup>

Of course, nuclear latency isn’t a path that leads inevitably to nuclear weapons. The future Asian nuclear order isn’t driven merely by technological determinism. Japan, at least, has been a latent nuclear power for some decades now. Decisions to cross the threshold and push for an indigenous arsenal would only be driven by a judgement that a much darker regional security environment was unfolding. Central to such a judgement would have to be a calculation about the likely durability and credibility of that bundle of US policies typically called extended nuclear deterrence. Broadly, while US extended nuclear deterrence and assurance remain credible, US allies can have their cake and eat it too, and that’s true even for those allies enjoying a high level of nuclear latency. But a slippage in the credibility of US commitments—or a perception that Washington might intend to fold its nuclear umbrella as part of a predetermined timeline of disarmament—could easily precipitate a chain of nuclear proliferation both in Northeast Asia and elsewhere.

# CONCLUDING THOUGHTS

From all four case studies covered here—the US–China relationship, the South Asian nuclear dynamic, the North Korean nuclear program and the challenges confronting US extended nuclear assurance in Asia—we seem to be headed into a more worrying regional nuclear order. The brief description of what’s occurring is that power shifts are pulling regional nuclear weapons into greater strategic prominence, and technological developments are bringing new levels of uncertainty to a wide range of strategic relationships.

Geopolitically, we’re heading into an Asia of ‘skewed or uneven multipolarity’<sup>53</sup> that’s trying to construct a regional security order on the basis of its own security dynamics. Those dynamics are a mixture of cooperation and competition. But competition seems to be intensifying, and it’s hard to imagine that the Asian nuclear order is going to be immune to such frictions. True, even now, there’s only mixed evidence for arms racing in Asia, but even without demonstrable ‘racing’ regional nuclear arsenals are becoming larger and more capable. As they do so, they become a more prominent feature of the strategic landscape.

Those arsenals reflect a core geopolitical reality: that power balances are shifting in Asia. They’re not shifting just between the great powers, although that’s a natural point of attention for many strategic analysts. One of the strongest motivations for both Pakistan and North Korea to place greater reliance upon their nuclear weapon arsenals is their sense that their principal rivals—respectively, India and South Korea—have stolen a march on them in terms of national power. Both Islamabad and Pyongyang sense that they are facing ever-steeper power gradients in relation to their neighbours.

Those contests exist alongside the great-power ones—contests in which variation of power gradients is more mixed, but the importance of actual or prospective change is amplified by competing visions of the shape of future regional order. While steeper power gradients are the drivers of increased nuclearisation in the South Asian and Korean dyads, the shallower power gradients of, say, the US–China relationship and the China–India relationship are also driving a fresh wave of concern by raising the issue of tolerable and intolerable asymmetries in their respective nuclear balances. Those who fear they might end up on the weaker side of the balance tend to be especially anxious about having options to neutralise a possible adversary’s power advantages.

Just as Asian nuclear arsenals have typically remained small, they have also remained comparatively unsophisticated. But now there’s a high level of technological ‘churn’ in those arsenals. The churn involves both MIRVing and MARVing—that is, the deployment of multiple independent re-entry vehicles atop ballistic missiles, and the development of manoeuvring warheads intended to evade terminal BMDs and home in on designated targets. It also involves a noticeable new emphasis on both mobile land-based missiles and the development of sea-based nuclear weapon systems. So far, relatively small numbers of delivery vehicles are involved, but the trend is upwards. And, of course, technological churn is also felt in the increasing deployment of non-nuclear weapon systems that affect the nuclear calculus, such as BMD systems and conventional precision-strike capabilities. It’s felt too in the pace of developments in the cyber and space domains.

Moreover, some nuclear weapon states (Pakistan, for example) have begun what we might call technological ‘backfilling’ by moving towards increasing deployment of ‘battlefield nukes’—short-range tactical nuclear

weapon systems that must be deployed close to the front line. Those deployments underline Pakistan's sense of vulnerability arising from the growing conventional force imbalance in South Asia. Such deployments, though, stress command and control systems. As Michael Krepon observes,<sup>54</sup> the best way of making nukes safe, secure and survivable, in the absence of advanced one-point-safe technologies, is to keep them concealed and distant from the conflict.

As a result of that broad sweep of technological churn, we're starting to see greater innovation across the regional arsenals and a greater willingness to fill in the gaps that have traditionally existed in the previous nuclear force structures. At the top level, the US is—gradually—bringing BMD systems into the theatre, in large part because of the increasing capabilities of regional ballistic missile arsenals.

Such deployments are aimed primarily at countering the crude capabilities of the North Koreans, but not entirely: insofar as they are intended to assure regional allies, they are also meant to signal some capability to offset Chinese theatre and tactical-range missiles, many of which are conventionally armed rather than nuclear-armed, but would play an important role in regional conflict scenarios. Still, BMD deployments also tend to reinforce the drive towards larger and more sophisticated arsenals, as US adversaries consider how to ensure effective penetration of better defences.

Moreover, the challenge posed by technological innovation isn't confined to nuclear arsenals. Conventional capabilities are improving to the point where they can pick up some missions—attacks against hardened targets, for example—that previously required nuclear weapons. The US is improving its high-precision conventional strike options, increasing its ability to pre-empt against some portion of an adversary's nuclear arsenal without crossing the nuclear threshold. And China's development of sophisticated conventionally armed ballistic missiles and hypersonic glide vehicles suggests that it's heading down the same road. Such options help to raise the threshold for nuclear use but also carry an element of risk—if an opponent were to interpret such an attack as a serious attempt to degrade its nuclear capabilities, it might well conclude that it faced a 'use-it-or-lose-it' dilemma.

On the positive side of the balance sheet, nuclear norms are changing only slowly in Asia. The norm that nuclear weapons are not the standard equipment of the modern state—certainly not in the same way that passports and national airlines are—seems to endure. With fewer than 10 countries nuclear armed out of an international community numbering over 190, we have to conclude that the international norm is one of forsaking nuclear arms. That norm's blurred by the number of states benefiting from extended nuclear deterrence, which, when added to the list of nuclear weapon states, raises the percentage of 'nuclear-protected' states from about 5% of the international community to almost 25%.

But we shouldn't dismiss the fact that what's normal for the international community isn't normal for the great powers. All five of the UN Security Council's Permanent 5 are nuclear armed. Of the G7, three (the US, Britain and France) are nuclear armed; the remaining four (Canada, Germany, Italy and Japan) are all covered by extended nuclear assurances. Of the G20 (and counting the European Union as not applicable), only six countries—Argentina, Brazil, Indonesia, Mexico, Saudi Arabia and South Africa—lack either nuclear weapons or a nuclear assurance, and even some of those have flirted with, or exercised, the option previously. If we look at the world's 10 largest country economies (as measured by purchasing power parity in the *CIA World Factbook* in August 2016), only Brazil and Indonesia lack either their own nuclear weapons or an extended nuclear assurance.

In short, nuclear weapons might not be the standard equipment of the modern state, but some form of nuclear security is standard among the world's major powers. Power attracts power. It seems unlikely that the future Asian nuclear order will show much deviation from that norm. So what we blissfully call the rise of Asia might well contain within it the seeds of new nuclear weapon states.

What, if anything, can Australia do to address the looming shifts in Asia's nuclear order? We can't stop the power shifts from unfolding or do much to alter the pace of technological churn. Still, we might be able to shape the political relationships within which those things are happening. To do that, we would want the regional nuclear order to be a topic of leadership discussion in Asia. At the moment, it isn't; it's the subject of academic and

think-tank enquiry but not of official policy. That's evident even from looking at the nature of the debate—most of it's confined to 1.5-track and 2-track discussions, reflecting the lack of official buy-in to the issues.

It might be that Australia could usefully stimulate official discussion of the issues through a series of specific regional summits, with attendance at the ministerial level. Attendees at those summits should include representatives from the regional nuclear weapon states—including North Korea—and states enjoying extended nuclear assurances or high nuclear latency. The summits' agendas should focus on order-building, not on an evangelical campaign against nuclear weapons. We've worked jointly with Japan in this field before, and Tokyo might also be a willing partner in such a venture this time around.

Secondly, even though the case studies explored here cover what we might think of as the 'barking dogs of the regional nuclear order', we can't ignore the dogs that don't bark in the night. We should do what we can to maintain and reinforce Southeast Asia's nuclear-weapon-free status. It's true that a sudden wave of nuclear proliferation is more likely further afield, in Northeast Asia, the Middle East or Europe. But we shouldn't take for granted the non-nuclear status of our near neighbourhood. Proliferation there would be of immediate strategic significance for us. Further, we have a direct interest in Southeast Asian countries continuing to exercise high levels of security over their existing civil nuclear programs, and in acting vigorously to police the possible transshipment of nuclear-related materials through the region.

Thirdly, as other US allies in Asia look for options to strengthen US extended nuclear assurances in the region, we would be well advised to do the same. If the Australian Government hasn't already done so, it should begin a more comprehensive set of discussions with the US about the ways in which the ANZUS alliance might be strengthened in that regard. As Asian strategic transformation unfolds, it will be important to ensure that the nuclear side of our alliance remains relevant to the shifting strategic environment. That might include the introduction of nuclear sharing arrangements similar to those already existing in Europe—especially if US allies in Northeast Asia start to head down that track.

Then there are the policy options that we should approach with genuine caution. Self-abnegation has to be the basis of fresh signals of restraint in Asia. But voluntary abandonment of our own tie to nuclear deterrence would do little to improve the situation and might easily make it worse. Some have suggested that we should forswear the defence of Australia by nuclear weapons, setting aside the position of extended nuclear deterrence in Australian strategic policy. Such commentators believe that because nuclear weapons play no great role in the protection of our own continent we could make such a change at an acceptable cost, and hope thereby to generate a wider regional rejection of nuclear weapons.

In fact, though, such a rejection seems unlikely to follow. The region won't reject them while the rest of the globe retains them. And our abandonment of our nuclear relationship with the US might easily spur debates elsewhere in the region that would be the reverse of what we intend. Some Asian policymakers would interpret such a move by Australia as an attempted appeasement of a rising China; others might see it as evidence that we no longer believed Washington assurances were credible.

Further, US nuclear weapons provide a useful backstop to Australian security, one which we should be reluctant to abandon in any event. It's unrealistic to believe that our security turns solely upon continental defence. Rather, it turns upon a secure region and a stable, favourable set of force balances along the Eurasian rimlands. Those balances would be harder to sustain in the absence of nuclear weapons.

But if nuclear weapons are here to stay, and if Asian nuclear relationships are destined to become more complicated and—probably—contentious, Australia should do what it can to make sure that regional deterrence policies don't become shrill. As this paper has argued, there's long been a degree of shrillness to North Korean nuclear policy—softened only a little by a more responsible pledge at the recent party congress—and it's unclear whether Canberra can do much to alter that tone. Pakistan's nuclear policy, shaped like North Korea's on the premise of a considerable power differential with a likely adversary, turns increasingly upon a promise of early use of nuclear



weapons in conflict. Finding ways to draw Pakistan towards nuclear normalcy will be one of the key challenges of the emerging order.

The US–China relationship constitutes a different sort of problem. Managing the tone of the relationship is clearly important, but both players sense a flattening of the power gradient between them, and that makes for a set of new challenges to the current strategic order and not merely the nuclear one. Both orders seem likely to tangle together: it will be hard to insulate the US–China nuclear relationship from the broader bilateral strategic one, and vice versa. Beijing, in particular, having only a thin record of formal nuclear arms control and no record at all of formal nuclear weapons ceilings and reductions, might well be uncomfortable with any attempt to move the bilateral relationship from one based on voluntary restraint to one based on formal commitments. But its willingness to do so seems likely to be an emerging test of China’s regional leadership.

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Australia can’t redesign the nuclear order to its will. But we should do what we can to support the continuing pre-eminence of deterrence in regional nuclear doctrines, work where we can to enhance crisis-stability arrangements, and advocate the continuing importance of the principle of voluntary restraint in Asia’s pre-systemic, pre-managed nuclear order.

Finally, even with such efforts, we must accept that nuclear weapons could spread quickly in Asia. Worries among US allies about the continued willingness of the US to offer extended nuclear assurances—something previously taken for granted but now less certain—could be a particularly important driver of near-term regional proliferation. Such an outcome would leave Canberra with a series of complex and unattractive choices, not merely over how to respond to proliferation by US allies in Northeast Asia, but in thinking through what a fundamental shift in the regional order meant for Australia’s own nuclear identity.

# NOTES

- 1 The terms 'extended nuclear deterrence' and 'extended nuclear assurance' are used here, and throughout the paper, to refer in particular to the nuclear elements of US extended deterrence and assurance policies. Washington offers in support of its allies a range of capabilities that deter adversaries and assure friends. Some of those are covered in this paper, but nuclear issues remain the core issue of this study.
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# ACRONYMS AND ABBREVIATIONS

BMD	ballistic missile defence
CVID	complete, verifiable, irreversible dismantlement
DMZ	demilitarised zone
HEU	highly enriched uranium
ICBM	intercontinental ballistic missile
MARV	manoeuvrable re-entry vehicle
MIRV	multiple independently targetable re-entry vehicle
NPT	Nuclear NonProliferation Treaty
SLBM	submarine-launched ballistic missile
SSBN	ship, submersible, ballistic, nuclear (nuclear-powered ballistic missile submarine)
THAAD	terminal high-altitude area defence
UN	United Nations
USSR	Union of Soviet Socialist Republics

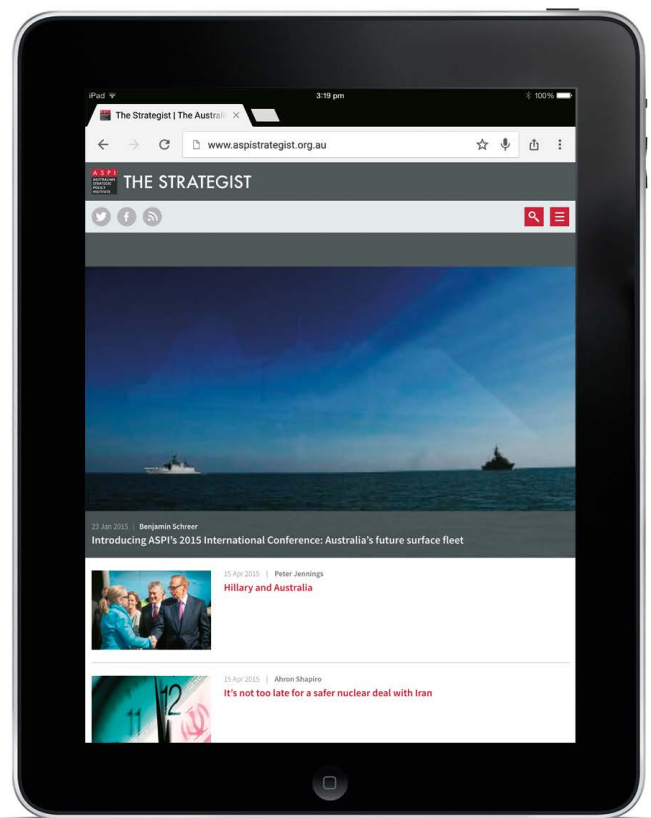
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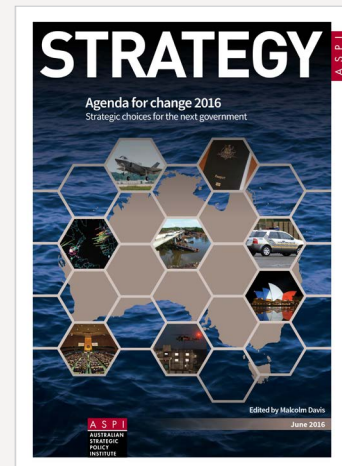
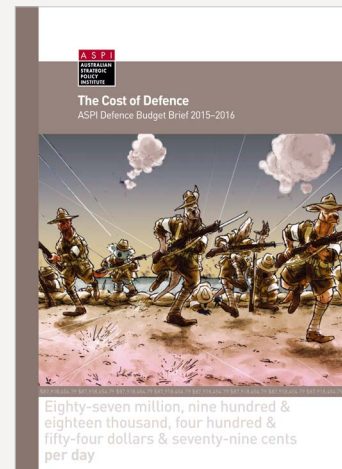


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