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A delicate issue

Asia's nuclear future

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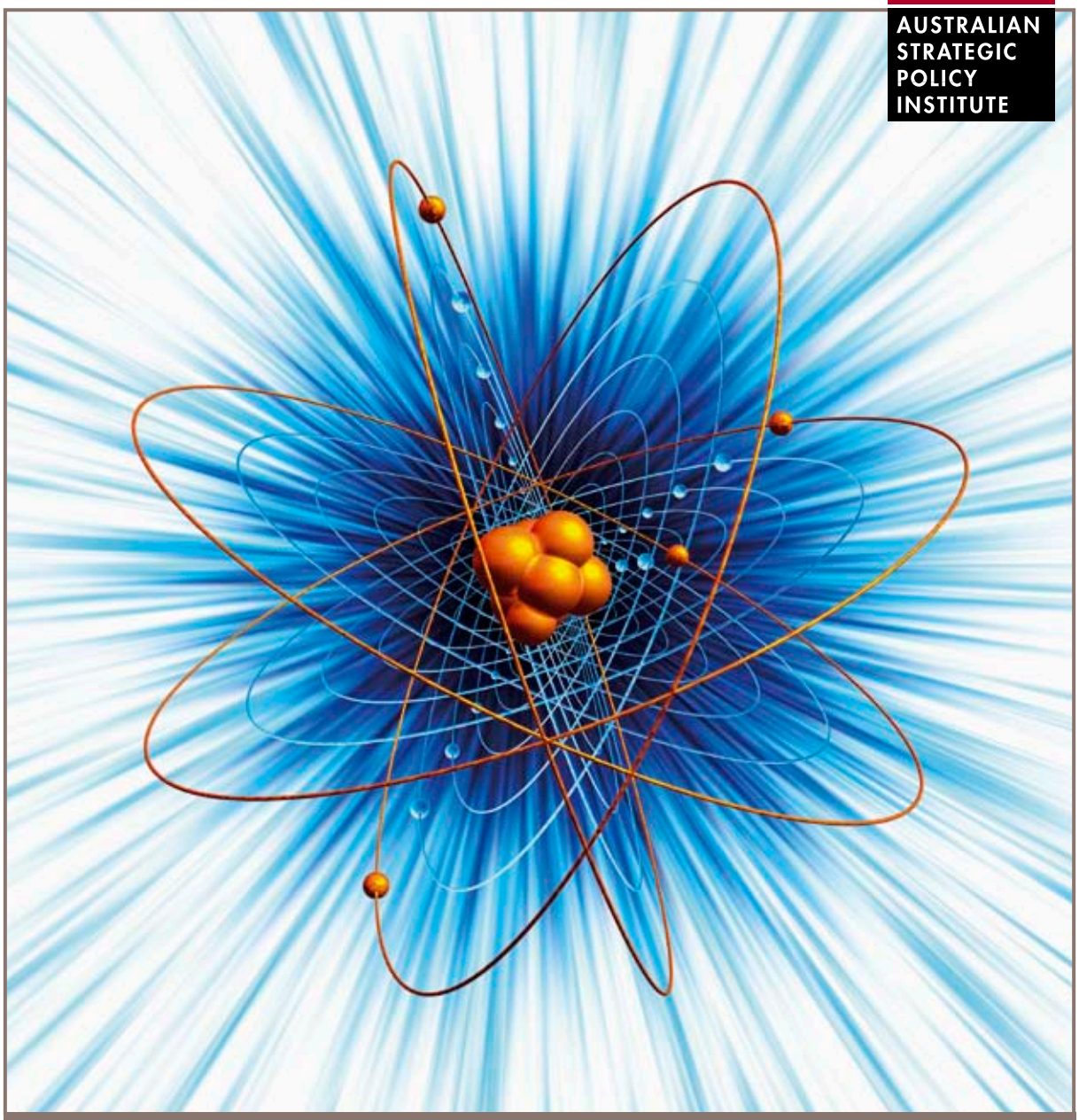

December 2009

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Cover image: Atomic structure. Computer artwork of electrons orbiting a central nucleus.

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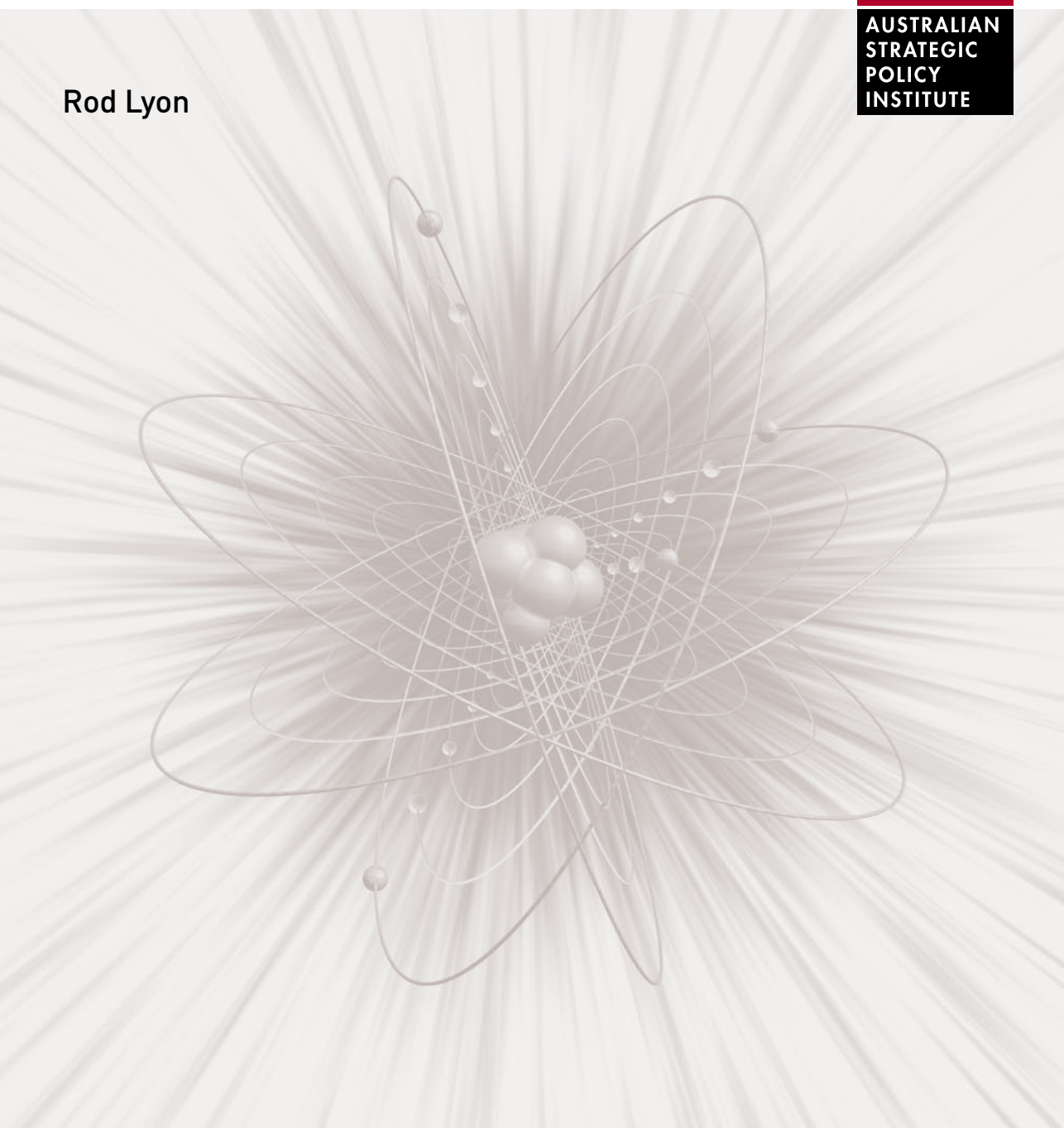

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Executive Director's introduction

ASPI has frequently written of the strategic challenges that will arise as Asian power grows. But in this report, we consider a delicate issue—the nuclear implications of the shifting Asian security environment. The issue is still an esoteric part of the ongoing Australian debate about Asia's future, that debate being much more focused on economic and political issues, and—where it intrudes at all into the strategic and military domain—typically constrained to the topics of conventional military modernisation and shifting strategic relativities. Nuclear weapons issues, by contrast, still turn mainly upon the old concerns about the US and Russian arsenals, nuclear arms control and the possibilities for achieving nuclear disarmament.

In this report, the director of ASPI's Strategy and International Program, Rod Lyon, unpacks a set of nuclear issues that seem likely to be of growing importance in Asia. He picks up a theme central to the broader academic debate: that the Cold War nuclear order has only limited applicability in the region. In the areas of great-power relationships, proliferation and arsenal security, Asia seems likely to pose a set of idiosyncratic nuclear challenges; challenges which could only be managed by special efforts by regional countries.

Nuclear weapons typically generate strong feelings. So some readers may feel challenged by the issues that Dr Lyon addresses here, especially some of the options that he canvasses in the final chapter—the issue of Australian policy settings in the face of a more challenging Asian nuclear environment. We offer those thoughts under the auspices of ASPI's mission: to encourage a richer public debate about strategic policy and options, and a broader set of policy considerations for government.

I would like to thank Rod for his efforts, a range of reviewers both inside and outside government for their contributions, and the ASPI production team for its usual sterling efforts to make the product both insightful and readable. This report is the first of two that ASPI will be publishing over coming months on nuclear issues. The second will focus more directly on the issues of proliferation, arms control and disarmament. In the meantime, I hope readers will enjoy ASPI's latest offering.

Peter Abigail
Executive Director

Photo opposite: President Barack Obama and South Korean President Lee Myung-bak took part in a joint news conference, in the Rose Garden of the White House in Washington, 16 June 2009. [Lee had sought, and received, an explicit White House assurance that US nuclear weapons provided an 'umbrella' for South Korea.] © Brooks Kraft/Corbis

Executive summary

Australians stand on the cusp of a new era in nuclear relations. Over coming decades, Asia is likely to become the dominant influence shaping the global nuclear order, and to bring to that order the characteristics of its own strategic relationships. As it does so, the global nuclear order will move further away from bilateral nuclear symmetry—the dominant nuclear relationship of the Cold War—and towards a set of multiplayer, asymmetric relationships. That doesn't automatically mean we're heading into a more dangerous world, but we are headed into a nuclear order of which we have little previous experience. Even our established notions of deterrence and abstinence, the foundation stones of nuclear order during the Cold War years, might come to have new meanings in that setting.

Asia brings together many of the worries of the new nuclear age. Great-power relationships are shifting, and the region is experiencing a transformation in geopolitics, as Asian powers emerge from a long era of weakness. Those powers will increasingly be feeling their way towards new nuclear understandings with each other. The US–China bilateral nuclear relationship will be an important part of that process, but certainly not its sole component. Most of the great-power relationships in Asia are currently in good shape, strengthened by economic, diplomatic and social ties. Still, as the tectonic plates of regional security shift in the years ahead, a central concern for all the region's great powers—even non-nuclear Japan—will be 'how much nuclear asymmetry is tolerable, and with whom?'

Moreover, the region's shifting geopolitics seems likely to reawaken the question of nuclear identity that many of the regional states closed off in the 1960s and 1970s by signing and ratifying the Nuclear Non-Proliferation Treaty and abandoning nuclear weapons ambitions and programs. It is possible that pressures for nuclear proliferation will increase, and not just in the more immediate neighbours of North Korea. US allies, increasingly exposed to localised power contests, will return again and again to gnaw an old bone—the credibility of US extended deterrence in a new Asian security environment. At a minimum, expect to see more vigorous 'nuclear hedging' by US allies, including Japan, South Korea and Taiwan. All seem likely to enhance their 'breakout' potential, and in dire circumstances might be tempted to cross the nuclear threshold.

Non-state actors, who already influence an increasingly important fraction of international relations, will also have important roles to play in an Asian nuclear context. The enduring strategic rivalry between nuclear-armed India and Pakistan seems especially vulnerable to such interventions. Moreover, the security of Pakistan's nuclear arsenal is a cause for concern, not so much for technical reasons to do with the arsenal itself, but because Pakistani nuclear security can only be a function of the strength of the broader Pakistani state. Pakistan has previously been vulnerable to what might be termed 'insider threats', when individuals inside the Pakistani nuclear program have pursued personal objectives beyond that program.

Asia's nuclear future is not settled. It might get better—if the North Koreans, for example, can be convinced to roll back their nuclear ambitions. Currently, that seems unlikely. Alternatively, it might get worse in any of several ways—by the emergence of a more intense set of great-power nuclear competitions, by reaching a 'tipping point' of nuclear proliferation in the region, or by leakage or theft of materials or weapons from regional nuclear arsenals. Or, it might stay pretty much the same as it has been over recent decades—where we edge delicately forward into the future, struggling to manage, cap and hopefully reverse a slow North Korean proliferation effort, but keeping most of the regional players at the non-nuclear level despite a rising tide of 'nuclear latency'.

The recent Australian Defence White Paper suggests that Canberra's policymakers are determined to maintain Australia's strategic weight in a shifting regional security environment, but it contains few hints about how Australia might find a stable saddle-point in a more highly proliferated nuclear world. Naturally, the government hopes that such a world does not ensue, but policymakers should revisit their options for Australia's own strategic future in the shifting Asian nuclear environment. Both 'ordering' and 'hedging' strategies are worth greater attention and, at least for the next decade or two, we might sensibly pursue a course that allows us to retain a range of future options.

Under the 'ordering' strategy, Australia would attempt to strengthen regional commitments to a low-proliferation world, and to build better understandings of how existing nuclear relationships might evolve in asymmetrical conditions, where several players are involved, where ballistic missile defences are becoming a more regular feature, where conventional strike options are growing, and where non-state actors might be an increasingly important worry for nuclear security. It would also attempt to improve regional commitments to strengthened nuclear safeguards and nuclear security. And Australian ministers might look for opportunities to endorse the continuing relevance of the assurance that the US currently provides to its Asian allies under its doctrine of extended nuclear deterrence—because the doctrine is an important stabiliser of the Asian nuclear order.

In the less likely event that a darker Asian nuclear future emerges, Australia would look more to a range of 'hedging' options. Not all those options would be nuclear ones, although the White Paper suggests they would all be 'significant and expensive'. Still, in a region of rising nuclear latency, Australia might want to ensure that its own boat also rises on that tide. To do that, we would need to enhance our own capacities in the nuclear field, to stay abreast of technological developments in enrichment and reprocessing, and to think about the possible roles of our planned conventional platforms in an era of greater nuclear proliferation. In extremis, might Australia build its own nuclear arsenal? Perhaps, but such a decision is not close, and would require a much darker Asian strategic environment than we see today. For Australia to swing back to a course that it abandoned in the late 1960s would involve a substantial reorientation of Australian strategic policy. It would not—and should not—be a course taken lightly.

Chapter 1

INTRODUCTION

> The most complex nuclear questions are located in Asia.
>
> —Therese Delpech (1998–99:58)

> The world is in a second nuclear age, an Asian nuclear age.
>
> —Paul Bracken (1999:96)

Over the course of the past decade, a number of strategic commentators have suggested that Asia is fast becoming the critical region shaping the global nuclear future. Notwithstanding the recent focus on US–Russian nuclear relations—because the START treaty expires in December 2009—many of the most burning nuclear issues now lie outside the old East–West Cold War divide. Nuclear relations between the great powers of the Asia–Pacific region are still in a formative stage, uncodified by either 'tacit rules'[1] or formal arms control. Proliferation prospects among regional countries are greater than many might suppose. And arsenal security has a salience here that is rarely matched elsewhere.

The refocusing of analytical interest on Asia has been especially noticeable since the Indian and Pakistani nuclear tests in 1998. The tests signalled the closing of a possible window of nuclear disarmament that had opened in the early to mid-1990s. And the course of events since, including North Korea's overt moves towards nuclear weapons (and the resulting worries in Japan and South Korea), Russia's concerns about its near-abroad, the quickening of Pakistani nuclear weapons production, and the modernisation of China's and India's arsenals, all point to a growing importance of Asian nuclear factors as the older transatlantic issues decline in importance.

In part, of course, the growing interest in Asian nuclear issues reflects a broader interest in the shifting geopolitical landscape of the 21st century. Henry Kissinger wrote in April 2009, in a piece for the *Washington Post*, that the nuclear future of the world would probably be decided within the next few years (Kissinger 2009). The core of

Kissinger's argument was that Iranian and North Korean nuclear proliferation would prove a decisive event, severely damaging the prospects for a homogeneous international order and increasing the need for a 'new, less universal approach' to it. In short, big historical shifts are occurring beneath regimes built for the geopolitical realities of an earlier era. Strategic adjustments in the Middle East – Northeast Asia axis may force us towards having to define a new operational concept of world order.

The shifting landscape brings to the fore a question of special significance: can the nuclear arrangements that the world codified in the age of the Cold War—arrangements that were robust enough to allow the collapse of a nuclear superpower in the late 1980s and early 1990s—now survive a fundamental transition of global power from West to East? The Cold War was typified by two risk-averse superpowers who successfully managed their strategic competition by transforming it into a contest in 'swaggering'. Swaggering produced enormous nuclear arsenals, as nuclear-weapon production became part of the contest of wills and prestige, but both contestants were so risk averse that one of them could crumble and fall apart without producing a nuclear crisis. Asian growth produces a different sort of dynamic, not of decay but of vigour, rising influence and power rebalancing. That rebalancing is not merely between Asian powers and Western ones, but within and between Asian states. Moreover, the rebalancing must be done at a time when non-state actors are increasingly making their presence felt in the international security environment.

This paper explores three different levels of the Asian nuclear environment:

- great-power nuclear relationships
- proliferation
- worries about non-state actors.

It also examines the implications of the changing Asian nuclear landscape for Australia.

Chapter 2 explores the distinctive features of Asian nuclear relationships. Where the Cold War was characterised by essential symmetry between the main players, Asian nuclear relationships are characterised by asymmetries, by a range of players, by smaller arsenals, and by a changing balance between offensive and defensive force deployments. Those distinctions seem likely to endure. But what does that mean for regional nuclear relationships, both in times of peace and in times of crisis? Deterring adversaries seems to be becoming more complex. And as the old East–West global order fades we're likely to see those complexities in nuclear relationships move to the forefront of global, and not merely regional, nuclear concerns.

Chapter 3 examines how great-power nuclear relationships might develop in the region. The US has long been the dominant nuclear player in Asia, but hasn't traditionally focused on exercising nuclear leverage there. The US–China nuclear relationship—essentially a minor component of the Cold War—may well prove a critical one for regional stability in coming decades, but it would be unwise to reduce a complex network of Asian nuclear relationships to a single or dominant bilateral one. The US–Indian nuclear relationship already has its own dynamic, and it is one that partly undoes the nonproliferation regime defined by the Nuclear Non-Proliferation Treaty (NPT) of 1968. Russia–China–India relations so far look manageable, but much will depend on how the broader strategic relationships among those countries might evolve.

As Asian strategic dynamics shift, it's also far from certain that current nuclear asymmetries between the region's great powers will remain tolerable. A key question for the future will be 'how much asymmetry will be acceptable, and between whom?' As part of that question, this paper asks whether Japan can remain a non-nuclear great power in a transformational security environment? Russia and the US inherit something like a relationship of symmetry from the Cold War days, but little of that relationship had a distinct nuclear focus in Asia. Moreover, neither has such a relationship with any of the other great powers in Asia. Nor do the Asian great powers have such relationships among themselves—their nuclear relationships look more hierarchical, and form a descending order of China, India and Japan. Still, none of the three currently think the existing regional hierarchy is based merely upon strength in nuclear arsenals.

Chapter 4 considers worries about proliferation. North Korea is unmistakably bidding to be recognised as a nuclear weapon state, not just as a state with nuclear 'ambitions', and that's putting worrying pressure on the US extended nuclear deterrence arrangements in Northeast Asia. This year, Washington has moved to signal more clearly its enduring commitment to those arrangements, entering into a dialogue with Japan over extended nuclear deterrence and concluding a US – South Korea joint vision statement reaffirming the US 'nuclear umbrella' over the ROK. Sustaining the credibility of extended nuclear deterrence will be an important factor in constraining nuclear proliferation in Northeast Asia. If the credibility of that assurance weakens—and it must, as US strategic primacy becomes more contested in Asia—there's some prospect that Japan, South Korea and Taiwan might cross the nuclear threshold. All three have previously done some work on nuclear weapons programs, and their positions today constitute a form of nuclear hedging that is far short of a full abandonment of their previous objectives. In certain circumstances, each, or all, could proliferate with relative ease.

In Chapter 5, the paper examines the non-state actor threat. The rising prominence of Asia in nuclear affairs is occurring during an age of technological diffusion; power is moving not only to a new balance point between states, but away from states more generally towards other sorts of actors. The ability of terrorist groups to unsettle relations between India and Pakistan—enduring strategic rivals—is an important worry for the two countries' nuclear relationship. Non-state actors are also relevant to the question of arsenal security in Pakistan, and especially the problem of the security of Pakistani weapons during crises. The rise of the non-state actor might well generate uncertainties that we can't see clearly at the moment. What are the risks that North Korea might 'sell' nuclear weapons, materials or technologies to non-state actors? What role might be played by malevolent non-state actors that are covertly sponsored by a state? In an increasingly networked world, what level of nuclear weapon development can be achieved by groups cooperating with other groups? Nuclear terrorism, of course, would be an ultimate form of asymmetry, but underlines the difficulty of exercising traditional deterrence policies across steep asymmetric power imbalances.

Finally, in Chapter 6, the paper looks at the implications for Australian policy of the changing shape of the Asian nuclear landscape. The chapter outlines some of the options for Australian policymakers, but with a fairly broad brush. Much of the choice comes down to where Australia's current and future governments choose to position the nation along the continuum of 'ordering' and 'hedging' strategies that have traditionally characterised our security policy. How Asia's future unfolds—and whether nuclear 'order' or 'disorder' prevails—will have a profound effect on those options. Australia has long lived in a belief that the age of proliferation by responsible, technologically advanced states is over. Over the next decade or two, we might have an opportunity to test the validity of that proposition.

Chapter 2

A GLOBAL NUCLEAR ORDER WITH ASIAN CHARACTERISTICS?

> The nuclear future of the globe is more likely to be written by what happens in Asia and the transpacific dimension than by what happens in Europe and the transatlantic dimension.
>
> —Brad Roberts (2009b:13)

> Nuclear weapons are becoming a crucial component of national security policies and postures of states in the Asian security region.
>
> —Muthiah Alagappa (2008:484)

Some years ago, Professor William Walker (from St Andrews University in Scotland) wrote a seminal article entitled 'Nuclear order and disorder'. In it, he argued that 'a nuclear order of great sophistication and effectiveness' had been fashioned in response to the challenges of the Cold War. It was an order that rested, he said, 'upon two linked governmental creations: a managed system of deterrence, and a managed system of abstinence' (Walker 2000).

Since the concept of a 'nuclear order' might be unfamiliar to some readers, it's worthwhile touching quickly upon Walker's presentation of it. A nuclear 'order', he argued, is 'clearly *an* international order, [but] intertwined with *the* international order' (Walker 2004:9). The primary objective of the international order is 'to reduce enmity to a more benign and contained rivalry' (Walker 2004:10), and nuclear weapons became entangled with the pursuit of that objective in the second half of the 20th century. They became central to power balancing, the key strategy for containing rivalries since the 18th century. Because of the great destructiveness of nuclear weapons, a distinct nuclear order evolved—an order designed to maintain strategic stability among nuclear-armed adversaries and to limit the spread of nuclear weapons to more players. Hence, the focus on 'deterrence', to underpin strategic stability, and 'abstinence', to underpin nonproliferation. Both objectives were pursued through what Walker labelled 'managed systems', which turned not merely upon power balancing, but also upon rules, norms, agreements and institutions.

During the first decade of the 21st century, arguments have quickened among academics over the extent to which Walker's 'nuclear order' still exists. The broad contours of those arguments can be traced in the pages of a special issue of *International Affairs* devoted to some of Walker's arguments.[2] In short, debate rages over a number of key propositions: whether the old order was merely a Eurocentric creation, 'lost in translation' as power shifted away from Europe; whether the old order has been broken and, if so, to what extent; whether a 'rebirth' of the global ordering project is possible and, if so, what that rebirth might look like.

If there's to be a rebirth of the nuclear ordering project, it seems likely that Asian countries will be obliged to play a much larger role in its negotiation than they did during the original ordering project.

For example, Brad Roberts (2007) has argued that the old order is broken, like Humpty Dumpty after his fall. The old order broke, says Roberts, because of a range of factors, including the inability of the guarantors of the order (the P-5, or the five permanent members of the UN Security Council) to enforce abstinence, the tensions between major powers during an era of unipolarity, the worries of some regional countries about likely proliferation by neighbours, and ongoing concerns about the efficacy of arms control, both in Washington and elsewhere. Implicit in Roberts's imagery of Humpty Dumpty is the idea that the prospects for successfully reconstructing the old order are poor. He also sees the prospects for defining a new one as disappointingly slim. The analytical community, he says, can no longer agree on the right starting point for a discussion of global nuclear order, and the members of the international community can't agree on what the systems of deterrence and abstinence should encompass, let alone how they might 'link'.

Perhaps global nuclear orders can only reflect broader international orders, and the current order is in flux. Global strategic realities are shifting. If there's to be a rebirth of the nuclear ordering project, it seems likely that Asian countries will be obliged to play a much larger role in its negotiation than they did during the original ordering project. Indeed, as strategic weight moves to Asia, it is increasingly likely that 'a global nuclear order with Asian characteristics' will take shape in coming decades. European countries these days seem to exist almost in a post-nuclear order. True, Britain and France are hardly racing to get rid of their nuclear weapons, and new members of NATO are keen to affirm that US extended nuclear deterrence also covers them, but the East–West spark has largely gone—which is precisely why US–Russian nuclear arms control is the easiest form to conclude.

If the global nuclear order is going to become increasingly 'Asianised', then we might expect some important differences between the Asian nuclear age and the Cold War nuclear age. For example, Therese Delpech (1998–99:58) has argued that two issues have been under-studied:

- the 'wide gap between Asian and Western nuclear perspectives'
- the 'possible role of nuclear weapons in a context which has little in common with Cold War experiences'.

During the days of the Cold War, Asia was a mere afterthought on key nuclear issues, for the simple reason that it was 'a subordinate security region penetrated and dominated by the ideological and strategic confrontation between the United States and the Soviet Union' (Alagappa 2008:37). In the years ahead, Asia might well define a new normalcy for nuclear relationships.

But what does that mean, in practical terms? There are two broad ways of tackling this question. The first way is to ask, 'What does the Asian nuclear order look like today, and what might it become in the future?' In short, that approach seeks to distil the core elements of the current Asian nuclear order, and to make some projections about the future of that order. The second way is to try to think of ways that Walker's 'managed system of deterrence' and 'managed system of abstinence' might be reconfigured in the Asian security environment. That approach looks at the new burdens of complexity that are likely to fall upon players in multiplayer, asymmetric contests, and considers whether 'abstinence' will increasingly be defined merely as some level of 'hedging' in many Asian states.

Characteristics of the Asian nuclear order

Let's start with the first approach, by examining the principal characteristics of the current Asian nuclear order. In recent years, there have been two major studies of the Asian nuclear landscape. Muthiah Alagappa has edited *The long shadow: nuclear weapons and security in 21st century Asia*, which examines nuclear issues across a large number of Asian countries (Alagappa 2008). And Etel Solingen, from the University of California, Irvine, has written *Nuclear logics: contrasting paths in East Asia and the Middle East*, which attempts to explain why East Asia differs so markedly from the Middle East on the key issue of nuclear proliferation (Solingen 2007).

An important feature of Solingen's analysis is that a direct comparison of East Asia and the Middle East shows that the likely proliferation trajectories of the two regions are sharply at odds. In East Asia, the broad trend has been towards nonproliferation, with North Korea as the exception; in the Middle East, the broad trend has been towards proliferation, with nonproliferating countries the exception. Solingen explained the variation by pointing to the domestic calculations made by dominant elites in different countries. In East Asia, 'outward-looking' elites have stressed the value derived from international connectedness; in the Middle East, 'inward-looking' elites have stressed the need for national sources of power. East Asia is tied into the international community by myriad connections, the Middle East by few. In short, the regions have been driven by different political economies in their decisions about proliferation. Of course, East Asia's 'connectedness'—which shows few signs of waning—implies a positive message about the region's nuclear future: that proliferation impulses will continue to be dampened by the value that domestic elites place on other international ties.

As Christopher Ford has observed:

> the fundamental policy lesson of *Nuclear Logics* would seem to be that if the international community wishes to fight proliferation, it needs to ensure that pursuing nuclear weapons entails very high isolation costs. Only if such costs obtain will outward-looking elites stand to lose enough to make them, in anticipation of such losses, oppose the efforts of inward-looking elites to travel down the nuclear road. (Ford 2009:120)

There's no doubt that Japanese policymakers understand the potential costs of a decision to proliferate. A former Ministry of Foreign Affairs official, cited by Solingen (2007:286–287), outlines them well:

> Japan maintains cooperative nuclear agreements with six countries, the United States, Britain, France, Canada, Australia and China. I personally negotiated ... most of these ... If Japan misuses its civilian nuclear program for military purposes, a set of stringent sanctions will be imposed on it, including the immediate return of all imported materials and equipment to the original exporting country. Should that ever happen, nuclear power plants in Japan [would] come to a grinding halt, crippling economic and industrial activities ... In this sense, the bilateral nuclear energy agreements provide a rather effective deterrent, certainly more effective than the NPT.

But there's the rub: just as some banks and financial institutions were deemed 'too big to fail' in the recent global financial crisis, aren't some possible proliferators going to be 'too big to sanction' if we hit a nuclear tipping point in East Asia? For example, is Australia going to apply strong sanctions against a proliferating Japan, one of our strongest trade partners? After all, current evidence suggests that a great-power proliferator is already treated differently from others. India is the case in point. So Solingen's estimation of the calculations that might be made by outward-oriented policy elites may, in some circumstances, prove a generous one.

Of course, it's also possible to argue that Solingen's work is based on a false premise about the 'underconsumption' of nuclear security in East Asia. China, Russia and the US—the three great powers most engaged in East Asia—are already nuclear armed. And US alliances or security arrangements 'extend' nuclear deterrence to a number of other regional players: Japan, South Korea, Taiwan and Australia. Moreover, we can now add in Solingen's solitary proliferator, North Korea, which seems resolute about pushing forward to a nuclear arsenal. On those figures, is East Asia really an underconsumer of nuclear deterrence? True, the proliferation genie has been relatively well managed there in the past, partly as a result of US pressure on would-be proliferants and partly because of extended nuclear deterrence arrangements. By contrast, extended nuclear deterrence is a relatively unknown concept in the Middle East (despite Hilary Clinton's recent statement offering to 'extend deterrence' to Middle East partners), and US pressure there is less effective.

In contrast to the Solingen analysis, Alagappa's assessment is more sobering. Alagappa's focus is not limited to East Asia, and so picks up the broad geographic swathe of countries from Japan to the Middle East (which he is calling 'West Asia'.) Overall, Alagappa sees nuclear weapons as already having an 'indirect but far-reaching influence' in Asia. He posits an Asia which has embraced and entrenched nuclear weapons in its core security policies, although he accepts that the true significance of that embrace does not show up appropriately in analyses that merely survey the 'surface' of the regional security environment. A number of states already have nuclear weapons programs, others already benefit from US extended nuclear deterrence guarantees, and still others show a persistent commitment to crossing the threshold.

Alagappa (2008:480–482) paints an Asian security order in which nuclear weapons are already consequential, despite modest arsenal numbers. He advances four propositions:

1. Deterrence will remain the primary strategic role for nuclear weapons now and in the foreseeable future.

2. Deterrence relationships in Asia won't look like East–West deterrence. They won't be relationships of mutual assured destruction (MAD), and there will be many asymmetries among them. Regional nuclear-weapon states will articulate a spectrum of strategies ranging from existential deterrence to minimum deterrence to assured retaliation; and sometimes doctrinal statements will outrun capabilities.
3. The smaller arsenals of Asia and the absence of severe confrontations will help to keep doctrines at the level of generalised deterrence.
4. Extended nuclear deterrence will continue to be important to US allies in East Asia, although it is hard to imagine other Asian nuclear weapon states 'extending' deterrence to their clients or allies.

Alagappa's propositions contain a 'picture' of what a more proliferated Asia might look like. It could well remain a region where deterrence dominates, and where arsenals are typically constrained: an Asia, in fact, that falls some way short of a 'nuclear chaos' model of unrestrained proliferation and mushrooming nuclear dangers.

An order in flux?

Notwithstanding Alagappa's more reassuring view, we shouldn't understate the extent of the looming change from a nuclear relationship based on bipolar symmetry to a set of relationships based on multiplayer asymmetries. As one observer has noted, when you add to that change the relatively constrained size of nuclear arsenals in Asia, the likelihood of further nuclear reductions by the US and Russia, and ballistic missile defences of uncertain effectiveness, the world is about to enter uncharted territory (Ford 2009:125).

Some factors certainly act as stabilising influences on the current nuclear order, not least that nuclear weapons (here as elsewhere) typically induce caution, that the regional great powers tend to get along reasonably well with each other and that the region enters its era of nuclear pre-eminence inheriting a strong set of robust norms and regimes from the earlier nuclear era. But other factors imply a period of looming change: geopolitical dynamism is rearranging strategic relationships; the number of risk-tolerant adversaries seems to be increasing; most nuclear weapons states are modernising their arsenals; the American arsenal is ageing; and the US's position of primacy is increasingly contested in Asia.

Indeed, it may be that dynamism which could most seriously undermine the Solingen model of East Asian nonproliferation. Solingen, after all, has not attempted to produce a general theory about proliferation; she has attempted to explain only proliferation in the post-NPT age (see Solingen 2007:3), when the P-5 of the UN Security Council already had nuclear weapons. In essence, though, it's exactly that broader geopolitical order that might be shifting. It isn't yet clear how the Asian nuclear order will evolve. It's one of those uncertainties that define Australia's shifting strategic environment. It's not too hard to imagine an order that's more competitive than the one we see now.

The 'managed system of deterrence'

The second approach to thinking about the Asian nuclear order is to attempt to superimpose upon it William Walker's two key mechanisms of the first nuclear age: the 'managed system of deterrence' and the 'managed system of abstinence'. What might those 'systems' look like in Asia?

In Walker's model, the managed system of deterrence included:

> the deployment of military hardware under increasingly sophisticated command and control; the development of strategic doctrines to ensure mutual vulnerability and restraint; and the establishment of arms control processes through which policy elites engaged in dialogue and negotiated binding agreements. (Walker 2007:436)

It isn't obvious that those core aspects of the 'managed' system are all central features of Asian nuclear relationships. Perhaps most importantly, it isn't obvious that the world even has a good model for how deterrence works in asymmetric relationships. Within the US, there's been something of a revival of interest in matters nuclear as strategic analysts attempt to reconceptualise how nuclear relationships might work in the future. Recent work on the problems of exercising deterrence across asymmetrical strategic contests, for example, suggests a number of problems: 'In asymmetric conflict situations, deterrence may not only be unable to prevent violence but may also help foment it' (Adler 2009:103).

Some of the problems arise precisely because weaker players seem increasingly likely to 'test' stronger players' threats—as part of a pattern of conflict that has emerged over recent centuries, in which weaker players have often prevailed against stronger opponents.[3] If we were to look at the case study of the India–Pakistan nuclear relationship—which is grounded in an enduring strategic rivalry, and therefore not 'typical' of the broader nuclear relationships in Asia—it's a moot point whether Pakistani behaviour has been much altered by the 'deterrence' policies of India.

... in a more competitive Asian strategic environment, nuclear asymmetries that are tolerable now might well become less tolerable.

Indeed, the case seems to show that Pakistan doesn't even accept a long-term condition of strategic asymmetry with India, and that it intends to use its nuclear weapons as an 'equaliser' against India's larger conventional forces by building a nuclear arsenal larger than the Indian arsenal arrayed against it. That would imply, more broadly, that increasing strategic rivalries across Asia could be accompanied by efforts to minimise asymmetrical disadvantages between a much wider range of players. In short, in a more competitive Asian strategic environment, nuclear asymmetries that are tolerable now might well become less tolerable.

Furthermore, we need to think about how we might 'codify' deterrence in Asia. In the Cold War days, the MAD doctrine tended to be reflected in arms control accords that limited wasteful spending and corralled the competition. As Walker acknowledges, the agreements were important 'stabilisers' of the broader nuclear relationship, but to what extent can they be replicated in conditions of asymmetry? It might be possible to codify crisis management procedures, but designing (and verifying) limitations on weapons numbers would seem to be much more difficult when the arsenals are of uneven size, and when the weaker party (perhaps both parties) would probably be relying on secrecy about the numbers and locations of weapons to minimise the vulnerability of their arsenals.

True, the news isn't all bleak. Alagappa notes that nuclear weapons haven't fundamentally altered the lines of amity and enmity in Asia. And although 'deterrence' comes in many shades in Asia, not all of those shades are completely novel. For example, Devin Hagerty's work on South Asia makes a case that deterrence, almost in its classical form, came to play an important role in stabilising the strategic rivalry between India and Pakistan (Hagerty 1998). But, if we're to define a new managed system of deterrence that embraces the full range of nuclear relationships across Asia, it seems that it will be a much more complex system than the one that characterised the bilateral superpower relationship of the Cold War.

The 'managed system of abstinence'

If deterrence comes in many shades in Asia, so, too, might abstinence—the flip side of Walker's ordering coin. Walker's managed system of abstinence included 'the NPT … and its safeguards machinery; the nuclear umbrellas (extended deterrence) … and security assurances to states renouncing nuclear weapons that they would not be used against them' (Walker 2007:436). As the Asian security environment shifts, that managed system is coming under greater pressure. It's possible that a greater number of NPT signatories will want to 'stretch the envelope' of things that they can legitimately do within the framework of their existing commitments. Similarly, the durability of existing extended nuclear deterrence arrangements is once again a topic of discussion in key countries. Negative security assurances generally remain, but are by themselves a weak leg of the tripod.

The problems arise primarily because nuclear weapons are gradually exerting greater strategic leverage in the region as a direct side-effect of shifting power relativities. In the Cold War era, most Asian governments' commitment to the NPT was underpinned by the modest role that nuclear weapons played in Asian security. Even at the level of the East–West conflict, this was a region defined by China's dominant geographical location (which nuclear weapons could not reverse) and by US maritime advantage.

Moreover, the relatively 'contained' role played by nuclear weapons during that era and into the 1990s facilitated the emergence of a number of nuclear-weapon-free zones within the region through agreements that we might see as specific 'enhancements' of the managed system of abstinence. The Treaty of Rarotonga establishing the South Pacific Nuclear Free Zone entered into force on 11 December 1986, and the Treaty of Bangkok establishing the Southeast Asian Nuclear-Weapon-Free Zone over the ten ASEAN states entered into force on 28 March 1997. A group of five Central Asian states—Kazakhstan, Uzbekistan, Tajikistan, Turkmenistan and Kyrgyzstan—more recently established a nuclear-weapon-free zone over their own territories, although the nuclear-weapon-free zone concept had largely run out of steam by then.

In an Asia where nuclear weapons become a larger factor in strategic and international relations than they now are, we could see more 'virtual' arsenals, more frequent and deliberate attempts to increase 'latency', and possibly a set of 'reluctant' proliferators who claim that proliferation has been forced upon them. Moreover, we should expect opacity rather than transparency to be the dominant characteristic of national proliferation programs. The world already has one opaque proliferator: Israel. There are no reasons why it can't have more of them in future.

This might prove especially true in a world where a nuclear 'renaissance' occurs as countries, sensitive to climate change, are drawn to explore the civil nuclear power option more intensively. That would be a world of rising nuclear latency, most especially among the

rapidly industrialising, energy-hungry countries of Asia (see Table 1). The spread of civil nuclear programs is typically taken as a sign of the region's commitment to tackle the problems of energy demand and climate change simultaneously.

Well-managed, properly-safeguarded civil nuclear programs certainly don't provide all the skills or materials needed for a weapons program. But some nuclear skills are dual use. Our current nonproliferation regime does as much as it can to ensure the separation of the civil and military nuclear worlds. Still, recent research suggests that even peaceful nuclear cooperation agreements between states do lead to the spread of nuclear weapons (Fuhrmann 2009).

Table 1: Current, planned and proposed civil nuclear energy programs in Asia

	Operable		Under construction		Planned		Proposed		Total	
Country	**MWe**	**Reactors**	**MWe**	**Reactors**	**MWe**	**Reactors**	**MWe**	**Reactors**	**MWe**	**Reactors**
Bangladesh	0	0	0	0	0	0	2,000	2	2,000	2
North Korea	0	0	0	0	950	1	0	0	950	1
Indonesia	0	0	0	0	2,000	2	4,000	4	6,000	6
Thailand	0	0	0	0	2,000	2	4,000	4	6,000	6
Pakistan	400	2	300	1	600	2	2,000	2	3,300	7
Vietnam	0	0	0	0	2,000	2	8,000	8	10,000	10
Taiwan	4,927	6	2,600	2	0	0	8,000	6	15,527	14
South Korea	17,716	20	6,700	6	8,190	6	0	0	32,606	32
India	3,779	17	2,976	6	21,500	23	20,000	15	48,255	61
Japan	46,236	53	2,285	2	17,915	13	1,300	1	67,736	69
China	8,587	11	17,540	17	36,380	34	79,000	90	141,507	152
Total	**81,645**	**109**	**32,401**	**34**	**91,535**	**85**	**128,300**	**132**	**333,881**	**360**

MWe = megawatts electrical

Under construction = first concrete for reactor poured, or major refurbishment underway.

Planned = approvals, funding or major commitment in place, mostly expected in operation within 8 years, or construction well advanced but suspended indefinitely.

Proposed = Specific program or site proposals; expected operation mostly within 15 years.

Source: World Nuclear Association, World nuclear power reactors and uranium requirements, *http://www.world-nuclear.org/info/reactors.html (accessed 1 October 2009).*

It's also true that the technology and engineering levels needed to develop nuclear weapons remain those attained by the US in 1945. Those levels are 'static', and more and more countries reach them with each year that passes. Moreover, latency isn't just a factor of rising nuclear and engineering skills; it also includes space programs and conventional weapon modernisation programs. We're seeing more Asian countries acquire the space-launch vehicles, long-range cruise missiles and advanced aircraft that could be the long-range nuclear delivery vehicles of the future.

In a world of rising latency, the accepted definition of 'abstinence' might slip from one in which a country definitively forsakes the nuclear weapon option to one in which a country hasn't yet used a robust and growing set of nuclear skills to overtly cross the nuclear weapon threshold. In that second world of 'abstinence', more and more countries would gather near the threshold—an unlovely spectacle, perhaps, but preferable to a world in which many of them surge across it.

Chapter 3

GREAT-POWER NUCLEAR RELATIONSHIPS IN ASIA

> The second nuclear age is about power imbalances and asymmetric warfare, not arms racing.
>
> —Michael Krepon (2009:169)

Spread centrally across the face of Asia are a set of great powers. The relationships between them will do much to define the future Asian nuclear order. The nuclear great powers of Asia (China and India) are joined by a Eurasian nuclear great power (Russia), an external superpower with strong regional interests (the US), and a great power with no nuclear weapons at all (Japan). Their relationships with each other are complicated by the existence of two more nuclear weapons states, Pakistan and North Korea, neither of which enjoys great-power status. While it's easiest for gaming and theorising purposes to treat them as a set of binary relationships, they aren't: the great-power relationships, interwoven, form the core of what we understand as the Asian nuclear order.

At the most basic level of arsenal size, Asia's nuclear powers are radically unequal: their arsenals are often characterised by ratios of 1:4 (or worse) in numbers. The US and Russia still boast large aggregate warhead numbers, and each of their arsenals totals in the several thousands. China has an arsenal much closer to the 250–400 warhead range, for a ratio of about 1:20 with both the US and Russia. India has perhaps 70–100 warheads (for a ratio of 1:3 or 1:4 with China). Japan has none. Pakistan's arsenal is generally thought to be somewhere in the 70–100 warhead range (a 1:1 ratio with India), although reports suggest that it has been moving vigorously recently to enhance the quantity and quality of its weapons. And North Korea probably has fewer than ten warheads (for something like a 1:500 ratio, or worse, with the US).

The US and Russian arsenals are currently decreasing in number, as arms control agreements see more warheads moved into storage or dismantled, but we might be approaching a threshold in that process. Neither country has an interest in agreeing to warhead numbers so low that they might tempt other nuclear-weapon states into a concentrated effort to match US and Russian levels, and so turn an exclusive club of two into a less exclusive club of three, four or more.

China and regional connectivities

Michael Krepon has argued recently that Asian nuclear relationships can be understood as two triangles—a US–Russia–China triangle and a China–India–Pakistan triangle (Krepon 2009:99)—but even that approach seems too reductionist. It is certainly true that strategic interconnectivities are especially strong within those triangles. As Krepon (2009:105) notes, 'as China increases its nuclear holdings and capabilities, India will as well. And as India goes, so goes Pakistan.' The competition is real, but moderated, he observes, by economic growth and bureaucratic sluggishness. However, the 'two triangles' approach leaves some worrying proliferation dynamics unexplored, including the US–China–Japan dynamic, the US–China–Taiwan dynamic and the US–China–North Korea–South Korea–Japan dynamic. It might be no accident that China appears as a player in every one of those relationships: its position at the geographical centre of Asia, and its trajectory as the fastest rising Asian great power, make it a key actor in Asia's nuclear future.

Over the past ten years, China's strategic nuclear force structure has been modernised to become more flexible and survivable. China has moved away from a strategic deterrent force based largely on vulnerable, static, liquid-fuelled intercontinental ballistic missiles (ICBMs), and introduced two new classes of ICBM—the DF-31 and DF-31A, both road-mobile, solid-propellant systems. The submarine-based leg of the force is also under modernisation, suggesting that China could emerge in 2010 with a sea-based nuclear missile capability similar to the Ohio–Trident capacity that the US fielded back in the 1980s. The force is still a long way short of the US strategic nuclear force, but the move towards survivable platforms means China will gradually be able to threaten more significant damage to US target sets during a protracted conflict (Office of the Secretary of Defense 2009:24–25).

Chinese military capabilities are being felt even more profoundly at shorter ranges. Short- and medium-range missile capabilities are growing strongly. Such missiles are not always nuclear tipped, but the rapid recent expansion in their numbers suggests that China would be well placed to compete more vigorously in any Asian missile competition.

The China–US nuclear relationship

Of course, China's rise will bring it into direct engagement with the existing dominant nuclear great power in Asia, the US. The nuclear relationship between the two is stable, but not simple. As Christopher Twomey notes (Twomey 2008:3):

- China is in the midst of an extensive modernisation program for its strategic nuclear forces, and US policymakers are already contemplating the modernisation path for US forces
- there are possible conflicts of interest between the two over specific points (for example, Taiwan) and the bigger issues of the future regional security order in East Asia
- a set of strategic dynamics is in play beyond the simple bilateral relationship.

In a recent report for the Center for a New American Security, Linton Brooks insisted that it was important to keep the US–China nuclear relationship in perspective: it was neither the most important component of the bilateral relationship (economic issues were), nor the most worrisome security issue (China's interest in asymmetric, especially cyber, warfare was) (Brooks 2009:61). This judgment is not new, but is certainly sound and bears remembering. Michael May, for example, wrote in 2005 that the strategic relationship between any two countries 'consists first of political and economic relations, ... to the extent it relies on military capabilities it relies mostly on conventional forces, and ... only lastly is it defined by nuclear capabilities, which experience has shown to be an unusual and limited instrument of national power' (May 2005).

There's no evidence that China is yet poised to push towards the sort of force structure that would transform the current US–China strategic relationship into one of MAD. China would want to avoid, if it can, a nuclear arms race with the US. Beijing's current modernisation program will enhance the credibility and survivability of a relatively small arsenal, but it won't give China the sort of arsenal that both the US and the Soviet Union deployed during the Cold War, which were big enough to support 'swaggering' as a form of international behaviour. In this respect—and it's an important one—US extended deterrence arrangements will not press up against the political pressures generated by a fully symmetrical nuclear power in Asia, at least for some decades to come. If the situation were to be otherwise—if China were to be moving towards a MAD relationship with the US—the pressure on US allies in Asia would be much greater, just as it was in Europe during the Cold War after the Soviets attained nuclear parity with the US.

Of course, what made the US–Soviet relationship manageable was a set of common understandings and behaviours: that nuclear weapons were weapons of last resort, that the costs of great power war were terrible, and that each side could tolerate geopolitical anomalies (like Cuba and West Berlin) rather than force a resolution of them. The two superpowers also shared some important ground on the core doctrine of deterrence and a realisation that each could sustain secure second-strike forces able to obliterate the other.

Does the same—or similar—common ground underpin the US–China strategic relationship? Not quite so obviously. China's primary strategic concerns centre on:

- Taiwanese independence
- a Sino-American conflict
- the 'three forces' (separatism, extremism and terrorism)
- a militarised Japan. (Chu Shulong and Rong Yu 2008:162–164)

The list signals some problems. Taiwan mightn't be the 'tolerable anomaly' for China that Cuba was for the US or West Berlin was for the Soviet Union: it seems to stand much closer to the centre of Chinese strategic interest than the other anomalies.

Our understanding of Chinese deterrence doctrine is still unfolding, as is China's depiction of its own doctrine. In recent years, Chinese strategic theorists have made an overt effort to conceptualise better the deterrence role of the Second Artillery Corps (which controls China's missiles). The 2005 *Science of Military Strategy*, for example, classifies nuclear deterrence into three gradations:

> The first is the maximum nuclear deterrence. It is designed to threaten the opponent by disarming him with just the first massive nuclear strike for attaining the aim of

> containing and coercing him under the condition of the deterrer's possession of quantitative and qualitative superiority of nuclear force. The second is the minimum nuclear deterrent. It depends on a handful of nuclear weapons to threaten the opponent by striking his cities for making up nuclear deterrence to him. The third is nuclear deterrence of moderate intensity. It relies on 'sufficient and effective' nuclear strike force[s] to threaten the opponent by incurring him an unbearable destruction to a certain extent so as to attain the objective of one's deterrence.[4]

US analysts say that China's doctrine is already considerably more sophisticated than a mere 'minimum deterrence' posture, and the quotation above does seem to contain an implicit endorsement of 'nuclear deterrence of moderate intensity'—a sort of Goldilocks deterrence that is neither too massive nor too minimal. But the serious questions about finding common deterrence ground don't turn only on the size of arsenals: they concern declaratory doctrines, the thresholds between conventional and nuclear war, an acceptance of the possible role of ballistic missile defences as an integral part of the nuclear balance, and perhaps even Beijing's willingness to 'accept anomalies'—like Taiwan—as part of the nuclear relationship.

Some Chinese analysts say that the US–China relationship is already characterised not by mutual assured destruction but by mutual assured deterrence—a subtle language shift that allows China to present itself as an 'equal' to the US ...

Importantly, too, they turn upon the perceptions that each party has of the other, which are themselves influenced by asymmetries in size and historical legacies of mistrust. As Brooks notes, 'There is ... no consensus in the United States on whether China should be thought of as a small Russia to be dealt with by deterrence or as a large rogue against which defenses are needed' (Brooks 2009:68). Similarly, there seems to be little consensus in Beijing about how to interpret a range of US nuclear policies or actions in recent years, including US expansion of the traditional 'triad' of nuclear weapons on board missiles, submarines and bombers to include conventional strike options, its ballistic missile defence objectives, and even the accidental transfer of a small number of ballistic missile nosecones to Taiwan in August 2006 (White 2008).

Some Chinese analysts say that the US–China relationship is already characterised not by mutual assured destruction but by mutual assured deterrence—a subtle language shift that allows China to present itself as an 'equal' to the US, to maximise the leverage it gains from a small arsenal, and simultaneously to signal its commitment to a deterrence doctrine as a governing principle between Washington and Beijing (Baker 2009).

A complicated multiplayer game

The problems of finding a stable US–China relationship are likely to be complicated by the actions of the other great-power nuclear states in Asia—Russia and India. Russia knows that its existing nuclear arsenal already substantially outweighs those of its Asian neighbours. But it senses that the tempo of strategic change around its borders might require it to move away from the Intermediate-range Nuclear Forces Treaty negotiated during the Cold War,

under which it was required to forsake many shorter range and intermediate-range missiles. Russian leaders now see a wave of missile proliferation among other Eurasian countries, and question the point of abiding by a US–Soviet arms control agreement that fails to bear upon any of their neighbours' missile programs. So the question of Russia's possible asymmetries with its neighbours is a pressing one in Moscow.

India sees a strategic future in which it 'escapes' the localised strategic rivalry it has with Pakistan and plays a larger role upon the bigger stage of the Asian theatre. It knows that its nuclear arsenal isn't really about Pakistan, but about the bigger issue of its place at the 'Asian table'. How much asymmetry can New Delhi tolerate, and with whom?

China doesn't currently seem to be worried by its strategic relationships with Russia and India, but that doesn't necessarily mean that the reverse is also true. It isn't entirely clear that Russia and India are indifferent to the growth of Chinese power. As one Indian strategic analyst has observed:

> for India to limit itself well short of the nuclear weapons strength of the second-tier nuclear power, China, with some 500 warheads/weapons, is to accept a status on par with that of Pakistan by default ... The logic of nuclear technology dictates that a big country, like India ... will not only acquire an arsenal it thinks is militarily adequate, but one that it feels will do justice to its size, resources and potential, and will help realize its ambitions. (Karnad 2005:552)

Furthermore, as Krepon's second triangle exemplifies, China has interests at stake in the South Asian relationship, and that relationship is still a difficult one. The attachment of both India and Pakistan to the concept of 'minimum deterrence' provides little comfort that their arsenals are already 'capped' in any quantitative or qualitative sense. As a recent assessment concluded:

> India and Pakistan each claim minimum nuclear deterrence policies; but in South Asia minimum deterrence does not call for a finite ceiling on the development of nuclear weapons and delivery systems ... [It] is a dynamic concept that changes with the evolving threat environment. The 'minimum' label has more to do with Indian and Pakistani desires not to provoke nuclear-armed adversaries (China and India, respectively) or the United States and other nonproliferation stalwarts. (Khan and Lavoy 2008:229)

So the great-power nuclear relationships in Asia are layered and multidirectional. Of course, the strength of the great powers' commitment to tolerating an asymmetric Asian nuclear order would be rigorously tested if relations between them were to sour. Then, arsenal sizes and capabilities would reflect concerns other than mere status. In that sort of regional security order, the dominant nuclear player, the US, would also have a host of other worries on its mind. Foremost among them would be a worry about maintaining its extended nuclear deterrence assurance to its regional allies.

Extended nuclear deterrence arrangements

Since the early years of the Cold War, the US has 'extended' nuclear deterrence to its allies. Under those arrangements, Washington 'reassures' allies that the US nuclear arsenal deters threats to them, as well as to itself, and that it's therefore unnecessary for allies to build nuclear arsenals of their own.

US assurances in Asia form one of the important substrata of the regional nuclear order—withdraw them and the order would look suddenly different.

US assurances in Asia form one of the important substrata of the regional nuclear order—withdraw them and the order would look suddenly different. The North Korean nuclear problem threatens to generate a much more broadly based nuclear problem in Northeast Asia. Extended nuclear deterrence was never really 'tested' in Asia during the Cold War: US conventional military preponderance over the Soviet Union in the Asian theatre meant that 'nuclear coupling' was essentially a European issue (for example, whether the Americans would trade New York for Paris), or at best a European question with Asian implications (for example, the possible transfer of the SS-20 missiles east of the Urals under a potential Intermediate-range Nuclear Forces agreement). The slow 'breakout' of North Korea, plus the growth of Chinese military power and the shifting strategic relativities of Asia, now mean that Asian beneficiaries of US extended deterrence reassurances (Japan and South Korea, most directly) are starting to feel more exposed to proximate security threats.

Japan isn't yet a 'normal' security power—it remains an undercontributor to regional and global security and quite narrowly focused on national defence tasks. But that focus is certainly sufficient for Japanese policymakers to ponder with increasing frequency the problems that growing Chinese force modernisation and North Korean nuclear developments generate for Japan's security policy. A recent assessment of Japan's nuclear debate concluded that the principal driver of Japanese concerns was not a specific sense of existential threat, nor a concern about specific war-fighting scenarios, but 'the spectre of political and strategic entropy that would be associated with a collapse of the US extended deterrence commitment' (Green and Furukawa 2008:348).

In recent years, the Japanese have been talking increasingly to the Americans about extended nuclear deterrence, just as they have been talking to Australian interlocutors. They have also been pointing out to the Americans that the US arsenal is currently thinly equipped with the sort of specific deterrent forces that Japan would like to see. US congressional transcripts suggest that the Japanese have been relatively detailed in outlining to the US their preferences for the US nuclear force modernisation program. In talks with the commissioners of the Strategic Posture Review Commission, for example, they stressed that the US nuclear umbrella needed to contain weapons that were stealthy, prompt, transparent, and able to penetrate hard targets with low yields and minimal collateral damage.[5] Some of those preferences reflect Japan's strong interest in not being downwind of possible nuclear impact sites, but on the whole they outline a set of desired attributes that aren't readily available in the existing US nuclear arsenal.

US strategists are probably not convinced by Japanese claims that the US needs to deploy specific weapons in order to 'couple' Japanese security to US security. Indeed, they would probably argue that extended deterrence doesn't depend on particular classes of nuclear weapons, but on the broader US nuclear arsenal and, indeed, on the broader US conventional arsenal as well. In recent years, the US has done much to broaden the 'triad' of capabilities upon which extended deterrence relies, precisely to include more usable weapons (such as

conventionally armed precision guided strike weapons), in the hope of making threats of retaliation more credible. It's not evident that the plan has worked. Nuclear weapons, because of their sheer destructiveness, speak a unique dialect of the language of deterrence. And US conventional forces, by contrast, haven't been especially convincing lately.

In short, major US allies in Asia are increasingly beset by the assurance problems of the 'Healey theorem'. Denis Healey, the British Defence Minister in the late 1960s, once observed that extended nuclear deterrence in the NATO context faced a critical paradox: 'even a small probability that the US might come to Europe's defence with nuclear weapons is probably enough to deter the Soviet Union ... [but] even a large probability of such a response will not suffice to reassure American allies in Europe' (Boutwell et al 1985:97). The core of the Healey theorem is that the 'tests' that allies typically impose on the US reassurance guarantee are much more demanding than those imposed by potential adversaries. During the Cold War, this problem belonged to Europe—and more specifically to NATO. Now, in an age of Asian strategic dynamism, it belongs to Asia and, at least in the first instance, to the US bilateral alliances within the region.

This problem adds immensely to the proliferation challenges that now loom in Asia and poses fresh headaches for Washington, one of which concerns the content and tone of the forthcoming Nuclear Posture Review, due out in the US in December 2009. The review will have many audiences, but some of the most important will be US allies in Northeast Asia.

Part of the problem is that extended nuclear deterrence is no longer as simple as it used to be. The credibility of the assurance to the recipient state was naturally high when the recipient believed that the US was engaged—against its most likely adversary, the USSR—in an ideological struggle for the future of humankind. Moreover, the core theory said that the recipient state (the 'protégé') was a defensive, passive state (typically a NATO member) that played only a small part in the overall deterrence calculation. With the end of the Cold War, the first condition ceased to hold. And in the dynamic shifts now underway in Asia, it's entirely possible that protégés mightn't always be the passive powers that the theory paints them to be. They might have a set of national interests that they believe they can advance by pushing their great-power security assurance as far as it will go in contests with their strategic opponents.[6]

For the foreseeable future, it's unlikely that other nuclear-weapons states will take on the burdens of extended nuclear deterrence. In discussions with some of them, ASPI has occasionally noticed an interest in how the regional great powers might be 'security contributors' in the broader security environment, but only in rare instances has the conversation involved any particular reference to nuclear weapons. That's unfortunate, in a way: despite the hurdles that extended nuclear deterrence faces as a doctrine in the post-Cold War era, it has undeniably been an important factor in diluting the pressures for nuclear proliferation. But a much fuller set of extended nuclear deterrence arrangements, under which more Asian nuclear powers pick up the burdens of extending nuclear deterrence, might only be possible in an Asia that has shifted away from its current geopolitical settings and hardened into a set of competing great-power blocs. It's not obvious that such a development would, overall, be beneficial.

Box 1: 'Swaggering' and the use of force

Twenty-five years ago, Robert Art outlined four purposes for the use of force: defence, deterrence, compellence and swaggering. 'Swaggering' essentially means the peaceful use of force to gain prestige. It's achieved mainly through 'shows' of force, including overt exercising, and the buying, building and deploying of prestigious weapons systems. As Art noted:

> The swaggering function of military power is at one and the same time the most comprehensive and the most diffuse, the most versatile in its effects and the least focused in its immediate aims, the most instrumental in the long run and the least instrumental in the short run, easy to justify on hard-headed grounds and yet often undertaken on emotional grounds. (Art 1982:32)

During the Cold War, when nuclear weapons constrained both the direct use of force and escalation options, swaggering became an important element of the superpower competition for influence. True, it helped to produce nuclear arsenals of excessive size, but it also corralled much of the superpower strategic competition into a relatively peaceful arena. Of course, the superpower arsenals also served other purposes during the Cold War—in particular, defence and deterrence.

Box 2: The deterrence ladder

Existential deterrence is the practice of using a tiny arsenal to deter threats to core national interests. It's a form of deterrence that plays upon a potential adversary's fear of the very existence of nuclear weapons. Once the weapons exist, they imply a certainty of damage in any encounter.

Minimum deterrence is the practice of doing the minimum necessary to deter a specific adversary, but still at a low level of investment and effort. It's more expansive than mere existential deterrence, but based on a similar belief that the core of deterrence can be achieved with a comparatively small nuclear arsenal.

Mutual assured destruction is the technological condition under which two great powers have nuclear arsenals of sufficient size and survivability that they both have the capacity to obliterate each other, regardless of which one attacks the other first.

Extended nuclear deterrence involves the extension of nuclear deterrence from one state to another, typically a close ally. The nuclear weapon state threatens to respond to attacks on the vital interests of its protégé by using nuclear weapons against the aggressor. It typically differs from *central deterrence*, under which the nuclear weapon state protects only its own vital interests by posing threats of punishment or denial to a potential aggressor.

Chapter 4

THE PROLIFERATION WORRIES

> Nonproliferation successes during the second nuclear age are harder to achieve because horizontal proliferation is more difficult to stop than the vertical kind. Put another way, wretched excess is easier to reverse than proliferation prompted by regional security concerns and religious zeal.
>
> —Michael Krepon (2009:96)

> A continuing thrust of the new nuclear order must be to slow the further spread of nuclear weapons by addressing the security concerns of potential nuclear weapon states ... [I]f a country strongly believes it needs nuclear weapons for its security, it will persist in that quest and ultimately succeed.
>
> —Muthiah Alagappa (2008:537)

The North Korean nuclear weapon program shows just how difficult it is to stop a determined proliferator. Despite valiant efforts by other countries to 'freeze' or otherwise constrain the North's program over the past fifteen years, Pyongyang has now conducted two nuclear tests and reprocessed enough plutonium to construct perhaps another six nuclear weapons. It's now considerably further down the path of nuclear weapons development than it was fifteen years ago. North Korea's abandonment of the Six Party Talks earlier this year and its current efforts to regenerate its nuclear infrastructure mean that it could produce enough plutonium for another one bomb per year for the next ten years (Hecker 2008a:13).

While we have a relatively good understanding of the North Korean plutonium program, its uranium enrichment program remains opaque. Through that program, it might well have the capacity to increase the overall number of warheads at its disposal in future years. Pyongyang announced in early September 2009 that an experiment in enriching uranium, begun in June, was apparently at the 'completion stage', although it provided no details on how successful the experiment had

been (Choe Sang-Hun and Sanger 2009). Still, the term 'experimental' suggests that the North is not yet running a full-scale enrichment program.

The twin tracks of ongoing negotiation and nuclear development have lent an air of unreality to North Korean proliferation, because advocates of the negotiation path have always been inclined to see the North's weaponisation efforts as mere attempts to secure a better bargaining position at the table. But that raises an obvious question, of course, about what that better position would be designed to achieve. In short, what does North Korea want? Over the years, many prospective 'goodies' have been dangled before the North Korean negotiators: energy assistance, food assistance, even a negative security assurance under which the US would agree not to attack the Democratic People's Republic of Korea. And yet Pyongyang has pressed ahead with its nuclear program.

In a recent assessment, Victor Cha concluded that the North Korean regime actually wants three things: nuclear weapons, for the long term; its own version of the US–India nuclear deal; and a way of embedding the Kim Jong-Il dynasty at the core of North Korean leadership for the foreseeable future (Cha 2009). Therefore, the principal problem in achieving a negotiated solution to the North Korean nuclear issue is that the other five parties to the Six Party Talks can't give Pyongyang what it really wants. That doesn't mean negotiations have no point, but their central purpose is to help slow the expansion of the North Korean arsenal, not to achieve the denuclearisation of the North.

Twenty years from now, we could be facing a North Korea armed with, say, thirty to forty nuclear warheads. What's the limiting factor to the final size of the North Korean arsenal? Is there a limiting factor? In earlier days, some analysts said that the real limiting factor was the durability of the North Korean regime, for the simple reason that the regime is the North Korean nuclear problem. Therefore, much will depend on whether Kim Jong-Il can effect a smooth transition of power to his youngest son and, if he can, whether the young Kim Jong-Un will bring much in the way of policy innovation to the North Korean position in the years ahead.

Unfortunately, the prospect of North Korea being nuclear-armed for a prolonged period is bound to generate ripples of strategic uncertainty. No-one seriously doubts that it would come off second best in any nuclear conflict with the US (the US mightn't even have to use nuclear weapons to devastate a North Korea that had resorted to nuclear use), but the bigger worry is not about North Korean *use* but about North Korean *possession*. Possession is the vehicle for changing the strategic dynamics between North Korea and its neighbours. It repositions Pyongyang in its dealings with both Seoul and Tokyo, and decreases Beijing's gravitational pull on North Korean policy.

Changing those regional dynamics is probably more important to Pyongyang than using its nuclear arsenal as a protective umbrella under which it can foment a more turbulent agenda abroad. So far, there's little evidence that nuclear weapons have changed North Korean policy in that regard. Has a 'rogue' state with a small nuclear arsenal behaved more roguishly than previously? Has it been emboldened by its arsenal to pursue a more adventurist or more aggressive agenda? The answer seems to be that it hasn't (Jervis 2009:149).

> … for North Korea's neighbours, North Korean proliferation is to an extent a stalking horse for the bigger shifts in strategic power that are now underway in Northeast Asia.

Moreover, for North Korea's neighbours, North Korean proliferation is to an extent a stalking horse for the bigger shifts in strategic power that are now underway in Northeast Asia. It takes place against the background of uncertainty about the great powers' future relations with each other. The North Korean problem provides some 'cover' for strategic programs and actions that might be taken amiss by another great power if that power believed they were aimed at it.

Of course, a substantial part of the broader regional worry about North Korea also has to do with Pyongyang's capacity to provide material assistance to other potential proliferators. It has 'form', having provided ballistic missile technologies to a range of clients and direct nuclear assistance to Syria. Recent media reports have suggested that Burma may have embarked on a covert program of nuclear cooperation with North Korea to provide the means for developing its own nuclear weapon capabilities. Those reports don't provide conclusive evidence of either intention or capability, but the thought that any Southeast Asian leadership might be thinking of heading down the nuclear path is unsettling for Canberra and for other Southeast Asian governments. Burmese proliferation would certainly reawaken a sleeping proliferation dynamic across the subregion. And it would bring an abrupt end to the Southeast Asia Nuclear-Weapon-Free Zone, of which Burma is a member.

The tipping-point countries

Beyond the usual proliferation suspects, however, a greater worry looms. The typical rogue proliferator tends to be a weak state faltering on the brink of failure. North Korea is a good example, as Burma would be if it were to head down the nuclear path. Consequently, their proliferation efforts tend to be poorly funded, and weapon development poses difficult technological problems for their scientists and engineers.

However, a much larger number of states that are much better placed to proliferate might yet cross the nuclear Rubicon if their leaders become convinced that proliferation by others is inevitable.

As Mitchell Reiss noted in 2004:

> Today, more than five decades after the dawn of the nuclear age, we once again find ourselves living in an age of anxiety … [A]ny number of events could spark countries into a headlong dash to acquire independent nuclear arsenals … [A] single new entrant to the nuclear club could catalyze similar responses by others in the region, with the Middle East and Northeast Asia as the most likely candidates … Or it may be that countries would not sprint to cross the nuclear finish line but rather hedge their bets by working quietly and methodically to acquire the technology and materials necessary to build nuclear bombs on short notice … Today, many of the building blocks for a nuclear arsenal … are more readily available than ever before. (Reiss 2004:3–4)

Nuclear tipping points are not new in history. For example, a study by the Institute for Defense Analyses identified two previous tipping points, one in the 1960s and the other in the 1980s (Blanc and Roberts 2008). Neither resulted in the large-scale breakouts that both portended—although, as the small print on investment advertisements typically warns, past performance is no guarantee of future success. Indeed, both previous tipping points occurred within the framework of the Cold War, so they mightn't be good models for the one that now looms.

With the second North Korean nuclear test, we seem to have crossed a threshold. It's increasingly apparent that Japan and South Korea will have to live for a long time alongside a North Korea with a proven and growing nuclear arsenal. In neither case is nuclear proliferation the most likely course: both look more likely to strengthen their extended nuclear deterrence relationship with the US, strengthen their ballistic missile defence capabilities, and increase their conventional strike options.

So, what are the circumstances in which those more attractive options would begin to seem insufficient? Much would turn upon the first strategy (strengthening the US extended nuclear deterrence commitment), since ballistic missile defences are an uncertain commodity and conventional strike options would—in some scenarios—seem a poor response to North Korean nuclear aggression.

Japan, for example, certain that it will find its patience tested by a nuclear-armed North Korea engaged for the long haul, is especially sensitive to any evidence of nuclear weakness from its US ally. Should Japan choose to proliferate, South Korea might be hard on its heels (some think that the ROK might even proliferate before Japan does). After the North's test in October 2006, the South Koreans feared that the Japanese would proceed down the nuclear path and were determined to follow if Japan did so. In the wake of the second nuclear test, those fears will have been renewed. It's now likely that the South Koreans will move up closer to the nuclear threshold.

If Japan and South Korea lose confidence in the US extended nuclear deterrent and start to build their own arsenals, two effects will follow. First, others in Northeast Asia and elsewhere would probably follow them. For example, Taiwan might attempt to seize the moment to do likewise, and it's not clear that China or the US could stop it. Second, the idea of extended nuclear deterrence in Asia would suffer a body blow, and that wouldn't be good news for Australia. Apart from Japan and South Korea, we're the major beneficiary of a healthy extended nuclear deterrence doctrine in the Asian security environment.

So there are at least three possible nuclear proliferators in Northeast Asia alone: Japan, South Korea and Taiwan. Analysts disagree about which is likely to proliferate soonest: their differing calculations turn upon competing assessments of motivations, capacity, and constraints.

Japan

Japan faces a distinct geopolitical challenge. With its shrinking population and protected economy, it faces a genuine challenge of strategic sclerosis in a dynamic Asian security environment. In a region of multiple great powers—the US, Russia, China, India and Japan—it risks becoming the weakest great power. As long as the US remains the dominant player in the Asian security environment, and as long as Japanese policymakers accept that Washington will continue to place a premium on Tokyo's strategic concerns because of

the US–Japan alliance, that gradual relative slippage might be tolerable. But, increasingly, Japanese strategic analysts are starting to ask themselves whether Japan can live without the bomb.[7] Concern about the country's nuclear future was once a specialist concern in Japan; nowadays it's akin to a cottage industry.

There's been a marked quickening of debate over the nuclear issue in 2009. The election of the Obama administration in the US almost immediately generated a public controversy inside Japan about how the administration's commitments to both nuclear deterrence and nuclear disarmament could be reconciled. Ambassador Yukio Satoh, one of the most venerable of Japanese strategic thinkers, outlined that dilemma:

> For obvious reasons, the Japanese are second to none in wishing for the total elimination of nuclear weapons … Yet, strategically, Japan's adherence to the Three Non-Nuclear Principles depends largely, if not solely, upon the credibility of the Japan–US Security Treaty, or more specifically, that of the United States' commitment to defend Japan from any offensive action, including nuclear threats … As depending upon the US' extended nuclear deterrence will continue to be Japan's only strategic option to neutralize potential or conceivable nuclear and other strategic threats, the Japanese are sensitive to any sign of increased uncertainties with regard to extended deterrence … Japanese concern about the credibility of American extended deterrence could increase if the US government would unilaterally move to redefine the concept of nuclear deterrence and to reduce dependence upon nuclear weapons in providing deterrence. (Satoh 2009)

Japanese academic Ken Jimbo wrote that Japan needed to have its own ideas about how to 'reconcile' the disarmament and deterrence schools, and argued in favour of a 'more visible nuclear commitment from the US in terms of both doctrine and capability' (Jimbo 2009).

The recent election of the Democratic Party of Japan to the government benches promises the introduction of a two-party structure to the nation's political culture. The logical effect should be to open up for debate a wide range of topics that have traditionally been discussed behind closed doors in Japan, including the subject of the country's security policies.

Japan continues to be constrained by a 'taboo' against nuclear weapons—the product of the Hiroshima and Nagasaki bombings in World War II. In recent talks with ASPI analysts, Japanese diplomats were keen to point out that Japan has no intention of developing nuclear weapons, and that its principal objectives are to understand better the US doctrine of extended nuclear deterrence, to signal to Washington Japan's interest in that area, and to be able to explain the principles of extended deterrence better to their own public.

But Japan also has close at hand the necessary capacities for near-term nuclear proliferation. It has substantial supplies of plutonium and the skills from its civil nuclear program to become a nuclear weapon state rapidly, should it choose to do so (Yoshihara and Holmes 2009). It has a solid-fuelled rocket program capable of launching a satellite into space. In technical terms, that means it has a rocket capable of reaching orbital insertion speed, about 7 kilometres per second. Because it's harder to put a payload into orbit than it is to have the payload fall back to earth, that essentially means that Japan has a rocket capable of ICBM ranges.

Nuclear hedging

In most assessments, Japan is already depicted as a 'nuclear threshold' state, meaning it could produce indigenous nuclear weapons in a relatively short time—say, in a few months. Japan has been in that position for perhaps over twenty years, so why hasn't it moved to proliferate before? And what's different now? As a threshold state, Japan has been able to obtain many of the benefits of 'nuclear hedging' without having to wear the costs of proliferation. Scholars have identified nuclear hedging as a distinct national strategy, lying between nuclear pursuit and nuclear abandonment.[8]

Hedging does more than warn potential adversaries of a state's capacities; it also warns allies of what might ensue if alliances weaken.

Hedging does more than warn potential adversaries of a state's capacities; it also warns allies of what might ensue if alliances weaken. Japanese policymakers have used nuclear hedging as a deliberate strategy to pursue both advantages. At what point might they abandon the strategy? Only when they believe that proliferation is necessary. Under what circumstances might they reach that judgment? When Japan needs to become more explicit in warning its adversaries of possible consequences, and when alliances are weakening anyway. The dynamism of geopolitical change in Asia might impel Japanese policymakers to believe that both conditions are being fulfilled.

Similar calculations would also underpin the positions of South Korea and Taiwan, which are both classic nuclear hedging actors. Both maintain a high degree of secrecy over nuclear programs they began in the 1970s and subsequently 'reversed', and both seem to have kept alive the option of restarting their programs. Taiwan is a possible contender for a nuclear weapons program for the simple reason that warming US–China relations leave it increasingly uncertain about its existing security relationship with Washington. Taiwanese scientists did some work on proliferation technologies in the 1960s and 1970s, motivated by the Chinese nuclear test of 1964 and Nixon's visit to China in 1972. Despite Taiwan's signing of the NPT in 1968 and ratification in 1970, covert work on the nuclear program seems to have continued at least until the late 1980s.[9] But Taiwan is certainly nuclear hedging at a lower level than the Japanese, and must know that a nuclear-armed Taiwan would be unacceptable to Beijing and probably to Washington as well. (Both China and the US would worry that an indigenous nuclear arsenal might allow Taipei to push for full sovereignty under the protection of a nuclear umbrella.)

South Korea is worried about the growth of the North Korean arsenal and the growth of Chinese power, and certainly not burdened by the anti-nuclear taboo that impedes Japanese proliferation. Seoul first embarked on a nuclear weapons program in 1970, after President Nixon announced the Guam Doctrine, which stated that the US expected its allies to become more self-reliant. American pressure capped the program during the 1970s (at a key point, it was instrumental in stopping the South Koreans from buying a plutonium reprocessing facility from the French in 1975). However, we now know—because Seoul confessed it to the International Atomic Energy Agency (IAEA) in August 2004—that the ROK

conducted both uranium enrichment experiments (in 2000) and plutonium reprocessing experiments (in 1982). During the enrichment experiments, which the government blamed on a group of rogue scientists, a minute quantity of uranium (about 200 milligrams) was enriched to a level of almost 80% (Sanger and Broad 2004).

South Korea doesn't currently possess enrichment or reprocessing capabilities. But—notwithstanding the 1992 Joint Declaration (between North and South Korea) on the denuclearisation of the Korean Peninsula, under which both countries forsake enrichment and reprocessing capabilities—South Korean authorities have been pressing in recent years to establish a 'pyroprocessing' facility that would allow the country to process spent reactor fuel. The status of the 1992 declaration is murky: the North doesn't seem to have abided by it. And 'pyroprocessing' might not be exactly the same as 'reprocessing', but it seems worrying enough to give the US considerable pause for thought that Seoul might be working towards a closed nuclear fuel cycle (Horner 2009).

The South Koreans have made little secret of their determination to enhance their own strategic capabilities in the wake of the second North Korean nuclear test. They've announced plans to develop an electromagnetic pulse weapon by 2014 (Jung Sung-ki 2009), and the ROK space program is gradually providing the country with missiles almost indistinguishable from ICBMs. Seoul's attempt to place a satellite into orbit in August was unsuccessful. A fairing seems not to have fallen away from the satellite, and the extra weight slowed the launch speed to only 6.2 kilometres per second, but a civilian space capability is for South Korea—as for Japan—a legitimate way to work on most of the key technologies relevant to ballistic missiles.

Meanwhile, a South Korean national daily newspaper, *The Chosun Ilbo*, has called for the country to develop its own nuclear deterrent, arguing that a North Korea which made steady progress on nuclear weapons and ballistic missiles 'would … be in a completely different class from South Korea'.[10] Clearly, for some South Koreans, that would be one form of intolerable asymmetry.

Taiwan and South Korea both constitute cases of 'nuclear rollback' that could be reversed under different strategic circumstances. A 2006 assessment concluded that both live in a 'dangerous neighbourhood', and that 'either country could restart its program relatively quickly, and shifts in capability or intent to develop nuclear weapons could escape detection' (Hersman and Peters 2006:540). Both countries demonstrate how nuclear 'reversal' constitutes nuclear hedging, permitting a variety of intermediate steps between fully abandoning a program and crossing the nuclear threshold. Those steps are difficult to monitor: 'should either country choose to "dial up" its nuclear-weapons related activities, it is unclear how long it might take for the US or the IAEA to uncover such activities and respond' (Hersman and Peters 2006:549).

Nuclear hedging, in short, comes in a variety of intensities. Detecting and responding to changes in intensity by particular actors will become harder as nuclear latency increases.

Chapter 5

NON-STATE ACTORS IN ASIA

> Overall, the trend in illicit nuclear trafficking still appears to be on the rise.
>
> —Galya Balatsky, Stacey Eaton and William Severe (2008:430)

> The terrorist danger arises not so much from state-controlled nuclear weapons or nuclear materials stockpiles, but instead from the loss of state control.
>
> —Siegfried Hecker (2008b:412)

As nuclear actors, even states have their weaknesses. As Scott Sagan once observed, nuclear weapons aren't actually controlled by states, or even necessarily by statesmen: they are controlled by 'normal, fallible people in normal, fallible organizations' (Erlandson 2007). But beyond the apparatus of the state, the problems multiply rather than diminish. Non-state actors are an increasing part of the political and strategic environment. Asia is coming to nuclear prominence during an era when non-state actors exert increasing influence upon the international security environment. It would be fatuous to pretend that the future doesn't hold the possibility of non-state groups playing important roles in nuclear matters. At one end of that spectrum lies the (still unlikely) possibility of a nuclear-armed non-state actor, but at the other end (and much more likely) we should expect to see groups rather than states acting as illicit agents of proliferation, and conduits of technology, information and material.

In this sense, the AQ Khan network may be the harbinger of future 'group' operations: not a network that seeks nuclear weapons in its own right, but one that works to feed the 'demand' side of the proliferation problem by enhancing access to critical supplies. Such networks typically find a ready market. Potential proliferators frequently exploit the smuggling networks of the nuclear black market to assist their own procurement efforts. As David Albright observed at the Carnegie International Nonproliferation Conference in April 2009, 'illicit nuclear trade has caused immense harm to international security.

I don't think we'd worry very much about Iran if it hadn't been for AQ Khan and Iran's own smuggling networks that were getting equipment out of Europe and other places' (Albright 2009). Industry sources assert that illicit procurement attempts are 'increasing considerably', that the methods are becoming smarter, and that such attempts often exploit the weaknesses of globalised industries (Wirtz 2009).

It is possible, of course, that non-state actors might yet turn out to be much more serious nuclear players.

It is possible, of course, that non-state actors might yet turn out to be much more serious nuclear players. At one level, they might be ongoing strategic irritants that provoke strategic confrontations between nuclear-armed states. The terrorist attacks on the Indian parliament in December 2001 and on Mumbai in November 2008 illustrate the strategic challenges that non-state groups can bring to an Indian–Pakistani relationship already fraught with a legacy of tensions. At a separate and much more serious level, they might attempt to be nuclear-weapon proliferators in their own right.

Rolf Mowatt-Larssen, formerly intelligence director at the US Department of Energy and now at Harvard, warned that the world faces four distinct types of proliferation threats:

- states attempting to proliferate
- states acting in concert with other states to proliferate
- states acting in concert with groups to proliferate
- groups acting in concert with other groups to proliferate.

The fourth category of threat is still the hardest for us to imagine and, probably, the least likely of the four threats. But we shouldn't assume that either a group or a collection of groups intending to proliferate will merely follow the well-established path of state proliferation, and acquire the materials and expertise to build their own weapons. It's much more likely that they'll attempt to procure an existing weapon. They stand their best chance of doing so in weak, nuclear-armed states, and the footprint of their activity will probably be disconcertingly small.

Across Asia, the concept of the state can be a weak, contested thing. In *Foreign Policy* magazine's 2009 Failed States Index, Asian states can't compete with African states for top billing, but Afghanistan comes in 7th, Pakistan 10th, Burma 13th, North Korea 17th, Bangladesh 18th, East Timor 20th, Sri Lanka 22nd, Tajikistan 36th, Cambodia 48th and the Philippines 53rd. On this list, Pakistan and North Korea stand out, although Burma is certainly in there as a perennial watch-point. As Robert Rotberg notes, much depends on how we define 'failed state'. He uses two key criteria (which differ from those the *Foreign Policy* list is based on): 'they deliver very low quantities and qualities of political goods to their citizens, and they have lost their monopoly on violence' (Rotberg 2009). North Korea hasn't lost its monopoly on violence, but Pakistan probably has.

Not much is known about the Pakistani arsenal, but it's believed to have been built with Chinese technical assistance and Saudi money. It probably numbers somewhere between seventy and one hundred warheads, although recent media reports suggest that the

Pakistan Government has been working strenuously to increase the size of the arsenal (Shanker and Sanger 2009). There's even less public knowledge available about the command and control arrangements for Pakistan's nuclear weapons. Based on a range of reports, there's little reason to believe that the arsenal is insecure in normal, peacetime conditions. Clearly, the Pakistani military would go to substantial lengths to ensure security. But what happens when normal, peacetime conditions do not exist in Pakistan?

It's reasonable to assume that there are provisions for 'mating' and deploying some number of nuclear warheads in particular crisis scenarios. Logically, those scenarios probably involve a crisis between India and Pakistan, for the simple reason that 'the nuclear dimension of regional security in South Asia is essentially a deterrence construct between India and Pakistan' (Khan 2009). Media reports suggest that some US officials worried most about the Mumbai terrorist incident precisely because it might generate a set of escalatory tensions that could result in such circumstances, fully mated and deployed Pakistani warheads being more vulnerable to ambush and theft than their separated components might be under normal, peacetime conditions.[11]

Rolf Mowatt-Larssen has recently summarised the three challenges that Pakistan faces in relation to nuclear security:

> First, growing extremism in Pakistan increases the odds of insiders in the nuclear establishment collaborating with outsiders to access weapons, materials, or facilities. Second, the rapid expansion of Pakistan's nuclear weapons program will introduce new vulnerabilities into the security system. Finally, growing instability within the country could lead to unanticipated challenges to nuclear command and control procedures, resulting in a 'loose nuke' scenario, a takeover of a facility by outsiders, or, in the worst case, a coup leading to Taliban control over the nuclear arsenal. (Mowatt-Larssen 2009)

Not all Pakistan experts are quite so pessimistic. For example, Feroz Hassan Khan notes that Western fears about Pakistani nuclear security 'range from the valid to the bizarre' (Khan 2009). However, among the valid concerns, even he lists theft of material, sabotage, unauthorised use of nuclear weapons, and insider–outsider collaboration. He accepts, too, that terrorist infiltration of the nuclear program is a concern for the Pakistani nuclear establishment as well as for Western analysts. (Among the bizarre fears, he includes the idea that the Pakistani armed forces and intelligence agencies could be 'accomplices' to Taliban sympathisers, and the abdication of the Pakistani state to the Taliban.)

The AQ Khan network hasn't been the only non-state nuclear actor to exploit its 'insider' links in Pakistan. Ummah Tameer E-Nau (UTN), a Pakistani charity under the control of Pakistani military officers, also offered to supply Islamic extremists with nuclear technology. UTN was set up in 2000, supposedly to do charity work in Kandahar and Kabul. It was founded by Bashir-ud-Din Mahmood, after Mahmood left the Pakistan Atomic Energy Commission in 1998. In the commission, he was the director for nuclear power and the chief designer and director of Pakistan's Khushab reactor. He was also a pioneer in Pakistan's enrichment program and a supporter of the Taliban. Some reports say that he met Osama bin Laden in Afghanistan to offer assistance with nuclear, chemical and biological weapons (Hussain 2008:154–155).

Between them, the two cases of AQ Khan and UTN point to a relatively high degree of 'actor autonomy' within the Pakistani nuclear establishment and raise concerns about further instances if controls slip in future. Both cases underline Mowatt-Larssen's worry about insiders and show that Pakistan has previously been vulnerable to such insider threats.

One particular sort of insider threat deserves special mention—the Saudis might attempt to seek a return on their initial investment, and solicit either a Pakistani guarantee of Saudi sovereignty or some overt or covert weapons transfer that would allow Saudi Arabia to offset the growth of Iranian nuclear capabilities.

One particular sort of insider threat deserves special mention—the Saudis might attempt to seek a return on their initial investment, and solicit either a Pakistani guarantee of Saudi sovereignty or some overt or covert weapons transfer that would allow Saudi Arabia to offset the growth of Iranian nuclear capabilities. Since Pakistan wouldn't want to bring itself into the line of fire of either Saudi Arabia's adversaries or the international community attempting to close the door on international nuclear proliferation, it would be reasonable to expect any transfer of weaponry to be covert. Monitoring for such covert transfer must be an intelligence collection priority of the highest order.

The possible threats to Pakistan's nuclear arsenal aren't all equally likely, but Pakistani nuclear security is only a subset of Pakistani national security, which might be severely tested in coming years.[12] The economy is far from healthy, and many well-educated, middle-class Pakistanis are fleeing the country. The Northwest Frontier Province and the Federally Administered Tribal Areas seem beyond the reach of Islamabad's writ, and there's a secessionist movement in Baluchistan. If the country were to lurch more towards becoming a failed state, we simply don't know enough about the Pakistani arsenal to be confident that all the warheads would remain secure. A range of internal or external actors might attempt to 'scoop up' the arsenal. Individual Pakistani military officers might attempt to seize some warheads as their version of a pension plan, flying the warheads out of the country to a buyer willing to purchase them for a premium price.

Might those possible buyers include terrorists? The standard judgment by astute terrorism analysts is that the prospects of nuclear terrorism are actually low—considerably lower than Western publics commonly suppose. The same is true, broadly speaking, for the prospects of nuclear terrorism in Asia. Only a few groups deliberately pursue terrorism based on weapons of mass destruction, and those that pursue it most diligently, like Al Qaeda, would be more interested in detonating a device in the US, Europe or Israel than in Asia (Kapur 2008:340). Still, that doesn't mean there couldn't be an Asian 'connection' to nuclear terrorism—it's entirely possible that nuclear materials from Asia could play a part in any such plot. Asian nations, as a group, need to find ways to enhance those aspects of nuclear security that have failed in the past, including export controls, traditional safeguards, and prosecutions of individuals engaged in transnational nuclear procurement crimes (Albright 2009).

The ultimate asymmetric threat?

In one sense, the non-state actor nuclear problem is merely the asymmetric problem writ large, but it illustrates one of the hardest challenges that deterrence has to cope with. Analysts typically wonder whether terrorists are 'deterrable'. As Robert Jervis has observed, in such cases deterrence would be working most powerfully in the opposite direction:

> Nuclear weapons in the hands of rogues have great deterrent power because the United States is so averse to casualties and risk that it would be paralyzed by rogues, who would then gain the freedom to take a wide range of undesirable actions. It is not surprising that the administration has not explicated the self-image implicit here, but it does fit with one strand of conservative thinking that is preoccupied with the specter of American decadence and lack of will. (Jervis 2009:148)

In asymmetric contests—including the ultimate asymmetric context of a great power confronting nuclear terrorists—it's quite wrong to assume that both players will play the game the same way that the US and the Soviet Union played it in the Cold War. The US might be prepared to pay high costs to confront an 'evil empire' dedicated to global authoritarian rule, but what costs is it prepared to pay to offset weaker, less significant actors? It seems to live in fear—understandably—of a terrorist nuclear attack within its major cities, and other possible asymmetric opponents can't have failed to notice that.

Chapter 6

AUSTRALIA IN AN ASIAN NUCLEAR ERA

> We need to review periodically and rigorously whether the mix and scale of our capabilities are appropriate to the emerging challenges in our strategic outlook.
> —Australian Defence White Paper (Department of Defence 2009:11)

What is Australia to make of the nuclear trends currently underway in Asia? How are our strategic interests best served in the emerging Asian nuclear era? Of course, we have a strong interest in a low-proliferation world, in reducing the salience of nuclear weapons in conflict situations, and in maintaining firm controls over nuclear weapons and fissile materials. But Australian policy will also be profoundly shaped by developments across the Asia–Pacific region, and strategic dynamism in Asia could prove an important destabilising factor in the current nuclear ordering arrangements.

The shape of the great-power nuclear balance in the region is unsettled. Nuclear contests in South Asia remain sharp, there are genuine prospects of a nuclear tipping point in Northeast Asia, and there are already rumours that the first nuclear weapon state in Southeast Asia—Burma—might be emerging. Moreover, over coming decades—and mainly for reasons that have nothing to do with strategic ambition—civil nuclear energy programs will grow substantially: under current plans and proposals, the number of civil nuclear reactors in Asia will triple between now and 2030. So, too, a greater number of countries will develop conventional weapons systems of longer range and increasing sophistication. As a consequence, 'nuclear latency'—the set of nuclear-related skills, materials and possible weapons systems around the region—will also grow.

A range of possible Asian nuclear futures now loom. At the opposite ends of the spectrum of possibilities are:

- an Asia where the Cold War nuclear ordering project is re-established and redefined
- an Asia where nuclear 'disorder' prevails.

Australia's policy options can be described here as 'ordering' and 'hedging', in part because those are the options for Australian strategic policies more generally.

In the first Asia, regional countries would successfully translate the practices of nuclear restraint of the Cold War (the managed systems of deterrence and abstinence) into an Asian context. In the second Asia, those practices would break down in significant ways. Nuclear latency would rise in both Asias, because nuclear technologies and potentially dual-use weapons systems are spreading. In the first Asia, the enabling properties of civil nuclear programs would have little or no carryover into nuclear weapons programs; in the second, they would frequently carry over.

It's difficult to estimate accurately the relative likelihood of the two Asias, or of the other 'intermediate' points on the spectrum where aspects of order and disorder would intermingle in varying proportions. The first Asia still seems more likely than the second, and therefore the logical focus of Australian policy effort, but the second Asia isn't so unlikely that we can afford to ignore it. Australian strategic policy should retain the flexibility to accommodate a range of possible Asian futures.

Australia's policy options can be described here as 'ordering' and 'hedging', in part because those are the options for Australian strategic policies more generally. For example, the 2009 Australian Defence White Paper can be seen as a document that attempts to find an appropriate position on the spectrum between ordering and hedging as Asian geopolitics shift substantially over coming decades. And Australian nuclear policy can only be a subset of Australian strategic policy.

For Australia, 'ordering' strategies would have most salience in the first Asia—the Asia that accepts an ordering imperative. In the second Asia, ordering strategies would have less purchase, primarily because the region would be shaped by other drivers, such as nationalism, insecurity, competition and rivalry. For the second Asia, a 'hedging' strategy would generate a much larger fraction of Australian policy options. As that second Asia came to seem more likely, Australian policymakers would need to reconsider the question their predecessors also addressed: how much does a rising tide of nuclear latency in the region compel us to ensure that our own boat rises on the same tide?

Both ordering and hedging are merely strategies, not end points. In a more worrying Asia, we would rely more on a hedging strategy because we judge that power balancing serves us better than regime building; in a more benign Asia, we should try to renew the ordering imperative of a low-proliferation, strategically stable Asia because we judge regime building to make more sense than power balancing. How—and when—we pursue particular steps within each strategy will depend importantly on how Asia's nuclear future unfolds.

Ordering

We have a strong strategic interest in a stable, benign Asian nuclear order, and we would maximise our own safety by helping to build it. Moreover, a stable regional nuclear order would be the basis for closer cooperation on civil nuclear programs, and would provide a supportive context for the growth in the numbers of nuclear power reactors that seems likely across Asia in coming decades. It would also reduce pressures for regional proliferation, strengthen safeguards provisions, and encourage greater use of newer, more proliferation-resistant reactor designs in Asian energy programs. And it would provide the context for Australia to move further into the nuclear field itself if it chose, perhaps by making greater use of nuclear power as an alternative to other forms of baseload power generation as worries about climate change increase.

But the prospects for Asia's future suggest that such a regional order is not inevitable. Indeed, they generate an overwhelming need to renew the 'ordering imperative' that first led to the establishment of the Cold War nuclear order. Even without the spur of proliferation cascades, there's still much in the Asian region that suggests an imminent ordering task—the asymmetric relationships, the weak role that arms control plays in the region, and the increased uncertainties about policies of US strategic reassurance all point to new ordering challenges in Asia.

What 'ordering' options are available to Australia? At the moment, Australian policymakers are focused on the approach of the NPT Review Conference in 2010 and the International Commission on Nuclear Non-Proliferation and Disarmament. Through both mechanisms, Australia hopes to reinvigorate the global commitment to a nonproliferation ethic and to build support for further arms reductions and a reduced reliance on nuclear weapons in the national strategic doctrines of the existing nuclear weapon states.

Any ordering strategy will include efforts to strengthen nuclear arms control arrangements in Asia, to assist the establishment of a robust regional network of safeguards as civil nuclear energy programs become more widespread, and to prolong the current system of US extended nuclear deterrence arrangements ...

It will be important to sustain the link between global regimes and Asian strategies, so there might also be subsequent options for Australia to support a series of more limited regional meetings to address nuclear issues in relation to Asia. Those meetings might resemble something of a regional one and a half-track meeting specifically drawing together government and non-government nuclear specialists for a discussion of the emerging regional nuclear challenges. The meetings needn't be complicated by classified information: most of the big puzzles, such as how to make deterrence work in multiplayer, asymmetric contests, can be discussed at the unclassified level.

Any ordering strategy will include efforts to strengthen nuclear arms control arrangements in Asia, to assist the establishment of a robust regional network of safeguards as civil nuclear energy programs become more widespread, and to prolong the current system of US extended nuclear deterrence arrangements, which act as important barriers to proliferation by key US allies. Australia already works assiduously on the first two issues—arms control and safeguards. For example, Canberra has been a key architect in the recent establishment of the Asia–Pacific Safeguards Network, which is designed to promote cooperation and strengthen safeguards practices across the region. Its contribution of $450,000 in May 2009 to strengthen nuclear security in Southeast Asia through the IAEA's Nuclear Security Fund initiative is only one recent, small sign of its commitment to improving nuclear security in the neighbourhood.

Should we be doing more to keep the doctrine of extended nuclear deterrence viable? Our own strategy for protecting our vital interests is tied to the doctrine, so we certainly have a strong interest in its survival. More broadly, extended nuclear deterrence underpins a nuclear order in which our principal ally plays a central role. Designed at a time when American power was great, the doctrine reflects a spirit of generosity and selflessness that might easily wane under different arrangements. A nuclear order in which no nuclear weapon state extends deterrence would be a more selfish, atomised and competitive one.[13]

But the Australian Government might find it politically challenging to endorse extended nuclear deterrence as a key plank of the regional nuclear order, since any such defence would press up against its advocacy of near-term nuclear disarmament. Like the Japanese, we would end up with concerns not only about Obama's 'twin commitments' to disarmament and extended deterrence, but about our own twin commitments as well. And it is not axiomatic that extended nuclear deterrence is as credible now as it once was—for one thing, the surfeit of American power upon which the doctrine rested in Cold War days seems to be ebbing away.

The possible shape of Asian nuclear disorder

It's important to consider how a more worrying Asian nuclear order might come about. Each of the five scenarios sketched below might be thought of as a distinct waypoint on the path to a form of Asian nuclear disorder. Each would demand some policy response from Australian policymakers.

1. Growing credibility problems for US extended nuclear deterrence

This scenario could arise either from a gradual weakening of US nuclear capabilities or from a perceived drop in US commitment to the nuclear defence of its allies. A weakening of capabilities could take the form of an ageing nuclear arsenal, or reductions in arsenal size to a level more directly comparable with those deployed by other Asian great powers unburdened by the special demands of extended deterrence—an arsenal measured in the hundreds of warheads, say, rather than the thousands. Moreover, the US arsenal has experienced considerable attrition in short-range, tactical weapons systems over recent decades—exactly the sort of systems that allies like Japan might be seeking as evidence of increased reassurance. Similarly, moves by Washington to reconfigure the extended deterrence burden towards a much greater prominence for conventional weapons might well 'spook' its Asian allies.

Improving US ballistic missile defences might partly offset some of those capability problems. But even a defensive system with a low leakage rate against attacking warheads wouldn't be fully reassuring to a protégé state. Some Japanese strategists, for example, already feel uncertain about relying too heavily on ballistic missile defences to counter even small nuclear threats from North Korea. Relying on them to offset threats from larger nuclear powers would require a substantial leap of faith.

On the 'commitment' side of the ledger, various signs of 'strategic weakness' in Washington could worry Asian allies at a time when they feel increasingly vulnerable to the changing pattern of strategic relativities near their borders. Even the current reshaping of the US military footprint in the Asia–Pacific region has generated speculation about what it might imply for US commitment to Asian allies and partners. Nuclear hedging in Australia and Asia would probably increase under this scenario.

2. Proliferation by Japan, South Korea, or both

The second scenario relates to the first because it's most likely to happen as a consequence of worries about the credibility of US nuclear reassurance policies. Proliferation by a major US ally would be a graphic signal of the decline of US influence in the region, and would quicken a debate about the place of US extended nuclear deterrence—and perhaps even the alliance itself—in Australian strategic thinking. One option would be to mount a new effort to confirm the reliability of the existing arrangement. Australian officials would look for new means to 'tailor' US nuclear reassurance to Australian circumstances. But—especially if Japan and South Korea both proliferated—Australia would be increasingly fearful of becoming the last recipient of an extended nuclear deterrence assurance that others had found wanting. If the government of the day judged nuclear deterrence still to be an important component of Australian strategy, it could either consider a new great power supplier of extended nuclear deterrence—not an especially likely strategy—or try to find an indigenous source of supply.

3. Proliferation by Burma

This scenario would pose difficult problems. Some would say that Burma was merely Southeast Asia's North Korea—a rogue, slow-motion proliferator that other regional countries could isolate and 'sanction' without a need to 'balance' at the nuclear level. In that analysis, we would be placing renewed emphasis on an ordering strategy to minimise the possibility of a follow-on chain reaction across the subregion. Much would depend on how other Southeast Asian nations responded. If others (such as Vietnam, Thailand and Indonesia) were to respond with increased nuclear hedging, Australians would be uneasy about an expansion of nuclear 'breakout' capacities to our immediate north. We would probably become less opposed to nuclear hedging, simply in order to maintain a similar level of nuclear capacity to our neighbours.

4. The return of a revisionist great power to the Asian security environment

This scenario might have a number of variants (for example, it could be complicated by the revisionist power first having achieved a kind of MAD relationship with the US), but even the bare-bones scenario would be strategically challenging. Given that earlier rises of revisionist great powers in Asia greatly disrupted Australian strategic interests—leading, for example, to World War II—Australian policymakers would be sensitive to much more intense pressures on extended nuclear reassurance. The notion of an indigenous nuclear arsenal last gained much traction in Australia during the 1960s, in part because of the circumstances in Mao's

China. The 2009 Defence White Paper seems to signal a determination to retain Australian 'strategic weight' in a shifting Asia, so this sort of scenario might be expected to generate a debate over *how* to retain weight.

5. A breakdown of the existing nonproliferation regime

This might result from tipping points in either the Middle East or North Asia. Either event could see a range of 'responsible' nuclear actors start to proliferate, and that would open up the whole question of the durability of the NPT in the 21st century. Middle Eastern proliferation might be judged to be the product of a dynamic peculiar to the Middle East, and to be both containable and relatively remote from Australia. So (unlike in some of the other scenarios) there might be no sense of imminent strategic threat to Australia. Still, a Middle Eastern nuclear tipping point would generate international concerns about the puncture rate of the existing global nonproliferation regime and excite predictions of the regime's terminal decline. More countries, including many in Asia, would begin preparations to live in a more highly proliferated world. Even if the Australian Government of the day is confident that the Middle East is a 'one-off' special case, pressures for greater nuclear hedging would probably increase.

The tide of latency

None of the five scenarios is likely, but any of them would heighten the sense of regional nuclear disorder and change the context for decision-making—even decision-making about apparently 'peaceful' nuclear programs. For example, the recent rush by Middle Eastern states to develop civil nuclear programs is widely interpreted as a response to the growth of Iranian nuclear capabilities—that is, as being motivated by strategic rather than by energy or environmental concerns. In more turbulent strategic environments, *all* nuclear plans become suspect.

Underlying all five scenarios is a tide of nuclear latency that will continue to rise across Asia. The factors driving civil nuclear programs, such as increased energy needs and the prospect of looming climate change, are likely to remain concerns however Asia's strategic nuclear future unfolds. In the first Asia, growing nuclear latency would be less worrying—not completely irrelevant, but tempered by accords that keep civil programs tightly safeguarded and weapons programs tightly constrained. In the second Asia, the flow of the latency tide would be more insidious, and it would matter very much whose boats rose on that tide. The gaps between mere latency, actual nuclear hedging, and covert proliferation might well become less distinct.

What would it take for Australia to do 'nuclear hedging'?

If we adopt Ariel Levite's definition, 'nuclear hedging' is 'a national strategy lying between nuclear pursuit and nuclear rollback' (Levite 2002–03:59). (This is a slightly different use of the term 'hedging' from the one in this paper: it focuses specifically on the sort of hedging required to keep open the option of indigenous nuclear proliferation.) More specifically, Levite claims:

> Nuclear hedging refers to a national strategy of maintaining, or at least appearing to maintain, a viable option for the relatively rapid acquisition of nuclear weapons, based on an indigenous technical capacity to produce them within a relatively short time frame ranging from several weeks to a few years. In its most advanced form, nuclear

> hedging involves nuclear fuel-cycle facilities capable of producing fissionable materials (by way of uranium enrichment and/or plutonium separation), as well as the scientific and engineering expertise both to support them and to package their final product into a nuclear explosive charge. (Levite 2002–03:69)

The core of the strategy, to quote Winston Churchill, is 'to have the art rather than the article'.[14]

By this definition, Australia doesn't currently follow a strategy of nuclear hedging: we have neither the art nor the article. Indeed, we lack almost every attribute of such a strategy. We have about 40% of the world's low-cost uranium reserves, but little nuclear expertise, no nuclear power industry, no enrichment or reprocessing capability, and no capability to design and construct a nuclear weapon. We have no indigenous space launch capability that might be the basis for a ballistic missile program. The 2009 Defence White Paper announced a long-range plan to acquire sea-based land-attack cruise missiles as a future strategic strike option, but it's uncertain where those weapon systems would come from, or even when they might be available.

The Howard government once canvassed the option of Australia enriching its own uranium in order to 'value add' in the provision of reactor fuel to our longstanding uranium customers, but those ideas arose late in the government's life and weren't translated into policy. The only Australian company conducting research into uranium enrichment, Silex, was sold to an American company (General Electric) in 2006. Under the contract of sale, the US company acquired the exclusive rights to use Silex's technology in future years.

However, nuclear hedging is a strategy with remarkably long legs: it can be pursued at a modest tempo over decades. It typically involves no hasty, expensive strategic programs, but the gradual accretion of expertise and systems. Sweden today retains an ability to build a nuclear weapon within two or three years on the basis of work it first began in the 1950s. Japan has been working the nuclear field for over forty years.

According to Levite, the timeframe over which a country might pursue a policy of hedging is a function of three variables:

- how the state defines its desired level of 'nuclear capability'
- the amount of advance warning it expects to receive of adverse developments
- its assessment of the risks, opportunities and costs of stepping up nuclear preparedness, especially in terms of domestic and foreign reactions to such a policy.

Those variables set boundaries around both the scope and the timing of a nuclear hedging program. First, in Australia's case, governments have for some decades defined their desired level of 'nuclear capability' as extremely low. That doesn't seem about to change. Even if some future Australian Government were to consider nuclear proliferation desirable, it's hard to imagine that it would be motivated to pursue a nuclear strategy more vigorous than some variety of minimal nuclear deterrence, which would require a nuclear arsenal of only a few dozen warheads.

Second, Australia can expect good advance warning of the sorts of strategic circumstances canvassed in the five scenarios for Asian nuclear disorder. Of course, that warning time decays in some scenarios in which others are already hedging, but major geopolitical shifts typically take several years. The emergence of a revisionist great power, or proliferation and greater hedging in Southeast Asia, wouldn't happen overnight.

Third, Australia would be acutely sensitive to the foreign and domestic costs of a hedging strategy. Internationally, those costs would be lower if other countries had already begun to hedge. If Australia were to hedge rather more, it would be in mixed company—alongside some other US allies, but also alongside more worrying proliferators. The domestic costs would vary with Australian public acceptance of the strategic need for such measures. The latest Lowy Institute poll suggests that Australians remain worried about the prospect of nuclear weapons being acquired by unfriendly powers (Hanson 2009:9), but that doesn't necessarily mean they think Australia should have its own nuclear arsenal; nor does it tell us much about the circumstances in which Australian opinion might shift.

The problem of long lead-times

On all three of Levite's variables, Australia might decide that it can take its time hedging. But there's a problem: long lead-times. To retain the option of nuclear hedging in the future, we'd need to grow the prerequisites—nuclear expertise, a nuclear industry, proficiency in the sensitive technologies of enrichment and reprocessing, and the delivery vehicles that might offer assured penetration to target (which is important for an arsenal with relatively few warheads).

Developing those capacities could easily take twenty years or more. The 2006 Switkowski task force report on a possible nuclear power industry for Australia estimated that it would take at least ten years—and more probably fifteen—just to build and bring on line the first civil nuclear reactor in Australia, and that timetable would require urgent action to remedy 'skill shortages, government policies and legal prohibitions restricting the growth of the [nuclear] industry' (Department of Prime Minister and Cabinet 2006:2). It's true that Australia might be able to conduct an emergency nuclear-weapon construction effort in rather less time, especially if it were to focus on uranium enrichment to provide a uranium-235 bomb. In that case, we wouldn't need to build a reactor, but enrichment is still a highly challenging exercise.

At the other end of the nuclear-weapon chain, building a reliable long-range ballistic missile would also take years. Only three countries now deploy ICBMs (the US, Russia and China), although a number of countries have civil space launch programs that offer similar capabilities. In short, retaining the option of future nuclear hedging would take considerable preparatory effort.

In extremis, might Australia join the list of repentant states that want to reconsider the choices they made about their nuclear identity in the late 1960s? Might it actually build an indigenous nuclear arsenal? Perhaps, but such a decision is certainly not close. The 2009 Australian Defence White Paper says that extended nuclear deterrence arrangements have been valuable to Australia precisely because they have allowed us to avoid a series of more significant and serious choices (Department of Defence 2009: paragraph 6.34). Of course, not all of those choices would have involved crossing the nuclear threshold.

For Australia to swing back to a course that it abandoned in the late 1960s would involve a substantial reorientation of Australian strategic policy. That course would be taken only with extreme reluctance, and it's certainly not one that Australian governments have done much to prepare for over recent decades.

Striking a balance

Over the coming decade or two—say, out to about 2030, the time horizon of the recent White Paper—Australia should attempt to strike a balance between its ordering and hedging strategies. For as long as possible, we should support a low-proliferation Asian security environment and reinforce impulses towards a stable, benign regional nuclear order. We should push an ordering strategy for the good reason that our strategic interests are best served by that approach.

Moreover, such an approach would allow us to remain focused on conventional force developments for the Australian Defence Force and to optimise our own options for peaceful nuclear uses if future governments so choose. Of course, Australia wouldn't be interested in a civil nuclear power program simply as a means of increasing latency: a well-safeguarded power program doesn't much enhance prospects for proliferation. A civil program would have to address more central issues, such as how to provide electricity to a modern industrial society with 35 million members.

But our advocacy of order might not be enough. In a darker Asian future of rising nuclear disorder, Australian strategy would be driven by a different set of imperatives. Where possible, we should try to retain hedging options during a possible turbulent era in regional security, and that means we'll need to keep a weather eye on our own nuclear capacities as the future unfolds.

Endnotes

1 For a discussion of the significance of tacit rules in the Cold War, see Gaddis (1986).

2 See *International Affairs*, 83(3), May 2007.

3 See, for example, Arreguin-Toft (2001) and Paul (1994).

4 Cited in Roberts (2009a:178). The Roberts article offers a useful examination of broader Chinese thinking on nuclear deterrence.

5 John Foster testifying before the US Senate Armed Services Committee on the Strategic Posture Review Commission, 7 May 2009, transcript, pp. 21–22.

6 This idea is explored by Timothy Crawford (2009:291–294).

7 See, for example, Tamamoto (2009).

8 See, for example, Levite (2002–03:69–73).

9 See Vincent Wei-cheng Wang (2008). The phrase 'nuclear dabbling' is used by Hersman and Peters to describe those activities, but the term seems too trivial. (2006).

10 'South Korean may need its own deterrent', editorial, *The Chosun Ilbo*, 27 May 2009.

11 See, for example, Sanger (2009).

12 Readers might be interested in two particular references: Reidel (2009) and Traub (2009).

13 I am indebted to Dr Ron Huisken of the Australian National University for this point.

14 Winston Churchill (1951), cited in Levite (2002–03).

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A delicate issue
Asia's nuclear future

The world stands on the dawn of a new nuclear era, in which Asia is likely to become the dominant influence shaping the global nuclear order. We're heading into a nuclear order of which we have little previous experience: an order characterised by multiplayer, asymmetric relationships, rather than the bilateral symmetry that characterised the Cold War. Great-power relativities are shifting across Asia, and as they do they bring to the fore a critical question—'how much nuclear asymmetry is tolerable, and with whom?' A shifting security landscape is also likely to reawaken proliferation pressures within the region; pressures that were previously dampened by the choices that regional states made in the late 1960s. At a minimum, we should expect to see more 'nuclear hedging' in Asia. Non-state actors might also have key roles to play. Asia's rising nuclear prominence is occurring during an age when non-state actors wield increasing influence, and they could catalyse a more difficult regional security environment.

Overall, Asia's nuclear future is unsettled: it might get better, it might get worse, or it might continue along similar lines to those it has followed in the post-Cold War era. But across all of those possible futures, nuclear 'latency'—nuclear skills, materials and delivery vehicles appropriate for nuclear weapons—will be a rising tide.

What is Australia to do? It favours a low-proliferation world, and sees a reforging of nuclear order as the most likely outcome from Asian security cooperation. It supports strategies and policies designed to bolster and enhance that objective. But how Asia's future unfolds will have a profound effect upon our own options. In the less likely event that a darker Asian nuclear future emerges, Australian policymakers would face a more difficult set of choices: choices that had less to do with an 'ordering' strategy and more to do with a 'hedging' strategy. We could well expect to have advance warning of that darker Asia, but Australia needs to keep a weather eye on its own nuclear capacities as the future unfolds.

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