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CHAPTER 11

Nuclear Proliferation and Disarmament

'The human race cannot co-exist with nuclear weapons.'

ICCHO ITOH, Mayor of Nagasaki, 1995–2007

PREVIEW

The development and use of nuclear weapons in 1945 marked a major turning point in the history of warfare and, indeed, in the history of humanity. Very quickly, enough nuclear warheads had been created and stockpiled to destroy civilization many times over, giving humanity, for the first time, the capacity to end its own existence. As the Cold War developed, the world thus fell under the shadow of 'the bomb'. However, while some saw nuclear weapons as the lynchpin of a deterrence system that effectively ruled out war between major powers, others viewed the nuclear arms race as a source of unending tension and insecurity. Does the theory of nuclear deterrence work? Do nuclear weapons promote responsible statesmanship, or do they fuel expansionist ambition? Nevertheless, anxieties about nuclear proliferation have, if anything, intensified during the post-Cold War period. Not only has the 'nuclear club' grown from five to at least nine, but many argue that the constraints that had previously prevented nuclear weapons from being used have been dangerously weakened. In what ways have the incentives for states to acquire nuclear weapons intensified? Is it now more likely that nuclear weapons will get into the 'wrong' hands? Finally, greater anxiety about nuclear proliferation has been reflected in an increasing emphasis on the issues of arms control and disarmament. Although non-proliferation strategies have ranged from diplomatic pressure and the imposition of economic sanctions to direct military intervention, nuclear arms control has been notoriously difficult to bring about. In this context, non-proliferation has increasingly been linked to a commitment to nuclear disarmament. Why is it so difficult to prevent states from acquiring nuclear weapons? Why has greater emphasis been placed on the goal of creating a world free of nuclear weapons?

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KEY ISSUES

- How do nuclear weapons differ from other kinds of weapons?
- How can nuclear proliferation best be explained?
- Do nuclear weapons promote, or threaten, international peace and stability?
- How can the spread of nuclear weapons best be controlled, or even reversed?
- Is a post-nuclear age possible or desirable?

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NUCLEAR PROLIFERATION

Nature of nuclear weapons

The first and only **nuclear weapons** that have been used in warfare were the atomic bombs, developed by the Manhattan Project, which were exploded over Hiroshima and Nagasaki on 6 and 9 August 1945 respectively. Developed under the scientific direction of the US physicist J. Robert Oppenheimer, and first tested in the New Mexico desert on 16 July 1945, these bombs represented an entirely new kind of weapon. Atomic bombs work through nuclear fission (the splitting of nuclei of highly enriched uranium (usually U-235) or plutonium). Fission weapons operate through a chain reaction, as each fission gives out excess neutrons, which in turn go on to cause more fissions. An even more powerful nuclear weapon was developed in the hydrogen bomb. This is based on nuclear fusion (the combining of nuclei), but it can only take place if they are subject to enormously high temperatures and pressures. Fusion weapons are therefore sometimes called thermonuclear weapons. Nuclear bombs cause devastation in three ways. Immediate devastation is wreaked by a *blast effect* of awesome explosive force, which is combined with *thermal radiation*, that can create a firestorm travelling at several hundred miles per hour with temperatures rising to 1000ºC. However, longer-lasting and more widespread effects come from *nuclear radiation*. Detonation of the weapon creates an immediate pulse of nuclear radiation and by-products of the detonation form radioactive fall-out. Exposure to either of these sources of radiation can cause radiation sickness and long-term diseases including a range of cancers. In the form of the hydrogen bomb, nuclear weapons have colossal destructive power. The Hiroshima and Nagasaki bombs were relatively small by comparison with the thermonuclear weapons later tested, some of which released destructive forces over 2000 times greater than those used against Japan.

The massive destructive capacity of nuclear weapons means that they have affected international and domestic politics in a way that no other weapons ever have. They are the archetypal example of a new category of weapons, recognized by the United Nations since 1948: '**weapons of mass destruction**', or WMD. The category of WMD now also covers chemical and biological weapons (CBW) sometimes grouped together as atomic, biological and chemical weapons (ABC). They are distinguished from conventional weapons in three main ways:

- As the name suggests, they are weapons that have potential to inflict massive collateral damage, having devastating implications for civilian populations.
- Their mass impact has raised important moral questions, notably through the suggestion that these weapons are 'non-legitimate, inhuman' forms of warfare.
- They have a particularly powerful deterrent effect, making attacks on states which possess WMD almost unthinkable.

However, the classification of all these weapons as WMD is questionable. This is partly because each of these weapon types has different effects: CBW, for instance, may be small-scale and more 'usable' than nuclear weapons, in which

● **Nuclear weapons:** Weapons that use nuclear fission (atom bombs) or nuclear fusion (hydrogen bombs) to destroy their targets, through the effect of blast, heat and radiation.

● **Weapons of mass destruction:** A category of weapons that covers nuclear, radiological, chemical and biological weapons, which have a massive and indiscriminate destructive capacity.

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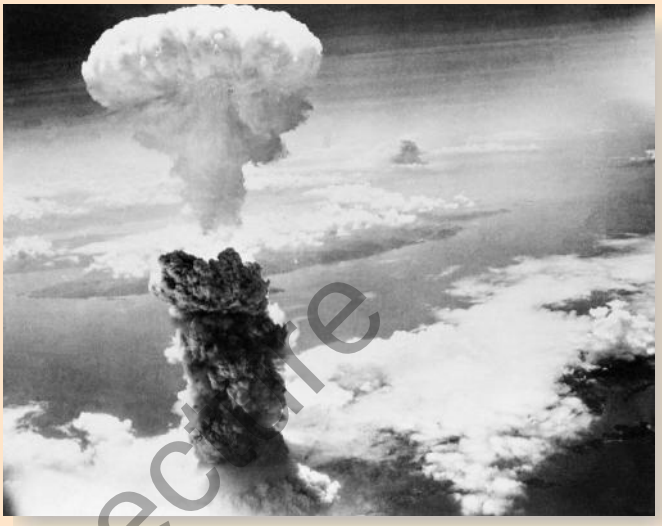
GLOBAL POLITICS IN ACTION . . .

The birth of the nuclear era



Events: The 'nuclear era' was born on 6 August 1945, when the USA dropped an atomic bomb on the Japanese city of Hiroshima. A second bomb was dropped three days later on Nagasaki. The Hiroshima bomb, known as 'Little Boy', contained 60 kilograms of uranium-235, equivalent to 12–15 kilotons of TNT. It devastated an area of 13 square kilometres and destroyed more than 60 per cent of the buildings in the city. The initial death toll was approximately 100,000, rising, by some estimates, to 200,000 by 1950 due to radiation poisoning, cancer and other long-term effects. The larger Nagasaki bomb, code-named 'Fat Man', contained a core of 6.4 kilograms of plutonium-239, equivalent to the power of 22 kilotons of TNT. It destroyed about 30 per cent of Nagasaki and left between 40,000 and 75,000 people dead. On 12 August 1945, Emperor Hirohito announced the surrender of Japan.

Significance: The atomic attacks on Hiroshima and Nagasaki were significant in at least three ways. In the first place, they have widely been seen as crucial in bringing about the speedy surrender of Japan and thus the final end of WWII. Indeed, the use of atomic weapons against Japan has commonly been justified in terms of avoiding the huge casualties that would have occurred through an invasion of Japan. However, accusations have been levelled at the Truman administration that the bombs were dropped for political rather than military reasons. After the surrender of Germany, Japan had put out peace feelers through the Russians and the Swiss, and considerable pressure to surrender was already being exerted though the very heavy aerial bombing of Tokyo and other major Japanese cities. A key motive for the use of atomic bombs may therefore have been to limit Soviet gains in the Far East, and particularly to prevent a Soviet invasion of Japan that would have left the Soviet Union, not the USA, as the chief power in the Pacific and East Asia.

Second, the use of atomic weapons played a crucial role in shaping the emergence and future direction of the Cold War. By establishing itself as a nuclear power, the USA was demonstrating its new military strength, possibly in the hope that the Soviet Union would consequently accept US hegemony and be less difficult to deal with over issues such as Germany and eastern Europe. However, if this was the thinking behind the nuclear attacks, it backfired badly. Instead of cowing the Soviet Union, the atomic bombs merely intensified Soviet attempts to acquire similar weapons, helping to fuel a nuclear arms race. The Cold War was therefore intrinsically linked to the nuclear age, the military stand-off between the USA and the Soviet Union developing into a 'balance of terror'. The implications of this 'balance of terror' have nevertheless been hotly disputed. While realists have argued that nuclear weapons underpinned the 'long peace' of the post-1945 period, liberals have tended to link them to increased risk and insecurity.

Third, the birth of the nuclear age fundamentally altered the nature of war and transformed attitudes towards warfare. As the archetypal weapons of mass destruction, nuclear weapons pose such a threat to civilian populations that they, arguably, rendered the notion of a just war redundant. In this sense, nuclear weapons have had a powerful symbolic, philosophical and even existential impact, highlighting the ultimate horror of war through linking war to the possible extermination of humankind. On the other hand, there are those who argue that the impact of nuclear weapons on war and warfare has been greatly exaggerated. From this perspective, the main significance of Hiroshima and Nagasaki was that they are the only historical examples of the military use of nuclear weapons. So devastating is their potential impact, and so strong the moral, diplomatic and practical constraints on their use, that nuclear weapons may be sought more because of the prestige they bring than because of their political efficacy.

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CONCEPT

Arms race

An arms race is a concerted military build-up that occurs as two or more states acquire weapons or increase their military capability in response to each other. Classic examples include the UK–German naval arms race that preceded WWI, and the US–Soviet nuclear arms race during the Cold War. Arms races may be fuelled by defensive calculations or miscalculations (the security dilemma), or they may occur as one or more states seek military advantage in order to pursue offensive policies. While arms races may increase the likelihood of war, by heightening fear and paranoia and strengthening militarism and aggressive nationalism, they may also help to maintain an overall balance of power (see p. 256) and so ensure deterrence.

case nuclear weapons may be the only true WMD. Similarly, trends in recent years away from nuclear weapons with large explosive potential have created a distinction between 'unusable' strategic nuclear weapons and possibly 'usable' tactical or 'battlefield' nuclear weapons. The distinction between conventional weapons and WMD is also, in some ways, unreliable. Not only may the use of WMD be dependent on conventional weapons systems (as in the use of inter-continental ballistic missiles (ICBM) to deliver nuclear weapons), but a sustained conventional aerial bombardment is capable of inflicting massive collateral damage with devastating implications for civilian populations.

Proliferation during the Cold War

The unprecedented destructive potential of nuclear weapons explains why the issue of **nuclear proliferation** has been at the forefront of the international security agenda since 1945. How can nuclear proliferation best be explained? A general logic lies behind the tendency for any weapons to proliferate. This is based on the so-called security dilemma (see p. 19), which recognizes the symbolic significance of weapons as well as their military purpose. In short, weapons acquired for defensive purposes may be *perceived* by other states as having, potentially or actually, offensive significance. This, then, encourages them to strengthen their own defensive military capacity, an action which, in turn, may be viewed by other states as offensive. A classic arms race therefore develops out of the simple fact that international politics is inevitably characterized, at some level, by fear and uncertainty. In addition, the costs of inaction (when an offensive military build-up is dismissed as merely defensive) greatly outweigh the cost of action (when unnecessary steps are taken in response to a defensive military build-up).

However, in the case of nuclear weapons, a range of other factors have been relevant. These include the particular importance of their deterrent effect. In view of the devastating potential of nuclear weapons, an attack on a nuclear power is almost unthinkable. The USA's atomic attack on Japan in 1945 therefore encouraged the Soviet Union to intensify its efforts to develop nuclear weapons, leading to the first Soviet nuclear test in 1949. Another factor is that nuclear weapons quickly acquired huge symbolic significance, particularly in terms of the political prestige associated with their possession. Members of the so-called 'nuclear club' are thus usually considered to rank amongst states of the first order. It was therefore no coincidence that during the Cold War the 'club' expanded to include all five of the permanent members of the UN Security Council (the P-5), with nuclear tests also being carried out by the UK (1952), France (1960) and China (1962).

During the Cold War, sometimes seen as the 'first nuclear age', nuclear proliferation was primarily vertical rather than horizontal. Greatest attention was given to restricting the spread of nuclear arms beyond the 'big five', particularly through the Nuclear Non-Proliferation Treaty (NPT), which was introduced in 1968 and extended indefinitely in 1995. Almost all states have signed the NPT, with the notable exceptions of India, Pakistan and Israel. By contrast, during this period, the USA and the Soviet Union built up the capacity to destroy the world many times over. By 2002, the joint US and Russian nuclear capacity accounted for 98 per cent of all the nuclear warheads that had been built (see Figure 11.1).

● **Nuclear proliferation**: The spread of nuclear weapons, either by their acquisition by more states or other actors (*horizontal* proliferation), or their accumulation by established nuclear states (*vertical* proliferation).

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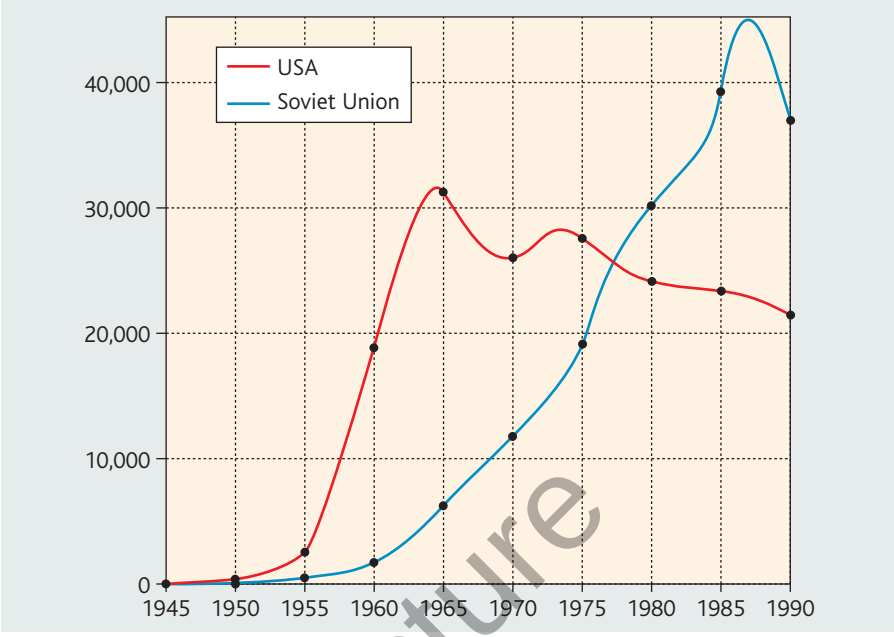

Figure 11.1 Accumulation of nuclear warheads by the USA and the Soviet Union, 1945–90

Source: Data from Norris and Kristensen (2010).

Both sides quickly developed massive **first-strike** capability, but also acquired **second-strike** capabilities that would enable them to withstand an enemy's attack and still destroy major strategic targets and population centres. By the early 1960s, both superpowers had an invulnerable second-strike capability which ensured that nuclear war would result in Mutually Assured Destruction (MAD), thus completing what Jervis (1990) called the 'nuclear revolution'. This system of nuclear deterrence led to a 'balance of terror' that some have viewed as the most powerful evidence of the capacity of the balance of power (see p. 268) to maintain peace and security. Nuclear war, indeed, threatened such environmental devastation that it created the possibility of the extinction of life itself, not least through a **nuclear winter**.

● **First strike:** A pre-emptive or surprise attack on an adversary; 'getting one's retaliation in first'.

● **Second strike:** A retaliatory attack on an adversary in response to a first-strike attack.

● **Nuclear winter:** The theory that the smoke and dust created by nuclear explosions would extinguish the sun's rays and dramatically lower temperatures on the earth.

Proliferation in the post-Cold War era

The end of the Cold War produced early, optimistic expectations that the issue of nuclear proliferation would be of declining relevance. If East–West rivalry had fuelled the nuclear arms race and created a balance of terror, its end surely opened up the possibility that nuclear proliferation could also be ended, if not reversed. Such expectations were fuelled by the 1991 Strategic Arms Reduction Treaty (START), and by START II in 1993, through which the USA and Russia agreed, for the first time, to reduce the number of their nuclear warheads and to eliminate certain categories of weapons, such as land-based intercontinental ballistic missiles with multiple warheads. Such early optimism quickly faded, however. The post-Cold War era, sometimes seen as the 'second nuclear age', has

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APPROACHES TO . . .

THE BALANCE OF POWER

Realist view

The idea of the balance of power has played a central role in realist theory. Waltz (1979), for example, portrayed the balance of power as *the* theory of international politics This reflects core assumptions about the importance of power in shaping state behaviour and of the role of power relations in structuring international politics. Realists view the balance of power, understood as a rough equilibrium between two or more power blocs, in strongly positive terms. As only power can be a check on power, the balance of power tends to lead to peace and stability. However, realism embraces two quite different conceptions of the balance of power. For classical realists, the balance of power is essentially a policy, a product of political intervention and statesmanship. This example o[redacted] (implying faith in free will and personal commitment) assumes that key decision-makers in foreign policy enjoy great (though not unlimited) freedom of manoeuvre. For neorealists, on the other hand, the balance of power is treated more as a system, as a set of arrangements that tend to arise automatically, rather than through the self-willed actions of decision-makers. This example of *determinism* (implying that human actions are entirely conditioned by external factors) suggests that the balance of power is essentially 'imposed by events' on statesman who are constrained by the dynamics of the international system. This happens because states in a self-help system are likely to act to prevent the emergence of hegemonic domination by a single state. A balance of power, nevertheless, is more likely to develop in a bipolar system than it is in either a multipolar or unipolar system (see Neorealist stability theory, p. 63).

Liberal view

Liberals have generally been critical of the idea of balance of power. In their view, the balance of power legitimizes and entrenches power politics and international rivalry, creating inherent instability and deepening distrust. This is because the basic premise of the balance of power is that other states, or coalitions of states, pose a threat to security, and this can only be contained through a rival build-up of power or the formation of a rival alliance. A balance-of-power mindset is therefore more likely to cause war than prevent it. Much of liberal thinking about international politics has therefore focused on finding alternative and more effective mechanisms for ensuring peace and security. The principal liberal solution is the construction of international organizations such as the League of Nations or the United Nations, which are capable of turning the jungle of international politics into a zoo. This happens, in part, because whereas the balance of power fosters private agreements amongst states, international organizations foster public agreements that cover most if not all states, so making possible a system of collective security (see p. 440).

Critical views

A variety of critical approaches to the balance of power have emerged. Social constructivists, for instance, have emphasized the extent to which any assessment of the balance of power is dependent on perception, ideas and beliefs. Any assessment of the balance of power is therefore shaped by the identities that states have of themselves and of other states. In short, paraphrasing Wendt's (1999) oft-quoted assertion about anarchy, the balance of power is what states make of it. International society theorists have, similarly, argued that the balance of power is an artefact: it emerges out of the existence of common norms and values and a mutual desire of states to avoid war. The balance of power, then, works because states *want* it to work (Bull [1977] 2002). Feminist theorists have shared with liberals the belief that balance-of-power thinking tends to intensify international conflict and make war more likely, not less likely. For feminists, this reflects a gendered conception of the balance of power, in which power is almost always conceived as 'power over', the ability to control or dominate others. The balance of power therefore invariably becomes a struggle for power. Finally, postcolonial theorists have viewed the balance of power as an essentially European, or western, game, which excludes consideration of the rest of the world. The European balance-of-power system in the late nineteenth century thus coincided with the 'scramble for Africa', and a deepening of global inequalities and imbalances.

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been characterized by heightened anxiety about nuclear proliferation. This has happened for at least four reasons:

- Established nuclear powers continued to use nuclear strategies.
- The incentives for states to acquire nuclear weapons have increased.
- Proliferation is easier, as nuclear weapons and nuclear technology are more readily available.
- Fears have heightened that nuclear weapons may get into the 'wrong' hands.

First, after early progress, attempts to reduce nuclear stockpiles, or encourage nuclear states to abandon nuclear weapons, petered out. START III talks began in Moscow in 1999 but broke down over disagreements about a possible renegotiation of the ABM Treaty. The 2002 Strategic Offensive Reduction Treaty (SORT) amounted to little more than a 'gentleman's agreement'. It contained no verification measures, allowed the USA and Russia to deploy between 1,700 and 2,200 warheads with the rest being put in storage rather than being destroyed, and enabled either side to withdraw from the Treaty at three months' notice. If established nuclear powers had substantially maintained their nuclear arsenals in the absence of a Cold War 'justification', this both demonstrated the wider strategic significance of nuclear weapons and weakened the moral and diplomatic pressure that nuclear powers could exercise on non-nuclear states. (Attempts to revive disarmament through the 2010 deal between the USA and Russia to cut nuclear weapons are discussed in the final section of the chapter.) Furthermore, there is evidence that established nuclear powers were keen to develop a new generation of weapons. These included low-yield battlefield nuclear weapons, or 'mini-nukes', that may potentially be usable, and missile shields, such as the USA had planned to site in Poland and the Czech Republic to protect itself from Iran and possible Russia. The UK also decided in 2007 to update and replace its Trident nuclear weapon system.

Second, non-nuclear states came, in many cases, under growing pressure to acquire nuclear weapons. This occurred in a variety of ways. For example, the superpower era operated in part through a system of 'extended' deterrents, based on the capacity of the USA and the Soviet Union to offer allied states a '**nuclear umbrella**'. Concern about the withdrawal of the US or Russian nuclear umbrella was likely to encourage states to stand on their own two feet in nuclear terms. This was particularly the case where regional tensions were deepening, as in South Asia in the 1990s. In 1998, both India and Pakistan tested nuclear devices and joined the 'nuclear club', responding to increasingly bitter rivalry over Kashmir and other issues as well as the scaling back of US support for Pakistan and India's loss of the backing of the Soviet Union. Regional tensions in the Middle East have also played a major role in encouraging Israel's acquisition of nuclear weapons, as well as Iran's quest for a nuclear capacity. Nevertheless, the greatest incentive to acquire nuclear weapons arises from their evident benefit in terms of discouraging intervention by much more powerful states, as the comparison between Iraq and North Korea demonstrates. The USA invaded Iraq in 2003 in significant part because of evidence uncovered by the 1991 Gulf War and subsequently that the Saddam regime had a nuclear weapons programme and was intent on acquiring WMD (although the failure of the invasion to find evidence of WMD suggests that such programmes had been abandoned some-

● **Nuclear umbrella**: Protection afforded non-nuclear states or minor nuclear powers by guarantees made to them by major nuclear powers; a form of extended deterrent.

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time during the 1990s). Although the USA had similar concerns about North Korea, its capacity to intervene was drastically reduced in 2006 when North Korea carried out its first nuclear test, even though it was not until 2009 that it achieved a proper reaction when it exploded a Hiroshima-sized weapon. The desire to prevent a possible US invasion has undoubtedly intensified Iran's desire to acquire nuclear weapons. Figure 11.2, shows the number of warheads that are held by nuclear powers.

Third, acquiring or developing nuclear weapons is much easier than it was during the Cold War. During the 'first nuclear age', the fact that the production of nuclear weapons required a broad-based and sophisticated technological structure, and a workforce containing people with key scientific skills, helped enormously to contain the horizontal proliferation of nuclear weapons. Only a small number of states had achieved the technological threshold that made the development of nuclear weapons possible. However, such technology had become much more diffuse by the 1990s, as demonstrated by the apparent ease with which India and Pakistan move from a 'threshold' position to achieving full nuclear capability. Particular concern was raised about the implications of the collapse of the Soviet Union and the political and economic instability in Russia in the 1990s. This created fears that Russian nuclear technologies and fissile (radioactive) materials may flood onto the open market. Whereas the scientific know-how to create nuclear weapons as well as the components of the weapons themselves were once controlled by tightly-disciplined military-industrial complexes, these, it seemed, had become available to the highest bidders, with very few questions asked.

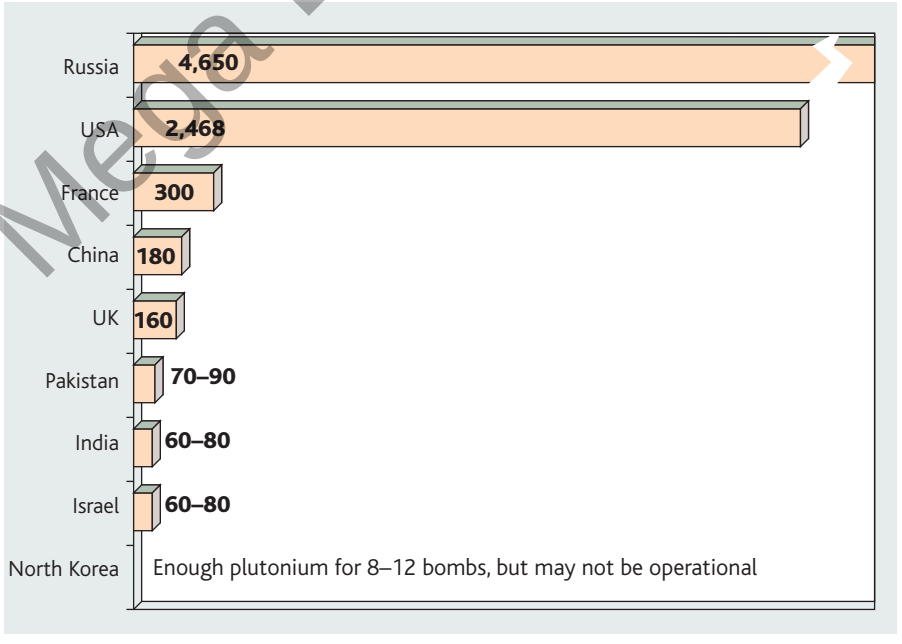

Figure 11.2 Number of warheads held by nuclear powers, 2010 (estimates of operational weapons)

Source: Data from Norris and Kristensen (2010).

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Finally, concerns about nuclear proliferation have intensified due to anxieties about the nature of the states and other actors that may acquire nuclear capabilities. While the 'nuclear club' consisted only of the P-5, the permanent members of the UN Security Council, it was possible to argue that they were in the hands of responsible states, whose calculations about military strategy in general, and the use of nuclear weapons in particular, were based on careful cost–benefit analysis. In these circumstances, caution would always win out over recklessness and there was a strong tendency for nuclear weapons to form part of a deterrent system in which their significance would always be symbolic rather than practical. However, as the obstacles to horizontal proliferation have diminished, the chances of nuclear weapons getting into the hands of states or other actors that may use them have significantly increased. This particularly applies in the case of so-called 'rogue' states (see p. 224), in which military-based dictatorial government combines with factors such as ethnic and social conflict and economic underdevelopment to dictate an aggressive foreign policy, particularly in the context of regional instability. In the post-Cold War era, US foreign policy has increasingly focused on attempts to prevent such states from acquiring nuclear weapons, with particular concern focusing in 2002 on the states dubbed 'axis of evil' by President Bush: Iraq, Iran, Syria, Libya and North Korea. More serious, though, is the prospect of nuclear weapons getting into the hands of non-state actors such as terrorist groups, especially ones motivated by radical politico-religious ideologies, for whom the traditional constraints on the use of WMD, arising in part from the fear of retaliation, simply do not apply. Concerns about so-called 'nuclear terrorism' are discussed in Chapter 12.

However, the image of a world in which all states, to say nothing of a collection of non-state actors, seek to acquire nuclear weapons is misleading. Indeed, the extent of proliferation is much less than we might otherwise have expected in an anarchic, self-help system (Smith 2010). A number of states with clear economic and technological potential to develop nuclear weapons have demonstrated a consistent determination not to do so. These include Australia, Canada, Germany, Japan and South Korea. A further collection of states have voluntarily abandoned nuclear programmes and renounced nuclear weapons. Brazil, Argentina and South Africa are all former 'opaque' nuclear states. The Ukraine, Belarus and Kazakhstan each inherited nuclear weapons after the break-up of the Soviet Union, but returned them to Russia in exchange for US economic aid. The US invasion of Iraq revealed that the Saddam regime, under pressure from the International Atomic Energy Agency (IAEA) (the UN agency that monitors states' compliance with their commitments under the NPT and other non-proliferation agreements), had abandoned its nuclear programme, along with its chemical and biological weapons, some time after the Gulf War; while Libya voluntarily gave up all its WMD programmes in 2003, in return for new trade agreements with the USA and the UK, and an end to diplomatic isolation. The reasons for this level of unilateral self-policing or self-restraint are many and various. They include that states recognize that the costs of acquiring nuclear weapons may outweigh the benefits they bring, that the possession of nuclear weapons is widely viewed by the international community as illegitimate, and that non-proliferation is clearly favoured by established nuclear powers, particularly the P-5.

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Debating . . .

Do nuclear weapons promote peace and stability?

Views about the implications of nuclear proliferation vary significantly. Whereas realists have interpreted nuclear weapons as a major component of the 'long peace' of the Cold War, others have warned that they pose an ever-present, and indeed deepening, threat to peace and security.

YES

Absence of nuclear war. The most remarkable thing about nuclear weapons is how rarely they have been used. Nuclear weapons have only been used as an instrument of war in 1945, to hasten the end of war in the Pacific by bringing about the surrender of Japan (even if the USA was also concerned to send a message to the Soviet Union). The fact that they have not been used subsequently, and that conventional war has never broken out between two nuclear powers, suggests that nuclear weapons are weapons of a very particular kind. They are almost entirely of symbolic, not practical, importance.

Effective deterrence. The primary motive for acquiring nuclear weapons is deterrence, the prevention of war through the massive devastation that would befall an aggressor. Nuclear weapons are particularly well-suited to this role, both because of their enormous destructive capability and because they are relatively ineffective as defensive weapons. This means that there is a low possibility of a state achieving a first-strike nuclear knockout, since nuclear powers invariably seek to develop a second-strike capability. This makes a nuclear war, fought between two nuclear powers, virtually unthinkable.

International stability. The vertical proliferation of nuclear arms has not destabilized international politics because it has tended to preserve the balance of power, albeit through a 'balance of terror'. Horizontal proliferation has been gradual (with the 'nuclear club' growing from five in 1964 to eight by 2005, although Israel and possibly Iran are widely seen as 'opaque' nuclear states). Arguably, the gradual spread of nuclear weapons preserves international stability better than either no spread or a rapid spread would.

Nuclear statesmanship. The possession of nuclear weapons may engender a sense of responsibility and a strong bias in favour of caution, even in states that had previously been inclined towards adventurism or aggression. For, example, regional tensions between India and Pakistan are much less likely to lead to war now that both powers possess nuclear weapons.

NO

Fallibility of deterrent systems. The theory of nuclear deterrence is naive and dangerous. A world in which there are nuclear weapons will always carry the threat of nuclear war. Deterrence may always fail due to miscalculations and accidents. For instances, states may make miscalculations about whether other states possess an invulnerable second-strike capability or, for that matter, whether they possess nuclear weapons at all. Conventional wars may also escalate into nuclear wars, through mistakes made in the frenetic atmosphere that often surrounds decision-makers in war-time situations.

Danger of nuclear imbalances. There is no guarantee that vertical or horizontal nuclear proliferation will preserve the balance of power. Indeed, proliferation inevitably creates temporary imbalances which may then be exploited by aggressive states. After all, the Hiroshima and Nagasaki bombs were dropped to take advantage of precisely such a military imbalance.

Useable nuclear weapons. Developments in recent years have focused increasingly on the production of nuclear weapons that have a more precise and contained impact, making them 'useable'. These 'tactical' or 'battlefield' nuclear weapons are no longer of symbolic importance alone. This has led to the theory of nuclear utilization target selection (NUTS), which rejects the logic of MAD in suggesting that it is possible for a limited nuclear exchange to occur.

Irresponsible nuclear powers. Although the deterrent effect of nuclear weapons worked during the bipolar 'first nuclear age', it is far less reliable in the less stable, multipolar circumstances of the 'second nuclear age'. The possibility of a nuclear first strike relies on the existence of a political or military leadership that is not averse to risk-taking, or a leadership that, because of its values and beliefs, pursues symbolic violence as a method of 'total war' in isolation from strategic considerations. The greatest concern is therefore that nuclear weapons may fall into the hands of military-based dictatorial regimes, or even terrorist organizations, which may have fewer scruples about using them.

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NUCLEAR ARMS CONTROL AND DISARMAMENT

Arms control and anti-proliferation strategies

Nuclear **arms control** has been seen as a central means of containing conflict and ensuring global security. Arms control is, nevertheless, a less ambitious goal than nuclear **disarmament**, which aims to decrease the size and capability of a state's armed forces, possibly depriving it of weapons. The objective of arms control is therefore to regulate arms levels either by limiting their growth or by restricting how they can be used. There is nothing new about arms agreements: for example, in 600 BCE a disarmament league was formed amongst Chinese states. However, formal bilateral agreements and multilateral agreements to control or reduce arms were rare before the twentieth century. What changed this was the advent of industrialized warfare through the development of technologically advanced weapons. It is therefore no surprise that since 1945 the arms control agenda has been dominated by attempts to limit the spread of WMD and particularly nuclear weapons (see p. 274). The principal means through which this has been attempted are treaties and conventions of various kinds, which attempt to establish security regimes to counter the uncertainty, fear and paranoia that are generated by the security dilemma.

How effective has nuclear arms control been? On the credit side, there are some undoubted, if partial, successes. For example, the Partial Test Ban Treaty went a long way to ensuring the elimination of atmospheric nuclear testing. Similarly, the NPT, the single most important nuclear arms control treaty, has made a major contribution to slowing the pace of horizontal proliferation, especially amongst developed states that clearly possess the economic and technological capacity to acquire nuclear weapons. Moreover, even when their specific provisions were effectively ignored, bilateral treaties between the USA and the Soviet Union at least went some way to reduce tension and promote caution, arguably helping to prepare the way ultimately for the end of the Cold War. On the debit side, however, nuclear treaties and conventions singularly failed to prevent the vertical proliferation of nuclear weapons during the Cold War, as the USA and the Soviet Union each built up nuclear arsenals of staggering proportions. START I and START II were, for example, simply 'dead letters', even though they set out only to reduce the increase in nuclear weapons, not to reduce them.

Why has arms control been so difficult to bring about? The first answer is, as realists would point out, that the security dilemma is an intractable problem, meaning that security regimes are always likely to break down and arms races are unavoidable. Second, there is a difference between national security, calculated on the basis of the interests of particular states, and the sense of collective or international security on which bilateral or multilateral agreements are based. In other words, states are always liable to view their build-up of arms as legitimate in terms of providing defence and ensuring deterrence, regardless of the international agreements that they are encouraged to join or have signed up to. India, thus, has never signed the NPT, while Pakistan, a signatory state, has clearly ignored its provisions. Third, the greatest difficulty in ensuring effective and enforceable arms control is that it seeks to control the most heavily armed, and

● **Arms control**: Mechanisms through which the proliferation of arms is constrained by agreements limiting their production, distribution and use.

● **Disarmament**: The reduction of fighting capacity, either through scaling-down or eliminating arms or, more likely, categories of weapons.

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KEY EVENTS . . .

Major nuclear arms control agreements

1959	Antarctic Treaty – prohibits weapons testing and deployment in Antarctica (multilateral)
1963	Partial Test Ban Treaty – bans atmospheric, underwater and outer-space nuclear tests (multilateral)
1967	Outer Space Treaty – bans the deployment of nuclear weapons in space
1968	Nuclear Non-Proliferation Treaty (NPT) – (a) prohibits the acquisition of nuclear weapons by non-nuclear states, and (b) commits the five recognised nuclear powers to the reduction and removal of their weapons over time (multilateral)
1972	Strategic Arms Limitation Treaty 1 (SALT 1) – limits strategic nuclear weapons and freezes ICBMs at 1972 levels (USA/USSR)
1972	Anti-Ballistic Missile (ABM) Treaty – limits the number of anti-ballistic missiles (USA/USSR)
1987	Intermediate Nuclear Forces (INF) Treaty – eliminates all intermediate range nuclear weapons in Europe (USA/USSR)
1991	Strategic Arms Reduction Treaty 1 (START I) – limits the number of nuclear warheads and delivery systems (USA/USSR)
1993	Strategic Arms Reduction Treaty 2 (START II) – further limits the number of nuclear warheads and eliminates certain categories of warhead (USA/Russia)
1996	Comprehensive Test Ban Treaty (CTBT) – bans the testing of weapons, but not ratified by the USA, China, India, Pakistan and North Korea (multilateral)
2002	Strategic Offensive Reduction Treaty (SORT or Moscow Treaty) – limits the number of deployed nuclear warheads (USA/Russia)
2010	New START Treaty (or Prague Treaty) – limits both sides' nuclear warheads to 1,550, a 30 per cent reduction on SORT and a 74 per cent reduction on START 1 (USA/Russia).

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therefore the most powerful, of the world's states. Great powers, and especially superpowers, will only be prepared to be bound by security regimes if they calculate that it is in their national interests to do so. Until 2010, genuine progress towards nuclear disarmament between the USA and Russia was confined to the relatively brief period after the end of the Cold War, forming part of the so-called '**peace dividend**'. However, the security priorities of both states soon changed. By the late 1990s, the USA, undoubtedly the most significant actor over the issue of arms control in the post-Cold War era, was revising its calculations about the dangers of nuclear proliferation, as well as about the means of countering it.

● **Peace dividend**: The opportunity afforded by the end of superpower rivalry to reduce military spending and increase economic and social expenditure, often described as turning 'guns' into 'butter'.

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Concerns about nuclear proliferation, especially in the USA, have increasingly come to focus on the threat posed by 'rogue' states. By their nature, such states are not susceptible to the pressures that are constructed by security regimes. This was highlighted in particular in the aftermath of the Gulf War, when weapons inspectors revealed that Iraq, a signatory of the NPT since 1968, had been covertly developing nuclear weapons. Inspectors from the IAEA, supplemented by the UN Special Commissioners (UNSCOM), were then authorized to disarm Iraq of all nuclear, biological and chemical weapons and materials. However, the failure of the Saddam regime to cooperate consistently with UNSCOM and the weapons inspectors convinced many in the USA and in allied states that Iraq was hiding a significant weapons programme and that the inspection process was ultimately flawed. This resulted in 1998 in Operation Desert Fox, a short bombing campaign launched by the USA and the UK, which targeted installations that were believed to be housing Iraq's biological, chemical and nuclear weapons. Following September 11 (see p. 21), the US approach to 'rogue' states in general and Iraq in particular was significantly revised. Abandoning altogether the idea of containment and a reliance on diplomacy, the USA adopted the **Bush doctrine**, through which the combined threat from 'rogue' states and WMD would in future be addressed through pre-emptive war (see p. 225) and regime change. This resulted in Operation Iraqi Freedom in 2003 and the outbreak of the Iraq War (see p. 131). The invasion of Iraq nevertheless failed to uncover stockpiles of WMD or evidence of an ongoing weapons programme, suggesting that, behind its stances of non-compliance, the Saddam regime had destroyed its weapons and abandoned its weapons programmes, even though this may have been only a temporary adjustment.

The USA's more assertive stance towards 'rogue' states that may possess, or be seeking to acquire, WMD became evident in its relations with Iran and North Korea. In 2003, IAEA inspectors found that Iran, an NPT member, had constructed a uranium enrichment plant at Natanz and a heavy water production plant at Arak, fuelling fears that it had an illicit nuclear weapons programme, supported by technology from Pakistan. This occurred in the context of growing Iranian anxieties about possible US intervention (maybe using Israel as a proxy), following the outbreak of the Iraq War. The Iranian authorities have nevertheless insisted that their facilities are for peaceful purposes only, highlighting the problem of 'dual use' nuclear technology that may generate both civil nuclear energy and weapons materials. Concerns about a nuclear Iraq were more acute in view of its relations with Israel, widely believed to be a nuclear power itself. While Israel's opaque nuclear status is likely to have encouraged, and helped to legitimize Iran's bid to join the 'nuclear club', others have warned that whereas Israel, surrounded by hostile Arab states, has clear deterrence motivations to possess nuclear weapons, Iran, committed under President Ahmadinejad to the destruction of Israel, may consider using nuclear weapons for offensive purposes. Anxieties about Iran acquiring nuclear weapons also reflect fears about the possibility of sparking a nuclear arms race in the volatile Middle East, as states such as Egypt, Saudi Arabia, Syria and Turkey act to prevent regional domination by a nuclear Iran. However, resisting diplomatic pressure from the USA and the EU3 (France, Germany and the UK), and despite the possibility of Iraq-style, US-imposed pre-emptive regime change, Iran announced in 2006, first, that it would restart small-scale uranium enrichment

● **Bush doctrine:** The doctrine, not always precisely formulated, that pre-emptive military action, possibly aimed at achieving regime change, would be taken against states thought to be threatening the USA through the development of WMD and/or by harbouring terrorists.

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and later confirmed that it had restarted its nuclear programme. Iran's progress towards achieving nuclear-capable status was underlined in 2009 by the launch of its first home-built satellite into orbit, possibly as part of a long-term ballistic missile programme, and by the construction, in the face of IAEA criticism, of ten new uranium enrichment plants.

Concerns about North Korea acquiring nuclear weapons stem, in large part, from the threat that this would pose to South Korea, which would then be under pressure itself to follow suit, possibly leading to a nuclear arms race in the Korean peninsular. A further worry arises from the possibility of a North Korean nuclear attack on the US mainland. However, despite pressure to isolate North Korea, which intensified after September 11, US diplomatic leverage over North Korea has been weak and may have been counterproductive, especially as North Korea's geographical proximity to China makes pre-emptive regime change much less likely. North Korea rejected calls for it to open its nuclear facilities to IAEA inspection, before withdrawing from the NPT in 2003. In 2006, North Korea detonated a nuclear device, making it the world's ninth nuclear state. However, following six-party talks, spearheaded by China and involving the USA, South Korea, North Korea, Russia and Japan, North Korea announced in 2007 that it had frozen its nuclear weapons programme, even though it resumed plutonium reprocessing (a precursor to producing atomic weapons) the following year. The, albeit failed, launch of a long-range missile in 2009, and the decision to expel nuclear weapons inspectors and pull out of six-party talks for good appear to indicate the continuing determination of North Korea to become a fully-fledged nuclear weapon state. From the perspective of postcolonialism (see p. 194), however, the concentration of non-proliferation energies on countries such as Iran and North Korea, and the wider link between non-proliferation and the 'problem' of 'rogue' states, is largely driven by Eurocentric perceptions and assumptions.

An alternative approach to security in a world of nuclear proliferation is to erect missile shields. The idea behind missile defence systems is that, as arms control and security regimes can never ultimately be relied on to prevent nuclear attacks, particularly from ICBM, the surest form of protection is provided by a network of anti-ballistic missiles. The USA is currently the only state with the economic and technological resources seriously to contemplate this approach to nuclear defence. Its first attempt to do so was through the Strategic Defence Initiative (SDI), popularly known as 'Star Wars', which was proposed by President Reagan in 1983. Intended as an alternative to MAD, the SDI was never fully developed or deployed, although, in stepping up the arms race with the Soviet Union, it placed the Soviet economy under greater pressure and thus contributed to the end of the Cold War. The idea of a national missile defence (NMD) was nevertheless revived by George W. Bush, who committed the USA to the construction of a missile shield to be sited in Poland, the Czech Republic and possibly other eastern European states, particularly to take account of the threat posed by Iran.

However, missile shields also have their drawbacks. First, they are enormously expensive to develop, as they have to be sufficiently comprehensive, sophisticated and reliable to be able to guarantee that no missiles will be able to penetrate the shield, in view of the devastating potential of a single nuclear warhead. Second, many doubt whether, regardless of the resources devoted to

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Focus on . . .

North Korea: a rogue nuclear state?

What are the implications for international security of North Korea becoming in 2006 the world's ninth nuclear state? North Korea is often seen as the archetypal example of what happens when a 'rogue' state is able to acquire WMD, and especially nuclear weapons. Instead of the acquisition of such weapons fostering caution, even statesmanship, in the case of North Korea it creates the prospect of a nuclear adventurism that threatens not only South Korea but also Japan and even the USA. The belief that a nuclear first strike by North Korea is a real and present danger is based on at least three factors. First, North Korea is almost unique in being a hermetically sealed state, contemptuous of international opinion and heedless of multinational agreements, as demonstrated by its withdrawal from the NPT and its resistance to diplomatic pressure, even from China. Second, its leadership is erratic and autocratic (its leader, Kim Jong-il (The 'Dear Leader') is the son of the founder of North Korea, Kim Il-sung (The 'Great Leader')), is closely linked to the military (North Korea has the fourth largest standing army in the world) and is imbued by a Marxist-Leninist ideology that has effectively been abandoned everywhere else in the world. Third, the regime's record of brutal internal repression suggests a clear willingness to use violence to achieve political ends.

However, such an image may demonstrate a crude and limited understanding of the North Korean regime and serve to overstate the threat that a nuclear-capable North Korea poses to international security. The uncooperative and often belligerent stance that North Korea adopts towards the rest of the world needs to be understood in the light of Korea's position as a small but strategically positioned country, which has been battered by invasion and exploitation for centuries. Harsh Japanese colonial rule was overthrown in 1945 only for civil war to break out between the Russian-backed North and the US-sponsored South, which left millions dead in the early 1950s. As the Korean War ground to stalemate and resulted in temporary armistice rather than a permanent peace, the North Korean regime and its military have, in a sense, never stopped fighting it. What is more, the fall of the Soviet Union and gradual liberalization of China left North Korea economically and politically isolated, facing a highly-trained South Korean army backed by US Marines and dealing with economic collapse and widespread famine. Such a view suggests that diplomatic engagement with North Korea should recognize that, being motivated more by fear than aggression, its overriding priority is regime preservation, especially as (perhaps unlike Iran) it lacks serious regional ambitions.

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their construction, missile shields can ever provide protection that is absolutely guaranteed, particularly as they are based, in effect, on the assumption that one bullet will *always* hit another bullet. Third, just as with the acquisition of any other weapons, the construction of missile shields may be perceived by other states as an aggressive or offensive act. The USA's NMD, and especially the proposal to site it in eastern Europe, thus provoked strong criticism from Russia and strengthened its assertiveness, possibly contributing to its 2008 war with Georgia (see p. 232). Recognizing that the NMD had become an obstacle to gaining Russian support for more pressing issues, such as Iran, President Obama announced the shelving of the missile shield in 2009. However, this was only part of a much more wide-ranging reappraisal of the USA's nuclear non-proliferation strategy by the Obama administration, which countenanced the possibility of a post-nuclear world.

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A world free of nuclear weapons?

The idea of a post-nuclear world has long been advanced by the peace movement, for whom anti-nuclear activism has often been its most prominent cause. In a sense, the campaign against nuclear weapons was born at the moment that the world's first atomic bomb was tested. When it was detonated in July 1945, J. Robert Oppenheimer, often called the 'father of the atomic bomb', recalled the words of the *Bhagavad Gita*: 'Now I am become Death, the destroyer of worlds'. Oppenheimer later would oppose, unsuccessfully, the development of the still more fearsome hydrogen bomb. For many, the historically unprecedented scale of death and destruction that nuclear weapons made possible fundamentally altered thinking about the ethics of war, perhaps making the notion of a just war entirely redundant. As the nuclear arms race accelerated during the Cold War period, large-scale peace movements were mobilized focusing on anti-nuclear protest. The UK-based Campaign for Nuclear Disarmament (CND) was founded in 1958, with the aim of ridding the world of nuclear weapons and other WMD, and European Nuclear Disarmament (END) emerged in the early 1980s as an attempt to extend anti-nuclear activism across Europe, even (though with limited success) into the Soviet bloc. The largest demonstrations took place in 1983, in protest against NATO's decision to site US cruise and Pershing intermediate-range missiles in western Europe. An estimated one million people protested in London, while some 600,000 also took to the streets in West Germany. The International Campaign to Abolish Nuclear Weapons (ICAN) was launched in 2007 and represents over 200 organizations in some 50 countries. Its chief goal is the establishment of a legally binding and verifiable Nuclear Weapons Convention, under which the use, for whatever reason, of a nuclear weapon would constitute a violation of international law (see p. 332).

The campaign against nuclear weapons has also been advanced through the establishment of nuclear-free zones in many parts of the world. The earliest of these were in the Antarctic (1959), Latin America and the Caribbean (1967) and the South Pacific (1985). The Treaty of Pelindaba (1996) declared Africa to be a nuclear-free zone, as did the Bangkok Treaty (1997) in relation to Southeast Asia. Taken collectively, these treaties mean that most of the Southern hemisphere is now a nuclear-free zone. Such trends and movements have been motivated by a variety of considerations. Most prominently, nuclear weapons have been seen as morally indefensible, if not quintessentially evil. In this view, the development, use or threatened use of a weapon that would lead to the indiscriminate deaths of tens of thousands or, more likely, millions of people can never be justified, in any circumstances. The economic and political case in favour of nuclear disarmament is based on considerations such as the huge cost of their development, the belief that the strategy of nuclear deterrence simply leads to an escalating, and unstable, arms race (making nuclear war more likely not less likely), and that nuclear weapons deepen inequality amongst states as the elite 'nuclear club' try to dictate to the rest of the world. Psychological arguments against nuclear weapons have also been advanced, not least linked to their capacity to generate unending anxiety and dread, as post-1945 generations have lived under the shadow of the bomb (Lifton and Falk 1982).

Liberals and social constructivists have nevertheless always emphasized the scope for state policy on nuclear weapons to evolve beyond narrow national

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Focus on . . .

Nuclear ethics: indefensible weapons?

Should nuclear weapons be treated as 'normal' weapons? Is the use, for whatever reasons, of a nuclear weapon ever justifiable? Realists have often viewed nuclear weapons as simply one rung, albeit a major one, on the ladder of arms escalation. To view nuclear weapons as normal, in this sense, is to countenance their acquisition and possible use if circumstances allow. This was certainly evident during the Cold War period, when a large proportion of realists took nuclear weapons to be legitimate, on the grounds of deterrence theory and especially the doctrine of MAD, as outlined by games theorists such as Kahn (1960). In this view, thinking 'the unthinkable' – that is, about nuclear warfare – is a defensible, and perhaps necessary, aspect of a national security strategy. However, realist support for nuclear weapons is not principled but strictly conditional. It is noticeable, for example, that realist support for nuclear weapons has declined in the post-Cold War period, as emerging multipolarity and new security challenges from non-state actors render traditional, bipolar deterrence theory redundant (Shultz *et al.* 2007).

However, nuclear weapons are widely viewed as incompatible with any sense of morality. For pacifists, nuclear weapons are simply an example of the insanity of war: to contemplate the use of nuclear weapons is to countenance the destruction of the human species. It is, furthermore, difficult to see how nuclear warfare can be reconciled with the principles of a just war (see p. 257), whatever the circumstances. In particular, by their nature, nuclear weapons violate each of the principles of *jus in bello* – discrimination, proportionality and humanity. Nye (1988) nevertheless attempted to reconcile the policy of nuclear deterrence with the broad just war tradition by advancing five 'maxims of nuclear ethics'. These are (1) the only acceptable reason for possessing a nuclear deterrent is self-defence; (2) nuclear weapons should never be treated as 'normal' weapons; (3) the purpose of any nuclear strategy must be to minimize harm to innocents (that is, non-combatants); (4) we should work to reduce the risks of war in the near term; and (5) we should work to reduce the reliance on nuclear weapons in the longer term.

security concerns. This was briefly evident in the re-energizing of US and Soviet disarmament efforts as the Cold War crumbled, but it has re-surfaced in the stress the Obama administration has placed on the idea of a nuclear-free world. In a speech beneath the walls of Prague Castle in April 2009, in advance of the signing of the new START Treaty with Russia, Obama set out his vision of a world free from nuclear weapons (although he acknowledged that the goal of complete nuclear disarmament may not be achieved in his own lifetime). In September 2009, Obama became the first US President to chair a meeting of the UN Security Council, the chief purpose of which was to call for an end to the proliferation of nuclear weapons, in the hope of strengthening the non-proliferation regime ahead of the five-yearly review of the NPT due to take place in May 2010. Obama's strategy, supported by President Medvedev of Russia, aimed to move beyond outdated Cold War thinking about nuclear deterrence. The key motivation behind it was to gain the moral authority to place greater pressure on non-nuclear states to abandon their quest for nuclear weapons. As such, this strategy acknowledges the link between nuclear disarmament and non-proliferation. If established nuclear powers are not seen to be serious about abandoning their weapons, their capacity to influence non-nuclear states is crucially undermined; indeed, their calls for non-proliferation are dismissed as simple

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SUMMARY

- The massive destructive capacity of nuclear weapons means that they have affected international and domestic politics in a way that no other weapons ever have. Vertical nuclear proliferation during the Cold War period witnessed the build-up of massive nuclear arsenals in the USA and the Soviet Union.
- While some believe that the Cold War nuclear arms race effectively underpinned the 'long peace' of the post-1945 period, especially once the condition of Mutually Assured Destruction was achieved, others have associated the 'balance of terror' with instability and the ever-present danger that deterrence would fail.
- The post-Cold War era has been characterized by heightened anxiety about nuclear proliferation. This occurred for reasons such as a growth in the number of states that have shown an interest in acquiring nuclear weapons, the easier availability of nuclear materials and technology, and the increased danger that nuclear weapons get into the hands of actors who may use them.
- Despite the development of an extensive non-proliferation regime, effective arms control has been difficult to bring about because states tend to place concerns about national security above their obligations under bilateral or multilateral agreements. Particular anxiety has been expressed about nuclear proliferation in relation to North Korea and Iran, based on the supposedly unstable and risk-prone natures of their regimes and the existence of significant regional tensions.
- The idea of a nuclear-free world has been advanced by both peace activists and, more recently, senior politicians in the USA and Russia. The Obama administration's defence strategy links a commitment to nuclear disarmament to the ability to exert strong moral and diplomatic pressure to ensure non-proliferation.
- Non-proliferation strategies may nevertheless have little impact on nuclear and would-be nuclear 'rogue' states. They may also fail to enjoy unanimous backing from major powers, possibly make inter-state war more likely, and may intensify defence anxieties in states that once benefited from the USA's nuclear umbrella.

Questions for discussion

- Are WMD a distinct category of weapons, and are nuclear weapons the only genuine example of WMD?
- Why do states seek to acquire nuclear weapons?
- Why do some states not seek to acquire nuclear weapons?
- How convincing is the theory of nuclear deterrence?
- Is the idea of nuclear weapons getting into the 'wrong hands' simply an example of Eurocentrism?
- Why has effective nuclear arms control been so difficult to bring about?
- Is a nuclear Iran a significant threat to international peace and security?
- Are efforts to achieve nuclear non-proliferation largely based on hypocrisy and Eurocentric biases?
- Are missile shields a solution to the threat of nuclear attack?
- Are nuclear weapons morally indefensible?
- Is a nuclear-free world possible or desirable?

Further reading

Herring, E. (ed.) *Preventing the Use of Weapons of Mass Destruction* (2000). A collection of essays that consider the various strategies that have been used to prevent the use of WMD.

Hymans, J. *The Psychology of Nuclear Proliferation: Identity, Emotions and Foreign Policy* (2006). A fascinating analysis, using the examples of France, Australia, Argentina and India, of the dynamics of nuclear decision-making.

Nye, J. S. *Nuclear Ethics* (1988). A balanced, rigorous and comprehensive discussion of the ethical dilemmas raised by nuclear weapons.

Solingen, E. *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (2007). An examination of the contrasting logics of nuclearization and denuclearization in different parts of the world.

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