

**START, STRATEGIC STABILITY AND THE FUTURE
OF NUCLEAR DETERRENCE**

by

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A dissertation submitted to the Area Study Centre
in partial fulfillment of the requirements
for the degree of
DOCTOR OF PHILOSOPHY

**AREA STUDY CENTRE
FOR AFRICA, NORTH AND SOUTH AMERICA
QUAID-I-AZAM UNIVERSITY, ISLAMABAD**

1995

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This is to certify that we have read the thesis submitted by ISHTIAQ AHMAD
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*Dedicated to
Excellency Erol Ertugan and Madam Mecal Ertugan*

Acknowledgements

Although any credible research work is primarily the result of one's own consistent hardwork, the help and guidance one receives from individuals and institutions in the process also play a vital role. I am indebted to many institutions and individuals who aided in the development of this dissertation.

First of all, a debt of gratitude to my supervisor Dr Rasul Bakhsh Rais. I must admit that without his guidance concerning the sources of information on START, and how to use and interpret them, it would have been difficult for me to complete this work. I also thank my previous supervisor Dr Raziullah Azmi for his scholarly assistance in my doctoral research.

The American Studies Research Centre in Hyderabad, India, is an institution I am greatly indebted to for providing me some of the most crucial documentary and other sources of information on the past, present and future of strategic arms reduction talks. I thank Vinoo Urs, Col Lance Mascarhanes, Prof Isaac Sequeira, Dr David Harrel, Dr Satish, Dr Ramesh Babu, Sumantha K Bhowmick, Manju S Rajan, Chhaya Patel, Mala Ranganathan, Angha Sirpurkar and Earnest Okelo. All these persons, associated with the ASRC in various capacities, were a great source of encouragement for me during most of the time I was busy in researching and writing my Ph D thesis.

I also wish to express my deepest appreciation to all other institutions that have at various stages contributed to my Ph D project. These include: International Institute for

Strategic Studies, Pakistan Institute of Strategic Studies, The American Centre Library in Islamabad, and my own Area Study Centre for Africa, North and South America.

Finally, the best of regards to my friends Akhtar Shah, Amir Mateen, Arshad Butt, Brig Shafiq Khan Niazi, Fahd Husain, Ghani Jafar, Khalid Qayyum, Matloob Alam, Raja Sajid Riaz, Sajid Mehmood, and Syed Nadeem. Thanks to Naeem Akhtar for his computer technical support. Love to my parents and other family members. Their inspiration is beyond recognition.

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Abstract

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History has turned full circle since the end of the cold war and collapse of the Soviet Union. Today, the United States and Russia are cooperating in areas which were ridden with conflict in not-too-distant a past. One of these areas is the strategic arms control. Two agreements have so far been signed to reduce drastically the strategic arsenals of the two sides: the START I treaty, which is currently being implemented; and the START II agreement, which is yet to be ratified. If START II was also ratified, by 2000 or 2003, the United States and Russia would reduce by 70 per cent the strategic weapons they possessed in 1992. This strategic build-down has occurred as a direct consequence of the end of the cold war confrontation. However, the strategic weapons potential of the two sides even after the implementation of the two START agreements would be formidable enough to destroy the world more than once. In the radically transformed global strategic landscape that exists today, the only cold war role nuclear weapons still retain is that of war-prevention. And nuclear weapons can play this role at levels which are far below those included in START I and II. Nuclear weapons cannot be disinvented. Nations still consider them as useful instruments of national security. The goal of nuclear disarmament can be achieved in a world with a single central authority, and not in a world

of anarchy. Thus, the question arises: if nuclear weapons cannot be eliminated, and if they cannot be retained at the present levels, what should be their lowest limit in the United States and Russia? START I and II, once implemented, would improve strategic stability between the two countries and help them maintain a credible and stable nuclear deterrence. This was what the entire negotiating process leading to the two treaties also aimed at. The same purpose can be served in a much better way if strategic nuclear weapons are further reduced drastically to the minimum possible level. This level of forces, which is possible to achieve under present circumstances, will ensure minimum deterrence. It is possible that the United States and Russia reduce their strategic arsenals to 200 weapons each provided they are joined by three other nuclear weapon states--- China, France and Britain. Mere reductions, however, are not enough. They have to be complemented by measures which ensure nuclear security, check nuclear proliferation and, above all, neutralise nuclear weapons.

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Introduction

Even after the end of the cold war, nuclear weapons remain the principal threat to international security. Over 90 per cent of the world nuclear weapon stockpiles are in the hands of the United States and Russia. The rest are possessed by three other declared nuclear weapon states---China, France and Britain---and three undeclared nuclear states---Israel, India and Pakistan. If the nuclear arsenals continue to exist at the same scale, and without any international safeguards, there will always be a possibility---no matter how remote it is---that nuclear weapons may be used, especially in a crisis situation when the chances of misjudgment, miscalculation and misinformation are always very high. The post-cold war world's foremost danger, however, is linked to the use of nuclear weapons, not to their possession. The possession of nuclear weapons stabilised political relationship between and among great powers in the past and prevented them from causing a conventional catastrophe of the scale of the two world wars. That has happened due to the existence of nuclear deterrence between or among nuclear states. The fear of retaliation prevented nuclear nations from attacking each other. The utility of nuclear weapons arises from their possession, not from their use. If the nuclear weapons maintained peace and deterred aggression in the past, they could perform the same role in future as well.

Although nuclear weapons have played a stabilising role in international politics, they should not necessarily be retained at existing levels. The central theme of the present study is that they need to be reduced at the deepest possible levels. This is what is required in view of the recent radical political transformation that has changed the world power configuration drastically; the role of nuclear weapons has been marginalised in international politics. Today economic power is more important than military potential. That is not to say that nuclear weapons have altogether become irrelevant to the international system. Their role in deterring aggression and maintaining peace remains as

valid today as before. The purpose of nuclear arms control in the post-cold war era is to further neutralise the role of nuclear weapons in international politics and to ensure that they are not used in critical times. What is needed today is not a nuclear deterrence with Mutual Assured Destruction (MAD) as its underlying principle; rather, a more cooperative foundation is needed upon which to rationalise the existence of nuclear weapons in the world as they are gradually reduced to a minimum level. That is, there must be a Mutual Assured Survival---as the American Nuclear Posture Review of last year also puts it.

When the cold war ended some years ago, some arms control analysts were quick to interpret it as the end of arms control as well. Why pursue arms control, they argued, when an arms race is no more? But this was a narrow interpretation of the concept of arms control; which is, in fact, a much broader concept, encompassing a whole gamut of safety- and security-related issues. Arms control is not merely about limiting or reducing arms; it includes all measures to prevent the occurrence of war or to limit its scope should it occur. This study is about rethinking arms control in accordance with the spirit of the time. It is about the role nuclear weapons retain in the post-cold war period. It is about the impracticality of the idea of nuclear disarmament, and about the feasibility and desirability of reducing nuclear weapons to the minimum deterrence level. This study discusses strategic arms control talks in detail and emphasises the practical negotiating lessons for reaching the goal of minimum deterrence. And it does this without ignoring factors which are not related directly to the process of strategic arms reductions but have an important bearing on it, such as the issue of nuclear proliferation.

This study includes more than one proposition. The foremost one is that the option of minimum deterrence will be both stable and credible provided nuclear weapons that are finally retained are deployed in survivable ways so that none of the nuclear powers will ever think of resorting to a first-strike, knowing that it will be destroyed in a retaliatory strike. Once implemented, the START I treaty and the START II agreement---signed as a part of the Strategic Arms Reduction Talks between the United States and Russia or the

former Soviet Union---would reduce strategic warheads of the two sides to the level which existed in the early seventies when the nuclear Non-Proliferation Treaty went into force. They constrain the first-strike potential of each side and allow it to deploy the remaining legs of its strategic nuclear triad at lower level of forces and in survivable ways. Thus, they ensure strategic stability and a credible and stable deterrence. Moving down to minimum deterrence levels will further improve the strategic balance between the United States and Russia and make deterrence more stable and credible.

The destructiveness of nuclear weapons and their spread across the world are the two foremost factors---among many others---which have motivated or forced the two nuclear superpowers to constrain their strategic arsenals since the time the nuclear age began. But, till the early eighties, nothing much could be accomplished as the political relationship between the two sides was characterised by over-blown suspicion of each other's intentions. START I and II became possible only after cooperation not conflict came to reflect the nature and dynamics of US-Russian ties. Today as well, the main factors leading to progress in the sphere of nuclear arms control are the same as they were in the middle of the present century. Chapters One, Two and Three of this study focus on the past review and present status of the strategic arms limitation and reduction process. The basic idea behind reviewing these talks comprehensively is to understand what has stalled the strategic arms reduction process, and what has helped the United States and Russia achieve rapid progress in constraining their strategic weapons potential.

The first chapter deals with Strategic Arms Limitation Talks, starting in late sixties and ending in late seventies. The United States and the former Soviet Union developed and modernised their strategic weapons during the cold war era, as each one of them looked at the other with suspicion and mistrust. The maintenance of a credible and stable nuclear deterrence, however, was deemed essential for preventing the cold war from turning into an all-out war. The war-fighting, not war-prevention, role of nuclear weapons was emphasised; and counterforce options were preferred over those of countervalue. Each

side developed such weapons as, it saw, gave it the capability to strike back effectively in the case of any first-strike from the other. But every new weapon which one side developed was considered first-strike weapon by the other. That was how the race for arms was fuelled. Arms control also stalled exactly for the same reason: the United States wanted Russia to reduce drastically that component of its strategic nuclear triad which was perceived by American arms control negotiators as allowing the Russians a first-strike capability. The Russians wanted the same. Even during seventies, when the spirit of detente came to characterise US-Soviet political relationship, the two sides did not abandon their quest for strategic weapons. In fact, during this period, the strategic arms race took a turn for the worse: the race for the deadliest of all weapons, ballistic missiles with multiple warheads, started and picked up with no end in sight. This development resulted from the failure of the SALT I agreements to constrain the US-Soviet strategic arms potential qualitatively. The SALT II agreement did include some provisions for the purpose, but it was not ratified. The two agreements, however, set important precedents for future strategic arms control efforts.

By the time the eighties began, the Americans were concerned deeply about the first-strike potential of Soviet ICBMs, especially heavy ballistic missiles. Both sides also realised that it was needless to maintain an 'overkill' strategic capability, when the strategic weapons strength of each side, especially of the former Soviet Union, had reached beyond the level which its economy could sustain. Thus began a long and cumbersome negotiating process in the early eighties, the Strategic Arms Reduction Talks---the first round of which, covering some over nine years, is discussed thoroughly in the second chapter of this study. With Mikhail Gorbachev's political will, and the corresponding political will of the American leaders, their mutual concern about the dangers of retaining a huge nuclear arsenal and realisation about what caused the failure of SALT---all led to the signing of START I in July 1991 and START II in January 1993. The primary factor causing the conclusion of the two treaties, however, has been the great international political change

that started with democratic upsurge in eastern and central Europe in the late eighties, which has resulted in a radically transformed strategic landscape of today.

In the third chapter, I have discussed the problems and prospects of strategic arms control in the post-cold war period. The strategic arms reduction process has undergone a transition in the last few years, which has broadened the START agenda. The talk of today is not about strategic defences or verification only. It concerns the risks of nuclear proliferation in the former Soviet Union. What to do about tonnes of fissile material that will result from warhead dismantling as a part of the START process or other arms control agreements and unilateral initiatives aimed at the dismantling and destruction of non-strategic nuclear weapon systems? How is nuclear proliferation to be dealt with in a post-Soviet world? START II is there, but it remains unratified. The concern of Russian nationalists about START II inequalities is just one explanation for this treaty's non-ratification despite the fact that it has been in existence since January 1993. Discussion about these and many other issues, pertaining to both progress and stalemate in START, is followed in Chapter Four by a review of the START I and II treaties and their impact on strategic stability and nuclear deterrence.

Taken together, the two START treaties set many precedents for another strategic arms reduction treaty the United States and Russia may sign, and which may include three other declared nuclear states---China, France and Britain. They include stringent verification provisions that ensure transparency of strategic arsenals and predictability about their deployment modes. They eliminate the most destabilising strategic arsenal ever conceived: multiple independently targetable re-entry vehicles (MIRVs). They reduce the attack potential of the United States and Russia. They have helped reverse the arms race. Whatever these agreements include must, therefore, be made irreversible. Chapter Four ends with a discussion on how to make START irreversible.

Finally, in Chapter Five, I have focused on minimum deterrence and affairs relevant to it both directly and indirectly. The current nuclear debate is about whether it is possible to

eliminate nuclear weapons altogether; and, if it is not, what should be the lowest possible ceiling for them. I have argued against nuclear disarmament and for minimum deterrence. I have recommended 200 nuclear weapons as the lowest possible ceiling that is possible to achieve in the present circumstances. All the declared nuclear powers will have to be included in the process. Not only that, the Big Five, as they are usually called, will have to take some bold steps to remove the grievances of the threshold nuclear states like India and Israel as well as those of other state which have a commitment to nuclear disarmament and wish for a similar commitment from both the declared and undeclared nuclear weapon states. The last chapter also discusses as an option the total elimination of ballistic missiles in the world. The chief threat to international security today, the nuclear danger, can only be reduced gradually. What steps should be taken for the purpose taking into consideration the strategic arms reduction achievements of the past? This study, its last chapter in particular, addresses primarily this question.

A plethora of literature is available on the subject of strategic arms control. Then, why was I inclined to explore a subject on which so much has already been written and analysed? There are two explanations for this. One, the end of the cold war has made much of this literature obsolete. Therefore, the need of the hour is to review the subject from an angle that fits into, or suits, the requirements of the new era. As long as arms are there, arms control as a valid concept will continue to exist. And, so long as nuclear arms are there, the phenomenon of nuclear deterrence---both in its theory and practice---cannot be done away with. This thesis is an attempt to give a new dimension to both the means and end of nuclear strategy---the former, arms control; and the latter, nuclear deterrence. The second reason why I have chosen to research in this particular field is that---and this is quite unfortunate---most of the arms control analysts usually tend to be partisan while arguing about the nuclear danger---a danger that has formidable consequences not just for one country but for the entire world. For most of these analysts---a majority of whom do their research in the United States or have, in some capacity, been associated with the

American conduct of arms control---it is always American security that is of key importance. As a result, the arms control recommendations they often come up have little in store for the security of the world as a whole. This study sees the nuclear danger in a broader perspective and makes specific arms control recommendations without ignoring the rational interests and ends of not just the nuclear haves but the have-nots as well.

The sources of information in this study are varied---including from *The New York Times* to *Izvestia*, from speeches and writings of Mikhail Gorbachev to Congressional debates in the United States. I must admit---and there is no escape from what I consider a dilemma---that most of these sources come from Western institutions or individuals. But even if they do, the most important thing is how one interprets, uses and analyses them. As long as the Soviet Union was intact, the only piece of information one could receive from the Soviet side was the voice of the Communist Party. Whether the information received was true or false, was a different matter. For instance, on the issue of Krasnoyarsk radar in Siberia, which stalled START in late eighties, the Soviets always denied its existence. It was only later, after the collapse of the Soviet Union, that the Russians finally confessed that the Soviet leadership had lied about the radar at that time. The Americans had termed this radar a violation of the ABM treaty. The point I want to make here is that so long as the Soviet Union was intact, there remained an information blockade. For instance, a START issue might have been debated by the Supreme Soviet, probably due to its controversial nature, but the only version one could get was the one given by the Communist Party. This problem concerning information sources is almost over in the post-cold war period, as not a single happening in Russia goes unreported across the world. The debates in Russian parliament over START II ratification are, for instance, available in periodicals like the *Arms Control Today*. In this study, besides using the statements of Soviet/Russian leaders and officials, I have consulted Russian newspapers and magazines like *Pravda* and *New Outlook* and sought information from the works of Russian defence experts like Alexei Arbatov and A A Kokoshin, and institutions such as

the Russian Academy of Sciences. The Centre for International and Security Studies at the University of Maryland has done an extensive post-cold war research on the subject of minimum deterrence. I have given special attention to all those whose works have been published by the CISS, including Ivo H Daalder, Terry Terriff and Michael E Brown. Although virtually all of them argue for minimum deterrence, one differs with them on what should be the lowest level of nuclear forces and what steps should be taken to keep minimum deterrence stable and end the threat of nuclear catastrophe in the world. The differences become acute when the discussion comes to START and the issue of nuclear proliferation in the Chapter Five. This work is in favour of a moderate and progressive reduction in nuclear arms. It highlights the dangers nuclear weapons pose to world peace and security. Much of my argumentation, therefore, lies somewhere between the two extremes of nuclear arms control studies---one upheld by nuclear disarmers like Robert S McNamara; and the other, by nuclear hawks like Henry Kissinger who favour the nuclear status-quo.

Chapter 1

SALT: Setting a Start

The fact nuclear weapons possessed an unprecedented destructive power was demonstrated clearly by the human tragedy at Hiroshima and Nagasaki. Therefore, diplomatic measures to control the likelihood of their use and spread were pursued soon after these weapons were developed. Some early attempts to control them---such as the Baruch Plan and proposals for General and Complete Disarmament---however, failed due to a climate of extreme suspicion and mistrust between the United States and the Soviet Union. As a consequence of the cold war, by mid-sixties, the two countries had developed and deployed thousands of nuclear weapon systems. By then, three other nations---Great Britain, France and China---had also tested nuclear devices. The 1962 Cuban Missile Crisis highlighted the dangers and potential for escalation to nuclear war between the United States and the Soviet Union. It was only after the Cuban episode that the two countries began to think seriously about the possibility of limiting strategic nuclear arsenal.¹

'Today, should total war ever break out again, no matter how, our two countries would become the primary targets. It is ironic but accurate fact that the two strongest powers are the two in the most danger of devastation. All we have built, all we have worked for, would be destroyed in the first 24 hours', said US President John F Kennedy in 1962 in his American University speech, which gave the basic rationale of the arms control process. Signed in 1963, the Limited Test Ban Treaty was the first nuclear arms control agreement to give practical shape to this rationale. The treaty limited the United States and the Soviet Union only to underground nuclear testing. Both sides also concluded a Hot Line agreement, which allowed leaders of the two countries to communicate with

each other during emergency situation to prevent the accidental occurrence of nuclear war. ²

In the sphere of strategic nuclear arms control, however, not much could be accomplished till the end of sixties. In 1969, after Richard Nixon became the US President, a serious beginning was made towards a long and tedious negotiating process between the United States and the Soviet Union called SALT, the Strategic Arms Limitation Talks. Under SALT negotiations, which continued till 1979, two strategic arms limitation agreements were concluded. These are called the SALT I agreements and the SALT II treaty. The first, signed in 1972, limited the number of both offensive and defensive strategic nuclear weapon systems of the United States and the Soviet Union. It was ratified. In the second agreement, which was signed in 1978 but remained unratified, the two sides went a step further by not merely limiting the number of strategic weapons but also limiting the qualitative aspect of strategic weapons modernisation.

How did SALT start?

In early sixties, leaders of the United States and the Soviet Union became concerned about the spread of nuclear weapons to other countries. It was primarily this concern which ultimately forced them to control their own nuclear weapons potential, particularly the strategic nuclear capability. In 1963, President Kennedy talked about the possibility of ten countries developing nuclear weapons by 1970, and perhaps fifteen to twenty by 1975. He termed this 'the greatest possible danger' which the United States was likely to face in future.' ³

For its part, the Soviet Union was concerned about the fact that four of the five states that possessed nuclear weapons were hostile to it. In addition, it wanted to prevent the acquisition of nuclear weapons by West Germany. Germany had caused enormous losses to the Soviets in the two world wars; and, after the second world war, a nuclear West Germany could endanger gravely the security of the Soviet Union and its Warsaw Pact

allies. The Soviets were, therefore, eager to discuss with the Americans the problem of nuclear proliferation. As a result of discussions at the 1965 and 1967 sessions of the United Nations Eighteenth Disarmament Committee, and informal meetings between Mr Kennedy's Secretary of State Dean Rusk and Soviet Foreign Minister Andrey Gromyko, the United States and the Soviet Union were able to submit identical drafts of a nuclear Non-Proliferation Treaty. This draft was slightly amended and then signed on 1 July 1968. The Soviets had considered this treaty a pre-requisite for the opening of negotiations on limiting US-Soviet strategic nuclear weapons. ⁴

Before concluding the NPT, the United States and the Soviet Union also signed in 1967 the Outer Space Treaty, banning weapons in space. Yet the US-Soviet agreement that President Lyndon Johnson---who succeeded Mr Kennedy after his assassination in 1963---wanted the most, eluded him while he was in the White House. In January 1964, he proposed, as a first step towards restricting strategic weapons, a mutual US-Soviet reduction in the production rate of fissile material. In 1966, President Johnson offered to open negotiations with the Soviet Union to limit strategic nuclear arms. The Soviets did not respond quickly to the two American proposals. The reason was that they were still in the process of achieving parity with the United States in the number of strategic nuclear delivery vehicles and were, therefore, reluctant to restrict their strategic programmes until they reached that goal. ⁵

Soviets achieve strategic parity

More than his predecessor, President Johnson was compelled to rely on the judgement of Secretary of Defence Robert S McNamara when questions involving nuclear weapons arose. During the Johnson presidency, the objectives of Mr McNamara's nuclear strategy remained essentially what they had been first defined in 1962: assured destruction and damage limitation. By 1967, however, the foundation on which they were based---the continued overwhelming American nuclear superiority---began to erode. As a result of

the expansion of the Soviet nuclear arsenal, which began in 1964, the number of Soviet inter-continental ballistic missiles stood at about 720 in late 1967. By the end of 1969, this number had reached 1,060---giving the Soviet Union for the first time a slightly larger ICBM force than that of the United States. Mr McNamara realised that, because of rapid expansion of the Soviet missile programme, the United States could no longer hope to escape massive destruction in the event of a nuclear war. The assured destruction capability that once was an American monopoly had now become a mutual phenomenon--the mutual assured destruction: no matter which superpower struck first, and no matter how massive its attack, the other would still be able to launch a devastating retaliatory attack. Mr McNamara was now prepared to allow the Soviet Union a rough parity in the number of missile launchers and, simultaneously, negotiate an agreement to limit strategic arms. ⁶

While wishing to conclude a strategic arms limitation agreement with the Soviet Union, the Johnson administration approved the development and deployment of additional nuclear weapon systems to enhance the American counter-force capability. In September 1967, Mr McNamara announced the American decision to build an anti-ballistic missile system. The Soviets were already developing such a system. Three months later, the United States also decided to proceed with the development of a new offensive technology, multiple independently targetable re-entry vehicles. ⁷

By that time, however, the Soviets felt that they could deal with the United States from a position of strength. As a result, in late June 1968, Foreign Minister Gromyko announced the Soviet willingness to discuss limitation of both offensive and defensive weapons. Three days later, on 1 July, the day the NPT was signed, President Johnson announced that an agreement had been reached on convening the Strategic Arms Limitation Talks. The talks were to start on 30 September. A joint announcement concerning the opening and schedule of these talks was prepared for release on 21

August; however, the day before, Soviet and other Warsaw Pact military forces invaded Czechoslovakia, and the United States postponed the opening of SALT indefinitely. ⁸

President Nixon and arms control

The presidency of Richard Nixon marked a high point in the US-Soviet effort to control the strategic arms race. One factor that accounted for Mr Nixon's success in SALT was the flexibility of the man himself. Soon after his inauguration as president in January 1969, President Nixon indicated that his administration would seek the strategic nuclear objective of 'sufficiency.' With the Soviets achieving strategic parity with the United States in the number of ICBMs and SLBMs, President Nixon realised that it was politically and economically impractical for the United States to attempt to maintain nuclear superiority, and that SALT was the only way to constrain the Soviet strategic build-up. Indeed, to him, the prospect that the Soviets would build a nation-wide ABM system seemed to make SALT an urgent necessity. Therefore, he asked Dr Henry Kissinger, then his assistant for national security, to conduct a comprehensive review of American strategic nuclear forces and doctrine before beginning arms control negotiations with the Soviets. The review, which took six months to complete, placed its emphasis on the deterrent value of strategic nuclear forces that was to be achieved through the combination of Mr McNamara's assured destruction capability and an enhanced counter-force capability. ⁹

By this time, the Soviet Union seemed to be even more interested than the United States to pursue SALT. The Soviet Union had compelling military reasons for resuming the quest for a SALT agreement: having achieved rough nuclear parity with the United States, the Soviets were more than eager to preserve it. What they had gained in the quantity of missile launchers they were about to lose to the Americans in the number of nuclear warheads. The Soviets probably hoped that SALT could provide a way of halting American MIRV deployments, at least long enough to deploy their own. On 17

November 1969, American and Soviet arms control negotiators met in Helsinki, Finland, to inaugurate SALT negotiations. Till May 1972, the two delegations held seven rounds of formal talks, meeting alternately in Helsinki and Vienna. ¹⁰

The task of the two delegations was difficult, because American and Soviet strategic arsenals differed significantly. American strategic force planners emphasised the development of technologically sophisticated and accurate strategic missiles with relatively small payloads of one to two megatons. On the contrary, the Soviet Union developed and deployed a number of different types of weapons, some of which were larger in size than American weapons and also had a greater throw-weight. Consequently, two questions remained the basic source of contention in SALT negotiations between the two sides. First, should both offensive and defensive limitations be included in the talks? Second, exactly what constituted strategic forces. ¹¹

Therefore, from the outset, the two sides favoured different limitations: the Soviets wanted to concentrate on defensive weapons, particularly anti-ballistic missiles; and the Americans wanted to limit offensive systems, especially heavy Soviet ICBMs. Underlying the discussions of the two delegations were long-standing problems of inspection and verification, issues that had blocked previous strategic arms control agreements. In addition, the Soviet delegation repeatedly expressed its interest in discussing American forces stationed in Europe to which the Soviets referred as 'forward-based systems.' The Soviets argued that these systems were 'strategic' because many of them had the capability of reaching the Soviet territory. The United States insisted that American nuclear forces in Europe should not be discussed at SALT negotiations because they did not have inter-continental ranges. ¹²

In late 1970, SALT stalled as the two sides refused to budge on the issues of forward-based systems and MIRVed ICBMs. Meanwhile, Mr Kissinger and Anatoly Dobrynin, Soviet ambassador to the United States, began meeting secretly in early 1971 to discuss SALT limitations. These meetings, later dubbed 'back channel negotiations', took place

without the knowledge of even American SALT negotiators. Consequently, the United States and the Soviet Union agreed in May 1971 on a compromise formula for breaking the SALT stalemate: thereafter, SALT negotiators would discuss limitations of both defensive and offensive weapon systems. In SALT negotiations that followed the May 1971 breakthrough, details of the SALT agreement were worked out; and a summit meeting between President Nixon and Soviet leader Leonid Brezhnev was scheduled for 18 to 22 May 1972. The summit was held as scheduled. Two agreements, which together are referred to as the SALT I agreements, were signed. ¹³

SALT I agreements

The SALT I agreements included the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems, or the ABM treaty; and the Interim Agreement between the United States of America and the Union of the Soviet Socialist Republics on Certain Measures with Respect to the limitation of Strategic Offensive Arms, or the Interim Agreement. ¹⁴

In the ABM treaty, the United States and the Soviet Union agreed to deploy no more than one hundred ABM launchers at two sites, one at the capital and another at least 1,300 kilometres from the capital. To ensure compliance with the terms of its provisions, the treaty called for 'national technical means of verification. Both the countries agreed not to interfere with the verification procedures and not to conceal deliberately any ABM components. Restrictions were also placed on ABM radars. The deployment of new ABM systems based on new technologies, such as lasers, was prohibited. The treaty was of unlimited duration, although reviews were scheduled for every five years. Either party had the right to withdraw from the treaty on six months notice.

The ABM treaty also called for the establishment of a US-Soviet Standing Consultative Commission to promote the objectives and implementation of the provisions of the treaty by considering questions concerning compliance; by voluntarily providing

information that either the United or the Soviet Union considered necessary to ensure compliance; by agreeing on the procedures for the dismantling of ABM systems and components; by considering questions concerning interference with national technical means of verifications; and by considering means to increase the viability of SALT agreements and to further limit strategic weapons. In short, the SCC provided US-Soviet arms control negotiators a forum to discuss issues linked with the implementation of the ABM treaty and the Interim Agreement.

The Interim Agreement placed a quantitative limit on both ICBMs and submarine-launched ballistic missiles. The United States was limited to 1,054 ICBMs, and the Soviet Union to 1,618 ICBMs. Each side had the right to deploy additional SLBMs in exchange for the dismantling of ICBMs. For instance, if all other ICBMs were dismantled, the United States could build up to 710 SLBMs on 44 submarines, and the Soviet Union could build up to 950 SLBMs on 62 submarines. The Soviet Union was limited to 308 heavy ICBMs. The Interim Agreement had a duration of five years---1972-1977---and both sides intended to replace it with a permanent agreement within this period. In essence, the Interim Agreement placed quantitative limits on SLBMs and ICBMs of both sides without significantly restricting qualitative developments, such as MIRVs.

In the US Senate, there was substantial support for the ABM treaty. The treaty was ratified by a vote of 88 to 2. However, during Congressional debate on the Interim Agreement, there was considerable concern over the fact that the agreement had allowed the Soviet Union about 50 per cent more ICBMs (1,054 to 1,618), and that the Soviet Union had a superiority of four to one in deliverable payload. Supporters of the agreement argued differently, saying that the United States had a significantly higher number of long-range bombers and warheads than the Soviet Union.¹⁵

However, to SALT critics, including Paul Nitze and Senator Henry Jackson, numerical advantages in ICBMs, SLBMs and submarines given to the Soviet Union by the Interim

Agreement could be translated into political advantage. They were also concerned about 308 heavy ICBMs that the Soviets were allowed to keep. The fear was that the Soviets would develop and deploy up to 40 warheads on each of these missiles, and that American land-based strategic forces would be vulnerable to attack and destruction. This 'window of vulnerability', in the view of these critics of SALT, endangered American national security. Senator Jackson introduced an amendment stipulating that any future arms control agreement should not limit the United States to levels of strategic forces inferior to the limits for the Soviet Union. The Senate accepted the Jackson amendment by a vote of 55 to 35 and then approved the Interim Agreement by a vote of 88 to 2. ¹⁶

By August 1972, both the US Senate and the Supreme Soviet ratified the two SALT-I agreements; and, with their approval, the strategic arms control completed its first phase. In less than three years, the United States and the Soviet Union had agreed to accept significant limits on their defensive and offensive arsenals. The foundation had been laid; all that remained was to build a substantial arms control structure on this framework. The second phase of strategic arms control began in November 1972, when US-Soviet arms control negotiators met in Geneva, where all subsequent SALT negotiations were held. If the task at SALT I had been to impose quantitative limitations on the arsenals of the two sides; at SALT II, it would be to extend these quantitative limitations and, in addition, to impose qualitative limitations that restricted the capability of strategic arsenals. ¹⁷

During the Nixon administration, SALT had become the cornerstone of detente, and detente the showpiece of the administration's over all approach to foreign policy. As the Watergate scandal developed, the Nixon administration attempted to divert public attention from its domestic wrong-doings to foreign policy achievements. In June 1973, Mr Brezhnev met President Nixon in Washington. The two leaders signed an agreement on the prevention of nuclear war and a communique pledging the United States and the Soviet Union to reach a SALT II agreement within the year. Mr Nixon travelled to Moscow in June 1974 hoping to conclude a SALT II agreement. But no such agreement

was reached. Instead, two other arms control agreements were signed. The first limited the number of ABM sites that each country could maintain to one, instead of the two permitted by the 1972 ABM treaty. The second agreement, the Threshold Test Ban Treaty, prohibited underground nuclear tests above a level of 150 kilotons. However, despite these summit meetings and agreements, domestic criticism of the Nixon administration resulting from the Watergate scandal increased until, in August 1974, President Nixon resigned. ¹⁸

Vladivostok Accord and after

After becoming president, Gerald Ford asked American SALT II delegation to pursue the achievement of a long term agreement. In November 1974, he met Mr Brezhnev at Vladivostok to sign an 'agreement in principle', which---although not legally binding---stated the goal for which the two leaders agreed to work. The agreement, known as the Vladivostok Accord, indicated that each side should be limited to 2,400 strategic nuclear delivery vehicles---including ICBMs, SLBMs and long-range bombers---and, of this total, 1320 could be MIRVed warheads. The new agreement was stated to cover the period from October 1977, the date the SALT I Interim agreement would expire, through December 1985. ¹⁹

When the substance of the Vladivostok Accord was made public in the United States, neither the proponents nor the opponents of SALT were satisfied. A number of arms control supporters thought that the total number of launchers and the MIRV sub-limit were too high. SALT critics, such as Paul Nitze, argued that the agreement protected Soviet heavy missiles, which could threaten the survivability of American ICBMs. ²⁰

As SALT II negotiators met in Geneva, the United States and the Soviet Union continued to develop new strategic systems. In the period following the signing of the SALT I agreements, both sides developed, tested, and began deploying several new and more capable weapon systems. This complicated SALT negotiations: a strategic arms

control agreement that could have been desirable and feasible at one point could subsequently have been negated by new technological or qualitative developments. The Soviet Union began to deploy a new long-range bomber, Backfire, which had an estimated range of 5,500 kilometres and could reach the American airspace. Thus, in SALT II negotiations, the American side argued that the Backfire bomber should count against the Soviet Union's 2,400 delivery vehicle ceiling, a position the Soviets repeatedly rejected.²¹

In the United States as well, programmes were under way to increase the accuracy of missiles, and work had begun on the development of a large MIRVed ICBM, the 10-warhead Missile Experimental or MX. President Ford also requested funds for the deployment of two new strategic weapon systems: the B-1 bomber and the Trident submarine. The Trident was designed to carry 24 SLBMs, each with up to 14 warheads and with a sophisticated guidance system. The most controversial American system in SALT II negotiations was, however, the cruise missile. Soviet negotiators argued that these missiles, if deployed, should count against the 2,400 delivery vehicle ceiling of the Vladivostok Accord. This was unacceptable to American negotiators. Cruise missiles complicated the problem of verification considerably. For instance, one version of cruise missiles was designed to fit into the standard torpedo tubes of submarines. Because there would be no way---short of physically inspecting all submarines and their armaments---to verify whether cruise missiles were on board and whether those missiles were nuclear or conventionally armed, Soviet defence planners would be forced to assume that all American missile submarines, not just American ballistic missile submarines, were 'strategic launchers.'²²

While the United States and the Soviet Union continued weapon modernisation plans, which were perceived differently by each side's arms control negotiators, SALT II negotiations received a boost after Jimmy Carter became the American president. In his inaugural address of 20 January 1977, President Carter expressed his desire to move

towards the goal of eliminating nuclear weapons from the world. Within several weeks of assuming office, Mr Carter stated that he wanted to conclude a SALT II agreement quickly and to move on to other items on the arms control agenda. He requested the US National Security Council to draft a 'comprehensive proposal' for making 'deep cuts' in the levels established by the Vladivostok Accord. ²³

In March 1977, Secretary of State Cyrus Vance visited Moscow and presented a comprehensive proposal which called for a 20 per cent reduction in the total number of strategic nuclear delivery vehicles allowed under the Vladivostok Accord from 2,400 to 1,800; a reduction from 1,320 MIRV launchers to a level between 1,100 and 1,200; a sub-limit of 550 on the number of MIRVed ICBMs; a cut in Soviet heavy ICBMs from 308 to 150; and a range limit of 2,500 kilometres on all cruise missiles and mobile ICBMs. ²⁴

Taken by surprise, the Soviets rejected the American proposal: Mr Brezhnev had expected that President Carter would sign the Vladivostok Accord, since Mr Carter had earlier assured him that he would. While rejecting the American proposal, the Soviets argued that it called for reductions that fell almost entirely on the Soviet Union. In the United States, however, the 'deep cuts' proposal became the standard for the times to come by which subsequent proposals were judged. But, despite the March 1977 imbroglio, Carter and Brezhnev expressed a desire to get SALT II negotiations back on track. In May 1977, Secretary of State Vance and Foreign Minister Gromyko met in Geneva and discussed ways to re-start SALT II. ²⁵

The road to SALT II

Unfortunately, by 1977, Soviet activities across the world had become a matter of concern for officials of the Carter administration. In July, Cuba started deploying its troops in the Horn of Africa, with the approval and help of the Soviet Union. The significance of this development was debated within the administration. President's National Security Advisor Dr Zbigniew Brzezinski differed with Secretary of State Vance

on how the United States should react to this development. Mr Brzezinski considered the matter serious and wanted to link it to other aspects of US-Soviet relations. Mr Vance, on the other hand, believed that SALT II was crucial for the United States and, therefore, it should not be linked to Soviet or Cuban actions in the Horn of Africa. The Vance-Brzezinski differences increased with the passage of time and affected the course of SALT negotiations. ²⁶

During 1978 and early 1979, many other obstacles also impeded SALT II negotiations. First, the United States was taking practical steps to normalise its relations with China. In January 1979, both the countries were to establish diplomatic relations. The Soviets feared that normalisation of Sino-American relations was simply a prelude to an eventual alliance between the two countries, which would be directed against the Soviet Union. Second, with the outbreak of Iranian revolution in January 1979 and the overthrow of the Shah by Ayatollah Khomeini, the United States was forced to dismantle intelligence-gathering installations in Iran. This was the time when the US Senate was also debating the verifiability of a SALT II treaty, and SALT II critics argued that the loss of these installations did 'irreparable damage' to the American ability to monitor Soviet compliance with a SALT treaty. Finally, the two sides disagreed on a number of issues, such as the Backfire bomber, cruise missiles and modernisation. ²⁷

It took Mr Vance and Foreign Minister Gromyko, and other SALT II negotiators, almost a year---from early 1978 to early 1979---to settle the conflicting issues by compromising their previous positions. One of these compromises was that the Soviets stopped linking the normalisation of Sino-American relations to SALT II. On the verification issue that surfaced in the US Senate in the aftermath of the Iranian revolution, the Carter administration asserted that, while installations in Iran were important, they were not indispensable, considering the other surveillance systems the United States employed. Meanwhile, Soviet and American negotiators continued to work on the draft

of the SALT II treaty. Finally, after over six and a half years of negotiations, the treaty was signed formally by President Carter and Mr Brezhnev in Vienna on 18 June 1979. ²⁸

SALT II

The SALT II treaty consisted of three parts: treaty provisions, a protocol, and a joint statement of principles. The 78-page treaty, scheduled to remain in effect from the time it entered into force until the end of December 1985, contained 19 articles. It placed a limit of 2,400, to be reduced to 2,250 by the end of 1981, on the number of strategic nuclear delivery vehicles of each side. Within this ceiling, no more than 1,320 ICBMs, SLBMs, and long-range bombers could be equipped with MIRVs or long-range cruise missiles. Within this sub-limit, no more than 1,200 ICBMs, SLBMs, and air-to-surface cruise missiles could be MIRVed; and within that sub-limit, no more than 820 ICBMs could be MIRVed. ²⁹

In addition to these over all limits, the treaty contained the following qualitative limitations: ceilings on the throw-weight and launch-weight of light and heavy missiles; a limit on the testing and deployment of one 'new type' ICBM; a freeze on the number of re-entry vehicles on certain types of ICBMs; a limit of ten re-entry vehicles on the one 'new type' ICBM that each side was permitted; a limit of 14 re-entry vehicles on SLBMs; and a limit of ten re-entry vehicles on air-to-surface ballistic missiles; a ban on the testing and deployment of air-launched cruise missiles with ranges greater than 600 kilometres on aircraft other than those counted as long-range bombers; a ban on the construction of additional fixed ICBM launchers and on any increase in the number of fixed heavy ICBM launchers, which limited the Soviet Union to 308 heavy ballistic missiles and the United States to zero; a ban on heavy, mobile ICBMs, heavy SLBMs and heavy air-to-surface ballistic missiles; a ban on certain types of strategic, offensive weapons not yet deployed by either side, such as ballistic missiles with ranges greater than 600 kilometres deployed on surface ships; an agreement to exchange data on a regular basis on the numbers of

weapons deployed and limited by the treaty; advance notification of certain ICBM test launchers; and a ban on ICBM systems that can be re-loaded quickly.

The second part of the SALT II treaty consisted of a protocol, scheduled to remain in effect until the end of 1981. It banned flight testing and deployment of ICBMs on mobile land platforms; prohibited the deployment of land-based or sea-based cruise missiles with ranges greater than 600 km; and banned the testing and deployment of air-to-surface ballistic missiles. The third part of the agreement consisted of a set of principles concerning the next round of SALT negotiations. The Backfire bomber was one of the major points of contention in SALT II negotiations. Although limits on Backfire were not formally part of the SALT II treaty; in a letter to President Carter accompanying the treaty, Mr Brezhnev committed the Soviet Union to produce no more than thirty such bombers per year and to limit the up-grading of their capabilities.

Soon after its conclusion, the SALT II treaty was submitted to the Senate for ratification. Three contentious points of view on the treaty surfaced during its ratification debate. First, some senators believed that the treaty was not in the national security interest of the United States as it validated Soviet strategic arms superiority. Second, some senators, while supporting the treaty, backed Mr Carter's contention that the SALT II treaty served 'the goals both of security and of survival, that strengthened both the military position of the United States and the cause of world peace.' Third, a few senators believed that SALT II did not do enough to control the arms race, as it did not require the United States and the Soviet Union to make substantial strategic arms reductions. The Senate Foreign Relations Committee conducted hearings on the treaty from July till October 1979. In November, by a vote of nine to six, it recommended the ratification of the treaty to the full Senate. ³⁰

SALT II remains unratified

In the end, however, President Carter was unable to translate the successful negotiation of SALT II into a ratified treaty. SALT II was overwhelmed by external events. In July 1979, the US Central Intelligence Agency discovered evidence that the Soviet Union had a combat brigade deployed in Cuba. The new development created furore in the United States and reversed the momentum of the Carter administration's SALT ratification effort. Whereas in the middle of August 1979, chances of ratification appeared to be good; by the end of August, the treaty was in trouble. A significant outcome of the crisis was the delay of the Senate's consideration of the treaty. The Senate, which was scheduled to have a final vote on the treaty by the end of October, spent most of September and October debating the Soviet brigade issue.³¹

On 4 November 1979, another event struck a blow at the treaty. A group of several thousand Iranians stormed and took over the American embassy in Tehran. This started a 444-day-long hostage crisis, which dominated the last fifteen months of the Carter administration. The hostage crisis affected many Americans' evaluation of the Carter administration's handling of American foreign policy, and this predominantly negative assessment had a significant influence on the SALT II debate. The hostage crisis had another important effect: In April 1980, the National Security Council led by Mr Brzezinski approved a mission to attempt to rescue American hostages held in Iran. Secretary of State Vance was opposed to this plan, and he resigned following the failed hostage rescue attempt. Without Mr Vance, there was no one in the Carter administration to counter Mr Brzezinski's views.³²

The final blow to the SALT II treaty was the December 1979 Soviet invasion of Afghanistan. Reacting sharply to this development, President Carter sent Mr Brezhnev 'the sharpest message' of his presidency on the Washington-Moscow hot line, telling him that the invasion was a 'clear threat to peace' and could make a 'fundamental and long-lasting turning point in our relations.' In Mr Carter's view, the situation created by the

Soviet action meant 'the immediate and automatic loss of any chance for early ratification of the SALT II treaty.' On 3 January 1980, he asked the Senate to postpone indefinitely its consideration of SALT II. Besides other factors, the hostage crisis and the Soviet invasion of Afghanistan eroded Mr Carter's domestic popularity, and he lost the 1980 election against the Republican nominee and a cold war hawk, Ronald Reagan. ³³

Back to square one?

The election of Reagan brought to the White House an individual committed to nuclear arms race with the Soviet Union and the first president since Truman who was skeptical about the value of nuclear arms control agreements. During Mr Reagan's first administration, defence spending nearly doubled. Major nuclear weapon systems that were shelved by Mr Carter like the B-1 bomber, were revived. The deployment of developed systems, such as the MX ICBM and the Trident submarine, was initiated. And the development of new systems, like Ballistic Missile Defence systems, was accelerated. Moreover, Mr Reagan, during his first term, was not only unable to conclude any major nuclear arms control agreements; existing agreements, like the ABM treaty and the unratified SALT II treaty, were threatened with revocation by the United States. The Soviet Union, Mr Reagan said in 1983, was 'the focus of evil in the modern world.' Its goal was 'the eventual domination of all peoples of the earth', with the American people its primary target. The SALT agreements, he argued, had enabled the Soviets to augment their strategic forces to a point where the United States was vulnerable to a Soviet first-strike, the so called window of vulnerability. ³⁴

The end of SALT was not as promising as its beginning. However, in the process, the United States and the Soviet Union made many achievements. The ABM treaty helped stabilise deterrence between the two countries by ensuring the continued mutual vulnerability of their strategic sites. The SALT I Interim Agreement, for the first time, limited the number of strategic weapons, the fact that this channeled their effort into

qualitative improvements notwithstanding. And, with the primary aim of constraining such efforts, the SALT II treaty imposed important qualitative limits and included some strategic arms reductions as well. Although SALT II was not ratified, the United States and the Soviet Union continued to observe its provisions. It was also during SALT negotiations that proposal for deep cuts in strategic arsenals was made: that is, the March 1977 American proposal of 20 per cent cuts in strategic arms. From the SALT negotiating process, it was evident that no strategic arms control effort of the United States and the Soviet Union would be worthwhile in future unless they improved their political relationship to the level where narrow strategic considerations were ignored for the larger interests of mutual security and world peace.

In the period between the second world war and signing of the SALT II agreement in 1979, some other nuclear arms control agreements---such as, the Threshold Test Ban Treaty and the nuclear Non-Proliferation Treaty---were also concluded. But SALT negotiations and agreements were significant in the sense that the lessons which leaders and arms control negotiators of the United States and the Soviet Union learned in the process were to contribute considerably to START, the Strategic Arms Reduction Talks, in eighties and nineties. In fact, during SALT negotiations, the two sides made some precedent-setting initiatives, which were included in the two SALT agreements. SALT negotiations and agreements set the pace of strategic arms control on which the United States and the Soviet Union were to build on in START---a process which would help them go beyond SALT achievements and reduce their strategic arsenals drastically.

Notes

- 1 For a review of initial attempts to control nuclear arms, which were made in view of the destructive potential of these weapons, see Ronald E Powaski, *March to Armageddon: the United States and the Nuclear Arms Race, 1939 to the Present* (New York: Oxford University Press), 29-121; and Robin Ranger, *Arms and Politics: 1958-1978* (Toronto, Ontario: MacMillan Press, 1979), 20-39.
- 2 Commencement Address at American University in Washington by John F Kennedy, in P Edward Haley, David M Keithly and Jack Merrith, eds, *Nuclear Strategy, Arms Control and the Future* (Boulder, CO: Westview Press, 1985), 207-209.
- 3 Kennedy's Press Conference, 13 March 1963, in Dan Caldwell, 'From SALT to START: Limiting Strategic Nuclear Weapons,' *Encyclopedia of Arms Control 2* (New York: Charles Scribner's, 1993), 895.
- 4 P H Vigor, *The Soviet View of Disarmament* (London: MacMillan Press, 1986), 85-94.
- 5 See John Newhouse, *Cold Dawn: the Story of SALT* (New York: Simon & Schuster, 1973), 87, 91; and US Arms Control and Disarmament Agency, *Documents on Disarmament 1964* (Washington, DC: ACDA, 1965), 4, 44-48.
- 6 Philip L Geyelin, *Lyndon B Johnson and the World* (New York: Oxford University Press, 1966), 31-32; US Department of Defence, *Statement of Secretary of Defence Robert S McNamara before the Senate Armed Services Committee on the Fiscal 1969-1973 Defence Programme and 1969 Defence Budget* (Washington, DC: US Government Printing Office, 1968), 54, 55; Address by McNamara, 'The Dynamics of Nuclear Strategy,' September 18, 1967, *Department of State Bulletin 57* (9 October, 1967), 443-451. Hereafter cited as 'The Dynamics of Nuclear Strategy.'

- 7 'The Dynamics of Nuclear Strategy,' 445.
- 8 Newhouse, *Cold Dawn*, 87, 91; Robin Edmonds, *Soviet Foreign Policy: the Brezhnev Years* (Oxford: Oxford University Press, 1983), 65-73; Vigor, *The Soviet View of Disarmament*, 95-102.
- 9 Gerard C Smith, *Doubletalk: the Story of the First Strategic Arms Limitation Talks* (New York: Alfred A Knopf, 1980), 1, 22; 'US Foreign Policy for the 1970s: Building for Peace,' Report to the Congress by Richard Nixon, President of the United States, 25 February 1971, in *Department of State Bulletin* 64 (22 March 1971), 408-410.
- 10 For more details, see Edmonds, *Soviet Foreign Policy*, 17-19, 80-86; Smith, *Doubletalk*, 31-35; Henry Kissinger, *White House Years* (New York: George Weidenfeld and Nicolson, 1979), 171-194; Raymond L Garthoff, 'SALT and the Soviet Military,' *Problems of Communism* 24 (January-February 1975), 26; and Powaski, *March to Armageddon*, 128-129.
- 11 See Smith, *Doubletalk*, 75-107.
- 12 Smith, *Doubletalk*, 86-96, 101; Kissinger, *White House Years*, 208; *New York Times*, 18 June 1972.
- 13 Kissinger, *White House Years*, 802-803, 837, 1129, 1149-1150, 1216-1217, 802-803. In May 1972, the United States launched a major offensive against North Vietnam. This development coincided with the signing of SALT I. This time, SALT negotiations were not delayed as they did after the 1968 Soviet invasion of Czechoslovakia: for both the United States and the Soviet Union, SALT was now more important than any other foreign policy consideration.
- 14 US Arms Control and Disarmament Agency, *Documents on Disarmament 1971* (Washington, DC: ACDA, 1973), 7-11, 298, 634-641. Smith, *Doubletalk*, 223-225, 228, 233, 264-265; Seymour M Hersh, *The Price of Power: Kissinger in the White House* (New York: St Martin's Press, 1983), 536. See also Treaty between

the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems, *Department of State Bulletin*, 26 June 1972, 918-920.

15. US Congress, Senate, Committee on Foreign Relations, Hearings; *Strategic Arms Limitation Agreements* (Washington, DC: US Government Printing Office, 1972), 394, 245-271.
- 16 Alan Platt, *The United States Senate and Strategic Arms Policy, 1969-1977* (Boulder, CO: Westview Press, 1978), 26-29; US Arms Control and Disarmament Agency, *Documents on Disarmament 1972* (Washington, DC: ACDA, 1973), 546-547, 652-653; 'Remarks in the US Senate in Favour of Strategic Equality with the Soviet Union by Henry M Jackson,' in Haley, Keithly and Merrith, *Nuclear Strategy, Arms Control and the Future*, 241-246; Henry Kissinger, *Diplomacy* (New York: Simon & Schuster, 1994), 748-752. The term 'window of vulnerability' has been used frequently by critics of strategic arms control in the United States, especially by officials of the Reagan administration in its first term. It implied that the Soviet edge over the United States in ICBMs, especially heavy ballistic missiles, rendered American strategic forces vulnerable to a Soviet first-strike.
- 17 Gerald Segal, et al, *Nuclear War and Nuclear Peace* (London: MacMillan Press, 1983), 44-46.
- 18 US Arms Control and Disarmament Agency, *Documents on Disarmament 1973* (Washington, DC: ACDA, 1974), 225-231, 271-283.
- 19 US Arms Control and Disarmament Agency, *Documents on Disarmament 1974* (Washington, DC: ACDA, 1975), 746-750.
- 20 Platt, *The United States Senate and Strategic Arms Policy*, 61-62, 65; Paul H Nitze, 'Assuring Strategic Stability in an Era of Detente,' in Haley, Keithly and Merrith, *Nuclear Strategy, Arms Control and the Future*, 254-255.

- 21 For details, see F A Long, 'Should We Buy the Vladivostok Accord?', *Bulletin of the Atomic Scientists* 31 (February 1975), 5; and Thomas W Wolfe, *The SALT Experience* (Cambridge, Mass: Cambridge University Press, 1979), 199-202.
- 22 Ron Huisken, *The Cruise Missile and Arms Control*, Canberra Papers on Strategy and Defence, 20 (Canberra: Strategic and Defence Studies Centre, Australian National University, 1980), 17-49.
- 23 Inaugural Address by President Carter, January 20, 1977, *Public Papers of the Presidents of the United States: Jimmy Carter, 1977* (Washington, DC: US Government Printing Office, 1977), 1, 3; Cyrus Vance, *Hard Choices: Critical Years in America's Foreign Policy* (New York: Praeger Publishers, 1983), 52.
- 24 See, for instance, US Arms Control and Disarmament Agency, *Documents on Disarmament 1977* (Washington, DC: ACDA, 1979), 199-209.
- 25 *New York Times*, April 12, 1977; Strobe Talbott, *Endgame: the Inside Story of SALT II* (New York: Alfred A Knopf, 1979), 70.
- 26 Zbigniew Brzezinski, *Power and Principle: Memoirs of the National Security Adviser, 1977-1981* (New York: St Martin's Press, 1983), 186, 189; Vance, *Hard Choices*, 84-85, 88; Talbott, *Endgame*, 2.
- 27 For further details, see Talbott, *Endgame*, 250-252, 254; and Powaski, *March to Armageddon*, 171-174.
- 28 Vance, *Hard Choices*, 134-135.
- 29 US Congress, Senate, Committee on Foreign Relations, Hearings; *The SALT II Treaty*, 96th Cong, 1st sess (Washington, DC: US Government Printing Office, 1979), 4-81. Hereafter cited as *The SALT II Treaty*.
- 30 *Los Angeles Times*, 19 June 1979; *The SALT II Treaty*, part 1, 433-598, part 2, 372-412.
- 31 Raymond L Garthoff, *Detente and Confrontation: American-Soviet Relations from Nixon to Reagan* (Washington, DC: Brookings Institution, 1985), 828-848.

- 32 For more details, see Vance, *Hard Choices*, 314-333, 368-383, 398-413.
- 33 Vance, *Hard Choices*, 386-388; Garthoff, *Detente and Confrontation*, 887-937.
- 34 Powaski, *March to Armageddon*, 184; Address by Reagan, 8 March 1983, *Public Papers of the Presidents of the United States: Ronald W Reagan, 1983* (Washington, DC: US Government Printing Office, 1984), 363; Reagan's news conference, 29 January 1981, *Public Papers of the Presidents of the United States: Ronald W Reagan, 1981* (Washington, DC: US Government Printing Office, 1982), 57.

Chapter 2

Negotiating START: the Difficult Days

SALT I and SALT II were arms control agreements and not arms reduction treaties. The SALT I Interim Agreement only required the United States and the Soviet Union not to go beyond the number of offensive strategic weapons each of them already possessed. The ABM treaty, as part of the SALT I agreements, limited the deployment of their ballistic missile defence systems. The Interim Agreement emphasised only quantitative, not qualitative, aspect of limitations. The result was a new, and even more dangerous, form of strategic arms race---in the sphere of ballistic missiles with multiple warheads, the MIRVs. As regards SALT II, it did include some provisions to limit the qualitative aspect of strategic armaments. But it did so not as drastically as it should have, given the extent to which the two sides had upgraded their strategic weapons potential qualitatively since the coming into force of the SALT I agreements. In addition---as the experience with SALT I had shown---for strategic arms control to be a smooth-sailing affair, the political relationship between the United States and the Soviet Union had to be one of peaceful coexistence. But events happening across the world in late seventies---in quick succession and culminating into the Soviet invasion of Afghanistan---made it clear that this was not the case. Consequently, the SALT II treaty was not ratified. All this, however, did not mean that leaders of the United States and the Soviet Union had abandoned their mutual quest for limiting strategic weapons. In fact, the SALT had set the pace of strategic arms control, which helped the two sides accomplish what the two SALT treaties could not. And that they did through Strategic Arms Reduction Talks---a long, complex and cumbersome process aimed at drastic cuts in strategic arms. ¹

With the dawn of eighties, strategic weapons possessed by the United States and the Soviet Union posed a potential danger to the security and survival of not only these two

powers but also to that of the entire world. They had more lethality, accuracy and range than before. In the American superiority in SLBMs and long-range bombers, the Soviets saw the risk of a first-strike; and, for the United States, the Soviet edge in ICBMs, especially heavy ballistic missiles like the 10-warhead SS-18s, created a 'window of vulnerability.' With the 'over-kill' capability that the two sides had acquired by then, in the case of a nuclear exchange, the whole world could be destroyed more than once. Why the two countries should waste so much crucial economic resources on nuclear armaments when deterrence between them could be maintained credibly at far lower levels of strategic arms. Guided by such perceptions, leaders of the two sides, therefore, realised that what was needed was not just a treaty that would merely limit the number of strategic forces and their qualitative improvement but an agreement that would reduce the number of each side's strategic arsenal drastically and place significant checks on their qualitative improvement.

In a speech in May 1982 at Eureka College, President Reagan announced that the United States and the Soviet Union would resume negotiations on strategic arms limitation---which were renamed as START---on June 29 in Geneva. He further stated that the major arms control objective of his administration would be to 'reduce significantly the most destabilising systems: ballistic missiles, the number of warheads they carry and their over all destructive potential.' It had taken the Reagan administration over one year after taking office to offer the Soviets a START proposal---much longer than either Mr Nixon, Mr Ford or Mr Carter had waited after entering the White House before submitting a SALT offer. The reason for this delay was that Presidents Reagan was more interested in deploying additional nuclear weapons than in dismantling them. ²

Heart of the matter

From June 1982 to December 1983, five rounds of START negotiations were held in Geneva. During this period, arms control negotiators from the United States and the

Soviet Union presented various START proposals. From these proposals, it was evident that each side wanted the other to make deep reductions in the best strategic system it had. At the same time, each side wanted to retain its own best. Thus, from the beginning, it was clear that START negotiations would not be easy to conclude.

At the core of the US-Soviet face-off were significantly different political and geographical realities. As a virtual island in the Western Hemisphere, the United States had to project its military power across the oceans and to protect its interests in Europe and Asia. Therefore, bombers and sea-based strategic forces formed the core of the American strategic nuclear triad. But, for the Soviet Union, it was impossible, both politically and financially, to do so. Moreover, its access to warm waters was limited. Therefore, much of the Soviet effort in strategic armaments was spent on developing and modernising land-based strategic forces. Land-based ballistic missiles, particularly heavy MIRVed ICBMs, made the backbone of the Soviet strategic arsenal. The Soviets considered American SLBMs and heavy bombers first-strike weapons. The Americans considered Soviet ICBMs, particularly MIRVed ICBMs, first-strike weapons. And each side wanted to reduce drastically the key forces of the other's strategic nuclear triad: the Americans targeted Soviet land-based ICBMs, especially heavy ballistic missiles, and throw-weight; the Soviets targeted American SLBMs, bombers and cruise missiles.³

The United States initially proposed a two-phase START process. In the first phase, it proposed around 50 per cent cuts in each side's ballistic missile force---that is, up to 5,000 warheads on 850 launchers, with no more than half of the warheads on ICBMs. The United States proposed a limit of 210 MIRVed ICBMs with four or more warheads, and a sub-limit of 110 heavy ICBMs, the SS-18s. These reductions were to be carried out in over five-to-ten-year period. In the second phase of talks, the United States tried to balance missile throw-weight at a ceiling of about 4 million pounds. Since the total American throw-weight was then about 4.2 million pounds and the Soviet Union's was about 11.2 million pounds, the Soviets were clearly required to make a much larger

reduction. The American proposal did not include any limit on long-range bombers and cruise missiles. ⁴

American START negotiators, thus, sought to reduce Soviet capabilities that were viewed as most threatening to the United States, particularly Soviet advantages in heavy missiles and throw-weight. In SALT I, the United States and the Soviet Union had used launchers as the basic counting unit; in START, the United States sought to use missiles, throw-weight and warheads as counting units. This approach had serious consequences for the key Soviet arsenal, MIRVed ICBMs. The reason the American proposal did not include long-range bombers in the first phase of reductions was that long-range bombers, which the United States possessed at that time, carried about 3,000 nuclear weapons as compared to less than 300 carried by those of the Soviet Union. Excluding cruise missiles in the proposal protected another area of American technological superiority. Finally, arms control constraints called for in the American proposal would not have had much effect on the Reagan administration's strategic weapons modernisation programme. The United States would have remained free to deploy the B-1 bomber, the MX, Trident II, as well as cruise and Pershing II missiles. ⁵

Soviet negotiators rejected the American proposal on the grounds that it was disadvantageous to the Soviet Union: it called for disproportionate reductions precisely in those weapon categories in which the Soviets had an advantage, and proposed insignificant or no limits on weapons in which the United States had an advantage. It would have required the Soviets to scrap about 1,500 strategic missiles, as compared to about 850 for the United States. The proposed reduction in land-based ICBM warheads to no more than 2,500 also would have hurt the Soviet Union more than the United States. The United States was at that time already 350 warheads below the proposed ceiling. The Soviet Union, on the other hand, was some 3,400 warheads above it. Moreover, the American proposal would have left the Soviets with about 400 MIRVed ICBMs, as compared to their existing level of 818. ⁶

After rejecting the American proposal, Soviet leader Brezhnev counter-proposed a nuclear freeze---which, he said, should apply both to the number of weapons and to the modernisation of existing weapons. Later, in mid-1982, Soviet negotiators at Geneva tabled a proposal that would not only have preserved the structure of SALT II but would also have reduced launcher ceilings and sub-ceilings. This proposal was similar to what the Soviets would have offered in SALT III, had the SALT II treaty been ratified. The Soviet proposal called for reductions to a level of 1,800 strategic nuclear delivery vehicles, unspecified limits on the total number of nuclear weapons---including cruise missiles and bombers---and modest reductions in SALT II MIRV sub-limits. ⁷

The Soviet proposal was unacceptable to the United States for four reasons. First, the freeze proposal would have left the Soviet ICBM advantage intact, while preventing the introduction of any new American nuclear weapon systems. Second, like SALT, it used launchers as the principal counting unit rather than missile warheads. Third, the proposal did not include any provision for limiting the ballistic missile throw-weight, thereby retaining the Soviet advantage in it. Finally, the proposal was linked to the cancellation of American plans to deploy Pershing II and Tomahawk intermediate-range nuclear missiles in Western Europe, which the Soviets considered 'strategic' because they could reach targets in the Soviet territory. ⁸

START goes nowhere

By the beginning of 1983, it was apparent that START was going nowhere. The US Congress had grown impatient with the delay, and some of its members accused the Reagan administration of scuttling the talks deliberately. Congressional criticism of the administration's strategic modernisation programme, particularly the MX build-up, intensified. The administration was thus forced to make its START stand flexible. In June 1983, President Reagan offered that the United States would retain the proposed ceiling of 5,000 on the number of missile warheads, but would raise its proposed limit of

850 deployed ballistic missiles to 1,200---the number favoured by the Soviets---so that both sides have the option and incentive to restructure their forces over the long run in the direction of smaller and less vulnerable single-warhead ICBMs. The United States also withdrew its previous demand that the Soviet Union should reduce its throw-weight advantage to the American level. Instead, it required that the Soviet advantage should be reduced only substantially. The new American proposal called for equal limits below SALT II levels on the number of long-range bombers and the number of air-launched cruise missiles allowed on each bomber. ⁹

The Soviets rejected Mr Reagan's proposal, and presented their own in July 1983. The new Soviet proposal called for a phased reduction by 1990 of strategic nuclear delivery vehicles to a ceiling of 1,800 for each side. Within that figure were a number of sub-limits. One limited each side to a combined total of 1,200 MIRVed ICBMs, MIRVed SLBMs and strategic bombers armed with cruise missiles. While the Soviet proposal would have sharply reduced the number of its own MIRVed ICBMs, it would still have left the Soviet Union with more than 7,000 ICBM warheads, as compared to the 2,500 limited proposed by the United States. Additionally, the Soviet proposal was once again contingent on the cancellation of American intermediate-range nuclear force deployments in Western Europe. All this was unacceptable to the United States. ¹⁰

In October 1983, the fifth round of START negotiations began in Geneva. This time, American negotiators presented an altogether a new formula for strategic arms reductions. Called the 'build-down plan', the new American proposal required the retiring of two warheads for each new warhead deployed on MIRVed ICBMs, three warhead requirements for every two new warheads deployed on MIRVed SLBMs, and a one-for-one replacement for each new warhead deployed on any single warhead missile. In addition, both sides were required to reduce their arsenals of ballistic warheads by a minimum of five per cent for ten years until they both reached a level of 5,000 warheads. The Soviets rejected the build-down plan as well. Terming it 'trickery', an editorial in

Pravda accused the Reagan administration of attempting to force the Soviets to dismantle their MIRVed ICBMs and to replace them with single-warhead ICBMs and SLBMs. In exchange, the Soviet official newspaper wrote, the United States would only scrap its obsolescent B-52 bombers. ¹¹

Perhaps, the reason for the Soviet rejection of the build-down idea was as much a result of poor timing as it was a product of what the Soviets considered a flawed concept. The plan was offered not long after the Soviet air force in September 1983 shot down a Korean airliner; which the Soviets claimed was on a spying mission for the United States, a charge the Reagan administration denied. In the wake of the incident, US-Soviet relations deteriorated sharply. Then, in November 1983, the United States began deploying intermediate-range nuclear forces in Western Europe. The Soviets were deeply concerned about these deployments because one of the INF systems being deployed in West Germany, the Pershing II, could reach the Soviet Union in five minutes---giving the United States a potential first-strike capability against the Soviet Union. In the Soviet view, therefore, Pershing IIs were strategic systems. In December, American INF deployments began. The same month, the fifth round of START negotiations ended, with the Soviets refusing to set a date for their resumption. START had stalled. ¹²

During the fifteen months long stalemate over START, from November 1983 to January 1985, neither the United States nor the Soviet Union made any strategic arms reduction proposal. Each side accused the other of the impasse in negotiations. In April 1984, partly in reaction to the break-down of the arms control talks, and partly in retaliation for the withdrawal of the United States from the Moscow Olympics in 1980, the Soviets announced that they would not participate in the Los Angeles games during the summer of 1984. With US-Soviet relations at a new low, the prospects for any meaningful nuclear arms control in the near future appeared bleak. ¹³

After SDI, a fresh start

In January 1985, US Secretary of State George P Shultz and Soviet Foreign Minister Gromyko signed an agreement to resume arms control negotiations on three separate but related issues: INF, START, and defence and space weapons. These were called the Nuclear and Space Arms Talks. Mr Gromyko also dropped the Soviet demand that the United States should withdraw its Pershing IIs and Tomahawk cruise missiles from Western Europe. The Soviets had opted out of START negotiations primarily in reaction to American INF deployments in Europe. In early 1985, not only were these deployments intact, more were to follow as well. What forced the Soviets to return to negotiations? The foremost reason was President Reagan's Strategic Defence Initiative of March 1983. Popularly known as the Star Wars programme, the SDI aimed at developing space-based ballistic missile defence systems that would render 'incoming' Soviet offensive nuclear weapons 'impotent and obsolete.' The Soviets feared that, after successfully developing such a ballistic missile defence system, the United States would achieve strategic superiority over the Soviet Union: with a nuclear shield thus obtained, the United States would be invulnerable to a Soviet retaliatory strike and, thus, in a position to strike first against the Soviet Union. To counter the perceived threat from the yet-to-be tested SDI, the Soviets had two alternatives: either develop a parallel BMD system or prevent the development of SDI through negotiations. They chose the latter course. ¹⁴

When the first round of Nuclear and Space Arms Talks began in March 1985, both the United States and the Soviet Union had not yet changed their START positions significantly. However, the same month, a new leadership emerged in the Soviet Union. Mikhail Gorbachev succeeded Mr Chernynko. With Mr Gorbachev in power, arms control received a major boost: thereafter, the Soviet side was never as rigid on any issue stalling strategic arms reduction talks as it had been in the past. In August, Mr Gorbachev declared a unilateral moratorium on nuclear testing. ¹⁵

By September, the Soviets had accepted many of the points in previous American proposals on strategic arms cuts. They proposed a 50 per cent reduction in ballistic missiles and long-range bombers, and called for a ceiling of 6,000 on the number of strategic nuclear warheads on each side. Of these, no more than 3,600 could be on land-based ICBMs. The Soviets, however, linked these reductions to a ban on space-based arms, long-range cruise missiles and new nuclear delivery systems. Although unacceptable to the United States, these proposals did pave the way for further negotiations. In November, the United States proposed that each side should be allowed a combined limit of 4,500 ICBM and SLBM warheads. Of this number, only 3,000 warheads could be placed on ICBMs. This was above the 2,500 figure originally proposed by the United States. The number for bombers and cruise missiles proposed by the United States were far less than before. ¹⁶

In November 1985, President Reagan and Mr Gorbachev held their first summit meeting at Geneva. During the summit, no significant progress was achieved on any of the major arms control issues. Mr Reagan refused to budge on the SDI. Consequently, Mr Gorbachev made no further concessions on START reductions. The two leaders were, however, able to explain to each other their views on these issues and, thus, reach a level of understanding that could facilitate future progress in strategic arms reduction negotiations. Both agreed that the United States and the Soviet Union should work towards 50 per cent reduction in strategic nuclear forces. And they agreed to meet again in 1986 and 1987. ¹⁷

Realising that nuclear arms talks were again going nowhere, Mr Gorbachev made a dramatic proposal on 15 January 1986. It called for a three-stage plan to achieve total nuclear disarmament by the year 2000. In the first stage, lasting five to eight years, the United States and the Soviet Union were required to reduce by 50 per cent their strategic nuclear weapons and agree on zero intermediate-range nuclear forces in Europe--- provided the United States was willing to limit research on space-based weapons. The

remaining strategic nuclear delivery vehicles were to carry no more than 6,000 warheads. In the second stage, beginning in 1990 and lasting no more than five to seven years, the United States and the Soviet Union were required to dismantle their tactical nuclear weapons. At the same time, other nuclear powers were required to engage in nuclear disarmament. In the final stage, beginning in 1995, the world's remaining nuclear weapons were to be eliminated. ¹⁸

Gorbachev's 'new thinking'

Ever since becoming the Soviet leader, Mr Gorbachev had revolutionised the foreign policy outlook of the Soviet Union. And his January 1986 proposal of nuclear disarmament was part of his 'new thinking,' whose main principles were made public at the 27th Soviet Communist Party Congress in February 1986. According to this new Soviet approach, victory in war was not possible. Therefore, national security could be ensured only by political, not military, means. In addition, such a security could not be achieved without taking into account of one's own interests and those of the adversary. And all this was possible only through vigorous arms control. In fact, Mr Gorbachev sensed the scale of the plight into which his country had fallen, due in part to over-commitment to military expenditure. ¹⁹

What started with Mr Gorbachev's January proposal was a series of arms control overtures by the Soviet Union. In May, for instance, the Soviets agreed to drop their earlier demand that American forward-based systems in Europe should be included in a strategic arms agreement. They also dropped their demand that all sea-launched cruise missiles with ranges of more than 592 kilometres should be banned. These Soviet concessions put the American side in a dilemma. How should it respond? The Reagan administration was divided: the State Department reacted favourably to these concessions, a move which was opposed both by the Department of Defence and the Arms Control and Disarmament Agency. In July, President Reagan offered to delay the

deployment of SDI for seven and a half years if the Soviets agreed to allow it after this interval. While the United States would not deploy SDI during this period, Mr Reagan's proposal would allow both sides to proceed with research, development and testing of space-based defence technologies. ²⁰

While Mr Gorbachev was intensifying the Soviet negotiation effort, the Reagan administration came under increasing pressure from the Congress. In August 1986, the House of Representatives passed a bill that not only appropriated \$ 33 billion less for defence than President Reagan wanted, but also required continued adherence to numerical limits on launchers and warheads set in the unratified SALT II treaty. The administration had earlier in the year threatened not to abide by SALT II limits while citing alleged Soviet violations of treaty limits. ²¹

Reykjavik summit and after

It was in this backdrop that President Reagan and Mr Gorbachev met at Reykjavik, Iceland, on 10-11 October 1986. The summit took Mr Reagan by surprise: he had not expected that the Soviet leader would discuss with him some of the most dramatic proposals ever presented during the nuclear age. Rather than simply discussing generalities, Mr Gorbachev presented specific proposals, marked by significant Soviet concessions, in the areas of START, INF and nuclear testing. At the summit, arms control negotiators from both sides developed the START framework, which called for a reduction to 1,600 of strategic nuclear delivery vehicles, a ceiling of 6,000 on ICBMs, SLBMs and air-launched cruise missile warheads. SLCMs were to be limited separately from the 6,000 ceiling. These reductions were to be completed during a five-year period. However, neither side could agree on what would transpire in the second five years of the proposed ten-year agreement. President Reagan suggested that both sides should eliminate all offensive ballistic missiles, leaving only cruise missiles and bombers to

comprise their strategic deterrent forces. Mr Gorbachev, however, favoured the elimination of all long-range nuclear weapons, including bombers and cruise missiles. ²²

But, like the Geneva summit, Reykjavik fell apart over SDI. On the last day of the summit, Mr Gorbachev insisted that all the concessions he had made were linked to American adherence to a strict interpretation of the ABM treaty. He insisted that there should be no testing and development of a ballistic missile defence system, and that BMD research should be confined to the laboratory. President Reagan also rejected Mr Gorbachev's interpretation of the ABM treaty. Instead, he announced the American decision to abide by the ABM treaty for an additional ten years---instead of the previously proposed seven and a half years period. Mr Reagan favoured a much looser interpretation of the treaty that would allow extensive BMD testing and development outside the laboratory. At Reykjavik, although no agreement was signed on the most radical arms control proposals of the nuclear history, both sides agreed on the basic START framework; which, in itself, was quite an achievement. ²³

In December 1987, President Reagan and Mr Gorbachev held their third summit in Washington and signed the INF treaty to eliminate US-Soviet intermediate-range and shorter-range missiles in Europe. They also issued a statement indicating the agreed framework of the START treaty, which called for a ceiling of 6,000 warheads on 1,600 launchers with a sub-limit of 4,900 warheads on ballistic missiles. Barring a few outstanding issues, the two sides were very close to reaching a START agreement at the Washington summit. Even before the summit, American and Soviet leaders had indicated that START, not INF, was the more ambitious goal. The total elimination of US-Soviet intermediate-range nuclear forces was to be a 'fine prelude', as Gorbachev called it, to the real thing: an agreement to reduce by half their strategic forces. ²⁴

Although signing of INF treaty was a boost for strategic arms control, concluding a START agreement was a difficult task: both sides still had to settle many crucial issues; and President Reagan and Mr Gorbachev failed to do so at their Moscow summit, held in

May-June 1988. The START framework, that had been negotiated in December 1987, continued to be the basis of an agreement. By this time, however, US-Soviet relations had come a long way since early eighties when, following the September 1983 shooting down of the Korean airliner, they had deteriorated to a state that was reminiscent of the cold war. And, with his revolutionary outlook on Soviet foreign affairs and its reflection through successive Soviet arms control overtures, Mr Gorbachev shared much of the credit for accelerating the pace of accommodation in US-Soviet relations. What contributed mostly to this improving relationship were his summit meetings with President Reagan at Geneva, Reykjavik and Washington. Though the Moscow summit was not a turning point in US-Soviet relations, it helped accelerate the momentum of what had become an institutionalised US-Soviet summitry.²⁵

Following the summit, negotiations in Geneva focused on six main areas: mobile missiles, SLCMs, ALCMs, ICBM warhead sub-limits, strategic defences, and verification. In each of these areas, important details were agreed---but significant differences remained. These could not be narrowed down in remaining months of the Reagan administration; the task was passed on to the next administration. As START negotiations recessed in late 1988, due to American presidential elections, the two sides had agreed to a 350-page joint draft text for a START treaty. Almost similar to the previously agreed START framework, the salient features of this text were: a ceiling of 1,600 on strategic nuclear delivery vehicles for each side, to include deployed ICBMs, deployed SLBMs, and heavy bombers; a ceiling of 6,000 on deployed strategic nuclear warheads, with SLCMs excluded from this ceiling; a sublimit of 4,900 on ballistic missile warheads; a 50 per cent cut in Soviet heavy ballistic missiles and in over all missile throw-weight; new delivery counting rules for ballistic missile warheads and strategic bombers; and intrusive short notice on-site inspection of suspect sites.²⁶

Unresolved START issues

By the end of 1988, not only the START treaty's draft text was ready, the specifics of unresolved issues in START negotiations could also be identified. First, on the issue of mobile missiles, the United States had proposed in November 1985 that the deployment of these missiles should be banned unless the Soviet Union showed how such deployments could be verified effectively. The Soviet Union, which was then beginning to deploy two mobile missiles---the single warhead, road-mobile SS-25 and the 10-warhead, rail-mobile SS-24---argued instead that their deployment should not be affected by the terms of any agreement. By 1988, the Soviets had deployed these two mobile ICBMs. With the American position on mobile missiles remaining the same, the Soviets now suggested a limit of 800 mobile missiles with a total of no more than 1,600 warheads. ²⁷

At the 1988 Moscow summit, the two sides worked out important elements of a possible regime for verifying mobile ICBMs. For instance, they agreed that road-mobile and rail mobile ICBMs would be based in agreed areas of limited size. An agreed percentage of the mobile force would be permitted outside these restricted areas at all times. Dispersals involving higher percentage would also be permitted. A number of important issues, however, remained unresolved. These included the size of restricted deployment areas, which the United States sought to limit to 25 square kilometres and the Soviet Union to 100 sq km. Exactly which production facilities associated with the mobile missile force should be subject to permanent portal monitoring, also remained in dispute. Finally, there was the issue of how to verify the absence of a 'covert' missile force. Because each side would retain a large number of non-deployed missiles, it would be difficult to ensure that these could not be used as a potential means of breaking out of treaty limits. Both sides agreed to negotiate limits on the number of non-deployed missiles, but neither numerical limits nor strict verification procedures were agreed. ²⁸

On the second unresolved START issue, concerning sea-launched cruise missiles, the United States and the Soviet Union had agreed at the 1987 Washington summit that long-range- nuclear SLCMs should be limited by the START treaty----although such limits should fall outside the ceilings of 1,600 delivery vehicles and 6,000 accountable warheads. In view of the difficulty of verifying the distinction between conventional and nuclear SLCMs, the Soviet Union proposed that all SLCMs should be limited to 1,000, and that their deployment aboard specific classes of ships and submarines should be restricted. Rejecting this proposal, the United States argued that a treaty limiting strategic offensive nuclear arms should not affect the deployment of non-nuclear weapons. In March 1988, the Soviet Union proposed a verification package which addressed some of the American concerns but did not settle the issue. The Soviet proposal included permanent, on-site inspection of cruise missile production sites and controls on transporting the missiles to deployment areas. The United States, however, remained skeptical of the prospects for effective verification of SLCM limits because of the small size of the weapons and the ease with which they could be hidden on large ships in violation of the treaty. There was also the question of devising an adequate verification regime which would be able to distinguish between conventional and nuclear SLCMs. 29

The third obstacle to START agreement concerned air-launched cruise missiles. While both sides had agreed to include ALCMs in the over all warhead ceiling----counting each missile as one warhead----three issues were still not settled. One, how many of these missiles to attribute, for the purpose of verification, to each ALCM-configured bomber. The United States proposed that the number should be six per bomber. The Soviet Union argued it should be linked to the type of aircraft. The second issue was, how to verify the ALCMs. Because the ALCMs could be carried inside the bomb-bay, distinguishing between ALCM-carrying and other bombers was to make verification much more difficult. The final problem was, how to differentiate the limited ALCMs from the unlimited, stand-off missiles on aircraft. Of the three, the latter

problem was to be more difficult to sort out, since it concerned the difficult question of when an ALCM was a tactical weapon and when it was strategic. The Soviet Union insisted on the range limit that had been used in the SALT II treaty: every cruise missile with a range above 600 km should be counted as strategic. The United States, on the other hand, sought the much higher range ceiling of 1,500 km. At the Moscow summit, the United States and the Soviet Union agreed that all existing long-range ALCMs on bombers would be made 'distinguishable' from their nuclear counterparts. How this would be done, was not agreed. ³⁰

Determining ICBM warhead sub-limits posed the fourth problem in START negotiations. Given the advantages that ICBMs enjoyed as first-strike weapons----with their highest alert rates, speed and reliability of communications----the United States insisted on a sub-limit of 3,300 ICBM warheads. While indicating that it would not exceed 3,300 ICBM warheads even in the absence of such a ceiling, however, the Soviet Union disagreed with the United States. It argued that ICBMs should not be singled out as more destabilising than any other systems. The Soviets said that they could accept the 3,300 figure only if it was applied separately to SLBM and ICBM warheads. The United States rejected this idea, since it would have constrained American flexibility in deploying SLBMs. Moreover, it contradicted the American view that ICBMs were more destabilising than SLBMs. Both sides, however, indicated that there could well be fewer than the originally envisaged 3,300 ICBM warheads. If this were to be the case, then the over all ceiling for warheads on ballistic delivery vehicles of 4,900, which was agreed at the Washington summit, could offer a margin of flexibility. Thus, no longer was START an attempt to fundamentally restructure the nuclear arsenal. The aim was now to achieve limitations which would be acceptable to both sides, because they would not curtail the options which each regarded as essential for its deterrent. Once that became acceptable, the task of START negotiators was no longer to compromise incompatible principles but to spell out, on the basis of agreed principles, limitations they regarded as acceptable. ³¹

Strategic defences and verification

The last two unresolved START issues in 1988, which had stalled negotiations the most, were strategic defences and verification. Since the launching of SDI in March 1983, the linkage between strategic defences and START had proved to be the most contentious issue. Here the differences were not merely ones of detail but of basic philosophy. The Soviet position had consistently been that reductions in offensive nuclear forces could be agreed only if, and when, the future strategic defensive climate was predictable. This required that any agreement on offensive forces should be accompanied by negotiated limits on the research, development, testing and deployment of strategic defences. The American argument was quite the opposite: that, because their purpose was to diminish the utility of ballistic missiles, strategic defence deployments did not detract from negotiated offensive reductions. The Soviets insisted that no agreement could be signed unless the issue of strategic defences was addressed. The United States, however, maintained that the issue was covered under the ABM treaty and had, therefore, already been addressed. ³²

For all the head way made on other START issues, it was this basic difference over the future of strategic defences that appeared time and again to block an agreement. The factors dividing the two sides were the length of the period during which each side would agree not to withdraw from the ABM treaty; what would happen after that period had elapsed; and, finally, what form research and testing would take during the non-withdrawal period. At Reykjavik, both sides had agreed on a ten-year non-withdrawal period; although the Americans linked it to a phased progress towards complete elimination of all ballistic missiles during the period. Disagreement over what would happen afterwards, and what kind of testing would be allowed during these ten years, had led to the collapse of the summit. Immediately after Reykjavik, the United States reverted to an earlier position: the non-withdrawal period should end in 1994, when the

United States hoped it would be ready to deploy the first phase of the SDI. This position was included in the American draft treaty on strategic defences tabled in Geneva in January 1988. The Soviet Union continued to insist that the non-withdrawal period should be at least ten years. ³³

On the second issue----what would happen once the non-withdrawal period had elapsed---- the United States continued to insist that each side should be able to deploy strategic defences once the period ended; whereas the Soviet Union argued that both sides should continue to adhere to the terms of the ABM treaty. At the Washington summit, it was agreed that intensive discussions on strategic stability should begin not later than three years before the end of the specified withdrawal period, after which----in the event the sides had not agreed otherwise---each side would be free to decide its course of action.' However, since both sides also agreed to adhere to the terms of the ABM treaty, which is of unlimited duration, this meant that either could only withdraw from the treaty after giving six months notice. This position was included in the American draft treaty tabled in January 1988. ³⁴

Finally, on the issue of what form SDI testing could take during the non-withdrawal period; at Reykjavik, Mr Gorbachev had rejected President Reagan's proposal that, during the period, each side should be free to test ballistic missile defences in space. The Soviets argued that, while laboratory research and testing of 'elements' could be allowed, any testing of space elements outside the laboratory should be banned. US-Soviet disagreements on this issue were, in fact, derived from the conflicting 'broad' and 'narrow' interpretations of the ABM treaty. The 'broad' interpretation, championed by the Reagan administration, maintained that full-scale space testing of strategic defence components based on 'new physical principles' was allowed under the ABM treaty. The 'narrow' interpretation, which the Soviets adhered to, argued that Article V of the Treaty banned the development and testing of any mobile, sea-, air- or space-based ABM system or component. ³⁵

Throughout much of 1987, while the Soviet Union was moving towards a compromise on the issue, the United States remained firm on its previous position on space testing. In April, the Soviet Union dropped its restrictive interpretation by accepting that strategic defence testing could be allowed on the ground at designated ABM test ranges. In September, it went further by proposing to allow some space-based experiments, so long as they did not exceed specified performance parameters. The issue was largely prepared over at the Washington summit, where the original Soviet proposal was for adherence to the ABM treaty as 'signed and ratified.' Ultimately, it was agreed to adhere to the treaty 'as signed', while allowing research, development and testing 'as required'. That the issue had not been settled, became clear immediately after the summit---when President Reagan stated that the reference to testing 'as required' meant that the Soviet Union had accepted the American definition of what kind of testing would be allowed. The Soviet Union protested that it had agreed to no such interpretation of the ABM treaty. It was, therefore, clear that the issue of strategic defence testing continued to present a real obstacle to any START agreement. The United States reiterated its position in its January 1988 draft treaty, which incorporated the 'broad' interpretation of the ABM treaty's testing provision. ³⁶

The United States also seemed to link progress on START to Soviet actions in the sphere of strategic defences. The Soviet Union had built a phased-array radar at Krasnoyarsk in central Siberia. Considering it a violation of the ABM treaty, the United States linked signing of the START treaty to the destruction of Krasnoyarsk radar. By no means then, the central question in 1988 was: could the two sides find a solution to the problem which had overshadowed START negotiations since 1983, the problem of strategic defences in space? It was not yet clear how the gap between the confirmation of the ABM treaty, as demanded by the Soviet Union, and moving away from it, as proposed by the United States, would be bridged. ³⁷

Lessons of the INF treaty

Besides strategic defences, another stumbling block in START negotiations concerned verification. By this time, the United States and the Soviet Union had agreed in principle on intrusive verification measures, including on-site inspections. Therefore, it was no longer a dispute over principle but one over the best way to ensure that provisions of the START treaty could be verified adequately. The breakthrough came in the wake of the INF treaty. Significantly, the rules of how to ensure that the ban on all intermediate-range nuclear forces would be observed, were negotiated by both sides in the knowledge that they were creating a precedent for a START treaty. Yet, there were three important and potentially complicating differences with the INF rule. One, in a START treaty, not only delivery vehicles but also warheads and throw-weight were to be the units of account. Two, START negotiations were dealing with the much more challenging circumstances in which a whole range of weapons----not just one or two weapon categories----were to be reduced, rather than eliminated. Verification of a START agreement was, therefore, much more demanding. It was necessary not only to verify the precise levels of forces existing at any given moment, but also to distinguish deployments that were permitted from those which were not. Warheads were easier to hide than missiles. In addition, peculiar verification problems were associated with SLCMs, ALCMs and mobile missiles. Finally, under START, the production and deployment infrastructure of strategic forces was to remain intact, and the testing of weapons was to be permitted----thus providing both the industrial and operational avenues for the rapid expansion of forces beyond the limits of an agreement. ³⁸

At the Washington summit, both sides agreed to such INF-derived provisions as data exchanges on the number, characteristics and location of nuclear systems to be reduced; baseline inspections to verify the data; on-site inspection of the elimination of systems; continuous on-site monitoring of the perimeters and portals of critical production and support facilities; and challenge inspections of declared facilities. They went further than

the INF measures by accepting short-notice challenge inspections of suspect sites; a prohibition of concealment or other activities impeding verification by national technical means, including a ban on the encryption of missile flight test telemetry; and measures to enhance the observation of facilities related to an agreement, including open display on demand of treaty-limited items at missile bases, bomber bases, and submarine ports. ³⁹

What the two sides had not agreed yet, included: means of counting, and distinguishing between, conventional and nuclear SLCM, and of differentiating between ALCM-carrying and non-ALCM-carrying bombers; ways to verify that no more than the declared number of re-entry vehicles were deployed on a given missile; and methods of verifying with adequate confidence the number of mobile missiles actually deployed. An important problem was posed by the issue of on-site challenge inspection of suspect sites. Although agreed in principle at the Washington summit, such inspections could trouble both sides: each side could inspect any facilities of the other on demand. In October 1988, the United States had proposed that each side should have the right of challenge inspections at designated sites, including installations associated with the production of rocket motors for solid-fuel missiles. In addition, each side could request inspection of an undeclared site, but the other side could refuse this if it could explain its reasons and take actions that could alleviate concerns about non-compliance. In the end, however, the United States settled for considerably less than the 'anywhere, anytime' challenge inspections. ⁴⁰

When George Bush's administration took office in January 1989, it inherited from the Reagan administration a US-Soviet joint draft text of the START treaty----whose detailed provisions, including on verification and other critical issues, required considerable additional work. START negotiations, however, could not resume for months, as the administration remained busy conducting a strategic review. It was not until September, when US Secretary of State James Baker and Soviet Foreign Minister Eduard Shevardnadze met at Wyoming, that START negotiations made head way. The

Soviets decided to delink an agreement on reduction of strategic offensive nuclear weapons from resolution of the issue of space-based defences against ballistic missiles. They also accepted many of the American proposals for verification, including trial inspection of long-range bombers. The Soviets agreed to dismantle, without preconditions, the Krasnoyarsk radar. For its part, the United States withdrew its proposed ban on mobile ICBMs. While the agreement on these issues was a major achievement, some other significant issues still had to be settled. For example, although the Soviet Union agreed to address limits on SLCMs in a separate agreement, the United States continued to oppose SLCM limits. Instead, it favoured declaration of the number of deployed SLCMs. ⁴¹

The cold war ends

While---by the time 1990s began---strategic arms control negotiators were following an agenda devised in the early eighties; the security environment which had defined the arms control began to undergo radical changes. Due primarily to changes in the Soviet Union, the cold war came to an end. Mr Gorbachev renounced the long-standing Soviet commitment to global communist revolutions. By the end of 1991, western Europe was no longer a part of the Soviet empire, the Warsaw Pact had dissolved, Germany unified, and the treaty on Conventional Armed Forces (CFE) in Europe----curtailing severely the Soviet potential for a conventional attack in Europe----concluded. In short, the Soviet threat, as the world had come to know it, had disappeared. These cataclysmic changes in global politics were to speed up START, but only after a transitional phase. ⁴²

During this period, START negotiations proceeded seemingly untouched by the changing political and security context primarily due to three reasons One, by the time the cold war ended, many of the treaty provisions were already in place. START was following an agenda as it had emerged from the basic negotiating approach. Therefore, renegotiating the existing treaty draft would have delayed the process. Two, with the end

of the cold war, arms control ceased to be the primary determinant of the US-Soviet relationship. For both sides, the political agenda broadened, making START not an unimportant but a less immediate concern. Three, once issues like strategic defences got settled, the START negotiations became embroiled in small technical matters. The political marginalisation of START itself gave prominence to minor technical issues. ⁴³

In addition, 1991 began with a promise of further delays in START. The Gulf war and the use of force by the Soviet Union in its Baltic republics led to postponement of the Moscow summit between President Bush and Mr Gorbachev scheduled for February. Meanwhile, disagreements over CFE treaty also emerged between the Soviet Union and other signatories to the CFE treaty. Until the Soviet Union alleviated these concerns, the United States put START negotiations on hold. What was apparent by this time was the fact that it had simply taken too long to finalise the START treaty. There would always be another technical issue to be settled, and another international event diverting top-level attention from START negotiations or making them hostage to the settlement of other issues. What the negotiations needed, but had not been receiving since the end of 1989, was an unambiguous political message from leaders of the two sides that they should be concluded. When the message came, it took less than six weeks to agree on outstanding issues. ⁴⁴

Quick march to START I

On 7 June 1991, US Secretary of State James Baker and Soviet Foreign Minister Bessmertnykh met in Geneva, and again in Berlin on 20 June. Between 26 June and 2 July, START negotiators from both sides also met in Geneva. On 6 July, President Bush asked Mr Gorbachev to push for progress in the negotiations and send a high-level Soviet delegation to Washington. That delegation, led by the Soviet Foreign Minister, and Chief of the Soviet General Staff General Mikhail Moiseyev, met American arms control officials on 11-14 July. On 17 July, after their meeting at the Group of Seven (G7)

summit in London, President Bush and Mr Gorbachev announced that the START treaty was ready and would be signed at a US-Soviet summit in Moscow at the end of the month. In six weeks, three issues---down-loading, new types of missiles and data denial--were settled. ⁴⁵

The problem with downloading---a process by which the number of warheads on a MIRVed ballistic missile is reduced---was that the START agreement did not require the destruction of warheads. Therefore, there was a danger that downloaded warheads could be put in storage and, in a crisis situation, could be redeployed. Thus, while each side would apparently conform to START sub-limits, unrestricted downloading would not reflect either side's real nuclear capability. This was unacceptable to American negotiators who had been trying throughout the START process to reduce the threat of Soviet MIRVed missiles to American silo-based ICBMs. The task was then to agree with the Soviet Union on the number of types of missile that could be downloaded, the total number of warheads that could be downloaded, and the extent to which individual types of missiles could be downloaded. The downloading issue was settled at the Washington Foreign Ministers meeting on 11-14 July 1991. The two sides agreed on a downloading quota of 1250 warheads. The United States was allowed to reduce one or two warheads each from its three-warhead Minuteman III missiles. Both sides could also download two other deployed ballistic missile types by up to 500 warheads. ⁴⁶

Another issue that raised questions about a possible break-out from treaty provisions was that of determining what a new type of ballistic missile was and what constituted modernisation of an existing type. The problem was that START permitted modernisation of existing missiles. Each side could undertake minor missile modernisation and call that missile a new type. The United States insisted that, to qualify as a new type, a missile needed to be significantly different from those already deployed. The agreement that was finally reached on this issue specified that an ICBM or an SLBM would be considered a new type if it showed a change in the number of stages, a change in the type of

propellant, a 10 per cent change in the missile of first stage, and 10 per cent change in the missile throw-weight. The throw-weight of a new missile must be smaller than the throw-weight required to carry an ICBM over a distance of 11,000 km and an SLBM over 9,500 km. ⁴⁷

Finally---on the issue of missile flight-test data---the United States and the Soviet Union agreed to exchange telemetry types, acceleration profiles and specified information on how to interpret the data. In addition, both sides agreed to broadcast all telemetric information from flight tests of ICBMs and SLBMs, and not to engage in encryption, jamming or any other practice that would impede access to data. Once all the START issues were settled, the treaty was ready for signatures by leaders of the two sides. President Bush and Mr Gorbachev signed the START I treaty at the Moscow summit on 31 July 1991. ⁴⁸

What made START I possible

The United States and the Soviet Union had begun START negotiations with different negotiating strategies, agreeing only on the principal objectives of significant strategic arms reductions and of strengthening strategic stability. When the talks started in 1982, the US-Soviet relationship was characterised by a renewed cold war: the two countries were as divided ideologically as they were prior to the beginning of SALT in sixties, suspicious of each other's strategic motives and competing for influence across the world. It was only after the two sides learned to coexist peacefully as they did in detente period of early seventies that START I became a reality. In fact, in view of the cold war's end, START I had become a compulsion for both the United States and the Soviet Union. Not signing START I amounted to negation of the radical political transformation under way across the world, which required the United States and the Soviet Union not to let the whimsical notions of the cold war determine their mutual relationship.

Over nine years long START I negotiations were difficult and cumbersome, characterised by numerous false starts and frequent stalemates. And much of this difficulty derived from the fact that---during most of this period, and due to cold war antagonism---the United States and the Soviet Union had quite different definitions of security and their fundamental security needs. Thus, each side mostly viewed key aspects of the arms control proposal of the other side as enhancing the other's lead in first-strike forces. Asymmetry between strategic forces of the United States and the Soviet Union posed one of the greatest obstacles to START I. Soviet missiles were larger than those of the United States, concentrated in land-based ICBMs. The Soviet Union also had an edge over the United States in missile throw-weight. American nuclear forces, on the other hand, were concentrated heavily in sea-based systems, contained a major bomber component and included modern cruise missiles. The United States, thus, sought to focus START negotiations on Soviet ICBMs---especially heavy MIRVed ICBMs, the SS-18s---and throw-weight. MIRVed ICBMs formed the backbone of the Soviet strategic arsenal. The Soviets sought to focus START negotiations on, SLBMs, long-range bombers and cruise missiles---forces which the United States considered crucial to its strategic nuclear triad. 49

Preventing Armageddon was the only objective American and Soviet leaders had in common. That was why the issue of arms control so dominated their summits. Yet there was always an underlying paradox: the arms to be controlled were the consequence, not the cause, of the hostility that infused US-Soviet relations. The cause was a combination of ideology and geopolitics. Mr Gorbachev changed all that. Not only did he put the basic issues of contention on the agenda, he also made massive concessions. In every significant area where the United States had grievances against the Soviet Union, Mr Gorbachev yielded. While signing the START I treaty, he abandoned long-held Soviet claims and accepted many of the premises of the American negotiating position. With his new outlook on Soviet foreign affairs, the Soviet leader finally forced a cold war hawk

like Mr Reagan to take his strategic arms control proposals seriously. Yet, it was only during the Bush administration that the United States began revising its appraisal of Soviet intentions. Had Gorbachev not come to power in the Soviet Union, the two sides might still have been busy negotiating START I, what to speak of going beyond it. Leadership plays a vital role in arms control. Unless leaders have the political will necessary for any arms control success, agreements as complex as START I, are not possible to negotiate and sign. ⁵⁰

Without a prior improvement in the over all political relationship between the United States and the Soviet Union, START I would not have been possible and many of the technical problems concerning both offensive and defensive strategic weapons would not have been solved. Many of the most decisive arms control breakthroughs between the United States have occurred at a time when the underlying political relations between them were fundamentally changed. Mr Gorbachev played a great role in improving US-Soviet relations. A Brezhnev Soviet state would never have negotiated and signed what START I or INF included. But without the willingness of Mr Reagan, during his second term, and Mr Bush to improve this relationship, Mr Gorbachev's role in the whole affair would have been marginalised. Leadership, however, is just one factor in determining the course of inter-state ties. There are other, more important factors which motivate or force leaders to act in a certain manner. For instance, the defence burden on the Soviet state was so great that Mr Gorbachev realised his country could not afford any further strategic arm race with the United States. Thus, the need for drastic arms reductions could also arise from economic compulsions of nations. Moreover, the nature and dynamics of inter-state relations on a particular matter like arms control cannot be seen in isolation from the political transformations under way at the global level, at any given point. ⁵¹

When Mr Gorbachev took over, the Soviet Union was under a great economic stress. And, with democratic upsurge in central and eastern Europe and the fall of the Berlin Wall, the end of eighties represented the beginning of the end of the cold war. With all

this going on, why should the superpowers keep over 20,000 nuclear weapons each? If the purpose of keeping so many nuclear weapons was deterrence only, the same could be achieved at much lower levels. The pace at which international system was being radically transformed, thus, made the retention of a large arsenal by each side obsolete. Reducing the 'over-kill' strategic capability was one of the objectives of START negotiations right from the beginning. But, at that time, not only were US-Soviet relations undergoing a renewed cold war phase, the international circumstances were also not suitable to accomplish such an end. With the cold war's end, this was not going to be the case. The quick succession with which events depicting the end of the cold war and beginning of a new era---characterised by a spirit of cooperation rather than confrontation in the US-Soviet relationship---happened, did divert the two side's attention from START. But not for too long. Once the dust settled down, it took them only a few months to settle many of the core issues that had been stalling START for years on. In fact, when both the shift in international politics and the nature of US-Soviet relationship came to be characterised by factors like peace, cooperation and accommodation, considerations like START asymmetries became irrelevant. Neither the United States nor the Soviet Union was interested in hedging on any START issue. This is how START I finally became a reality. ⁵²

The arms control process contributes to reducing the probability of armed conflict---not because it merely controls arms---but because, over time, it can help to change political incentives in favour of peace rather than war. Seen in this perspective, therefore, the START negotiating process itself played a great role in inducing the two sides to redefine the problem of their strategic relationship in ways that would promote agreements intended to produce mutual security rather than their own unilateral security. START negotiations helped to sustain an atmosphere between the two sides that facilitated cooperation in a host of areas including crisis management, mutual restraint in regional conflicts and other bilateral matters. They also helped to foster impression

across the world that the nuclear giants had the arms race under control, and that progress was being made in the pursuit of a safer world. Negotiations that led to START I presented an invaluable source material to analyse the military-technical trends, superpowers strategic rivalry, and their political and diplomatic interaction. The START I treaty provided an insight into the complexity of strategic arms control problems, and its comprehensive verification provisions contained mechanisms and procedures of lasting value. In START I's aftermath, any further arms control agreements were likely to be simpler, shorter, and negotiated more quickly and with less visibility than this 750-page treaty.

Notes

- 1 To understand the flaws inherent in SALT, see Steve Weber, 'Cooperation and Interdependence,' *Daedalus* 120 (Winter 1991), 190-192; Robert R Bowie, 'Arms Control in the 1990s,' *Daedalus* 120 (Winter 1991), 56; Albert Carnesale and Richard N Haas, 'Lessons Learned from Superpower Arms Control,' *Washington Quarterly* 10 (Summer 1987), 29-73; and Joseph Kruzel, 'From Rush Bagot to START: the Lessons of Arms Control,' *Orbis* 30 (Spring 1986), 207-216.
- 2 *New York Times*, 10 May 1982; US Congress, Senate, Committee on Foreign Relations and House Committee on Foreign Affairs, *US Arms Control and Disarmament Agency 1983 Annual Report*, 98th Cong, 2nd sess (Washington, DC: US Government Printing Office, 1984), 6, 154-155. Hereafter cited as *ACDA 1983 Annual Report*.
- 3 Cruise missile was another area of strategic superiority for the Americans. As regards missile throw-weight; since the Soviets emphasised heavy ballistic missile potential, they had an edge over the Americans in throw-weight. See Douglas Stanglin, 'How to Understand the Unthinkable,' *US News and World Report*, 12 June 1989, 32-35.

- 4 *New York Times*, 10 and 11 May 1982; US Congress, Congressional Budget Office, *Modernising Strategic Forces: the Administration's Programmes and Alternatives* (Washington, D C: US Government Printing Office, 1983), 29-40. Hereafter cited as *Modernising Strategic Forces*. Also see Strobe Talbott, *Deadly Gambits: the Reagan Administration and the Stalemate in Nuclear Arms Control* (New York: Alfred A Knopf, 1983), 263-265.
- 5 *Modernising Strategic Forces*, 29-40; Talbott, *Deadly Gambits*, 263-265; Christopher Paine, 'A False START,' *Bulletin of the Atomic Scientists* 38 (August-September 1982), 11-13.
- 6 *New York Times*, 19 May, 1982.
- 7 *New York Times*, 19 May 1982; *ACDA 1983 Annual Report*, 12.
- 8 *ACDA 1983 Annual Report*, 12, 167; and Talbott, *Deadly Gambits*, 280.
- 9 *New York Times*, 9 June and 11 August, 1983; *ACDA 1983 Annual Report*, 11-12, 166.
- 10 See *New York Times*, 10 June and 14 July 1983; and Talbott, *Deadly Gambits*, 362.
- 11 See Talbott, *Deadly Gambits*, 334-339; and *ACDA 1983 Annual Report*, 13-15, 166-167. *Pravda* is quoted in *New York Times*, 24 October 1983.
- 12 Richard Burt, 'The Year-long Shadow of KAL Flight 7,' *New York Times*, 31 August 1984. The deployment of American intermediate-range nuclear forces in western Europe was in line with NATO's two-track decision, which was taken to build up NATO theatre nuclear forces and---at the same time----negotiate cuts in the over all intermediate-range nuclear forces with the Soviet Union.
- 13 *Washington Post*, 17 June 17 1984.
- 14 *New York Times*, 9 January 1985; *Public Papers of the Presidents of the United States: Ronald W Reagan, 1983* (Washington, D C: US Government Printing Office, 1984), 437-443.
- 15 *New York Times*, 10 April, 13 September 1985; Paul Doty, 'Arms Control: 1960, 1990, 2020,' *Daedalus* 120 (Winter 1991), 40-41. Between November 1982 and

- 22 See *New York Times*, 13, 14, 16 and 18 October 1986; and Michael Mandelbaum and Strobe Talbott, 'Reykjavik and Beyond,' *Foreign Affairs* 65 (Winter 1986-1987), 228. For progress in START up to Reykjavik, see William G Hyland, 'Reagan-Gorbachev III,' *Foreign Affairs* 66 (Fall 1987), 7-21.
- 23 *New York Times*, 13, 15 and 17 October 1986.
- 24 Flourney M A, 'A Rocky START: Optimism and Obstacles on the Road to Reductions,' *Arms Control Today* 17 (October 1987), 71; The Washington Summit Communique, *Survival* 30 (May-June 1988), 267.
- 25 See International Institute for Strategic Studies, *Strategic Survey 1987-1988* (London: Brassey's, for IISS, 1989), 40-43. Hereafter cited as *Strategic Survey 1987-1988*; Joseph G Whelar, *The Moscow Summit, 1988* (Boulder, CO: Westview Press, 1990), 3, 84; Congressional Research Service, *START and Nuclear Arms Control: Chronology of Major Events 1982-1992*, CRS Report for Congress (Washington, DC: US Government Printing Office, June 1992), 5-6. Hereafter cited as *START and Nuclear Arms Control*; and Ishtiaq Ahmad, 'The INF Treaty: Lessons for START,' *Pakistan Journal of American Studies* 9 (Spring & Fall 1991), 18-28.
- 26 For details regarding the START treaty text, see Hans Binnendijk, 'START: a Preliminary Assessment,' *Washington Quarterly* 11 (Autumn 1988), 5; Robert Einhorn, 'The Emerging START Agreement,' *Survival* 30 (September-October 1989), 387; and Victor Karpov, 'An Equation Without Unknown Qualities,' *New Times* (March 1988), 5-7.
- 27 Edward Warner III and David A Ochmanek, *Next Moves: An Arms Control Agenda for the 1990s* (New York: Council on Foreign Relations, 1989), 28; Christoph Bertram, 'US- Soviet Nuclear Arms Control,' in Stockholm International Peace Research Institute, *SIPRI Yearbook 1988: World Armaments and Disarmament* (Oxford: Oxford University Press, for SIPRI, 1989), 303.

- 28 International Institute for Strategic Studies, *Strategic Survey 1988-1989* (London: Brassey's, for IISS, 1990), 44-45. Hereafter cited as *Strategic Survey 1988-1989*.
- 29 Martin E Goldstein, *Arms Control and Military Preparedness from Truman to Bush* (New York: Peter Lang Publishing, Inc, 1992), 226-227; Max M Kampelman, 'START: Completing the Task,' *Washington Quarterly* 12 (Summer 1989), 7, 14. Also see Linton Brooks, 'Nuclear SLCMs Add to Deterrence and Security,' *International Security* 13 (Winter 1988-1989), 170-190.
- 30 Binnendijk, 'START: Down the Homestretch,' *Washington Quarterly* 11 (Autumn 1988), 5-18; Bertram, 'US-Soviet Arms Control,' 304.
- 31 Brent Scowcroft, J Deutch and James Woolsey, 'The Real Danger Is in the Next Arms Treaty,' *International Herald Tribune*, 5 December 1987; Einhorn, 'The Emerging START Agreement,' 393.
- 32 For details, see *Strategic Survey 1987-1988*, 44; and Bertram, 'US-Soviet Nuclear Arms Control,' 308-311.
- 33 *Strategic Survey 1987-1988*, 44; R Jeffrey Smith, 'The Real Target of SDI May be the ABM Treaty,' *Washington Post*, 22 February 1987.
- 34 *International Herald Tribune*, 16-17 January 1988. Also see Abraham D Sofaer, 'The ABM Treaty: Legal Analysis in the Political Cauldron,' *Washington Quarterly* 10 (Autumn 1987), 59-75; and Dimitry Mikheyev, *The Soviet Perspectives on the Strategic Defence Initiative* (New York: Pergamon Brassey's, for Institute for Foreign Policy Analysis, 1987).
- 35 *Strategic Survey 1987-1988*, 46. Also see Sam Nunn, 'The ABM Treaty Reinterpretation Dispute,' *Washington Quarterly* 10 (Autumn 1987), 54-56; William J Durch, *The Future of the ABM Treaty*, Adelphi Papers, 223 (London: International Institute for Strategic Studies, Summer 1987), 9-35.
- 36 For further details, see Leggett, 'Verifying a START Agreement,' 269.
- 37 *Arms Control Reporter*, December 1987, 603.

- 38 For details, see Jeremy K leggett and Patricia M Lewis, 'Verifying a START Agreement: Impact of INF Precedents,' *Survival* 30 (September-October 1988), 414-418; Robert Einhorn, 'Revising the START Process,' *Survival* 32 (November-December 1990), 497-505; Binnendijk, 'START: Down the Homestretch,' 5-18; and Ahmad, 'The INF Treaty: Lessons for START,' 18-28.
- 39 Leggett and Lewis, 'Verifying a START Agreement: Impact of INF Precedents,' 409-428.
- 40 Jack Mendelsohn, 'INF Verification: a Guide for the Perplexed,' *Arms Control Today* 17 (September 1987), 25, 28-29.
- 41 *START and Nuclear Arms Control*, 6.
- 42 A tremendous amount of literature is available on events that led to the end of the cold war, the resulting transformation of world politics and its impact on US-Soviet (Russian) relations, including the arms control relationship. See Regina Cowen Karp, 'The START Treaty and the Future of Strategic Arms Control,' in Stockholm International Peace Research Institute, *SIPRI Yearbook; World Armaments and Disarmament 1992* (Oxford: Oxford University Press, for SIPRI, 1992), 14. Jonathan Dean, *Testimony before the Senate Foreign Relations Committee* (Washington, DC: Congressional Research Service, 5 March 1992), 1-2.
- 43 See Goldstein, *Arms Control and Military Preparedness from Truman to Bush*, 243.
- 44 *International Herald Tribune*, 6-7 March 1991.
- 45 *International Herald Tribune*, 8-9 June; 4, 16 and 18 July 1991.
- 46 Dunbar Lockwood, 'START Treaty Signed, Brings Historic Cuts in Strategic warheads,' *Arms Control Today* 21 (September 1991), 25 and 32-33.
- 47 For details, see Karp, 'The START Treaty and the Future of Strategic Nuclear Arms Control,' 19-20.
- 48 *International Herald Tribune*, 1 August 1991; 'START Treaty Begins an Irreversible Process,' *Financial Times*, 2 August 1991.

49 *New York Times*, 30 July 1991.

50 'USA and Soviets Agree Arms Cuts,' *Jane's Defence Weekly* (22 July 1991), 131. On Mr Gorbachev's contribution to arms control, see Joseph S Nye, Jr, 'Arms Control and International Politics,' *Daedalus* 120 (Winter 1991), 153. Also see Mikhail Gorbachev, 'Realities and Guarantees for a Secure World', *New Times* (5 October 1987), 3-6; and Mikhail Gorbachev, *Speeches and Writings*. (Oxford: Pergamon Press, 1987).

51 See Edward L Warner III, *Merits of the START I Treaty and Proposals for Further Reductions*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 3 March 1992), 1-2. This radical change in the political relationship not only opened new opportunities for drastic arms reductions but also focused world attention on the success in this area as a measure of the political change. See Doty, 'Arms Control: 1960, 1990, 2020,' 41.

52 Johan Jorgen Holst, 'Arms Control in the Nineties,' *Daedalus* 120 (Winter 1991), 87.

Chapter 3

START Negotiations in the Post-Cold War Period

The predominant belief in the arms control community today is that while arms control contributes to the easing of international tension, it is mostly the result---rather than the cause---of political detente. Had Mr Gorbachev not shown the political will to improve relations with the United States and bring the cold war to an end, and had he not received the kind of response his 'new thinking' for the purpose required from the American leadership, neither START I nor any other arms control treaties would have been possible to conclude. The START I treaty was signed well after the end of the cold war. Its conclusion was the consequence of developments which radically transformed relations between the superpowers. What led to these developments was the discovery made by the Soviet leader, when he found the arms race running beyond what the Soviet economy could sustain. Mr Gorbachev recognised that Soviet security problems were partly of its own making. This discovery apparently made arms control unnecessary: if each side realised that it could best enhance its security by dismantling those weapons which most threatened the other, then it would do so without having to be constrained by detailed agreements. All it needed was a general conviction that the other side had got the message and was behaving similarly. In the end, the very concept of 'sides' would become irrelevant. When this realisation started determining the strategic perceptions of both the United States and the Soviet Union, the long, complicated START I negotiating process of the eighties came to a swift end in the beginning of 1990s. ¹

The successful conclusion of START I, however, did not mean that future efforts to further constrain the strategic potential of the two sides had to be an easy affair. The biggest blow to START negotiations came only three weeks after the START I treaty was signed. On 18 August 1991, leading political and military officials in the Soviet Union

staged a coup against President Gorbachev. The Soviet army's dissatisfaction with Mr Gorbachev's arms control concessions was stated to be the main reason behind the coup. For once, the arms control process appeared to suffer the biggest reversal of the times. But the coup did not succeed. On 23 August, Gorbachev was back in power. And, with that, arms control was also back on track. ²

With the end of the cold war, there had emerged a widespread sense among arms control experts in general that nuclear weapons would be less important in future than they were during the era characterised by US-Soviet confrontation. The enormous buildup of nuclear weapons since 1945 was primarily the product of the cold war. The character of military competition between the two superpowers was shaped by the existence of strategic nuclear weapons. With the end of the cold war, it was but natural for any weapons developed to sustain cold war competition to depreciate in their value as a currency in international relations. The depreciation of nuclear weapons was clearly evident in President Bush's 27 September 1991 speech on future American nuclear policy. ³

Unilateral initiatives

President Bush announced a number of unilateral initiatives to alter American nuclear weapons programmes and force posture. These included the withdrawal and elimination of tactical nuclear weapons, withdrawal and partial elimination of sea-based tactical nuclear weapons, and cancellation of some weapon modernisation programmes. Mr Bush also announced that he would remove from active alert all American long-range bombers and ICBMS which were due for elimination under the START I treaty. The most encouraging element of Mr Bush's initiative was that it did not contemplate negotiations with the Soviet leader. President Bush generally acted unilaterally---challenging the Soviets to respond in kind, rather than calling for new arms control negotiations to formalise the arrangement. On 5 October, President Gorbachev

responded to Mr Bush's initiatives by announcing a number of steps that the Soviet Union would take to alter its nuclear weapon programmes and force posture. These included the withdrawal and elimination of tactical nuclear weapons, cancellation of nuclear weapon modernisation programmes, and the removal from alert of heavy bombers and some ICBMs. ⁴

With the end of the cold war, the sense of peril that long drove START negotiations faded. Political easing cut deeply into the anxiety and competitiveness that fueled arms building. Tight budgets forced unilateral decisions on reducing or forgoing the weapons that had been regulated by treaty. No longer was arms control the high-policy arena. As long as the two sides retained nuclear weapons of colossal destructive power, they had a great obligation to hold them and reduce them in ways that promote safety and stability. On the experience and example of the US-Soviet arms control, all efforts to limit the arms of the others rested. Arms control still had a residual value. By the time START I was signed, the world stockpile of nuclear weapons comprised some 52,000 nuclear warheads, 97 per cent of them in the hands of the United States and the Soviet Union. Beyond the three other states acknowledging the possession of nuclear weapons---China, France, and Britain---there were four or five states that either had some nuclear capability or were on the threshold of achieving it. Reductions in strategic weaponry which START I had included were far less than what was required in the new cooperative era making much of this weaponry redundant. It was perhaps with this realisation that President Bush and Mr Gorbachev had made the unilateral initiatives. ⁵

Before any credible move towards a START II treaty---which START I had called for---could be made by the end of 1991, an event of the century took place: the Soviet Union collapsed. Consequently, the process of START I ratification was delayed. The reason was that the Soviet collapse led to the creation of several independent states, with four of these---Russia, Ukraine, Kazakhstan and Belarus---having nuclear weapons on their soil. On 8 December, Russia, Ukraine and Belarus formed the Commonwealth

Kazakhstan President Nursultan Nazarbayev met President Bush in Washington in May and agreed to eliminate all nuclear weapons stationed on the territories of the two republics within seven years after the entry into force of the START I treaty. The same month, Belarus also made a similar commitment. These developments paved the way for a five-nation meeting in Lisbon, Portugal, on 23 May; where the United States, Russia, Ukraine, Kazakhstan and Belarus signed a protocol to the START I treaty. Commonly known as the Lisbon protocol, it made all five states parties to the START I treaty and committed Ukraine, Kazakhstan and Belarus to accede to the nuclear Non-Proliferation Treaty 'in the shortest possible time 'as non-nuclear weapon states. ⁸

Meanwhile, the spirit of cooperation in US-Russian relations continued to grow. Meeting at Camp David in February, President Bush and Russian President Yeltsin declared: "Russia and the United States do not regard each other as potential adversaries. From now on, the relationship will be characterised by friendship and partnership founded on mutual trust and respect, and a common commitment to democracy and economic freedom." It was the result of this growing amity in US-Russian relations that, by the end of 1992, the US Senate and parliaments of the four former Soviet republics ratified the START I agreement. Since the treaty enjoyed tremendous support in the US Senate, it was approved by an overwhelming vote, 94 against 6, on 1 October 1992. The Senate, however, ratified the START I treaty with the understanding that the Lisbon protocol and separate commitments by leaders of Ukraine, Kazakhstan and Belarus to President Bush---in the form of letters accompanying the protocol---carry the same legal obligation as the treaty. The Russian Parliament ratified the treaty on 4 November 1992 but stipulated that the actual exchange of instruments of ratification would not occur until after the other former Soviet republics with nuclear weapons on their soil acceded to the NPT as non-nuclear weapon states and agree to START implementation measures. ⁹

By 1993, it was clear that the traditional, bilateral arms control agenda had run its course. The long-standing objective of stabilising strategic balance at reduced levels of

armaments, while still important, was being replaced by the more immediate objective of dealing with the spread of nuclear weapons to more states, or meeting the challenges of proliferation arising out of the break-up of a single nuclear states: the former Soviet Union. The officially recognised powers were much more worried by the danger of proliferation than they were by the size and nature of each other's arsenals. The nuclear arms control also appeared to take a multi-lateral form in future. By opening the START I treaty to all four former Soviet Republics with strategic weapons on their soil, the Bush administration partly succeeded in its approach to chocking off the spread of nuclear weapons beyond Russia. In a step that was in the direction of multilateral form of disarmament, in place of the bilateral emphasis during the cold war, the United States had set an important landmark in getting these new states to acknowledge that their international recognition was obtained in exchange for their renunciation of nuclear weapons. ¹⁰

Belarus ratified the START I treaty on 4 February 1993 and deposited its instruments of accession to the NPT as a non- nuclear weapon state on 22 July. The Kazakhstan Parliament, which had ratified the START I treaty on 2 July 1992, voted to accede to the NPT as a non-nuclear weapon state on 13 December 1993. Kazakhstan deposited the instruments of accession to the NPT on 14 February 1994. ¹¹

Ukraine stalls START

Ukraine ratified the START I treaty on 18 November 1993 but attached several conditions that were tantamount to an official repudiation of its earlier commitment to eliminate nuclear weapons on its territory. Among the conditions, the Ukraine's parliament reiterated the republic's claim to ownership and administrative control of the nuclear weapons on its territory. More importantly, it stipulated that Ukraine did not consider itself bound by Article V of the Lisbon protocol, which required Ukraine to accede to the NPT as a non-nuclear weapon state 'in the shortest possible time.' The

parliament made it clear that, under the START I treaty, only 36 per cent of the launchers and 42 per cent of nuclear warheads on Ukrainian territory would be subject to elimination. It also insisted on sweeping security guarantees. Some of these were: the nuclear powers will never use nuclear weapons or conventional forces against Ukraine. They will refrain from threat of force, respect the territorial frontiers of Ukraine, and refrain from economic pressure as means of resolving disputes. In other key conditions, the Ukraine parliament stated that it would not exchange the instruments of ratification of the START I treaty until Ukraine had been assured the right to monitor the dismantlement of any warheads transferred from Ukraine; had received adequate compensation for the fissile material of these warheads, including the material in tactical warheads withdrawn to Russia in 1992; and had received 'sufficient international financial and technical assistance.'¹²

The non-availability of Western security guarantees and mistrust of Russia were the two factors forcing deputies in the Ukrainian parliament to dither on the ratification of START I and signing of the NPT. The uniqueness of the Ukrainian case confronted the world with a new challenge: international recognition of Ukraine as a nuclear power would carry grave consequences for the integrity of the NPT regime, a regime whose extension was to be decided in 1995. Without sacrificing the principles of that regime or, indeed, the treaty commitments Ukraine had endorsed through the Lisbon Protocol, the United States sought to devise the ways to meet the challenge. In its efforts to persuade Ukraine to comply with the Lisbon Protocol, ratify START I and accede to the NPT, the Bush administration offered Ukraine on 8 January 1993 \$175 million in Nunn-Lugar assistance money for dismantling of the SS-19 and SS-24 missiles and silos. The new American administration led by President Bill Clinton promised to begin delivering part of this aid package to Ukraine soon after its parliament claimed ownership of nuclear weapons on its territory on 2 July. ¹³

On 14 January 1994, leaders of the United States, Russia and Ukraine signed a Trilateral Statement, in which President Clinton and Mr Yeltsin informed Ukrainian leader Kravchuk that, once the START I treaty entered into force and Ukraine acceded to the NPT as a non-nuclear weapon state, the United States and Russia would reaffirm their commitment to Ukraine---in accordance with the principles of the Conference on Security and Cooperation in Europe Final Act of 1975---to respect the independence, sovereignty and existing borders of CSCE member-states and recognise that border changes can be made only by peaceful means. Also---in accordance with the CSCE Final Act---they reaffirmed their commitment to refrain from economic coercion, and stated that Ukraine would enjoy the 'positive' and 'negative' security assurances they had made to all non-nuclear signatories to the NPT. The Trilateral Statement also committed the United States to expand its Nunn-Lugar assistance to the four former Soviet republics with nuclear weapons on their territories. ¹⁴

The annex to the Trilateral Statement stated that all warheads on Ukrainian territory would be transferred to Russia during the seven-year period as provided in the START I treaty. In a letter from Yeltsin to Kravchuk, Russia agreed to write off some of Ukraine's debt for past deliveries of oil and natural gas in compensation for the 2,000-3,000 tactical warheads that were withdrawn from Ukraine to Russia in 1992. Ukraine's compensation for the highly enriched uranium contained in strategic warheads withdrawn from its territory, worth about \$ 1 billion---a sum which represented Ukraine's share of the Highly-Enriched Uranium Agreement signed by the United States and Russia in February 1993---would come in the form of low-enriched uranium to fuel its civilian power reactors. Under the terms of the agreement, the US Enrichment Corporation would, in a 20-year period, purchase from Russia approximately \$ 11.9 billion worth of reactor-grade uranium derived from 500 tonnes of highly enriched uranium extracted from dismantled warheads. The United States, however, made it clear that the Highly Enriched Uranium

Agreement could not be implemented until Russia worked out bilateral agreements with Ukraine, Kazakhstan and Belarus on sharing the proceeds. ¹⁵

Ukraine welcomed the Trilateral Statement; and, on 3 February 1994, its parliament passed a resolution asking President Kravchuk to exchange the instruments of ratification for the START I treaty. It also voted separately on Ukraine's immediate accession to the NPT. However, the measure failed by a few dozen votes to achieve the number required by the Ukrainian constitution to approve any legislation. The security assurances which Ukraine had sought from the United States and Russia were linked to Ukraine's accession to the NPT as a non-nuclear weapon state. It was, therefore, clear that Ukraine's failure to accede to the NPT would deny it the security assurances that appeared to be a key factor in its February 1994 decision to drop its conditions for ratifying the START I treaty. Another problem was the Russian parliament's decision not exchange the instruments of ratification of START I until Ukraine acceded to the NPT. By early 1994, Ukraine had not acceded to the NPT; but there was a reason for hope as Russia and Ukraine began to implement the Trilateral Statement with transfers of ICBM warheads and fuel rods. ¹⁶

Till March 1994, some 60 strategic warheads, removed from SS-19 and SS-24 ICBMs from Ukraine, reached Russia by train. And, at a joint press conference with Mr Kravchuk in Washington on 4 March, President Clinton announced that the United States would double its assistance to Ukraine, pledging \$350 million for economic aid and another \$350 million in Nunn-Lugar assistance. However, the day after the Clinton-Kravchuk meeting, tension between Russia and Ukraine also surfaced, as the former decided to cut back natural gas supplies to the latter. A week later, the Ukrainian Defence Ministry announced that it was suspending strategic warhead withdrawals to Russia. ¹⁷

It was not until the end of the year that Ukraine finally decided to remove the main obstacle to the entering into force of the START I treaty. On 16 November, its parliament voted with an overwhelming majority for Ukraine's accession to the NPT as a

non-nuclear weapon state. However, the parliament made its approval contingent on two key conditions: written security assurances from nuclear weapon-states, and recognition of Ukraine's ownership of the fissile material in nuclear weapons still stationed on its territory and its administrative control of these weapons. The security assurances were given to Ukraine on 5 December in the form of a document jointly by the United States, Russia and Britain----at the CSCE meeting in Budapest. Codifying pledges made in the Trilateral Statement, these included the standard negative and positive security assurances nuclear weapon states provided to all non-nuclear state parties to the NPT as well as CSCE commitments to respect the existing borders of Ukraine and refrain from economic coercion against it. The same day, along with Ukraine, the United States, Russia, Kazakhstan and Belarus exchanged the instruments of ratification of the START I treaty. With that, on 5 December 1994, the treaty entered into force---more than three years after it was signed, and more than 12 years after START negotiations began. Besides requiring the United States and Russia to reduce the number of their accountable warheads to no more than 6,000 each, START I and its associated documents, including the Lisbon protocol, required Ukraine, Kazakhstan and Belarus to eliminate all nuclear weapons on their territories by transferring them to Russia. 18

START II negotiations

The START I treaty's entry into force cleared the way for the US Senate and Russian parliament to start deliberating on the ratification of another agreement, START II, that President Bush and Mr Yeltsin had signed on 3 January 1993. The START I treaty was to leave each side with a formidable strategic weapons potential. Therefore, immediately after START I was signed, both sides felt the need for seeking further reductions in their strategic weapons. The withdrawal of Soviet conventional forces from Eastern Europe, the improvement in US-Soviet relations and the costs of supporting a sizeable nuclear arsenal---all pointed to the need to make further cuts. Negotiations between the United

States and Russia on the START II treaty, which was to build on START I treaty's framework, began in January 1992---almost six months after the signing of START I and nearly one month after collapse of the Soviet Union. In his 28 January 1992 State of the Union Address, President Bush proposed a new agreement requiring far deeper cuts than those required by START I. In his new proposal, Mr Bush offered to reduce American SLBM warheads by 'about a third' below the number of warheads which the United States planned to deploy under the START I treaty if the CIS states agreed to a ban on MIRVed ICBMs. President Bush's proposal was to leave the United States with approximately 4,500 deployed strategic warheads: 500 on ICBMs, 2,300 on SLBMs, and 1,900 on bombers. President Yeltsin responded quickly to the American proposal, proposing that the two sides cut their strategic nuclear warheads to 2,000-2,500 each. ¹⁹

US Secretary of State Baker and Russian Foreign Minister Kozyrev met four times between February and June 1992 to discuss START II reductions. These meetings failed to reduce the gap between the American proposal for a ban on MIRVed ICBMs and a limit of 4,700 warheads and the Russian proposal for reductions to a level of 2,000-2,500 warheads. The United States insisted that Russia should agree to a warhead total higher than 2,000-2,500. Although, in the end, Russia was willing to agree to a higher warhead total, it differed with the United States over forces that would be permitted under those limits. The United States wanted Russia to agree to a ban on MIRVed ICBMs, while Russia wanted the United States to agree to deeper reductions in MIRVed SLBMs. The Baker-Kozyrev meetings, however, did pave the way for the Washington summit between President Bush and President Yeltsin on 17 June. ²⁰

At their summit, the US-Russian leaders signed the Joint Understanding on Further Reductions in Strategic Offensive Arms---also called the De-MIRVing agreement---to form the basis for a follow-on to the START I treaty. The agreement covered numerical ceilings and time-frame for reductions. Both sides agreed to eliminate all 50 American 10-warhead MX missiles, accelerate the elimination of American 450 two-warhead

Minuteman II missiles; download American 500 Minuteman missiles from three warheads each to one; halve the number of warheads on American D-5 Trident SLBMs from 8 warheads to four; eliminate all of Russia's SS-18 and SS-24 heavy missiles; impose a ceiling of 3,000-3,500 strategic warheads and bombs on each side by the year 2003; and eliminate all MIRVed ICBMs by 2003. The ceiling of 3,000-3,500 weapons represented a compromise between Mr Bush's proposal of 4,700 and President Yeltsin's startling counter-offer of 2,000-2,500. In reaching the compromise position, the United States agreed to eliminate more SLBMs than it had originally wanted; while Russia agreed to scrap more ICBMs than it had first contemplated. The United States agreed to eliminate over half of its SLBM warheads, from 3,840 to 1,750, but the latter figure still represented a devastating sea force. However, in the Washington agreement, the United States finally achieved one of the major objectives it had pursued throughout the nuclear era: the eradication of Moscow's MIRVed ICBMs. The question was, why Yeltsin had agreed to forsake his entire MIRVed ICBM force, the backbone of Russia's nuclear arsenal. Perhaps he felt this was the price he must pay for the substantial economic aid he hoped for to rebuild the shattered Russian economy. ²¹

In July 1992, six weeks after the Washington summit, the United States presented a draft treaty to Moscow. In November, Russia responded with a formal draft treaty of its own, reflecting some of the issues raised at a 24 September meeting between Russian Foreign Minister Kozyrev and US acting Secretary of State Lawrence Eagleburger. While endorsing provisions of the De-MIRVing agreement, Russia asked for an easing of some of the terms of treaty implementation for economic reasons. Russia asked if it could convert, rather than destroy, its SS-18 silos to hold single-warhead ICBMs, such as the SS-25s. In its formal draft treaty, Russia also asked if the downloading rules that were apparently agreed in June could be changed to allow it to retain a single-warhead version of the SS-19. Russia had deployed some 170 of these missiles. On the downloading issue, American START II negotiators rejected the Russian demand,

arguing that it was agreed at the Washington summit that the two sides would adhere to the START I treaty rule that an individual missile should not be downloaded by more than four warheads. Since only single-warhead missiles were to be permitted under the START II treaty and an SS-25 missile had six warheads, Russia could not retain it unless the United States agreed that a missile could be downloaded by five warheads instead of four. In its formal treaty draft, Russia also proposed several measures which could help it verify limits on US bombers with more confidence. It proposed that conventional and nuclear bombers should have some externally observable differences so that they could be distinguished from each other. Finally, Russia insisted on inspecting the American B-2 Stealth bomber to determine that it was not equipped with more nuclear weapons than the number, 16, which the United States had attributed to it. ²²

President Bush lost the November 1992 elections against Bill Clinton. In December 1992, Mr Bush made it clear that, before he left office on 20 January 1993, the United States would sign the START II treaty with Russia. Had the United States and Russia not signed the treaty by then, the negotiating process would have delayed by several months: the new American administration would have remained busy getting its personnel in place and ordering its foreign policy priorities. For his part, Mr Yeltsin also wanted a quick conclusion of the START II treaty, mainly for three political or economic reasons. One, in view of political challenges from the Russian parliament, it was in his interest to appear to the Russian people as the only leader in Russia with whom the United States negotiated. Two, Mr Yeltsin and his advisors estimated that savings on operation and maintenance cost for Russian strategic forces---which Russia had to retain if it did not sign the START II treaty---would exceed the dismantling cost. Three, the conclusion of the START II treaty was to increase goodwill for Russia in the West, thereby promoting a climate suitable for increased Western economic assistance it. With these incentives to complete negotiations on the START II treaty quickly, Mr Yeltsin also declared in Beijing on 18 December 1992 that START II would be ready for signature in

early January 1993. US-Russian START II negotiators met in Geneva on 22-24 December to try to complete last remaining details of the agreement. The key unresolved issues in START II negotiations---SS-18 silos conversion, SS-19 downloading, and long-range bombers---were finally settled during Eagleburger-Kozyrev meetings in Geneva on 28 and 29 December. ²³

Settling START II issues

On the SS-18 missile issue, the United States agreed to let Russia convert 90 of its 154 SS-18 missile silos that would remain after the START I treaty was implemented. Russia was to destroy the remaining 64 SS-18 missile silos. To ensure that the silos could not be reconverted quickly to launch banned SS-18 missiles, Russia agreed to fill the floor of every silo with 5 metres of concrete. In another measure designed to make the silos incapable of launching SS-18s, a 'restrictive ring' with a diameter smaller than that of the SS-18 was to be installed in the upper portion of the silos. The United States was allowed to observe the entire process of pouring concrete into the silos and to measure diameter of the restrictive ring. The United States was also allowed to conduct each year four re-entry vehicle inspections of converted SS-18 silos in addition to the ten re-entry vehicle inspections it was permitted to conduct under the START I treaty. Most importantly, Russia was required to destroy all of its SS-18 missiles, both deployed and non-deployed. SS-18s could be destroyed either by cutting their stages into pieces or by using them as space launch vehicles. ²⁴

On the SS-19 downloading issue, the United States agreed to let Russia retain 105 of its 170 SS-19 missiles by removing five of the six warheads from each missile. Russia was not required to change the SS-19's re-entry vehicle platform, since the cost of doing so would have defeated the purpose of retaining these missiles. The SS-19 was the only missile to be downloaded by more than four warheads. ²⁵

Lastly, on the long-range bomber issue, the United States and Russia agreed that the long-range bombers reoriented to conventional roles, and exempted from the START II treaty warhead limits, could be returned to a nuclear role but could not be subsequently reoriented to a conventional role. Thus, the United States would have the option of declaring all of its B-1B bombers as conventional weapon carriers and, then, later returning them to the strategic nuclear force as older B-52Hs were retired. This provision did not apply to either of Russia's modern long-range bombers, the Blackjack and the Bear H, because both of them were already equipped with long-range nuclear ALCMs. The United States and Russia also agreed that long-range bombers reoriented to a conventional role would have observable external differences from nuclear bombers of the same type. Finally, the two sides agreed to exhibit one long-range bomber of each type, including the B-2 Stealth bomber, to demonstrate to each other the number of nuclear weapons which each bomber was actually equipped to carry. During these exhibitions, to be held only once, the inspection team might look at the exhibited bomber's weapon bays and those portions for the exterior equipped for carrying weapons. However, it would be the discretion of the party being inspected to cover all the other portions of the bomber to conceal technological secrets. The United States also decided to permit Russia to inspect the B-2 bomber; however, in the START I treaty, it had refused to grant the former Soviet Union such a permission.²⁶

Once all the issues were settled, START II was ready for conclusion; and it was signed by President Bush and Mr Clinton at their Washington summit on 3 January 1993. Negotiated in less than two years, as compared to over nine years of START I negotiations, the treaty required the United States and Russia to reduce the number of their deployed strategic warheads to 3,000-3,500 each, and eliminate all MIRVed ICBMs, by 1 January 2003.²⁷

Strategic defences no more an issue

Strategic Defences had proved to be the main obstacle to START I; but for START II, they did not. Unlike the Reagan and Bush administrations, the Clinton administration downplayed the significance of SDI and its later versions in view of their non-feasibility and cost-effectiveness. Already, in completing START I, Moscow had set aside its demand that Washington should agree to limit strictly the scope of its SDI tests. The Soviet move at that time reflected an apparent calculation that Congressional opposition to a space-based defence and the resulting budgetary constraints would effectively limit any push to develop a space-based defensive system. By the time eighties ended, despite appropriations of \$ 17 billion during about six years, there were no realistic prospects of deploying a Star Wars system. Part of the problem was consistent inability of SDI's designers to define its architecture. Originally, there was much talk of space-age particle beams and laser weapons, until the practical difficulties of those technologies became apparent. By 1989, the SDI organisation decided to a new technology called 'Brilliant Pebbles.' In the new programme, some 6,000 independent pebbles, each carrying killer rockets that would crash into incoming Soviet ICBMs, were to be tested, developed and deployed. But when inspected closely, Pebbles also appeared less brilliant. Much of the sensing technology had already remained unproved, and the difficulties of retaining human control over thousands of semi-autonomous weapons hurtling through space, were immense. 28

Technically speaking, the Strategic Defence Initiative was, thus, a pipe-dream. Even if once constructed, its operational effectiveness would have remained uncertain. The essential difficulty in devising a BMD system like the SDI or its later versions is rooted in the very great destructiveness of nuclear weapons and the very great speed of ballistic missiles. President Reagan might have used it as a bargaining chip in START I negotiations: the Soviets always expressed the fear that if the United States deployed such a BMD system, it would make itself totally invulnerable to a nuclear attack and, thus,

would be in a position to launch a first-strike against the Soviet Union. They were justified in expressing such apprehensions: nuclear deterrence fails when either of the two sides feels it has developed a system that can withstand the other's retaliatory strike after it launches a first-strike. However, due to its technical infeasibility and cost-effectiveness, the SDI was abandoned by the Clinton administration on 13 May 1993. By then, the SDI had consumed some \$30 billion. Thus, in economic terms also, the SDI proved to be a wasteful venture. In May, the Strategic Defence Initiative Organisation was also renamed Ballistic Missile Defence Organisation, signalling a re-emphasis of American ballistic missiles programmes from strategic to theatre. The Bush administration had already initiated a ballistic defence programme called the Global Protection Against Limited Strikes in 1990. In 1991, it announced to test and develop ground- and space-based ABM systems for territorial defence of the United States against limited ballistic missile attack. Building on this transition from strategic defences to theatre defences, the Clinton administration presented its Theatre Missile Defence initiative in 1993 to test and develop theatre, or tactical, missile defence system, without undermining the ABM treaty.²⁹

The transition from strategic to theatre ballistic missile defence has taken place as a consequence to the end of the cold war and the American concern regarding the multi-dimensional dangers associated with nuclear proliferation. Both the United States and Russia are interested in deploying more robust defences against ballistic missile attacks from potential proliferationists and terrorists; the United States is also interested in guarding against the possibility of unauthorised attacks involving Russia strategic forces. There exists a widespread perception in the American arms control community that the main threat the West faces today is not an all-out, coordinated attack by Russia, rather a small, uncoordinated and perhaps unauthorised attack from some unknown quarters. Les Aspin, US Defence Secretary during the Bush administration, described such dangers as 'undeterrable threats.' These threats are said to arise from situations when civil war

replaces central authority, when empires break into pieces, or from rouge regimes of Third World led by dictators like Saddam Hussain. This is the reason that the centrepiece of the Clinton administration's Nuclear Posture Review, which was announced in September 1994, is the TMD initiative. Some strategic defence proposals on the American side call for deployment of 700-1,200 ground-based launchers complemented by a constellation of 1,000 or more Brilliant Pebbles, the space-based interceptors. ³⁰

The United States still spends some \$ 3 billion on researching defensive technologies. It is also working on developing a chemical laser called Alpha, which can be deployed on space stations circling the earth and is meant to provide defence against ballistic missiles. On the whole, however, defensive systems have ceased to be a major obstacle to strategic arms reduction treaties. Even against the TMD or GASPAL, there exists considerable opposition in the US Congress---due to the high cost involved, technical difficulties in producing these technologies and their inherent potential for undermining the provisions of the ABM treaty. ³¹

Ratifying START II

Since its conclusion in January 1993, the START II treaty has not yet been ratified by the US Senate and the Russian parliament. This has happened primarily due to two reasons: First, the delay in START I's entry into force, which in turn has delayed the START II ratification process. The START II treaty's entry into force was conditional to START I's entry into force. And START I did not enter into force unless Ukraine agreed to sign the NPT in December 1994. Second, there is a strong opposition to START II by nationalist deputies in the Russian parliament. In the case of the US Senate, however---as apparent from START II hearings conducted by the Senate Foreign Relations Committee between early 1993 and early 1995---START II enjoys an overwhelming support.

The Russian parliament started ratification hearings on the START II treaty in early 1994. During the hearings that took place ever since then, its nationalist deputies have

argued against ratification and for two alternatives. For some critics, START II is totally unacceptable to Russia and should be jettisoned altogether; while others argue that START II treaty's inequalities can be redressed through introducing amendments to it or negotiating supplementary agreements, prior to the treaty's entry into force. One of the major arguments against START II put forward by Russian critics is that the agreement would require Russia to eliminate the principal component of its deterrent force--- MIRVed ICBMs---while it would allow the United States to retain the key element of its deterrent force: SLBMs. As a result, Russia would have to go through the costly and difficult process of restructuring its strategic triad; while the United States could keep its triad intact, including the forces in which it enjoyed technological superiority over Russia. President Yeltsin has dismissed START II critics as a 'reactionary minority', arguing that the treaty should be seen in terms of political and economic advantages Russia has reaped by foresaking strategic competition for domestic reform. ³²

For Mr Mr Yeltsin and his supporters in the Russian parliament, military drawbacks of START II are out-weighed by its political advantages: the treaty provides Russia a framework for partnership with the United States and encourages the Clinton administration to provide financial support for Russia's economic progress. Moreover, ratification of the START II treaty by Russian parliament will boost Mr Yeltsin's image as an international peace-keeper. Russia's START II supporters also argue that, even after the reductions, Russia will retain over 3,000 strategic warheads, a force which is more than any power other than the United States possesses and will defend Russia against any aggression. ³³

That START II remains unratified, however, does not mean the end of the strategic arms negotiating process. The United States and Russia have adopted several measures to make the implementation of START I effective, prepare the groundwork for the implementation of START II and work for another START treaty once START II is ratified. President Yeltsin, in his speech to the United Nations General Assembly on

September 26, suggested giving thought to further steps to limit US-Russian strategic nuclear weapons, and proposed a treaty on nuclear security and strategic stability among nuclear-weapon states leading to further reductions of nuclear weapons and delivery vehicles. In his UN speech, President Clinton endorsed efforts towards further reduce nuclear weapons and make the dismantling of nuclear warheads transparent and irreversible. He also offered that, as a unilateral gesture, the United States will place weapons-grade fissile material excess to its needs under international supervision. ³⁴

The Russian leader followed his UN speech with a two-day visit to the United States. During the visit, President Clinton and Mr Yeltsin agreed to a confidential exchange of information every three months on the unilateral deactivation and elimination of strategic systems under START I. They agreed to speed up the rate of deactivation of those missiles scheduled to be retired under START II. Instead of taking the nine years allowed by the treaty, the United States and Russia have agreed to begin removing warheads from these missiles immediately following the ratification of START II by both countries. Clinton administration officials said the United States would partially pay for Russia's weapons deactivations, as provided for in the treaty. This will eliminate the threat from these systems in one or two years, rather than the seven years or more originally allowed. Actual destruction of strategic delivery systems would still require several more years. On Yeltsin's proposal to go beyond START II reductions, the two leaders agreed only to include the possibility of further reductions among topics to be explored in talks on strategic stability and nuclear security. ³⁵

START in 1995

For START, 1995 has proved to be a significant year. The implementation of START I continues smoothly, so does the transfer of strategic arsenals to Russia from Belarus, Kazakhstan and Ukraine. Kazakhstan has transferred all warheads and will dismantle silos and missiles within the next two years. By October 1994, Ukraine had transferred

360 warheads to Russia. By September 1994, Belarus had transferred 45 SS-25s, and the process would be completed by the middle of 1996. The most important START achievement of the year has been an agreement by President Clinton and Mr Yeltsin at their Moscow summit held in May to negotiate arrangements concerning reciprocal visits by US-Russian arms control inspectors of sites where the two countries store some of the plutonium and highly-enriched uranium they have withdrawn from outmoded nuclear weapons. ³⁶

Since March 1995, almost four years after the signing of START I, arms control inspections have begun to check that the United States and Russia are doing away with what once seemed impressive numbers of nuclear weapons. Yet, START I is not the only strand in a thickening web of agreements that will allow the United States and Russia to explore each other's most closely guarded nuclear secrets. The US Senate Foreign Relations Committee concluded its hearings on START II on 29 March. In case both the Senate and Russian parliament ratify the START II treaty, still more intrusive inspections will begin. By the end of the decade, the two sides would have reduced their strategic warheads by two-thirds --- which, without any further cuts, is to leave an awkward joint legacy: tonnes of highly-enriched uranium and plutonium from the warheads' cores, along with their other bits and pieces. It is the need to do something about this that is driving the United States and Russia to imaginative nuclear cooperation. ³⁷

The START I treaty stipulates that only launchers, not warheads, will have to be destroyed. Yet both the United States and Russia have begun dismantling warheads. According to a March statement of US Defence Secretary William Perry, the United States has removed warheads from all the weapons it is required to eliminate under the START I treaty. It has destroyed some 90 per cent of the missiles and bombers as required by the treaty. For its part, Russia has destroyed some 50-60 per cent of the missiles and bombers----although it is still receiving former Soviet warheads from Ukraine, Kazakhstan and Belarus. Both sides have a backlog of warheads waiting to be

taken to bits. It is a slow business; aside from its uranium and plutonium, a typical American warhead may have up to 6,000 parts and each has to be catalogued, with procedures worked out for disposal. Not only strategic warheads but also those from other advanced weapons have to go through this process. The American target is to take apart 2,000 warheads a year over the next three years, then reduce the rate somewhat. In the past three years, the average has been only 1,500. Russia has maintained it is already dismantling 2,000 warheads a year. But it operates fewer safety procedures and is short of safe and secure sites to store the materials. There have been three major interceptions in the West of weapon-grade material leaking out of Russia. As long as this fissile material has not been disposed of permanently, it will remain vulnerable to Russian domestic instability and susceptible to purchase or theft by rouge regimes or terrorists. It could even be reintroduced into Russian nuclear forces if Moscow's relations with the West turned sour. ³⁸

The United States has taken this danger seriously enough to expend resources to nuclear weapon safety and security in the former Soviet Union. The American assistance for the purpose, using money from the Nunn-Lugar funds, thus, continues---although, earlier in the year, the US Congress had some doubts that Russia was not dismantling 2,000 warheads a year as it had claimed. Therefore, it asked the Clinton administration to slow down implementation of the START I treaty. Since 1992, the Congress has appropriated some \$1.3 billion to aid the dismantling of weapons in Russia, Ukraine, Kazakhstan and Belarus. Some \$75 million have been committed to building a secure storage plant, mostly for plutonium from dismantled warheads. A deal has already been done worth some \$12 billion over twenty years to buy up to 200 tonnes of highly enriched uranium---the equivalent of some 20,000 dismantled Russia warheads. ³⁹

At their summit meeting in Moscow on 9-10 May 1995, President Clinton and Mr Yeltsin were able to make limited progress towards resolving American disputes with Russia about its adherence to START agreements. The Russian leader assured Mr

Clinton that Moscow would allow some inspections of portions of its SS-25 ballistic missiles that had been converted to civilian use in launching satellites. Russia had previously disputed American claim that SS-25 inspections were required to ensure that a large number of such mobile missiles are were not being secretly held in reserve by the military. Russia also agreed at the summit meeting to negotiate arrangements for reciprocal visits to sites where the two countries store some of the plutonium and highly-enriched uranium they have withdrawn from outmoded nuclear weapons. The visits are meant to check that none of the fissile materials is being used again in new bombs. American officials maintain that the visits will help resolve American doubts about Russia's claims that it is dismantling 2,000 to 3,000 warheads a year. For its part, the United States has kept thousands of its own outmoded nuclear arms on military stand-by as a hedge against any Russian dishonesty. American officials described this tentative accord as more important than potential reductions in American and Russian nuclear arms below the START II ceilings. On the whole, the outcome of the Moscow summit reflected Moscow's willingness to work with Washington on some little-noticed military or security-related matters even while it defied the Clinton administration on such high-profile disputes as Russia's contract to sell Iran a nuclear reactor. ⁴⁰

While START II might have been advantageous for Moscow, the Russian parliament will find it very difficult to act on anything Yeltsin wants. Opposition to the treaty by nationalist deputies aside, the Russian Federation has to face the fallout of a long turmoil in Chechenya, even if the war there comes to an end. Russia and other former Soviet republics are also concerned about the prospect of NATO expansion. Belarus, Moldova, Russia and Ukraine have announced that they will either disavow or revise their commitments to the CFE agreement. Moreover, despite the end of the cold war, Moscow still has its own priorities. After a period in which Mr Yeltsin was eager to brush aside old preoccupations, he has hewed to traditional Russian concerns about regional hegemony and international standing, some times at the expense of American interests.

Some of the aspects of Russian foreign policy that clash with American goals are: a protective attitude towards Bosnian Serbs, the war in Chechnya, and arms sales to Third World clients---most importantly, the decision to give nuclear reactors to Iran. 41

As part of NATO's 1993 Partnership for Peace initiative, the Clinton administration plans to expand NATO to central and eastern European states. NATO expansion is being taken in Russia as a hostile move by the Western alliance against Russia. For instance, Yegor Gaidar, one of the most liberal and pro-Western Russian parliamentarians, said recently that NATO expansion would bring nuclear weapons closer to Russia. It could complicate efforts to win ratification of START II, strengthen the hands of nationalists in the Russian parliament and weaken Mr Yeltsin. 42

On the positive side, however, several US-Russian projects are under way to improve the security of Russian nuclear facilities. Russia is ready to negotiate with the United States on nuclear warhead stockpiles, developing a joint data base and measures to ensure that warhead destruction will be irreversible. But START II is more problematic: due to bitterness caused by disputes over Russian nuclear sales to Iran and American move to expand NATO, the impetus to ratify it is not there yet; and the treaty had a chance of falling prey to Russian pre-election politics. But strategic arms reduction has in the past been made to serve presidential election goals. It can do so for Mr Yeltsin if the United States moves at all towards further reductions, easing criticism of the treaty in Moscow and allowing him to be a nuclear peace-maker. But, before marching on the road to further strategic reductions---on the lines proposed by President Yeltsin in September 1994 speech at the UN---a serious evaluation of START treaties I and II is necessary. Grievances of nationalist deputies in the Russian parliament aside, both the treaties serve the goals of strategic stability and nuclear deterrence. And both provide a basis for any future strategic arms reduction treaty, either START III or strategic stability

Disarmament Agency, arms control still has a crucial role to play in the post-cold war world. For details, see Ronald F Lehman II, 'Arms Control: Passing the Torch as Time Runs Out,' *Washington Quarterly* 16 (Summer 1993), 37-52.

- 6 Congressional Research Service, *START and Nuclear Arms Control: Chronology of Major Events 1982-1992* CRS Report for Congress (Washington, DC: US Government Printing Office, 1992), 11. Hereafter cited as *START and Nuclear Arms Control*; United Nations Institute for Disarmament Research, 'START Chronology', *UNIDIR Newsletter* 22 and 23 (Geneva: UNIDIR, June-September 1993), 31-32.
- 7 *START and Nuclear Arms Control*, 12-13. For details on the nuclear fallout of the Soviet fall, see Jonathan Dean, *Testimony before the Senate Foreign Relations Committee* (Washington, DC: Congressional Research Service, 5 March 1992), 5-9; Andrei Zagorski, 'Post-Soviet Nuclear Proliferation Risks,' *Security Dialogue* 23 (1992), 27-39; and Alexander N Rossolimo, 'The Post-Soviet Nuclear Threats Are Even Bigger,' *International Herald Tribune*, 15-16 May 1993.
- 8 For letters associated with the Lisbon Protocol, see *Arms Control Today* 22 (June 1992), 33. See also United Nations Institute for Disarmament Research, Protocol to the Treaty Between the United States of America and the Union of Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms, Lisbon, 23 May 1992, *UNIDIR Newsletter* 22 and 23 (Geneva: UNIDIR, June-September 1993).
- 9 *New York Times*, 2 February 1992; 'START Chronology', *UNIDIR Newsletter*, 33-34; Dunbar Lockwood, 'Senate Ratifies START Agreement, Sets Groundwork for Deeper Cuts,' *Arms Control Today* 22 (October 1992), 30; Dunbar Lockwood, 'Russia Ratifies START; Ukraine Reaffirms Conditions for Approval,' *Arms Control Today* 22 (November 1992), 26, 31-32. Also see US Congress, Senate, Foreign Relations Committee, Hearings: *The START Treaty*, Senate Hearing 102-607, February, March and June 1992 (Washington, DC: US Government Printing Office, 1992); and US

- Congress, Senate, Foreign Relations Committee, Report; *The START Treaty*, 102nd Congress (Washington, DC: US Government Printing Office, September 1992).
- 10 International Institute for Strategic Studies, 'From Arms Control to Non-Proliferation,' *Strategic Survey 1993-1994* (London: Brassey's, for IISS, 1994), 50. Hereafter cited as *Strategic Survey 1993-1994*; 'Arms Control After START,' *Financial Times*, 30 December 1992. Joseph Fitchett, 'Spector of "Instant" Powers Haunts Post-Soviet World,' *International Herald Tribune*, 9 March 1993; Joseph Fitchett, 'Ex-Republics as START Signatories,' *International Herald Tribune*, 20 May 1992. See also Joseph S Nye, Jr, 'Arms Control and International Politics,' *Daedalus* 120 (Winter 1991), 163.
- 11 *New York Times*, 5 February 1993 and 26 March 1994.
- 12 Dunbar Lockwood, 'Ukrainian Parliament Ratifies START , But Adds 13 Conditions for Approval,' *Arms Control Today* 23 (December 1993), 17; *International Herald Tribune*, 21 December 1992; *Washington Post*, 22 January 1993; *Financial Times*, 19 February 1993; *Economist*, 3 April 1993.
- 13 *Washington Post*, 9 January 1993; *Strategic Survey 1993-1994*, 52. For a review of how and why Ukraine stalled START, see Anatoly Shevstov and Mikhail Budnik, 'The START I Treaty and Its Future: A Ukrainian Perspective,' in United Nations Institute for Disarmament Research, *UNIDIR Newsletter* 22 and 23 (June-September 1993), 19-21; Michael E Brown, 'Will START Stall?', *UNIDIR Newsletter* 22 and 23 (June-September 1993), 24-30; Celestine Bohlen, 'Ukraine's Hesitations Cast a Pall Over START, Experts Say,' *International Herald Tribune*, 2-3 January 1993; and Zalmay Khalilzad, 'Solving Ukraine's Nuclear Dilemma and More,' *Asian Wall Street Journal*, 30 December 1992.
- 14 *Strategic Survey 1993-1994*, 52.
- 15 See National Academy of Sciences, *Management and Disposition of Excess Weapons Plutonium* (Washington, DC: National Academy Press, 1994), 105; *Washington Post*, 9 and 15 January 1994. Although seven years was the original timetable for the

- transfer of all strategic warheads, a protocol---signed by Ukraine's acting Prime Minister Zvyagilsky and Russian Prime Minister Victor Chernomyrdin on 16 May 1994---required Ukraine to transfer its warheads within three years of the signing of the Trilateral Statement: that is, by May 1997.
- 16 *Washington Post*, 4 February and 2 March 1994; Dunbar Lockwood, 'Ukrainian Rada Clears way for START I, NPT Accession,' *Arms Control Today* 24 (March 1994), 32. 'Moscow Trilateral Statement Implementation Begins,' *Arms Control Today* 24 (May 1994), 24.
- 17 *New York Times*, 5 March 1994; Dunbar Lockwood, 'Ukraine Begins Transfer of Strategic Nuclear Warheads,' *Arms Control Today* 24 (April 1994), 20.
- 18 Dunbar Lockwood, 'Ukraine Accedes to NPT; Opens Way to START Reductions,' *Arms Control Today* 24 (December 1994), 17.
- 19 President George Bush, State of the Union Address, Washington, DC, 28 January 1992, *US Department of State Dispatch*, 3 February 1992, 73-74; Dunbar Lockwood, 'START I Enters into Force, Clears Way for START II Approval,' *Arms Control Today* 24, January-February 1995, 19; 'The Race to Disarm,' *The Independent*, 30 January 1992; Michael R Gordon, 'Post-START Arms Control: Slower Pace,' *New York Times*, 17 July 1991; Daniel Hirsch and Peter Tyler, 'The Devil Is in Details,' *Nuclear Times* (Spring 1992), 3-4.
- 20 *START and Nuclear Arms Control*, 12-13.
- 21 See, for instance, Goldstein, *Arms Control and Military Preparedness from Truman to Bush* (New York: Peter Lang Publishing, Inc, 1992), 247; and James Baker, Secretary of State, Statement before the Senate Foreign Relations Committee, *The START Treaty*. Senate Hearing 102-607, Part 2 and 9, 22 June 1992 (Washington, DC: US Government Printing Office, 1992).
- 22 See *Washington Post*, 25 September 1992; *New York Times*, 15 October 1992; and Dunbar Lockwood, 'Nuclear Arms Control,' in Stockholm International Peace

- Research Institute, *SIPRI Yearbook 1993: Armaments and Disarmament* (Oxford: Oxford University Press, 1993), 556.
- 23 For details, see *New York Times*, 19 December 1992; and *Financial Times*, 31 December 1992.
- 24 The length of an SS-18 missile is over 35 metres and that of SS-25 is 22.3 metres. The 'restrictive ring' may have a diameter of no more than 2.9 metres; the SS-18 has a diameter of 3 metres. The 90 converted silos were to hold Russia's SS-25.
- 25 Lockwood, 'Nuclear Arms Control,' 558-559
- 26 Lockwood, 'Nuclear Arms Control,' 559
- 27 *New York Times*, 4 January 1993; Michael E Brown, 'The "End" of Arms Control,' in Ivo H Daalder and Terry Terriff, eds, *Rethinking the Unthinkable: New Directions for Nuclear Arms Control* (London: Frank Cass, 1993), 52.
- 28 Gordon, 'Post-START Arms Control: Slower Pace.' For details, see William Durch, 'Rethinking Strategic Ballistic Missile Defence,' in Daalder and Terriff, *Rethinking the Unthinkable*, 52; Union of Concerned Scientists, *Missing the Targets: SDI in the 1990s* (Cambridge, MA: Union of Concerned Scientists, 1992); Cherkasov, Sergei. 'The Strategic Arms Reduction Treaty and the Future of Space weapons.' *New Outlook* (Winter-Spring 1992): 61-66.
- 29 Joseph Fitchet, 'Proposed Global Missile Shield Can Track Anything, But Lacks Political Vision,' *International Herald Tribune*, 11 March 1992; *New York Times*, 14 May 1995; R R Subramanian, 'Strategic Defence Initiative: An Offensive Capability?', *Strategic Analysis* 9 (April 1985), 40-43; Arms Control Association, *The Administration's Proposal on Theatre Defences* (Washington, DC: Arms Control Association, December 1993).
- 30 George Quester, 'The Future of Nuclear Deterrence,' *Survival* 34 (Spring 1992), 78; 'The Future of Arms Control,' *Arms Control Today* 25 (January-February 1995), 14, 16-17.

- 31 See, for instance, Spurgeon M Keeny, Jr, *The Significance of the START Treaty and Possible Reductions Below the START Ceilings*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 5 March 1992), 4-5; Sidney D Drell, *The Future of Arms Control*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 3 March 1992), 7-12; Eric Schmitt, 'US Is Redefining Nuclear Deterrence,' *New York Times*, 26 February 1993; and William J Broad, 'Star Wars' II: The Death Ray That Refused to Die,' *New York Times*, 7 December 1994.
- 32 Michael Dobbs, 'Russia Must Now Sell Treaty to a Hostile Parliament,' *Washington Post*, 4 January 1993; Leyla Boulton, 'Yeltsin Faces Powerful Opposition to Treaty at Home,' *Financial Times*, 30 December 1993; Alexei Arbatov, *Implications of the START II Treaty for US-Russian Relations*, Report no 9 (Washington, DC: Henry L Smitson Centre, 1993), 69-75; K E Sorokin, 'Russia After the Crisis: the Nuclear Strategy Debate,' *Orbis* 38 (Winter 1994), 19-40.
- 33 Arbatov, *Implications of the START II Treaty for US-Russian Relations*, 69-75.
- 34 US Department of State, *US-Russian Strategic Stability and Nuclear Security Initiatives* (Washington, DC: US Department of State, 28 September 1994). Hereafter cited as *US-Russian Stability and Nuclear Security Initiatives*.
- 35 *The Clinton-Yeltsin Washington Summit* (Washington, DC: Federal News Service, 26 September 1994); Jack Mendelsohn, 'Clinton, Yeltsin Discuss Arms Control at UN and in Washington,' *Arms Control Today* 24 (November 1994), 26; *US-Russian Strategic Stability and Nuclear Security Initiatives*.
- 36 'Withdrawal of Nuclear Arms From Belarus Assessed,' *Izvestia*, 17 March 1994; 'Nuclear Weapons Deactivations Continue in FSU,' *Arms Control Today* 24 (November 1994), 27; Ashton Carter, Assistant Secretary of Defence, *Testimony before the Senate Foreign Relations Committee*, 4 October 1994; *The Military Balance 1994-1995*, 256. See also Carnegie Endowment for International Peace, *Nuclear*

Successor States of the Soviet Union: Nuclear Weapon and Sensitive Export Status Report (Washington, DC: Carnegie Endowment for International Peace, and Monetary Institute of International Studies, December 1994), 59p. This report narrates in detail the steps being taken by the United States in cooperation with Russia, Ukraine, Kazakhstan and Belarus to lessen the risks of nuclear proliferation in former Soviet territories.

- 37 Dunbar Lockwood, 'Senate Panel Ends START Hearings; Full Vote May Come Before Summit,' *Arms Control Today* 25 (April 1995), 17. 'Psst, Want to Know a Real Secret,' *Economist*, 11 March 1995, 3. Hereafter cited as 'Psst, Want to Know a Real Secret.'
- 38 James Blaker, 'Coping With the New "Clear and Present Danger" from Russia,' *Arms Control Today* 25 (April 1995), 13-16; Robert D Blackwill, 'Time for a Joint Effort to End the Nuclear Threat Once and for All,' *International Herald Tribune*, 24 April 1995.
- 39 'Psst, Want to Know a Real Secret,' 3; Blackwill, 'Time for a Joint Effort to End the Nuclear Threat Once and for All.'
- 40 *International Herald Tribune*, 12 May 1995; *New York Times*, 8 and 11 May 1995. The Clinton administration fears that the Russian contract to sell nuclear reactor technology will speed up Iran's effort to develop an atomic bomb. See Steven Greenhouse, 'US Warns Russia of Nuclear Cutoff,' *New York Times*, 10 April 1995.
- 41 'The Future of Arms Control,' *Arms Control Today* 25 (January-February 1995), 16; US Senate Foreign Relations Committee hearings on START II held in March 1995 provide the latest American assessment of the political and strategic situation in Russia. One of the predominant arguments during the hearings was that, due to the Russian parliamentary elections scheduled to be held at the end of 1995, START II ratification by the Russian parliament might not be possible this year. See Lockwood, 'Senate Panel Ends START Hearings; Full Vote May Come Before Summit,' 17.

42 For details, see Thomas L Friedman, 'The Priority with Russia Ought to be Nuclear Trims,' *New York Times*, 11 May 1995; and Michael E Brown, 'NATO Expansion: the Need Is Dubious, the Risks Real,' *International Herald Tribune*, 17 January, 1995.

43 Rose Gottemoeller, 'America and Russia and a Road Map to Read Together,' *International Herald Tribune*, 9 May 1995.

Chapter 4

Assessing START I and II Agreements

Signed in July 1991 after over nine years of intensive talks, the START I treaty is the first agreement in the history of nuclear arms control in which the United States and the former Soviet Union have agreed to actually make sharp cuts in their strategic nuclear forces. By specifying the basic framework of deep reductions, ways and means of implementing them, and procedures of the world's most intrusive verification regime; the START I treaty set a precedent which helped the United States and Russia to conclude quickly, in January 1993, the START II treaty on further deep reductions in strategic forces. Once provisions of the two START treaties were fully implemented, both sides would reduce their strategic forces by about 70 per cent from the levels that existed in 1991. How significant are these treaties in ensuring strategic stability between the United States and Russia and maintaining such a strategic balance between them as will guarantee a credible and stable deterrence? Can they act as a springboard for any future arms reduction treaty on reducing US-Russian strategic weapons to hundreds rather than thousands and also making some reductions in the nuclear arsenals of three other declared nuclear powers---China, France and Britain? To understand the impact of the two START treaties on strategic arms reductions in particular and arms control in general, it is necessary to narrate and assess various provisions of the treaties, and how they will affect strategic force structures and postures of Russia and the United States. But all this cannot be seen in isolation from the radical transformation of international setup in recent times and the resulting geopolitical and military considerations of the two sides.

Although the START I treaty cuts forces largely considered to be redundant, it does introduce the idea of cutting, rather than limiting, strategic forces. In the two SALT agreements, the United States and the Soviet Union had negotiated only the rate of

growth of nuclear weapons. Had SALT II agreement been ratified and implemented, both sides would only have reduced their strategic nuclear delivery vehicles or launchers, and not warheads. The START I treaty will not only reduce and eliminate launchers but also warheads---weapons which have been of central importance to both sides and are the main source of the nuclear danger. Thus, START I accomplished what the two SALT agreements could not. The treaty provides for transparency of existing and predictability of future strategic forces. From the outset, START negotiations aimed at 50 per cent cuts in the most destabilising ballistic missile capabilities. Through its limits on heavy ICBMs and on ballistic missile warheads and throw-weight, the treaty will achieve precisely that. However, because of counting rules that treat bomber and cruise missile capabilities less restrictively, reductions in total strategic weapons will fall short of 50 per cent. The total warheads will be cut by 20-25 per cent for the United States and 30-35 per cent for Russia. Ballistic missile reductions will amount to 35 per cent for the United States and around 50 per cent for Russia. These reductions will take place over a period of seven years. Since the START I treaty entered into force on 5 December 1994, if all went well, START I reductions would be implemented by December 2001, or even before that. And, by then, the two sides would reduce approximately by over 30 per cent the number of their respective strategic nuclear arsenals that existed at the time when the treaty was signed. ¹

As against START I, the START II treaty can be termed the most sweeping arms reduction treaty in the history of nuclear arms control: it builds upon START I but calls for greater reductions in strategic nuclear forces. The START II treaty requires the United States and Russia to reduce the number of their deployed strategic warheads to 3,000-3,500 each and eliminate their MIRVed ICBMs. These reductions, once the treaty enters into force, will be carried out by 1 January 2003, or by the end of the year 2000 if the United States helps finance the elimination of strategic weapons in Russia. Under START II, the United States and Russia will reduce their strategic warheads by about

two-thirds from the levels deployed in 1992. All START I provisions will pertain, except as explicitly modified in the new treaty. Because of the close relationship between START I and START II, the latter could only enter into force unless the former would have. Since the START I treaty has already entered into force, the START II will be ready for implementation once it is ratified by the US Senate and Russian parliament. Thus, ratification remains the only impediment to START II implementation. ²

Table 1

Comparison of Central Limits Set by START Treaties I and II

	START I	START II
Total strategic warheads	6,000	3,000-3,500
	Accountable	Actual
ICBM warheads	4,900	No specific submit
MIR Ved ICBM warheads	N/A	0
SLBM warheads	N/A	1,700-1,750
Heavy ICBM warheads	1,540	0
Mobile ICBM warheads	1,100	START applies
Total Strategic Nuclear Delivery Vehicles	START applies	

Source: US Department of State, *US Department of State Dispatch*. 4 (Washington, DC: Government Printing Office), 4 January 1993, 6.

START I's main provisions

The START I treaty consists of 19 articles governing basic provisions. It comprises a series of annexes, protocols, a memorandum of understanding, joint statements, unilateral statements, declarations and an exchange of letters. These documents, which make up the

bulk of the treaty, are intended to amplify basic treaty provisions, define and explain them and facilitate their implementation to mutual satisfaction. ³

Article I of the START I treaty commits both sides to reduce and limit their strategic nuclear weapons in accordance with treaty provisions and to comply with its annexes, protocol and memorandum of understanding. Article II imposes limits on aggregate numbers of deployed strategic nuclear delivery vehicles, including ICBMs, SLBMs and long-range bombers, and the warheads they carry. These limits must be met over a period of seven years after the treaty enters into force. Specifically, as apparent from Table 1, neither side may exceed a limit of 1,600 on strategic nuclear delivery vehicles. These vehicles may carry no more than 6,000 accountable warheads. A maximum number of 4,900 warheads may be carried by ballistic missiles, and no more than 1,100 warheads may be on mobile ICBM launchers. No more than 1,540 warheads may be carried by heavy ICBMs. Seven years after the treaty's entry into force, the aggregate ballistic missile throw-weight for deployed ICBMs and SLBMs for both sides may not exceed 3,600 tonnes.

Article III of the treaty establishes counting rules for strategic launchers and warheads. Each deployed ICBM, SLBM or long-range bomber counts as one launcher. Each re-entry vehicle of an ICBM or an SLBM counts as one warhead. Each long-range bomber equipped with bombs and short-range attack missiles counts as one warhead. Different counting rules apply to ALCM-carrying long-range bombers. For the United States, the first 150 ALCM bombers will count as carrying 10 warheads each, although up to 20 ALCMs may be carried. For Russia, the first 180 ALCM-carrying bombers will count as carrying eight warheads each, but may carry a maximum of 16. American and Russian bombers equipped with ALCMs above these agreed limits will be counted with the maximum number of ALCMs they are actually equipped to carry. Article IV of the START I agreement limits the number of non-deployed mobile missiles and non-deployed mobile launchers, and specifies rules on how and where they may be stored.

These provisions are intended to make rapid reload and refire more difficult. Each side is permitted to have only 250 non-deployed ICBMs for mobile launchers of ICBMs. Within this limit, each side may not have more than 125 non-deployed ICBMs for rail mobile launchers of ICBMs. Non-deployed mobile ICBM launchers are limited to 110, of which no more than 18 may be non-deployed rail-mobile launchers. Non-deployed ICBMs for mobile ICBM launchers must be stored separately from non-deployed mobile launchers located at the same facility.

Article V prohibits the United States and Russia not to produce, test or deploy certain types of weapons; not to convert existing types of weapons which are counted in the treaty as having a specified purpose and capability; not to base weapons subject to treaty limitations outside either party's national territory. Treaty provisions included in this Article are especially concerned with preventing production, testing and deployment of heavy ICBMs of a new type, heavy SLBMs, mobile launchers for heavy ICBMs, launchers of heavy SLBMs and downloading of heavy ICBMs. The Article further commits both sides not to produce, test or deploy an ICBM or SLBM with more than ten warheads; not to flight-test or deploy an ICBM or SLBM with a greater number of warheads attributed to it; not to produce, flight-test or deploy systems for rapid reload; and not to produce, flight-test or deploy long-range, nuclear armed ALCMs with more than one warhead. Article VI includes provisions for road- and rail-mobile launchers. The road-mobile launchers can only be based in restricted areas not exceeding five sq km and holding no more than ten deployed road-mobile launchers and associated missiles each. Either party may only deploy rail-mobile ICBM launchers and their associated missiles in rail garrisons, of which no more than seven are permitted.

Article VII establishes the principle of verifying treaty provisions by national technical means and on-site inspections in accordance with the Protocol on Conversion or Elimination and the Protocol on Inspections and Continuous Monitoring Activities. It also specifies that only after treaty obligations have been met will weapon systems

covered by the treaty cease to be subject to the treaty. Articles VIII-XV of the START I treaty establish the treaty verification regime. The key to this regime is the data-base provision, which commits both sides to provide data on the number, location and technical characteristics of items---strategic offensive arms, fixed structures and facilities--subject to the treaty, and to update data regularly. Each side must provide notifications concerning movement, conversion or elimination of items subject to the treaty, data on ICBM and SLBM throw-weight, flight tests of ICBMs and SLBMs and telemetric information, and new types of strategic offensive weapons. Both sides are committed not to interfere with the other's NTMs and not to use concealment measures that may interfere with satellite monitoring of treaty compliance. Full access to telemetric information obtained from ICBM and SLBM flight tests must be provided: neither party may engage in jamming, encryption or encapsulation of data. An exemption to this rule is limited to 11 ICBM and SLBM flight tests per year. ⁴

The treaty provides for 12 types of on-site inspections and exhibitions: baseline data inspections, data update inspections, new facility inspections, suspect site inspections, re-entry vehicle inspections, post-exercise dispersal inspections, conversion or elimination inspections, close-out inspections, formerly declared facility inspections, technical characteristics exhibitions, distinguishability exhibitions and heavy bomber baseline exhibitions. Each party shall also have the right to conduct continuous monitoring activities at the perimeter and portals of the other's production facilities for mobile ICBMs launchers. Procedures for all these inspections and exhibitions are specified in the Inspection Protocol and in the Conversion and Elimination Protocol.

On-site inspections and exhibitions are intended to verify compliance with the treaty's basic provisions on reduction and elimination of strategic offensive systems and the treaty's counting rules. Their aim is to minimise the potential for circumventing treaty commitments. Therefore, each side has the right to verify basic data and update data on numbers and types of systems and their specified location. New facility inspections serve

to confirm that declarations by one side about the facility's purpose and which treaty-limited items it holds are correct. Suspect facility inspections are intended to confirm that the covert assembly of ICBMs for mobile launchers is not taking place. Re-entry vehicle inspections serve to establish that deployed ICBMs and SLBMs do not carry more re-entry vehicles than the number of warheads attributed to them. Post-exercise dispersal inspections of mobile ICBM launchers and missiles are intended to ensure that the number of those returned and those not returned does not exceed the number specified for that base. Conversion or elimination inspections allow each side to confirm that conversion or elimination of missiles has actually taken place. Close-out inspections confirm that the elimination of facilities has been completed, and that such facilities are not used for purpose inconsistent with the treaty. Technical characteristics exhibitions are intended to verify that the technical data specified for each type of ICBM, SLBM, mobile ICBM launcher and their variants correspond to the actual systems in place. Distinguishability exhibitions for long-range bombers allow the inspecting party to ensure that the counting rules for ALCM-capable bombers and non-ALCM-capable bombers are properly applied, and that the technical characteristics of each type of heavy bomber corresponds to those specified. Inspectors are assigned the task to verify that the maximum number of ALCMs an ALCM-capable long-range bomber is actually equipped to carry does not exceed 20 ALCMs each for the United States and 16 ALCMs each for Russia.

Article XV of the START I treaty establishes the Joint Compliance and Inspection Commission, whose job is to settle compliance disputes and to improve the treaty's effectiveness as may be necessary. Each side can call a meeting of the JCIC at any time. Article XVI prohibits either side to assume international obligations that will conflict with treaty provisions. Thus, a transfer of strategic offensive weapons to a third country is not permitted. Articles XVII-XIX state that the START I treaty will remain in force for a period of 15 years. It can be extended by successive five-year periods or be

superseded by another agreement on the reduction and elimination of strategic offensive arms. Each party has the right to withdraw from the treaty if it decides that continued adherence to the treaty will jeopardise its supreme interests. Should one party decide to withdraw from the treaty, it must give the other six months notice and declare its reasons for withdrawing. The treaty may be amended through proposals from either party.

START I's impact on strategic stability and deterrence

An assessment of START I must start with the question whether or not the treaty fulfils the basic objective for which START negotiations had begun. This objective was stated clearly in President Reagan's Eureka proposal of March 1982, the first START initiative. It proposed 50 per cent reductions in US-Soviet strategic weapons that the United States considered most destabilising: land-based ICBMs, particularly the ten-warhead Soviet heavy missile, the SS-18. In the treaty that was finally concluded, the total strategic warhead reductions to be made by each side would amount to over 30 per cent. Russia would reduce its ballistic missile warheads by some 50 per cent---as against the United States, which would cut its ballistic missile warheads by no more than 35 per cent. Therefore, even if START I fell short of the initially proposed goal of 50 per cent cuts, the United States achieved through this treaty what it had initially intended to accomplish through START negotiations. Ballistic missiles constitute some 90 per cent of the Russian strategic force. Under the START I treaty, that percentage will drop considerably as ballistic missile warheads are cut almost by half and bomber capabilities are permitted to expand. Additionally, most of the treaty provisions---such as the limits on delivery vehicles and warheads, bomber counting rules, and throw-weight limits---were initially proposed by the United States. ⁵

By the time START I reductions are completed, Russia's 308 SS-18s will be reduced by half, leaving 154 SS-18s with 1,540 warheads in place. The treaty also forecloses options for expanding the Russian heavy ICBM force by banning new types of mobile

missiles. Moreover, measures like the 4,900-warhead limit on ballistic missiles and reduction in Soviet ballistic missile throw-weight by 46 per cent, were intended to encourage both sides, especially Russia, to reduce reliance on MIRVed ICBMs---which the United States had always considered to be most destabilising, first-strike, nuclear weapons. Moreover, the START I treaty promoted a shift to long-range bombers since they were considered unsuitable for a first-strike. The liberal counting rules for bombers with gravity bombs and short-range attack missiles, and concessions granted for ALCM-carrying bombers, indicated the desire of the two sides to limit ICBM forces. The United States has always been concerned that, while mobility increases survivability, mobile systems are difficult to verify---and this increases fears of potential break-out from the treaty. The START I agreement, thus, includes detailed provisions to limit the potential of Russian mobile ICBMs, including rail-mobile SS-24s and road-mobile SS-25. It limits the number of warheads on deployed mobile ICBMs to 1,100, the number of non-deployed missiles flight-tested from a mobile launcher to 250, of which no more than half may be for rail-mobile launchers; and the number of non-deployed mobile launchers to 110 of which no more than 18 may be for rail-mobile ICBMs.

The START I treaty permitted the replacement and modernisation of strategic offensive arms, except where specifically prohibited. It permitted both sides to make the required force reductions in older, less capable, strategic forces; thus preserving the most modern and accurate ones. As a result, the treaty's impact on offensive nuclear capability was rather limited. Apart from the mandated cuts in SS-18s, it did not begin to do more than eliminate redundant nuclear capability. Both sides were left with sufficient numbers of nuclear weapons to cover the targets prescribed by their respective operational plans. Thus, despite the size of nuclear force cuts that were to be undertaken, the START treaty could not be viewed as anything more than a first step towards larger reductions. The reason why within months after the signing of START I, the two sides moved towards signing another START treaty that would make much more reductions than that of

START I, did, therefore, make sense. Perhaps leaders of the two sides realised that START I-mandated reductions did not match the drastic changes that were occurring on the international scene. ⁶

The START I treaty's most important achievement is the creation of a verification regime. Never before in the history of nuclear arms control have compliance verification procedures been as comprehensive and intrusive as they are in this treaty. While procedures, such as those devised for verifying the INF treaty, have been useful in designing the START verification regime, the latter is of entirely different magnitude. Under the START I treaty, verification is not only about verifying conversion or elimination of nuclear weapons but also about verifying compliance with treaty provisions governing accountable systems. It is always more difficult to verify permitted numbers of weapons than to establish their absence. For instance, if a particular type of weapon has been banned, discovery of one such weapon will constitute a violation of the treaty. On the other hand, if a specified number of weapons of one type is permitted, the inspecting side will need to verify that the maximum number permitted has not been exceeded, that these weapons comply with capabilities ascribed to them, such as the number of warheads and throw-weight; and that they are located where they should be. ⁷

The extensive verification provisions in START I will ensure that treaty provisions are honoured. And verified ceilings will improve the predictability of the size and quality of each other's strategic forces. The treaty sets a series of major monitoring tasks, such as monitoring by number and types of deployed silo-based ICBMs, both deployed and non-deployed mobile ICBMs and their launchers; deployed ballistic missile launching submarines, their launchers and deployed SLBMs; deployed long-range bombers that can and cannot carry ALCMs; previously nuclear-equipped long-range bombers that no longer carry nuclear weapons; and missiles, launchers or bombers eliminated in accordance with treaty limits. ⁸

The Protocol on Procedures Governing Conversions and Elimination of items subject to the treaty lays out detailed provisions on what constitutes elimination and procedures on how these items are to be eliminated. These procedures are subject to on-site inspection. The Protocol specifies that conversion or elimination can only take place at facilities designated for these tasks. The missiles and their associated launchers will by either cut into pieces, crushed or exploded. Missile silos will be excavated and filled with earth. The process of destroying a silo may not exceed 180 days during which time it must be visible to NTMs and after which it can be filled with earth. Long-range bombers will be eliminated by cutting off the tail section, removing the wings and cutting the fuselage into two pieces. Elimination must be completed within 60 days and bomber remains must be visible to NTMs for a period of 90 days thereafter. The Protocol on Inspections and Continuous Monitoring Activities governs all activities related to regular inspections, suspect-site inspections, and continuous monitoring of mobile ICBM production facilities. It determines the rights and duties of the inspecting party. It lays out in detail how inspections are to proceed from the point of entry to the site to be inspected, the equipment that may be carried by inspectors for the purpose of inspection, and what inspectors may look at, investigate at close range, measure and count. ⁹

In terms of their feasibility and utility, the complex verification provisions of the START I treaty have so far proved successful. Although the START I treaty entered into force in December 1994, its implementation had started well before that so had the application of the treaty's verification provisions. The START I verification regime beyond any doubt achieves an unprecedented degree of transparency of nuclear forces and their capabilities. Verifiable data exchanges on forces and regular updating of data will provide the necessary baseline for treaty items on which on-site inspections in combination with satellite surveillance can build. The regulated procedures which guide all verification activity assure that, as steps are taken to comply with treaty limits, verification is undertaken to mutual satisfaction. The benefits of the START I

verification regime are of lasting value, if seen in terms of how precedent-setting they have proved to be for START II, and how they may be for any other strategic arms reductions that the two sides may agree beyond START II levels. In terms of importance, START I treaty's comprehensive verification provisions clearly outweigh the contribution to strategic stability of the treaty-mandated force reductions themselves.¹⁰

The START I treaty reflects an era of cold war rivalry, during which the purpose of strategic arms control was mostly to maintain a military status-quo, expressed in terms of strategic parity and based on mutual deterrence. By early seventies, the Soviet Union had achieved strategic parity with the United States. Thus, the main motive behind the SALT I and SALT II agreements was to manage and preserve this parity so that a stable and credible deterrence could be maintained between the two sides. The START I treaty is meant to achieve the same objective, except at a significantly reduced level of forces. START negotiations were primarily aimed at maintaining the balance of existing forces, preserve military options prescribed by nuclear strategy, anticipate and forestall force developments that might endanger the balance, and, thus, maintain strategic stability.

The START I treaty intends to create a more stable balance at a lower level of strategic nuclear arsenals. It encourages the evolution of force structures that rely less on first-strike weapons and more on less destabilising systems. The treaty will not decisively reduce the destructiveness of nuclear war should it occur, what it will do is moderate the strategic competition and make it more predictable.¹¹

Strategic stability is more important than reducing the number of weapons. Strategic stability has two components: first-strike stability and arms-race stability. START I ensures both. The treaty's chief contribution to first-strike stability is that it makes it easier to deploy forces in survivable ways by constraining the attack potential of both the United States and Russia. It ensures arms race stability by increasing predictability regarding the evolution of both sides' forces and by placing comprehensive constraints on their overall attack potential. By restricting merely the number of launchers deployed

but not the size or number of warheads they carry, SALT accords encouraged the expansion of strategic nuclear weapons. The START I treaty reduces these weapons and reverses their growth.¹²

Before its conclusion and during its ratification in the US Senate, the START I treaty was criticised on the grounds that its deep reductions would concentrate American retaliatory weapons on a relatively small number of potentially vulnerable delivery platforms, and that this could increase Soviet incentives to carry out a first strike. Henry Kissinger, for example, argued that the ratio of Soviet warheads to American silos could increase from the existing three-to-one to over four-to-one. This concern is based on faulty analysis, as it minimises the positive impact of START I's deep cuts on the former Soviet Union's strategic missile forces and makes pessimistic assumptions about forces the United States will choose to deploy under START I.¹³

The START I treaty cuts drastically into what neither side regards as essential for deterrence in future. It improves strategic stability, both in inducing caution in crisis and in reducing the incentive to compete in an unpredictable manner. On the plus side of the stability is the encouragement, through the treaty counting rules, of less vulnerable SLBMs and bombers rather than fixed ICBMs, and of minimum MIRVed rather than maximum-MIRVed ICBMs. With START I treaty, the fixed land-based ICBMs no more remain the main element of nuclear deterrence. By halving the number of the most threatening ballistic missile warheads, and by substantially cutting the aggregate missile throw-weight, the treaty will reduce the nuclear attack potential of the United States and Russia. Since the treaty contains incentives to decrease, through downloading, the number of warheads carried on deployed MIRVed missiles, and since it promotes a shift from fast-flying missiles to slow-flying bombers, START I may render the nuclear forces of either side less capable of threatening a first-strike. START I also permits the parties to improve the survivability of their deterrent forces and institutionalises unprecedentedly extensive and intrusive measures of verification. With the START I agreed counting

rules and definitions, as well as its notification, elimination and verification procedures, deeper reductions in strategic weapons---which even go beyond the levels START II, the treaty that followed START I, proposed---have become easier to negotiate. ¹⁴

The main shortcoming of the START I treaty was insufficient arms reduction: the treaty fell short of the envisaged ambitious goal of a 50 per cent reduction in strategic forces of the United States and the former Soviet Union. Even after START I had been implemented, both sides would still be permitted to have more weapons than they had when the SALT I Interim Agreement was signed in 1972. But START I provided a framework to facilitate the early negotiation of much deeper cuts than those agreed to in it. The START II treaty, which was negotiated in a much shorter time than START I, did remove many of the shortcomings of START I. The START II treaty will further reduce the risk of nuclear war, simply because of the level of reductions in US-Russian strategic arms it includes. It will also improve strategic stability, as it includes the elimination of MIRVed ICBMs, which---because of their lethality and vulnerability--- are most likely to be launched in a pre-emptive attack. Moreover, as pointed out in its preamble, START II reflects the new realities that have transformed relations between Russia and the United States. The treaty has effected the cessation of the nuclear arms race between the two sides. Nevertheless, the nuclear forces that the United States and Russia might retain following the implementation of START I and II, would still give either side a capability to destroy the other side, as well as other nations. These forces exceed by far the levels which are deemed sufficient by the advocates of minimum nuclear deterrence. ¹⁵

START II's main provisions

The START I treaty's impact on strategic stability, and its role in determining the future of nuclear deterrence, must be seen within the parameters of the over all START reductions that will take place if the START II treaty is also ratified by the US Senate and Russian parliament. The treaty will eliminate the most destabilising strategic weapons---

heavy, MIRVed ICBMs. It will also reduce by two-thirds below the 1992 levels the total number of nuclear weapons deployed by the United States and Russia, or by about 65 per cent of their December 1994 deployments. As apparent from Table 2, in December 1994, the United States possessed a total of 8,258 strategic warheads. Under START II, by 2003, it would have approximately 3,500 warheads. The Russian warhead total in December 1994 was 8,943. By 2003, if START II was implemented, Russia would have some 2,999-3,499 warheads. The START II treaty includes eight Articles governing basic provisions, a Protocol on Procedures Governing Elimination of Heavy ICBMs and on Procedures Governing Conversion of Silo Launchers of Heavy ICBMs, a Protocol on Exhibitions and Inspections of Heavy Bombers, and a Memorandum of Understanding on Warhead Attribution and Heavy Bomber Data.¹⁶

Article I of the START II treaty concerns central limits: it sets equal ceilings on the number of strategic weapons that can be deployed by either side. Ceilings are set for two phases: Phase One to be completed seven years after entry into force of the START I treaty and Phase Two to be completed by the year 2003. Phase Two may be completed by the end of the year 2000 if the United States can help finance the elimination of strategic offensive arms in Russia. The Article sets ranges for some of the central limits. By the end of Phase One, each side must have reduced its total deployed strategic nuclear warheads to 3,800-4,250. These include the number of warheads on deployed ICBMs and SLBMs as well as the number of warheads for which heavy bombers with nuclear missions are equipped. Of the total 3,800-4,250 warheads, no more than 2,160 on deployed SLBMs and no more than 650 on deployed heavy ICBMs. And, by the end of Phase Two, each side must have reduced its total deployed strategic nuclear warheads to 3,000-3,500. Of these, none may be on MIRVed ICBMs, including heavy ICBMs. Thus, all heavy ICBMs must be eliminated from each side's deployed forces; only ICBMs carrying a single warhead will be allowed. No more than 1,700-1,750 deployed warheads may be on SLBMs. There will be no prohibition on MIRVed SLBMs.

Articles II and III deal with downloading and missile elimination system. The treaty allows for a reduction in the number of warheads on certain ballistic missiles. The rules for downloading warheads from existing types of ballistic missiles under START II treaty are less restrictive than those included in START I. Each side is able to download two existing types of ballistic missiles by up to four warheads each, in addition to the US Minuteman III and the Russian SS-18. There are no aggregate limits on the number of warheads that can be downloaded. A limit of 105 ICBMs of one of these types may be downloaded by up to five warheads each. Such an ICBM may only be deployed in silos in which it was deployed at the time of the signing of the START I treaty. Thus, the three-warhead Minutemen III ICBM, the four-warhead Russian SS-17 ICBM, and 105 of the six-warhead Russian SS-19 ICBMs are able to be downloaded to a single warhead, to comply with the requirement to eliminate all MIRVed ICBMs. The US Peacekeeper ICBM and the Russian SS-18 heavy ICBM and SS-24 ICBM, each of which carry 10 warheads, and the remaining SS-19 ICBMs, must be eliminated, in line with START I procedures. ¹⁷

As regards the missile system elimination; in START I, deployed SLBMs and most deployed ICBMs may be removed from accountability either by destroying their launchers--- silos for fixed ICBMs, mobile launchers for mobile ICBMs, and launcher sections of submarines for SLBMs---or by converting these launchers so that they can carry only another type of permitted missile. The one exception is the SS-18. Under START I, the requirement to eliminate 154 deployed SS-18s must be met through silos destruction, not conversion. In the START II, these rules generally continue to apply. The major exception is the SS-18. 90 SS-18 silos may be converted to carry a single-warhead missile, which Russia has said will be an SS-25 type. Articles II and III of the START II treaty lay out specific procedures, including on-site inspections, to ensure that the converted silos will never again be able to launch a heavy ICBM. The remaining 64 SS-18 silos subject to this treaty will have to be destroyed. In exchange for the right to

retain up to 90 converted SS-18 silos, the treaty requires that all SS-18 missiles and canisters, both deployed and non-deployed, be eliminated by no later than 1 January 2003. This is a major change from the START I treaty, which did not seek the destruction of missiles. In START II, the Russians have agreed to eliminate all SS-18 missiles, both deployed and non-deployed. This fully achieves a long-term American goal to eliminate completely heavy ICBMs.

Article IV of the START II treaty sets counting rules for long-range bombers. In START I, these bombers are subject to more flexible counting rules than are ballistic missiles. Each long-range bomber equipped to carry only short-range missiles or gravity bombs counts as one warhead. American heavy bombers equipped to carry long-range nuclear ALCMs each count as ten warheads, and Soviet heavy bombers equipped to carry long-range nuclear ALCMs each count as eight warheads. In START II, long-range bombers are counted using the number of nuclear weapons---whether long-range nuclear ALCMs, short-range missiles, or gravity bombs---for which they are actually equipped. This number is specified in the treaty's Memorandum of Understanding on Warhead Attribution and Heavy Bomber Data and will be confirmed by a one-time exhibition and by routine START I on-site inspections. Under this Article, a maximum of 100 heavy bombers that have never been accountable under the START I treaty as long-range nuclear-ALCM long-range bombers may be reoriented to a conventional role. Such bombers will not count against the treaty warhead limits. They will be based separately from heavy bombers, equipped for nuclear weapons, will be used only for non-nuclear missions, and will have observable differences from other long-range bombers of the same type that are not reoriented to a conventional role. Such long-range bombers may be returned to a nuclear role after three months notification, and then may not be reoriented again to a conventional role. ¹⁸

Article V of the treaty states that, except as provided in START II, the provisions of the START I treaty, including the verification provisions, will be used for the

implementation of START II. Some of the new verification measures which will be used in START II are, observation of SS-18 silo conversion and missile elimination procedures, exhibitions, and inspections of all long-range bombers to confirm weapon loads, and exhibition of heavy bombers reoriented to a conventional role to confirm their observable differences. Under the Article, a Bilateral Implementation Commission has been established to promote the objectives and implementation of the provisions of the treaty. If requested by either of the parties, the Commission will meet to resolve questions relating to compliance with the treaty obligations, and agree upon such additional measures as may be necessary to improve the validity and effectiveness of the treaty. ¹⁹

The rest of the three articles of the START II treaty specify procedures for treaty ratification, when it will come into force, the duration for which it will remain in force, how it can be amended, and the right of the parties to withdraw from it. The treaty will enter into force on the date of exchange of instruments of ratification, but not prior to the entry into force of the START I treaty. It will remain in force so long as the START I treaty remains in force. Each party can withdraw from the treaty if it decides that extraordinary events related to the subject matter of the treaty have jeopardised its supreme interests. But, for that, it has to give a six months advance notice. Each party can also propose amendments to the START II treaty, which, if agreed, will enter into force in accordance with the procedures governing the treaty's entry into force.

START II's impact on strategic stability and deterrence

The START II treaty is the largest step in almost 30 years of arms control talks between Washington and Moscow. The cuts it promises should bring the strength of the nuclear forces back to levels not seen in the United States since early sixties and in Russia since mid-seventies. Unlike the previous treaties, START II was completed in record time, little more than six months from the initiating of a draft in Washington by Presidents

Bush and Yeltsin. SALT I and II talks and START I each took nearly a decade to complete. The START II treaty serves the security interests of both sides in a sense that it will enhance strategic stability and saves the two sides a substantial amount of money. The treaty symbolises a mutual US-Russian commitment to move on to a more constructive political relationship. Like START I, it will act as a hedge against political reversals in Moscow by imposing on Russia a legally binding obligation to make deep reductions in its strategic forces that will be in effect for many years, regardless of changes in the Russian leadership. With 3,500 warheads---half of which are based on the world's most survivable and secure strategic force, the SLBMs, and the rest on ICBMs and heavy bombers---the United States has the capability to deter any form of nuclear threat. The elimination of MIRVs will enhance stability by reducing incentives to rely on preemptive postures. Because the treaty scraps all the SS-18s and removes all but one of the warheads from up to 105 SS-19s, it is described by some as removing Moscow's 'first-strike capability' and will put an end to the 'window of vulnerability.'²⁰

Like START I, the START II treaty fulfils many of the American objectives in START negotiations: after implementation, it will eliminate the key component of Russia's strategic nuclear triad---the MIRVed ICBMs. This, however, does not mean that Russia will then be totally exposed to the American first-strike. It will still possess a strategic weapons strength necessary for a robust deterrent. Moreover, during the course of the START II negotiations, Russia has managed to receive several concessions from the United States. These include, a ceiling on American SLBM warheads, which was 50 per cent below the number the United States had planned to deploy under the START I treaty; new bomber counting rules that abandon the steep discounting of bomber weapons and counting bombers as having the number of weapons for which they are actually equipped; the right to inspect the B-2 Stealth bomber; limits on the number of times bombers may be re-oriented between nuclear and conventional roles; and the right to convert 90 SS-18 silos and download 105 SS-19 missiles.

The START II treaty will have its biggest impact on ICBM forces. If one looks at the following Table 2; to comply with the MIRVed ban, the United States will have to eliminate all 500 of its ten-warhead MX missiles. Since all single-warhead Minuteman IIs have already been retired, the only remaining ICBMs, after being downloaded from three warheads each to one, will be Minuteman III. As a result, compared to the force the United States would otherwise have deployed under START I, the number of ICBM warheads will decrease from 2,090 to 450-500. Russia will also have to eliminate or convert all of its launchers for MIRVed ICBMs, including SS-18 and SS-24 silos and SS-24 rail-mobile launchers. Once these reductions are made, Russian strategic warheads will reduce from December 1994 total of 4,963 to a number between 505-1,005. In short, the percentage of ICBM warheads in the Russian nuclear triad will decrease, while the ratio of ICBM forces in the US triad will rise. But Russia will still possess a robust, survivable ICBM force, notwithstanding the fact that it will have to eliminate all of its SS-18s.²¹

If in the case of the ICBMs, START II appears to be disadvantageous for the Russians; in the case of SLBMs, it seems to be advantageous to the Americans. As apparent from Table 2; although, under START II, the number of American SLBM warheads will be reduced to half, from 2,688 to 1,680, the share of the triad's total SLBM warheads will increase from 40 per cent to almost 50 per cent. In any case, the SLBM warhead force of 1,680 does represent a devastating sea-force. Under START II, Russia will retain almost the same number of submarines and SLBM warheads it is expected to deploy under START I; that is, some 25 to 27 submarines and 1,696 warheads. As regards to heavy bombers, it is apparent from Table 2 that the United States will likely retain all of the more than 200 of these, which it has planned to keep under START I. But many such bombers will be reoriented or converted to conventional missions. The number of nuclear weapons they carry will decline from 3,480 to 1,320, and the total warheads in the triad made up by bomber weapons will drop from 43 to 36 per cent. The United

States has decided to retire all B-52Gs but will retain the slightly more modern B-52H for both nuclear and conventional missions. In addition to the B-52s, the United States has 96 B-1Bs, 94 of them START I-accountable. It may also field 20 operational B-2 Stealth bombers. Under START II, assuming the Russian arsenal will have 505-1,005 ICBM warheads and 1,696 SLBM warheads, Russia will have room for more nuclear weapons on Bear-H and Blackjack bombers. Russia has ceased the production of heavy bombers. 22

Table 2

American and Russian Strategic Nuclear Forces: Present and Projected.*

American Strategic Forces

	December 1994	START II (Projected)
ICBMs		
MX/Peacekeeper	500	0
Minuteman III	1,590	450-500
Minuteman II	0	0
Total	2,090	450-500
SLBMs		
Poseidon(C-3)	0	0
Trident I (C-4)	1,536	0
Trident II (D5)	1,152	1,680
Total	2,688	1,680
Bombers		
B-1B	1,536	0
B-2 Stealth	64	320
B-52H	1,880	1,000
B-52G	0	0
Total	3,480	1,320
TOTAL WARHEADS	8,258	3,500(3,450)

Russian Strategic Forces

	December 1994	START II (Projected)
ICBMs		
SS-11	0	0
SS-13	30	0
SS-17	100	0
SS-18	2,480	0
SS-19	1,560	105
SS-24 silo	100	0
SS-24 rail	360	0
SS-25	333	400-900
Total	4,963	505-1,005
SLBMs		
SS-N-6	16	0
SS-N-8	208	0
SS-B-17	0	0
SS-N-18	672	528
SS-N-20	1,200	720
SS-N-23	448	448
Total	2,544	1,696
Bombers		
Bear-A/B	2	0
Bear-G	72	0
Bear-H(6)	162	162
Bear-H(16)	912	576
Blackjack	288	60
Total	1,436	798
TOTAL WARHEADS	8,943	2,999-3,499

* Under START II counting rules, ICBMs, SLBMs and bombers will be counted as carrying the following number of warheads: MX/Peacekeeper x 10; Minuteman III x3; Minuteman II x 1; Poseidon C-3x 10; Trident I (C-4) x 8; Trident II (D-5) x 8; B-1B x 16; B-2 x 16; B-52H x 20; B-52G x 12; SS-11 x 1; SS-13 x 1; SS-17 x 4; SS-18 x 10; SS-19 x 6; SS-24 x 10; SS-25 x 1; SS-N-6 x 1; SS-N-8 x 1; SS-N-17 x 1; SS-N-18 x 3; SS-N-20 x 10; SS-N-23 x 4; Bear-A x 1; Bear-B x 1; Bear G x 2; Bear-H(6) x 6; Bear-H(16) x 16; and Blackjack x 12.

Source: *Arms Control Today* 24 (December 1994),29.

Most of the START II reductions will complete without actually destroying weapons or even retiring them, but by reducing the number of warheads carried by existing types of ballistic missiles and by reorienting bombers to conventional roles. Critics of START II often point out that, by permitting the two sides some 'surplus capacity' to deliver nuclear weapons, the treaty creates potential for break-out. They target the treaty provision that allows Russia to keep 90 of its SS-18 silos and all associated launch facilities. According to them, it is true that these silos are supposed to have enough concrete poured in the bottom and narrowing steel rings inserted in the top so that they cannot be used for the SS-18s. But modified SS-18 silos can still be used to threaten the United States. Indeed, the critics point out, that was why the Russians demanded they should be allowed to keep the 90 large silos: they were too poor to build new silos for the shortly-to-be-converted SS-19. As a result, the Russians will be able, should the wrong people come to power, to rip out the concrete and the steel rings and use the 90 silos for SS-18s they may have hidden and not declared. The START II is also criticised for allowing Russia to keep over 100 of its SS-19s and their full infrastructure. While Russia will have to take off 5 to 6 warheads on the SS-19s, if President Yeltsin was overthrown and succeeded by an old-school Russian, the deadly SS-19s could quickly regain their full multi-warhead capability. On the issues of downloading of warheads and conversion of missile silos, America has beyond any doubt made compromises with Russia. ²³

Given the ground realities, however, the breakout risks appear to be exaggerated. Any breakout from the treaty will take considerable time, can be monitored and will have little effect against weapons that can survive an attack and threaten retaliation, such as SLBMs and bombers. If Russia did attempt a covert effort to upload its strategic missiles---which is extremely unlikely as long as Russia, in view of its economic problems, needs Western assistance and understands the political cost of involved in cheating on START II----such an effort will be detected by the United States long before the strategic balance is altered in any significant way. Much, however, will depend on whether Mr Yeltsin or other

reformers in Russia remain committed to securing free-market economics and an absence of military aggressiveness. If they do, the very risk to US military security inherent in these compromises may not be realised. ²⁴

Both START I and II provide each side transparency and predictability concerning strategic nuclear programmes of the other side and may bring significant savings in military spending. These savings will come from the smaller operating budget of reduced forces and from the cancellation of new strategic weapons systems. However, there will be costs incurred too as a part of the task of disposing of almost 18,000 nuclear warheads and their launch systems. For the United States, savings from reductions to a 3,000 warhead-level force, along with some cutbacks in modernisation, have been estimated to be as much as \$15 billion per year. Greater savings may be achieved if the United States decides to take additional steps consistent with, but are not required by, the START II treaty. Russian officials have estimated that, while dismantlement costs may be substantial, they will be exceeded in the longer run by savings from reduced operations and support costs. ²⁵

Making START I and II irreversible

There is no doubt about the fact that reductions in strategic forces which will take place once the START treaties I and II are implemented, will improve strategic stability and ensure a stable and credible nuclear deterrence. Still, however, a lot else can be done to enhance strategic stability and nuclear security. There are some areas linked directly or indirectly to the process of strategic arms reductions, which have not been addressed by the two START agreements in a manner as the post-Soviet nuclear risks require. And, unless these potential loopholes in START I and II are tackled effectively, there will always be a likelihood for a START reversal.

The main effect of the START treaties is to move a large portion of American and Russian strategic nuclear forces from field deployment to stored, reserve status. These

agreements greatly reduce the short-term risk of nuclear war. But, with the exception of the American 20-year project to purchase enriched uranium from Russia, the reductions they entail are not permanent or irreversible. There is no agreed limit on the number of already fabricated weapons or on the amount of weapons-grade fissile material that the two countries may retain in their stockpiles and the verification of these data, and no arrangements for monitoring the stockpiles to help prevent unauthorised removal of warheads or fissile material. The strategic warheads deployed on the territories of Belarus, Kazakhstan, and Ukraine are currently being transported to Russia for dismantling. Yet even after the transfer of all these warheads, Russia will hold the fissile material from them. ²⁶

The underlying problem is, thus, the uniquely dangerous combination of nuclear threat and proliferation risks arising from the Russian arsenal. The Russian elections in December 1993 moved the country to the right and once again underlined the possibility that a authoritarian regime could emerge in Russia. Such a regime could use these reserves of warheads, missile and fissile material to organise rapid, large-scale expansion of Russian nuclear forces, recreating many aspects of the cold war standoff. Russia remains the only country in the world that can completely destroy the United States. Moreover, although a decisive move to the right in Russia could come suddenly at any time, it will be many years before it becomes clear that functioning democratic institutions have taken root in Russia and have a real chance of surviving. This means that, unless there is a decisive bad news sooner, the unstable political conditions of Russia will probably last for decades; and, with them, American concerns over the status of Russian nuclear weapons. The risks from the Russian nuclear arsenal is not the only problem here. There has been no plan yet for bringing China, France, and Britain into negotiations on reducing or limiting their nuclear arsenals. The deployed Chinese arsenal is a small fraction of that of Russia and the United States, but no outsider knows how many missiles or how much fissile material China is storing. ²⁷

The main justification for nuclear weapons now is to discourage war of any kind between the nuclear weapon states and to deter use of nuclear weapons by declared or clandestine nuclear weapon states through the capacity to retaliate. If so, nuclear weapons will probably be around for a long time to come. But at what level? As long as the threat is from rational governments concerned with the welfare of their own populations, the deterrence approach may hold. If the fear is, however, that unstable governments headed by political extremists or extremist groups outside government may gain control of nuclear weapons in Russia or China or that weapons and fissile material may be stolen or sold, then the traditional deterrence approach becomes less convincing, and measures directed at deep cuts and better control over remaining weapons become even more important. This whole range of problems of existing nuclear weapons and fissile material---above all, those from Russia---can be addressed by, first, ensuring that the START reductions with Russia are irreversible; and, second, instituting a post-START arms control programme bringing in the remaining nuclear weapon states. ²⁸

START I and II can be made irreversible by establishing a US-Russian system of monitoring in both countries' stocks of warheads and fissile materials produced for weapons through a portal-perimeter system similar to that now in use under the INF treaty and applied to existing storage sites. Moreover, a comprehensive data exchange can be set up between the United States and Russia on current holdings of warheads and fissile material for weapons, with mutual verification of the numbers. In addition, the two sides can sign an agreement to dismantle all strategic warheads reduced under the START treaties, and, subsequently, as well as tactical warheads withdrawn unilaterally; not to reuse their fissile material for weapons; and to transfer this material to storage monitored bilaterally or by the IAEA. Finally, the two sides can agree to destroy all missiles withdrawn from field deployment, to comply with reduction agreement, and to end the production of these missiles. These approaches imply a new concept of negotiated reduction of nuclear weapons---one that makes reductions irreversible by

dismantling reduced weapons and disposing of the fissile material in a secure way, as well as by destroying missiles. Besides ensuring the irreversibility of START I and II, there is also a need for going beyond the levels of strategic arms reductions proposed in the two START treaties. Beyond START II, not only can further deep cuts in the strategic weapons of the United States and Russia be negotiated, the rest of the three declared nuclear states---China, France and Britain---can also be involved in the strategic arms reduction process. ²⁹

Notes

- 1 Regina Cowen Karp, 'US-Soviet Nuclear Arms Control,' in Stockholm International Peace Research Institute, *SIPRI Yearbook 1991: World Armaments and Disarmament* (Oxford: Oxford University Press, for SIPRI, 1991), 395-401; and 'Strategic Arms Reduction Treaty: Analysis, Summary, Text,' *Arms Control Today* 21 (November 1991), 2-3.
- 2 Dunbar Lockwood, 'Strategic Nuclear Forces Under START II,' *Arms Control Today* 22 (December 1992), 10-11; Dunbar Lockwood, 'START II: The Penchant for Peace,' *Bulletin of the Atomic Scientists* 48 (October 1992), 10-11, 45. Chances are that, in case START II is ratified some time this year or early next year, it may be implemented by 2000. One, because the United States is already financing the dismantling of missiles in Russia under the Nunn-Lugar Assistance programme. Two, the United States admits that it has deactivated and dismantled about 95 per cent of its START I missiles and bombers; Russia says it has dismantled over 50 per cent of its START missiles and bombers. Both have dismantled some warheads as well. Given such a pace of START I's implementation, much of which took place at a time when

this treaty had not even entered into force, the implementation of START II---once it enters into force after ratification---may also be quick.

- 3 For details, see US Arms Control and Disarmament Agency, *Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Elimination of Offensive Arms (START)* (Washington, DC: US Government Printing Office, for ACDA, July 1991).
- 4 For a summary of verification regime of the START I agreement, see US Congress, Office of Technology Assessment, *Verification Technologies: Measures for Monitoring Compliance with the START Treaty* (Washington, DC: Office of Technology Assessment, December 1990).
- 5 See Max M Kampelman, 'START: Completing the Task,' *Washington Quarterly* 12 (Summer 1989), 6.
- 6 *International Herald Tribune*, 29 July 1991; Paul H Nitze, 'Give Strategic Disarmers a Mandate to Keep Going,' *International Herald Tribune*, 16 August 1991.
- 7 Spurgeon M Keeny, Jr, *The Significance of the START Treaty and Possible Reductions Below the START Ceilings*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 5 March 1992), 1-2.
- 8 Keeny, *The Significance of the START Treaty and Possible Reductions Below the START Ceilings*, 2; Sergei Kislyak, 'START Verification: A Step Towards Transparent Restraint,' in Serge Sur, ed, *Verification of Disarmament or Limitation of Armaments* (Geneva, United Nations Institute for Disarmament Research, 1992), 48-56.
- 9 Dunbar Lockwood describes START I verification in 'Verifying START: From Satellites to Suspect Sites,' *Arms Control Today* 20 (October 1990), 13-19. See also Sidney N Graybeal and Patricia Bliss, 'Getting out of the STARTing Block,' *Scientific American* 251 (December 1989), 61-67.

- 10 The START I treaty is different from other nuclear arms control treaties in the sense that its implementation started well before its ratification. For instance---even before START I's entry into force and as part of the START I's provision on 'provisional application---the United States and Russia began deactivating some of their strategic arsenals which were to be reduced under the treaty. The Joint Compliance and Inspection Commission has met several times since November 1991 to review the process of data exchanges and discuss other treaty inspection and implementation issues. For more details, see Rodney W Jones, 'US Implementation of START: Responding to New Challenges,' in United Nations Institute for Disarmament Research, *UNIDIR Newsletter* 22 and 23 (Geneva: UNIDIR, June-September 1993), 4-9; Maj Gen D Kharchenko, G K Khromov, and Victor Slipchenko, 'Implementation of START in the Russian Federation,' in *UNIDIR Newsletter* June-September 1993, 9-18; and Alexei G Arbatov, 'Implementing START: Political, Economic and Strategic Dimensions *Mediterranean Quarterly* 2 (Spring 1991), 55-71.
- 11 Ralph Earle, *The START Treaty and Future Reductions in Strategic Nuclear Weapons*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 10 March 1992); Kampelman, 'START: Completing the Task,' 12; Edward Warner III and David A Ochmanek, *Next Moves: An Arms Control Agenda for the 1990s* (New York: Council on Foreign Relations, 1989), 54; Jan M Lodal, 'Finishing START,' *Foreign Policy* 48 (Fall 1982), 66-80.
- 12 See, for instance, Warner and Ochmanek, *Next Moves*, 22-27; and Edward L Warner III, *Merits of the START I Treaty and Proposals for Further Reductions*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 3 March 1992), 7-8.
- 13 For details, see Henry A Kissinger, 'The Dangers Ahead,' *Newsweek*, 21 December 1987, 35; Henry A Kissinger, 'START: A Dangerous Rush to Agreement,' *Washington Post*, 24 April 1988; and Kampelman, 'START: Completing the Task,' 8. Arguing

- against the START I ratification, Jay Kosminsky of the Heritage Foundation urged the Senate to delay ratification until all outstanding issues concerning the obligations of the former Soviet republics were resolved. But, as it became apparent later, such issues were finally resolved. See Jay Kosminsky, *Arms Control: the End of an Era*, Testimony to the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 5 March 1992), 2-4.
- 14 Joseph Goldbalt, *Arms Control* (Washington, DC: Sage Publications, for International Peace Research Institute, 1994), 69-70; Sidney D Drell, *The Future of Arms Control*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 3 March 1992), 1-2.
- 15 Robert Mauthner, 'Nuclear Age Is Not Over,' *Financial Times*, 24 July 1991; Goldbalt, *Arms Control*, 70-73; 'This Is a Balanced Treaty,' *Izvestia*, 8 January 1991.
- 16 See US Arms Control and Disarmament Agency, *Treaty Between the United States of America and the Russian Federation on Further Reduction and Limitation of Strategic Offensive Arms (START II)* (Washington, DC: US Government Printing Office, for ACDA, January 1993).
- 17 In the START II treaty, unlike in START I, there is no aggregate limit on the number of warheads that may be downloaded: a missile that is downloaded by more than two warheads does not have to have its re-entry vehicle platform or bus destroyed and replaced with a new one that conforms to the reduced loading. Up to 105 ICBMs may be downloaded by as many as five warheads each---a provision that in practice applies only to the Russian SS-19 missile.
- 18 Reoriented bombers do not have to be physically re-configured, but they must be based separately from bombers with nuclear roles. Bomber nuclear weapons may not be stored at their bases, and their crew may not train or conduct exercises for nuclear missions.

- 19 For a discussion on START II verification regime, see Amy Smithson, 'START II: Evolution or Revolution?', in Sur, *Verification of Disarmament or Limitation of Armaments*, 56-63.
- 20 Serge Schmemmann, 'US and Russia Sign Disarmament Pact,' *New York Times*, 4 January 1993. Daniel Green, 'Big Savings Spur START II Nuclear Arms Meltdown,' *Financial Times*, 30 December 1992.
- 21 Lockwood, 'Strategic Nuclear Forces Under START II,' 10-11.
- 22 Lockwood, 'Strategic Nuclear Forces Under START II,' 11-12.
- 23 Henry Kissinger, Frank J Gaffney (Director of Centre for Security Policy), and Casper Weinberger are some of the START II critics in the United States. See, for instance, Casper C Weinberger, 'START II: the Hidden Flaws,' *Forbes*, 1 February 1993.
- 24 *Financial Times*, 30 December 1992.
- 25 Through the Nunn-Lugar Soviet Nuclear Threat Reduction Act of 1991, the US Congress has since 1992 appropriated some \$1.3 billion to aid the dismantlement of nuclear weapons in Russia, Ukraine, Kazakhstan and Belarus. For details, see *New York Times*, 3 January 1993; R Hall, *Memorandum for the Record: Budgetary Impact of Bush-Yeltsin Accord* (Washington, DC: US Congressional Budget Office, 29 June 1992), 1-4; Boris Yeltsin, Moscow Press Conference with President Bush, *Federal News Service transcript*, 3 January 1993, 3; Harold A Feiveson and Frank n von Hippel, 'Beyond START: How to Make Much Deeper Cuts,' *International Security* 15 (Summer 1990), 158; and Daniel Green, 'Big Savings Spur START II Nuclear Arms meltding,' *Financial Times*, 30 December 1992.
- 26 Jonathan Dean, 'The Final Stage of Nuclear Arms Control,' *Washington Quarterly* 7 (Autumn 1994), 36-38.
- 27 Richard Nixon, 'Moscow, March '94: Chaos and Hope,' *New York Times*, 25 March 1994; Dean, 'The Final Stage of Nuclear Arms Control,' 38-40.
- 28 Dean, 'The Final Stage of Nuclear Arms Control,' 40-41.

Chapter 5

Beyond START II: Moving Down to Minimum Deterrence

That the United States and Russia are currently busy implementing the START I treaty and have yet to ratify START II, does not mean that strategic arms reduction negotiations have been put on hold indefinitely. The START I and II agreements have generated hopes about deeper cuts. There seems to be a consensus---at least in the American arms control community---that 3,000-3,500 warheads each is far more than the United States and Russia need to maintain minimum levels of deterrence. If Russia and the United States are no longer enemies, why should they need 3,000-3,500 warheads each? This concern for much deeper reductions, in fact, goes back to the pre-START II period. In September 1991, about three months before the Soviet collapse, the US National Academy of Sciences released a study which concluded that if positive trends continued, and other nuclear powers accepted appropriate strategic arms limitations, the United States and Russia could reduce their strategic arsenals to 1,000-2,000 warheads. Robert S McNamara, former US Secretary of Defence, has argued that 1,000-2,000 warheads would be sufficient for deterrence. Then there are proposals for reducing strategic arsenals to as low as from 500 to 200. The proposals for strategic arms reductions beyond the levels included in START II have also raised the question of including France, Britain and China in a legally binding nuclear arms reduction regime. ¹

More than anything else, it is the new international alignment that has prompted nuclear strategists in the United States to address the following question: how low can we go? The answer to this question will depend on the purposes one assigns to nuclear weapons. If these weapons are to be used exclusively for deterrence, a few hundred may be sufficient---as France and Great Britain have concluded. One important use that can be assigned to nuclear weapons is insurance. No one knows what may happen in future.

Hardliners may capture power in Russia. China may decide to flex its muscles. The nuclear threat may be posed by a Third World rogue state. To guard against future security threats, that exist due to uncertainty about the intentions of other states, American strategists recommend keeping in possession some, not necessarily 3,000-3,500, nuclear weapons. Still another purpose nuclear weapons serve is reassurance. American nuclear arsenal reassures US allies in Europe, like Germany and Japan, that the United States is capable of defending them. Too deep a reduction in the American nuclear arsenal may lead such allies to doubt the ability of the United States to defend them. As a result, both Germany and Japan may be forced to develop their own nuclear weapons, and they have the capability to do so. ²

Nuclear deterrence in future

Much of the current nuclear debate is, therefore, not on nuclear disarmament; rather, it is on how to arrive at the deepest possible nuclear reductions in view of the new global realities---reductions that will ensure a credible and stable deterrence. Deterrence---both in theory and practice---will, in fact, continue to exist as long as nuclear weapons are there. And nuclear weapons will be there as long as there are risks of armed conflict. Even the end of cold war has not reduced the risks of armed conflict. The post-cold war world has seen the depressing resurgence of old ethnic conflicts that remained repressed in some of the former communist regions and which the world had hoped to forget: between Chechens and Russians, between Bosnians and Serbs. It is against this pessimistic reading of the trends that predictions of future nuclear deterrence must be made. Even after START II, strategic relationship based on mutual assured destruction will remain intact. The reason is that disarmament is neither feasible nor desirable. Only if there was no political competition could the fears of nuclear rearmament---and the associated instabilities---be eliminated. ³

However, in recent times, the traditional theory of deterrence has undergone significant changes to cope with the drastic transformation of international system. Previously the main argument about nuclear deterrence used to be between those favouring minimum deterrence and those backing war fighting. Through START, the United States and Russia have worked for stable deterrence, for a security regime of cooperative behaviour. In case START I and II treaties were implemented successfully--and a credible move towards going beyond START II levels of strategic arms reductions was made---instead of the traditionally provocative offensive force structures and doctrines of the cold war era, deterrence in the next century would take a more cooperative form. Despite the easing of tension between the United States and Russia, a cooperative, reciprocal deterrence between them will continue to be as important as nuclear weapons and their utility. The new concept is based on common security percepts which emphasise the need for mutual reassurance and the acceptance by the United States and Russia of the legitimate security interests of each other. The underlying notion behind this new form of deterrence, however, is still based on the concept of mutual assured destruction: that both sides should maintain the capability to match the nature and destructiveness of each other's nuclear arsenal---to counter the other's nuclear or conventional strike and not let it gain military or politically significant advantages. ⁴

A nuclear-free world?

That deterrence is to stay as a workable concept, means there is no chance in the foreseeable future to move towards a nuclear-free world. Still, ever since the cold war's end, the desirability and feasibility of moving towards such a goal has been debated by the arms control community---more than ever before. Although the arguments for a nuclear-free world have not changed in any fundamental sense, their salience has dramatically increased in the post-cold war period, when the United States and its

European allies no more face as dangerous a military threat as the former Soviet Union and its Warsaw Pact allies used to pose. This has resulted in a pronounced shift in the cost-benefit calculus of retaining nuclear weapons. The retention of thousands of nuclear weapons is both costly and dangerous. Nuclear proliferation poses another potential danger to international security. Therefore, the alternative of a nuclear-free world appears increasingly attractive. The argument for zero nuclear weapons rests on the assumption that nuclear weapons have only a limited utility, which is to prevent their use by others: if nuclear weapons are useful solely to deter others from using them, then nothing is lost by getting rid of them altogether. ⁵

The elimination of nuclear weapons is also argued on moral grounds. The inherent destructiveness of nuclear weapons make them instruments unsuitable for achieving national policy goals. Therefore, both the threat and possible use of these weapons is regarded as immoral. For instance, Mr McNamara has argued that there are about 40,000 nuclear warheads in the world with a total destructive power more than a million times that of the Hiroshima bomb. Even assuming that reductions required by the strategic arms treaties that President Bush and Mr Yeltsin have signed are carried out, the stock of warheads of the five declared nuclear powers is not likely to be reduced below 10,000 by the year 2003. By then, the danger of nuclear war would have been lowered but not eliminated. The end of the cold war clearly does not in itself mean the end of international conflict, but it need not mean a return to an earlier style of international relations based on the balance of power and shifting alliances. The unlimited destructiveness of nuclear weapons call into question the utility of war as a policy instrument. So does recognition that wars fail to settle conflicts that lead to them. ⁶

The arguments in favour of moving towards a nuclear-free world are powerful, particularly in the world of today. But not only is such movement practically impossible, it will not be feasible both for political and strategic reasons. The practical argument against moving to zero nuclear weapons rests on a sober consideration of the magnitude

of the task at hand. To be effective, a nuclear-free world would have to construct a system of airtight verification and assured enforcement, neither of which seems practically feasible. A particular verification problem is the existence of large quantities of plutonium from dismantled weapons. The US National Academy of Sciences estimates that, by the end of the century, the world stockpiles of plutonium will be 1,600 to 1,700 metric tonnes, only about half of which is contained in spent fuel. Because a few kilograms of reactor-grade plutonium are sufficient to build a nuclear weapon with a yield in the kiloton range, and because no one knows what the actual inventory of fissile material in the world really is, few countries are likely to be confident that all materials and weapons-making capability have been accounted for. There can be no certainty that someone is not cheating. There is no guarantee that the plutonium stockpiles collected from dismantled strategic systems, under START I and II agreements, will not find their way back once again into the same systems. ⁷

For a non-nuclear world, what is needed is the perfect operation of a collective security system. But there are both practical and historical reasons to doubt that collective security will in fact operate perfectly, especially when participation in collective action is likely to increase the threat to oneself. Collective security requires collective interests and a collective will. But history and logic suggest that it is a feeble foundation on which to base one's security. Thus, unless an effective security system has first been created, which will require an unprecedented devolution of sovereignty, no state that currently depends on nuclear weapons for some of its security is likely to agree to their elimination. The political case against zero nuclear weapons follows logically from this conclusion. ⁸

Disarmament: neither possible nor feasible

So long as nuclear weapons have value to their possessors, so long as they are perceived to have value, their agreed elimination is not possible. And however much some may

want to believe otherwise, nuclear weapons are still valued by their possessors, many of whom continue to believe that their relative power resides in possessing these weapons. Mr Yeltsin has maintained that 'it is no secret that Russia's status as a great power depends on its armed forces having nuclear weapons.' Also, despite massive nuclear weapons reductions and fundamental international change, the United States policy in retaining nuclear weapons in thousands remains unchanged. The United States still believes that it should have sufficient nuclear strength to withstand a nuclear first-strike from an adversary and inflict an unacceptable damage on the adversary. ⁹

When the US Department of Defence announced its long awaited Nuclear Posture Review in September 1994---the review took ten months to complete---it reaffirmed most of the Bush administration's policies, opting for the status-quo on the use of nuclear weapons ,and concluded that it was too soon to commit to cuts in strategic forces below START II levels. Two days before the Review was announced, Defence Secretary William Perry summarised its results in a Washington speech, saying that the United States could not make strategic force reductions below the 3,000-3,500-warhead level called for in START II until that treaty had been 'implemented fully' (that is, until 2003). In support of his opinion that an American commitment now to go below START levels should be premature, Mr Perry said reforms in Russia might fail and the United States should be prepared to respond if necessary. He said under the Nuclear Posture Review's proposed force structure, the United States would retain a capability to 'reconstitute' its strategic forces rapidly by 'uploading' warheads on its Minuteman III ICBMs and Trident II SLBMs. In the Review, force posture decisions made essentially on cold war assumptions, have been supposed to suit to the radically different strategic landscape of today. Accordingly, strategic forces will be reduced to 3,500 weapons deployed on a triad of land, sea and air-breathing modes. The one significant departure is the much greater emphasis on the safety and security of nuclear forces that remain, and the stated

intention to move from the world of mutual assured destruction to mutual assured survival. ¹⁰

The Nuclear Posture Review codifies American unwillingness to go for nuclear disarmament. The Russians are also unwilling to do so. That both are no more hostile to each other, is another matter. The strategic perceptions on both sides are, in fact, guided by what is also believed predominantly by the arms control community: the issue of eliminating nuclear weapons is not as simple as it often appears to nuclear disarmers. The fact, however, is that the elimination of weapons does not eliminate the perceived need for their possession. The existence and accumulation of weapons is a function of actual or potential conflict between and among states. Eliminating weapons no more means peace than that their possession means war. If disarmament is to make war unlikely, then it must reduce the incentives to war. In short, the problem is not so much the existence of nuclear weapons as that international society is organised around a system of states which lacks central authority. In such a system, conflict and war are always possible. Because nuclear weapons cannot be disinventured, and because neither airtight verification nor assured enforcement is possible in a world without a central authority, states will always lack confidence in the ability of an international treaty to prevent nuclear armament at some point in future. ¹¹

The very concept of a world without nuclear weapons is an illusion. Assume for a moment that all nuclear weapons have been destroyed. Unless the means for building them are also destroyed, or placed under some airtight supervision, a number of nations would still be able to produce them quickly. The knowledge of how to produce nuclear weapons cannot be erased. A world in which nations destroyed their nuclear weapons but knew how to produce them would not be a more secure world. To imagine a world free of nuclear weapons is to imagine a world in which nations truly cooperate in enforcing inviolable restraints on their own knowledge, permit controls over all their nuclear facilities and accept verification inspections in all parts of their territories, including their

military and industrial plants. A world free of nuclear weapons might also become dangerously safe for conventional war. Never in history have two dominant powers competed so intensely---during the cold war period, so fraught with provocations and indirect conflicts---and yet avoided open warfare. Making the world safe for resumption of conventional warfare can hardly be considered a major advance for humanity. ¹²

For a world free of nuclear weapons to be safe, the end of US-Russian rivalry is just one requirement; all the regional and international conflicts will need to be resolved. A serious commitment requires abandoning much more than nuclear weapons. It will demand a radical shift in the assumptions about power that have guided the United States and other nations for the last 50 years. Security can be strengthened by gradual and progressive mutual accommodation in arms control negotiations, and also by unilateral actions. Therefore, step-by-step reductions, meant to reduce the threat of a first-strike, should be the objective. It must also be noted that, as in the case of START I and II, reduction in warhead numbers is not the only means of nuclear restraint. The same objective can also be achieved by reducing vulnerability, improving controls, avoiding destabilising surprises, and controlling and limiting weapons-grade material. ¹³

Neutralising nuclear weapons

There is convincing evidence that the nuclear weapon states are not willing to totally eliminate their nuclear weapons. The five declared nuclear powers will each wish to keep some weapons as long as any of the others do. They will claim the necessity for keeping some weapons as a hedge against the uncertainties of the status of threshold states and the possibilities of breakout---open deployment of nuclear weapons by one or more of them. States that have nuclear weapons regard them as the ultimate guarantee of their security in an uncertain world where there is no dependable central authority. Therefore, the abolition of nuclear weapons is not a practical objective at this time. What, however, is possible today is the adoption of measures aimed at neutralising the importance attached

to the possession of nuclear weapons. Once nuclear weapons are actually neutralised, they will cease to be a major factor in international politics. ¹⁴

The existence, quantity and quality, and distribution of nuclear weapons has played a critical role in defining the character of international environment after the second world war. Nuclear weapons had the effect of making the major powers much more cautious and far less inclined to consider war as a means of rationally settling the differences between them. In the post-cold war period, what has declined is the war-fighting role of nuclear weapons. They have depreciated in their value as a currency in international relations. However, even in the wake of their devaluation, nuclear weapons will retain their general importance in preserving peace among the major powers. The major powers will no longer be concerned with deterring an adversary which is presumed to be considering aggression. Rather, they will be interested in using nuclear weapons as a hedge in the event that international relations should deteriorate and as a means of keeping the major power competition at the political and economic, not the military, level. ¹⁵

The depreciation of nuclear weapons as political-strategic instruments in shaping major power relations is highly desirable insofar as it is a reflection of the end of the cold war. Nevertheless, it also reflects a major power vacuum that has emerged in world politics. The international environment is now being more predominantly shaped by non-nuclear and non-military factors, some of which are not under the control of the major powers, and which may in fact be uncontrollable. The international environment is, and will remain for some time, highly uncertain---at least in the foreseeable future. The cold war has ended, but the character of international relations remains undetermined so does the various stances the principal nations have to adopt to define their respective interests, in order to cope with the new global realities. One, however, cannot ignore the fact that nuclear weapons will certainly not disappear. Avoiding nuclear war will remain a

significant consideration, and the war-prevention function of nuclear weapons will remain important, but not to the same urgency as in past. ¹⁶

No escape from post-START II cuts

The conclusion that nuclear weapons cannot be eliminated in the given circumstances, however, does not mean that the United States and Russia should stop at START II. One of the factors pushing the two sides towards START I and II reduction levels has been the changed nature and dynamics of their political relationship characterised less by competition and more by cooperation. And this is what makes irrational the retention of an arsenal even as big as that which will result after the implementation of the two START treaties. But some in the American arms control community still argue that the United States should not go beyond START II. For instance, asking the Clinton administration not to go beyond START II levels, Paul H Nitze, who headed the American INF delegation in Geneva, argues: 'For the immediate future, our chief concern is likely to remain the arsenal of the former Soviet Union. Even after all the prospective cuts in the arsenal are implemented, a process that will require many years, it will remain formidable. Whoever controls it or substantial portions of it, will retain the ability to inflict catastrophic damage on us, our allies and friends worldwide. Because we cannot be sure that such control will not someday revert to a leadership hostile to our interests, we must continue to rely on nuclear weapons as an insurance policy, to deter any future leader who may control all, or a major portion, of the former Soviet arsenal and contemplate using it. At the same time, we should use our possession of nuclear weapons as a leverage to negotiate changes that will render that arsenal smaller, less threatening, safer, and more secure.' ¹⁷

Arguments like this are seconded by officials of the Clinton administration, like Defence Secretary Mr Perry. The problem with the opponents of post-START II reduction, however, is that they have not delinked START from cold war concerns. The

the United States agrees to discuss Russian concerns in START III negotiations, it is increasingly unlikely that the Russian Parliament will ratify START II. ¹⁹

Thus, there is no escape from the fact that nuclear weapons have to be reduced. The question that remains unanswered is, what can be the lowest possible post-START II level of nuclear weapons that the United States and Russia should retain to ensure a stable and credible deterrence between them? Although the achievement of a credible and stable deterrence in the cold war period was presumably linked with the deployment of thousands of nuclear weapons, this is no longer the case today. A small, highly survivable force of a few hundred weapons is sufficient to meet the two side's security requirements. In addition, under current conditions, it is no longer plausible to maintain that deterrence works only if the United States can hold at risk the entire array of military, strategic, and leadership targets within the vast Russian landmass, as was deemed crucial not so many years ago. Rather, the purpose of nuclear weapons today is to remind any regime with potential hostile intent of its own, inevitable vulnerability. Considering the character of nuclear weapons, the prospect of just a few weapons---tens rather than hundreds and certainly not thousands---exploding on one's territory would be a stark reminder of one's inescapable vulnerability. Therefore, a force of just a few hundred survivable and deliverable nuclear weapons would be sufficient to deter an attack on the United States. The same applies to Russia. The decisive point is that lower and more stable forces are preferable not only for themselves but for their contribution to keeping the cold war from revival. ²⁰

With the end of the cold war, the purpose and role of nuclear weapons also needs to be stated in new terms. In future, world security will certainly depend much less on nuclear weapons than it did in past. While nuclear deterrence, in its various forms, has been the mainstay of security for the past 50 years, the conditions which led to this situation have changed so dramatically that no one today sees nuclear weapons retaining such an important role. START I and II have been signed primarily as a consequence of this

drastic transformation of US-Russian relationship. Leaving aside the hawkish concerns of some officials of the Clinton administration, including Defence Secretary Mr Perry, about post-START II reductions, and the opposition to START II by nationalist elements in the Russian parliament, both the United States and Russia now seem to agree that a new stage can be considered after START II. What they have not yet defined is the minimum level of strategic armaments beyond START II. Insofar as the role of nuclear weapons in deterring aggression and maintaining peace is concerned, both sides still agree that it remains as valid as in past. No rational government or leader can seriously contemplate a conflict fought with strategic nuclear weapons. Yet the certainty that a nuclear first-strike should be met with nuclear retaliation and the element of doubt that persists in an aggressor's mind that his opponent might use nuclear weapons in the last resort, has kept peace between Russia and the United States, and in Europe, for 50 years. It is this war prevention role of nuclear weapons that remains unchanged in the post-cold war world. Thus, the right recipe for future arms control negotiations is not to abandon nuclear weapons altogether. It is to reduce them progressively to much more reasonable proportions than START I and II have done. ²¹

Extended deterrence still valid

In the cold war period, besides ensuring deterrence between the United States and the Soviet Union, nuclear weapons fulfilled another purpose for the latter: reassurance. Because Germany, Japan and other allies of the United States could rely on the American nuclear guarantee, they faced no incentive to acquire nuclear weapons even though most were technically capable of doing so. Unlike Russia, therefore, any American decision to go beyond START II ceilings also depends on the question: how many nuclear weapons are sufficient today to convince these countries that the American nuclear guarantee is credible and thus to forestall new incentives for proliferation? The answer is that the countries that have so far abstained from nuclear weapons in the belief that the American

nuclear umbrella offered them protection will continue to do so now. This will be true even if American nuclear force levels continue to decline to still lower levels, provided that the nuclear weapon capabilities potentially threatening to allies---especially Russian---did so well. The nation seeking to deter is required to have a nuclear force equal to that of the nations it wishes to deter. Thus, further reductions in American strategic forces should occur in tandem with Russia's and should also be accompanied by cuts in the forces of the other acknowledged nuclear powers. Regarding extended deterrence, however, what counts in the current circumstances is whether the interest to be defended is vital to the United States, not the size of the nuclear forces defending it. If the United States can also be defended by that force then nations vital to American interests can also be defended by that force. The point here is that extended deterrence is possible with minimum deterrence. ²²

The end of the cold war does not, therefore, mean the end of extended deterrence as an American objective. The common perception today is that, with the disappearance of communist threat in Europe, the strategy of extended deterrence has also lost its value. There have been calls for dismantling NATO itself, since it has lost the logic for which it was created. As a result, in the last few years, NATO's defence strategy has been restructured significantly to deter potential threats from ethnic turmoil in Europe and the threat of nuclear proliferation from across the Mediterranean. But no one can deny the fact that the international political climate is lively and changing. Already, since the cold war's end, NATO states have been faced with new dangers, new challenges. Russia's future remains uncertain. The START I and II cuts---in case START II also enters into force----will take seven more years to complete. During this period, given the feared lurch to Russian authoritarianism, US-Russian relations may worsen. Even after the implementation of START agreements, Russian nuclear forces will be formidable. China, France and the United Kingdom are not yet ready to reduce their respective strategic nuclear weapons. Then, there is threat of nuclear proliferation from the former

The United States and Russia can strive to reduce their nuclear weapons to a few hundred weapons. This may be a hard task. The difficulties in securing the implementation of START I treaty underscore that even a modest reduction process is far from easy to achieve. More radical reductions would face even greater obstacles, particularly because these would have to be accompanied not just by cuts in American and Russian forces, but also by limitations on French, British, and Chinese nuclear weapons and a cap on the ability of other countries to expand their inherent nuclear capabilities. The task is indeed hard; it is not impossible now that, with the entry into force of START I, many of the difficulties associated with the breakup of the Soviet Union have been overcome. What kind of additional nuclear reductions and force posture changes should take place beyond START II levels? Aside from nationalist opposition, the main Russian concern regarding START II is that although the force limitations enshrined in the treaty conform closely to the structure of American strategic forces, and particular provisions---like the elimination of MIRVed ICBMs, the most modern and capable element in Russian forces---would compel a fundamental restructuring of Russian strategic forces, an extensive modernisation programme, or abandonment of Russia's commitment to nuclear parity; none of which Russia finds acceptable. A commitment to seek further reductions---especially if the specific force configurations conform more closely to Russian concerns---may, therefore, be important to alleviating Russian opposition to the START II agreement. ²⁵

Addressing Russian concerns and securing START II's entry into force is a necessary element in any new arms control strategy. But it is not sufficient. Two additional factors must also be taken into account. One is to secure the participation of the other nuclear powers---Britain, France and China---in the nuclear arms reduction process. Although all three countries have to some extent scaled back their most ambitious modernisation plans, none has formally engaged in arms control negotiations affecting the size and disposition of their nuclear forces. If a continuing improvement in US-Russian nuclear

relations permits the big two to agree on reductions beyond the START II levels, there may emerge a parallel preference in other nuclear powers as well. To date, British, French and Chinese leaders have indicated that they are not yet ready to participate in the arms reduction process. They argue that, although deep cuts are to be made in American and Russian nuclear weapons, the nuclear superpowers still plan to field 5-10 times as many nuclear weapons as Britain, France and China. This arithmetic has led officials in these countries to argue that they should not and will not join the arms reduction process until the United States and Russia reduce their forces much more. Chinese officials have insisted that the United States and Russia must reduce their forces to China's level before Beijing will contemplate cuts of its own. A crucial second factor is to find new ways to address proliferation concerns within an over all arms control strategy. Radical reductions in the arsenals of declared nuclear powers are improbable, unless the capacity to acquire nuclear weapons on the part of nuclear threshold and non-nuclear states is significantly constrained. ²⁶

Only one basic requirement remains for the strategic forces of the United States and Russia: they should be considered fully adequate, in each country, to ensure against strategic attack from the other. This deterrent requirement has been central for both sides throughout the nuclear age, and today it is the only one left that matters. Neither side now asks that its strategic forces be able to win some general nuclear war, because both sides now recognise openly that in such a war there will be only losers. The lesser capabilities that either side may require of its nuclear weapons---for example, deterrence of some lesser nuclear threat by some other possessor of nuclear weapons--- do not affect the over all size of their strategic forces. An American force that is sufficient to balance the Russian force, until both sides make reductions far beyond those now in sight, will be capable enough for every lesser job. The same thing is now true on the Russian side. During the cold war, it was possible to think that Soviet planners must consider the nightmare of having to face three or four strategic nuclear enemies at the same time.

They certainly had deep political differences with all four of the other announced nuclear weapon states. But there is no justification for such Russian nightmares today. ²⁷

Force requirements for minimum deterrence depend on how vulnerable those forces are to preemptive attack. Neither side need to win, because winning is understood to be impossible. Therefore, both sides have no immediate need for strategic nuclear forces beyond that required for deterrence of nuclear attack by other nuclear powers. A minimum deterrent requires forces capable of withstanding an attack and retaliating against a target set that is both sufficiently credible and sufficiently valuable to the potential aggressor that he is dissuaded from attacking. Top-level control over any use of nuclear weapons will remain as long as nuclear weapons exist. Command and control should be improved as technology permits. Nuclear deterrence has always depended on the ability of the major powers to maintain responsible and adequate command and control of their forces, so that nuclear attack could not be launched without proper authorisation. The START treaties lay a base for shared strategic moderation, for a stable and peaceful balance, at a great long-run reduction in cost, tension, and danger. ²⁸

The case for a minimum deterrence rests on the proposition that stability depends not on the size of a nation's strategic nuclear forces, but rather on their degree of survivability in a surprise attack. The more warheads that can survive an attack, the smaller the initial forces needs to be. Both the United States and Russia can build such a deterrent constrained within their current strategic force structures. It is one that will be less expensive to maintain. If such a force is militarily safe, technologically feasible and more fiscally prudent, why not pursue it? The true interest of both sides is that each step towards lower and less threatening deployments should be seen as a step forward by healthy majorities on both sides, so that nuclear moderation remains for both a broadly popular policy. In particular, the United States should avoid the temptation to use a time of great Russian economic stress to drive for one-sided advantages. The importance of other familiar criteria may go up as numbers of warheads come down: survivability,

safety, and others, which are well protected in START I and II. It is evident that so far the policy of large-scale reduction has broad support in both the countries. Both want nuclear deployments that are less dangerous, less expensive, and smaller. Both have better things to do with scarce resources. ²⁹

The role of defence policy is to be prepared not only for immediate, but for unexpected future threats to national and international security. In nuclear matters, the basic protection against any renewed arms race lies in the reality that the United States and Russia will retain a strategic nuclear deterrent such that neither side could hope to achieve any significant nuclear advantage without giving obvious notice of its effort early enough to give plenty of time for a balancing reply. That is true today, and it will also be true under START I and II. If negotiations are even moderately prudent, it will be true also under any later and more modest regime including other nuclear powers. In future, both sides can keep sustained assurance that there will be no nuclear break-out on either side without warnings that give more than enough time for any necessary response. Such an assurance is needed on the issue of downloading multiple-warhead missiles. This is the reason START treaties I and II included special monitoring provisions to cover the downloading case. Minimum deterrence is now possible because stability has come to depend not only on the threat of nuclear attack, but also on a shared preference for peace over war. ³⁰

Eliminating strategic ballistic missiles

Eliminating all long-range ballistic missiles can be one of the targets of any post-START II reductions agreement. The strategic community has long recognised that ballistic missiles pose the greatest threat to stability. These missiles combine high vulnerability to attack with great accuracy and speed; which makes them prime target in an initial strike, inevitably reducing the response time available to the defender. Although the ban on MIRVed ICBMs has gone some way to alleviate this danger, the elimination of all

ballistic missiles would remove the worry altogether. In START I and II, neither side was willing to give up long-range missiles entirely for the reason that, for both of them, such missiles were considered the most survivable single system of delivery. Survivability is properly prized as an essential element in strategic stability. The facts, however, speak for the opposite: so long as ballistic missiles are there, neither side can escape the possibility of a sudden surprise attack. In spite of careful technology, and the sanity and sobriety of those in control of such forces, this possibility will exist as long as these weapons exist. ³¹

With the nuclear forces of both sides limited to bombers and cruise missiles, neither would have to worry that it might have to launch its nuclear forces preemptively because the other side had launched, or was about to launch a first-strike. The objective of arms control agreements should not be confined to reducing the number of nuclear weapons only, it should also be to avoid either side's ever resorting to their use. Nothing will do that more than dispensing with ballistic missiles. The most important lesson of the last over three decades of living with a delicate balance of nuclear weapons is that no one has used them. The irrationality of any calculated nuclear attack has been apparent to leaders of the two sides. The danger that the world faces today is that rationality will be set aside some day in a moment of confused fear, probably based on misinformation. Without ballistic missiles, such pressures, and risks, are bound to be less. In addition, long-range ballistic missiles are of course not deployed only by the United States and Russia. There are missiles in other countries, including China, that have nuclear warheads to put on them. The renunciation of long-range ballistic missiles would have to be world-wide. However, there will not be much international progress away from long-range missiles while Washington and Moscow continue to rely on them. A US-Russian agreement to ban all land-based missiles would provide stronger nations with political leverage in their campaign to convince other countries to forego developing their own capabilities and, ultimately, to eliminate missile capabilities that have already been deployed. ³²

START and nuclear proliferation

START can also not be seen in isolation from the issue of nuclear proliferation; which, in some ways, is linked to the worldwide race for ballistic missiles. One radically new aspect of the post-cold war non-proliferation environment has been the proliferation risks arising from the fragmentation of a single nuclear weapon state, the Soviet Union. The threat to international security posed by the post-Soviet collapse nuclear risks has more or less been tackled. All appears to be set for completion by no later than 1997 of the transfer of nuclear weapons to Russia from Ukraine, Kazakhstan and Belarus. Along with pursuing further deep START reductions, including strategic weapon reductions by the three other declared nuclear states, the United States and Russia should also take some new initiatives to check the horizontal proliferation of nuclear weapons. For that, discrepancies inherent in the NPT have to end. For that, the nuclear have-nots must enjoy the positive and negative security guarantees from all the nuclear powers as---for instance---the United States, Russia, Britain and France have given to Ukraine in exchange for its signing of the NPT in December 1994. The NPT was extended indefinitely on 11 May 1995; but such an extension will have little credibility as long as key world proliferationists like India and Israel are not part of the treaty. ³³

Therefore, START must be designed to deal simultaneously with the problems of vertical proliferation and US-Russian compliance with the provisions of the NPT. If the United States, Russia and other nuclear powers wish to diminish significantly the perceived political utility of nuclear forces in international politics so that other states will not find them of value, then they should reduce their forces beyond START II levels. The nuclear powers cannot call upon the non-nuclear states to forego the acquisition of nuclear weapons when they show by their own example how much political utility they have. There is an apparent contradiction between the logic of the NPT and the doctrine of nuclear powers that nuclear weapons are essential to deter aggression and maintain peace.

Why, the would-be proliferationists can safely ask, do some states require their own national deterrent for these purposes, while others are expected either to seek a nuclear guarantee from their allies or---if that is not available, or comes at an unacceptable political price---simply to rely on some vague notion of collective security. and 'new world order.'³⁴

As apparent from President Yeltsin's recent statements and the Clinton administration's Nuclear Posture Review of last year, nuclear weapons continue to be central to the two country's power potential. The nuclear haves can discourage proliferation by opting for such levels of post-START II reductions as will neutralise nuclear weapons. They can go much further than that by, for instance, concluding a Comprehensive Test Ban Treaty; signing a cut-off agreement that will guarantee a production stop of fissile material for weapons purposes; pledging no-first use of nuclear weapons; and agreeing to a reconciliation of export controls with a non-nuclear state's 'inalienable right' under Article VI of the NPT to develop nuclear energy for peaceful purposes.³⁵

From the extensive debate that took place during the time the Conference on NPT Review and Extension was being held in New York in April-May, it is apparent that the nuclear have-nots have some valid grievances against the NPT. Many of these states feared that if the treaty was extended indefinitely, they would lose the little leverage they still had to ensure that nuclear states comply with their obligations under Articles IV and VI to reduce their arsenals and permit transfer of peaceful nuclear technology. The NPT formalises discrimination between nuclear haves and have-nots. Therefore, by objecting to indefinite extension, these states express their reluctance to accept this discrimination indefinitely. The US-Russian decision to go beyond START II levels will be an additional evidence that they are complying with Article VI of the NPT, which requires the existing nuclear weapon states to engage in negotiations 'towards general and complete disarmament.' The treaty was not designed solely to stop the spread of nuclear

weapons. The non-nuclear states agreed to remain that way in return for a pledge, in Article VI, that the nuclear powers would pursue 'negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament.' The full promise of the NPT has not yet been realised. ³⁶

In the final analysis, however, it is unlikely that the nuclear weapon states will agree to give up their nuclear weapons completely before there is a functioning system of world security with a proven record of achievement and a non-proliferation regime of recognised comprehensive effectiveness. Since these conditions are not possible in the foreseeable future, what is required is an approach that defines a goal for nuclear arms control and which is realistic enough to have some long-term prospects of practical implementation.

To start with, the United States and Russia can sign a third START treaty soon after START II's ratification. START III can reduce US-Russian strategic arsenals further to 1,000 each. They can do that without compromising their military security and political position with respect to three other nuclear weapon powers. Then they could approach China, Britain and France about devising a framework for an agreement among the five nuclear powers to reduce their total arsenals to no more than 200 warheads each, to separate these warheads from their delivery systems, and to place both the warheads and the delivery systems under multilateral control on the territory of the owner states. The equal level of 200 warheads is selected for reasons of negotiability as slightly lower than the French or Chinese level, thus requiring some reduction by all. The five governments will commit themselves to dismantle all the warheads that are reduced to reach the 200-warhead level and to place all weapons-grade fissile material under international monitoring as reductions are carried out. At the same time, the undeclared nuclear states--like Israel and India---can also be given the choice between placing their warheads or explosive devices and fissile material in monitored storage or agreeing to their elimination. If the undeclared states decide in favour of the former arrangement, it will

place their nuclear weapons under international supervision and make it highly improbable that the weapons will ever be used. And if they decide for the latter, they should be offered similar international security guarantees by the nuclear states as, for instance, have been given to Ukraine. ³⁷

Notes

- 1 Carl Kaysen, Robert S McNamara and George W Rathjens, 'Nuclear Weapons After the Cold War,' *Foreign Affairs* 70 (Fall 1991), 95-110; McGeorge Bundy, William J Crowe, Jr, and Sidney D Drell, 'Reducing Nuclear Danger,' *Foreign Affairs* 72 (Spring 1993), 140-155; National Academy of Sciences, *The Future of the US-Soviet Relationship* (Washington, DC: National Academy Press, 1991), 3, 30. For more details on the nuclear debate, see Jonathan Dean and K Gottfried, *Nuclear Security in a Transformed World* (Cambridge, MA: Union of Concerned Scientists, 1992) ; and Michael J Mazarr, 'Nuclear Weapons After the Cold War,' *Washington Quarterly* 15 (Summer 1992), 185-201.
- 2 For instance, on the need for going beyond START II-levels, Ivo H Daalder writes: The continuing deployment of 10,000---or even 5,000----strategic nuclear weapons by the United States and Russia is inconsistent with the emergence of a post-nuclear era. There is clearly a need to rethink the requirements of strategic nuclear forces. An important first step is to pose the right question: rather than asking 'How much is enough?'; the guiding question should be : 'How low can we go?' See Ivo H Daalder, 'The Future of Arms Control,' *Survival* 34 (Spring 1992), 51-73; Ivo H Daalder, 'Stepping Down the Thermonuclear Ladder: How Low Can We Go?', in Ivo H Daalder and Terry Terriff, eds, *Rethinking the Unthinkable: New Directions for Nuclear Arms Control* (London: Frank Cass, 1993; Peter Giziwski, *Towards Minimum Deterrence:*

- How Low Can We Go?* (Ontario: Canadian Centre for Arms Control and Disarmament), 1991; and Michael J Mazarr, 'Military Targets for a Minimum Deterrent: After the Cold War, How Much Is Enough?' *Journal of Strategic Studies* 15 (June 1992), 14-171.
- 3 See George Quester, 'The Future of Nuclear Deterrence,' *Survival* 34 (Spring 1992), 74, 88; Paul H Nitze, 'Keep Nuclear Insurance,' *Bulletin of the Atomic Scientists* 48 (May 1992), 34-36; Walter B Slocombe, 'Strategic Stability in a Restructured World,' *Survival* 32 (July-August 1990), 299-312; and Paul Doty, 'Arms Control: 1960, 1990, 2020,' *Daedalus* 120 (Winter 1991), 45.
 - 4 Michael J Mazarr's book *START and the Future of Deterrence* (London: MacMillan Press, 1990) provides a detailed assessment of this new form of nuclear deterrence. Also see Doty, 'Arms Control: 1960, 1990, 2020,' 48-49.
 - 5 Robert S McNamara, 'The Military Role of Nuclear Weapons,' *Foreign Affairs* 62 (Fall 1983), 79; Ivo H Daalder, 'What Vision for the Nuclear Future?,' *Washington Quarterly* 18 (Spring 1995), 128-129; John Mueller, 'The Essential Irrelevance of Nuclear Weapons: Stability in the Post-War World,' *International Security* 13 (Fall 1989), 55-79.
 - 6 See Robert S McNamara, 'Yes, Do Our Best to Return to a Non-Nuclear World,' *New York Times*, 24 February 1993; Kaysen, McNamara and Rathjens, 'Nuclear Weapons After the Cold War,' 101; and Yuri A Zamoshkin, 'Nuclear Disarmament: Ideal and Reality,' in P Christin and A C Knigge, eds, *Breakthrough* (Los Angeles, CA: Catalan Communes, 1990), 209-213.
 - 7 National Academy of Sciences, Committee on International Security and Arms Control, *Management and Disposition of Excess Weapons Plutonium* (Washington, DC: National Academy Press, 1994), 29.

- 8 See Henry Kissinger, 'What Kind of New World Order?', *Washington Post*, 3 December 1991; and Michael E Brown, 'The 'End' of Nuclear Arms Control,' in Daalder and Terriff, *Rethinking the Unthinkable*, 61.
- 9 Fred Hiatt, 'Russians Favouring Retention of Nuclear Weapons,' *Washington Post*, 25 November 1992.
- 10 See US Department of Defence, *Nuclear Posture Review* (Washington, DC: Department of Defence, 22 September 1994). Defence Secretary William Perry's March 1995 testimony before the Senate Foreign Relations Committee, however, indicates the Clinton administration's willingness to go down in the hundreds instead of in the thousands of nuclear weapons provided other nuclear powers should also be brought into the process. For details, see Dunbar Lockwood, 'Senate Panel Ends START Hearings; Full Vote May Come Before Summit,' *Arms Control Today* 25 (April 1995), 17.
- 11 See Thomas C Schelling, 'The Role of Deterrence in Total Disarmament,' *Foreign Affairs* 40 (April 1962), 1-10.
- 12 Zbigniew Brzezinski, *In Quest of National Security* (Boulder, CO: Westview Press, 1988), 133-134.
- 13 Richard J Barnet, 'Twin Anachronisms: Nuclear Weapons and Militarism,' *Bulletin of the Atomic Scientists* 48 (May 1992), 26.
- 14 For details, see Kaysen, McNamara, and Rathjens, 'Nuclear Weapons After the Cold War,' 103; David Welsh, 'Domestic Politics and Ethnic Conflict,' *Survival* 35 (Spring 1993), 63-80; and Brown, 'The 'End' of Nuclear Arms Control,' 62-63.
- 15 For details, see Patrick J Garrity, 'The Depreciation of Nuclear Weapons in International Politics,' *Journal of Strategic Studies* 14 (December 1991), 464-465; William G Hyland, 'Setting Global Priorities,' *Foreign Policy* 73 (Winter 1988-1989), 26; and Michael J Mazarr, *Towards Nuclear Disarmament: An Action Agenda on the Future of Nuclear Weapons in World Politics*, Project on Rethinking Arms Control,

- Paper no 12 (College Park, MD: Centre for International and Security Studies, University of Maryland, December 1994). For a discussion on the cold war role of nuclear weapons, see Robert Jervis, *The Meaning of Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989).
- 16 Garrity's 'Depreciation of Nuclear Weapons' (462-513) analyses in detail the value associated with nuclear weapons in the post-cold war period. On the war prevention role of nuclear weapons, see Kenneth H Waltz, *The Spread of Nuclear Weapons: More May be the Better*, Adelphi Papers, 171 (London: International Institute for Strategic Studies, 1981); and Charles L Glaser, *Analysing Strategic Nuclear Policy* (Princeton: Princeton University Press, 1990), especially chapters 6, 10.
- 17 Paul H Nitze, *The START Treaty and the Future US Strategic Nuclear Policy*, Testimony before the Senate Foreign Relations Committee, 25 February 1992. Also see Paul H Nitze, 'Give the Strategic Disarmers a Mandate to Keep Going,' *Washington Post*, 16 August 1991.
- 18 Stephen S Rosenfeld, 'But Who Really Needs 3,000 Nuclear warheads?,' *Washington Post*, 22 June 1992.
- 19 Selig S Harrison, 'Make the World Less Nuclear, With Zero as a Goal,' *New York Times*, 18-19 February 1995.
- 20 Daalder, 'What Vision for the Nuclear Future?', 134. McGeorge Bundy, William J Crowe, Jr and Sidney D Drell, *Reducing Nuclear Danger: The Road Away from the Brink* (New York: Council on Foreign Relations Press, 1993), 45.
- 21 See Robert Mauthner, 'Nuclear Age is Not Over,' *Financial Times*, 24 July 1994; Therese Delpech, 'What Future for Nuclear weapons?,' *Security Dialogue* 25 (1994), 405-406; and Johan Jorgen Holst, 'Arms Control in the Nineties,' *Daedalus* 120 (Winter 1991), 88-89.

- 22 See Kenneth H Waltz, 'Nuclear Myths and Political Realities,' *American Political Science Review* 84 (September 1990), 731-745; and Daalder, 'What Vision for the Nuclear Future?', 134-135.
- 23 Quester, 'The Future of Nuclear Deterrence,' 85; John Lloyd, 'Arms Treaty Is a Hostage to Fortune,' *Financial Times*, 4 January 1993.
- 24 Emanuel Adler, 'Arms Control, Disarmament, and National Security: a Thirty Year Retrospective and a New Set of Anticipations,' *Daedalus* 120 (Winter 1991), 13-14; Daalder, 'What Vision for the Nuclear Future?', 135-136.
- 25 Alexei Arbatov, 'Russian Nuclear Disarmament: Problems and Prospects,' in Daalder and Terriff, *Rethinking the Unthinkable*, 103-115; and Alexei Arbatov, ed, *Implications of the START II Treaty for US-Russian Relations*, Report no 9 (Washington, DC: Henry L Stimson Center, October 1993; 'START is a Good Beginning, Arms Expert Says,' *International Herald Tribune*, 29 July 1991.
- 26 For more details, see Robert S Norris, *British, French and Chinese Nuclear Forces: Implications for Arms Control and Non-Proliferation*, Paper no 11 (College Park, MD: Centre for International and Security Studies, University of Maryland, November 1994); Nicholas D Kristof, 'China Gives No Hint of Reciprocity,' *International Herald Tribune*, 30 September 1991. If the United States and Russia agree to further cut their strategic forces, if relations between Russia and the West continue to develop in a constructive manner, and if European security problems between the great powers remain manageable; Britain and France may be willing to entertain the idea of making some cuts in their own forces. France may be a bit hesitant, given the fact that it continues its policy of conducting nuclear tests under sea water, ignoring repeated Greenpeace protests. China, however, is more problematic because its leadership appears to be quite stubborn on the issue. Thus far, ignoring US-Russian moves to reduce strategic weapons, it has gone ahead with its strategic ballistic missile programme. In May 1995, for instance, it tested a mobile ICBM. See *New York*

- Times*, 31 May 1995. During START II hearings by the Senate Foreign Relations Committee, Defence Secretary William Perry stated that China was not prepared to contemplate a treaty that would allow Washington and Moscow to deploy more warheads than Beijing. See Lockwood, 'Senate Panel Ends START Hearings; Full Vote May Come Before Summit,' 17.
- 27 Bundy, Crowe and Drell, *Reducing Nuclear Danger*, 31-32; Mazarr, 'Military Targets for a Minimum Deterrence,' 147-171.
- 28 Bundy, Crowe and Drell, *Reducing Nuclear Danger*, 34-35; Kaysen, McNamara and Rathjens, 'Nuclear Weapons After the Cold War,' 107; Paul H Nitze, *The START and Future US Strategic Weapons Policy*, Testimony before the Senate Foreign Relations Committee (Washington, DC: Congressional Research Service, 25 February 1992), 4; Quester, 'The Future of Nuclear Deterrence,' 76.
- 29 See Kaysen, McNamara and Rathjans, 'Nuclear Weapons After the Cold War,' 95-111; Joseph Fitchett, 'Nuclear Pact Sounds Knell for Old Ideas,' *International Herald Tribune*, 18 June 1992; and 'The World Bids Farewell to Its Balance of Terror,' *The Independent*, 7 June 1992.
- 30 Mauthner, 'Nuclear Age Is Not Over.' ; Mueller, 'The Essential Irrelevance of Nuclear Weapons,' 70.
- 31 Alton Frye, 'The ZBM Solution: Get Rid of All Ballistic Missiles,' *Washington Post*, 2-3 January 1993; Daalder, 'What Vision for the Nuclear Future?', 138.
- 32 See Daalder, 'The Future of Arms Control,' 69-70; Bundy, Crowe and Drell, *Reducing Nuclear Danger*, 44; and Standsfied Turner, 'Without ICBMs, a World of Greater Stability,' *International Herald Tribune*, 31 October 1986.
- 33 'A Bargain for the World,' *New York Times*, 13-14 May 1995; *New York Times*, 12 May 1995; Peter Hlintze, 'For a Stable Future, Make the Non-Proliferation Treaty Permanent,' *International Herald Tribune*, 13 April 1995; William Pfaff, 'Nuclear

Proliferation Will No Longer be Stopped,' *International Herald Tribune*, 30 January 1992.

For a detailed review of the START's linkage with NPT, see Ishtiaq Ahmad, 'Stopping the Nuclear Spread,' *Pakistan Journal of American Studies* 11 (Fall 1993), 15-27.

34 See Edward Mortimer, 'Superpowers Move the Winning Post,' *Financial Times*, 2 February 1992; Ahmad, 'Stopping the Nuclear Spread After START,' 23-24.

35 Stephen S Rosenfeld, 'How the Nuclear Haves Can Discourage Proliferation,' *Washington Post*, 27 March 1995; A A Kokoshin, 'A View from Moscow,' *Daedalus* 120 (Winter 1991), 141.

36 Harrison, 'Make the World Less Nuclear, With Zero as the Goal.' ; Shai Feldman, 'Indefinite Extension of the Nonproliferation Treaty Isn't a Sure Thing,' *International Herald Tribune*, 1 March 1995.

37 Richard L Garwin, 'A Blueprint for Radical Weapons Cuts,' *Bulletin of the Atomic Scientists* 44 (March 1988), 10-13; Harold A Feiveson and Frank N von Hippel, 'Beyond START: How to Make Much Deeper Cuts,' *International Security* 15 (Summer 1990), 154-180; Dean, 'The Final Stage of Nuclear Arms Control,' 45-48; Brown, 'The "End" of Nuclear Arms Control,' 54-58. Also see Andrew J Goodpaster, *Further Reins on Nuclear Arms* (Washington, DC: Atlantic Council, August 1993); and Jonathan Dean and Kurt Gottfried, *A Programme for World Nuclear Security* (Washington, DC: Union of Concerned Scientists, February 1993). *The Military Balance 1994-1995* estimates the nuclear weapons stockpiles of the three nuclear powers other than Russia and the United States as: France, 417; China, 300; and Britain, 196. They are either tactical, intermediate-range or strategic weapons.

Conclusions

Years have passed since the cold war ended, the United States and Russia have yet to fulfil their NPT obligation of nuclear disarmament. But nuclear disarmament is not possible, as it appears from the preceding discussion. What, however, is possible is nuclear reduction to the minimum deterrence level. Under START I and II, the United States and Russia will eliminate only the number of nuclear weapons which they have developed since NPT's entry into force in early seventies, in total violation of the treaty's Article VI. Even this elimination will be doubtful as long as START II remains unratified. Moreover, China, France and Britain---the other three declared nuclear states---have so far not participated in any nuclear arms reduction process. One must accept the fact that nuclear proliferation is a dangerous phenomenon. And it has to be checked. If states ruled by dictators, whose perceptions and actions are likely to be irrational, come to possess nuclear weapons, the chances of nuclear war may increase. But the nuclear spread must not be treated solely as a nuclear haves versus nuclear have-nots issue. The nuclear danger confronts the entire world, not just the United States or Russia. Reducing this danger is, therefore, the collective responsibility of all the states.

The post-cold war period provides an opportunity to both the declared and undeclared nuclear states to reduce---and, in the long run, eliminate---the risks associated with the nuclear danger. But as mentioned at the start of this study, even after the signing of START I and II, the ground reality today is that over 90 per cent of the world nuclear stockpile still lies in the hand of the United States and Russia. Most of this nuclear possession seems irrelevant if seen in the context of existing political and military realities. There is also no escape from the fact that none of the other declared and undeclared nuclear nations will be serious in reducing its nuclear arms or abandoning the nuclear quest unless the United States and Russia commit to surrender as much of their

respective nuclear arsenals as removes their current status as nuclear superpowers. It is the great international change occurring in recent times that has made the signing of the two START treaties possible. The same factor can make possible much more else, provided the states concerned and their leaders are willing to move ahead on the road to nuclear reduction.

The nuclear arms race between the United States and the former Soviet Union was fuelled by overblown suspicion and exaggerated threats. In the cold war period, each side developed and deployed sufficient strategic weapons for counterforce and war-fighting purposes. Neither side was able to introduce an arms control process that would keep the process of negotiations ahead of the process of building and deploying new weapon systems. Arms control agreements during the cold war---and these include SALT I and II; and, to some extent, the START I treaty---were concluded when neither side had an appreciable advantage. In the post-cold war period, with a wholly different strategic landscape, the clash of purposes appears to have largely ended; and, with that, the utility of counterforce doctrines and targeting. Suspicion and mistrust are cold war legacies. And they should be treated as such.

Besides concluding the START treaties, the United States and Russia have undertaken some other arms control moves. Both sides are following a two-year old moratorium of nuclear testing. There are moves towards signing the Comprehensive Test Ban Treaty and concluding a fissile material cut-off convention. But these moves only point to the reduced role of nuclear weapons. They do not indicate the nuclear obligation of states in the new security environment. Despite fundamental international change and radically different strategic landscape, the American nuclear strategy---as reflected in the Pentagon's 1994 Nuclear Posture Review---is still based on cold war assumptions when the Soviet threat was the main basis of strategic planning.

The cold war confrontation provided the rationale for large nuclear arsenals. In the post-cold war period, there is no justification for retaining massive nuclear forces when

the reasons for their build-up have disappeared. Arms control is not an end itself; it is a means to an end: it removes uncertainties besetting states as they seek security in an international system whose dominant features are insecurity and anarchy. The purpose of nuclear weapons today should, therefore, be to reduce the likelihood of nuclear war in a crisis situation. The goal can be to extend fifty years of nuclear non-use to future. By reducing existing and potential nuclear capabilities to minimum levels, this goal can be achieved---but only fully. Arms control can play a much important role today than before. Given present global realities, the end of arms control must be to prevent the use of nuclear weapons.

Nuclear weapon states have important obligations. And one of them is a strict guarantee not to threaten or use nuclear arms against those states that do not have them. Nuclear weapons should not serve their previous role as symbols of power and status. They have to be neutralised. The post-START II regime should be one of minimum deterrence based on small, well-protected strategic forces designed to constitute weapons of last resort, an insurance against the recurrence of old threats or the emergence of new ones. The limit of 200 weapons each, as recommended before, will serve all these purposes. Minimum deterrence will reduce the probability of a nuclear war taking place while continuing to discourage conventional wars between and among great powers. Fewer weapons will reduce the incentive to resort to nuclear weapon use in times of crisis or war. In addition, small forces are easy to command and control. Minimum deterrence will also reduce the costs of defence preparation and production.

This study discusses the global ban on ballistic missiles as one of the options. For a stable and credible post-START II regime, all destabilising weapon systems have to be eliminated. And ballistic missiles fall into the same category primarily due to their speed and accuracy and first-strike vulnerability. But this end may be difficult to achieve. The United States can do so by restructuring its strategic triad and shifting the emphasis on cruise missiles and bombers---which are not considered destabilising weapons. But, for

Russia, it will be a problem in view of its economic constraints. Only if the Americans decide to go beyond Nunn-Lugar Assistance Programme in assisting Russia, can the latter restructure its nuclear triad. An additional problem in this respect is posed by other nuclear powers, both declared and undeclared. For instance, China may not agree to any such proposal as most of its current armament investment goes to developing modern versions of ICBMs.

Insofar as the question of ballistic missile elimination is concerned, the United States and Russia can ban all MIRVed ballistic missiles. They have already agreed under START II to eliminate all land-based MIRVed ICBMs. A similar agreement to eliminate all MIRVed SLBMs can be signed by the two sides. Russia will be ready to conclude this agreement, as it will reduce by almost 70 per cent the American SLBM warheads. This will help remove the concerns of nationalist Russian parliamentarians about START II---leading to its swift ratification. The Russian hardliners criticise the treaty because they believe it protects American SLBM forces, thereby allowing the United States to enjoy strategic superiority over Russia.

Some arms control analysts also suggest a total ban on non-strategic weapons, including ballistic missiles. But countries like China and India may not agree to any such proposals. The nuclear quest of India and Pakistan arises from their regional security concerns. For China, it arises from both regional and global concerns. Unlike these countries, the nuclear relationship between the United States and Russia has a global context---especially after the threat of conventional arms superiority of former Warsaw pact states disappeared in Europe. Non-strategic weapons serve the security ends of regional powers. Therefore, nuclear nations other than the United States and Russia may not agree to a total ban on non-strategic weapons.

Under START I and II, warheads will only be removed, not dismantled. The steps which both the United States and Russia have so far taken to dismantle strategic warheads voluntarily are insignificant. All these warheads should be dismantled. The fissile

material thus obtained should be put in safe storage, with effective monitoring and accounting. This will make the process of nuclear arms reductions, including the START, irreversible. An additional stabilising step can be to separate warheads from delivery systems and place both under the IAEA monitoring mechanism in the owner states. The fissile material collected after dismantling warheads can be put in use for peaceful purposes. It can also be shared with the non-nuclear states under Article IV of the NPT, which obligates the nuclear weapon states to help the non-nuclear states in the transfer of nuclear energy---including both technology and material---for peaceful purposes.

The undeclared nuclear states can be asked to consider one of the two alternate arrangements for reducing the nuclear danger: accept nuclear disarmament and, in return, enjoy nuclear cover of the declared nuclear powers. Or, retain their existing nuclear capabilities but agree to all the steps which the declared nuclear powers take to lessen and ultimately eliminate the risks associated with the nuclear danger confronting the world.

The United States and Russia can learn important lessons from over a decade long strategic arms negotiating process. One of these lessons is that it is very easy to negotiate arms reduction treaties in times when states happen to coexist peacefully. What is needed today is that the two sides should try to benefit most from all the cooperative trends in their political relationship, putting aside all differences which are not as acute as they were in the cold war period. Some matters of tension and dispute remain. The Russians are worried about NATO expansion. Matters like war in Chechenya and Russian nuclear sales to Iran have strained US-Russian relations. The Russian hardliners oppose START II as adamantly as over two years ago when the treaty was signed. Some American Congressmen refuse to believe in the Russian claims concerning the rate at which Russia is withdrawing its warheads. There is no end in sight of the political instability in Russia. These and many other factors do have the potential of undermining the spirit of cooperation in the US-Russian relationship. Cooperative trends in this relationship,

Ballistic missile defence (BMD): Systems capable of intercepting and destroying nuclear weapons in flight, for defence against a ballistic missile attack. The now defunct US Strategic Defence Initiative (SDI) was a programme for space-based systems. In May 1993, the Strategic Defence Initiative Organisation (SDIO) was renamed the Ballistic Missile Defence Organisation (BMDO), signifying the end of the 'Star Wars' era and a re-emphasis of US missile defence programmes from strategic to theatre defences. *See also* the ABM Treaty, Anti-ballistic missile system; Ballistic missile; and Theatre Missile Defence Initiative.

CFE Treaty: The Treaty on Conventional Armed Forces in Europe, negotiated in the CSCE process, was signed in 1991 by NATO and Warsaw Pact countries and entered into force on 9 November 1992. It set numerical ceilings on conventional forces---including battle tanks, armoured, combat vehicles, artillery, combat aircraft and attack helicopters--of the signatory parties. CFE removed the conventional arms superiority of the former Warsaw Pact countries over NATO member-states.

Comprehensive Test Ban Treaty (CTBT): The proposed agreement to extend the 1963 Partial Test ban Treaty to prohibit all types of nuclear testing.

Conventional weapons: Weapons not having mass destruction effects. *See also* Weapons of mass destruction.

Counterforce: Attack or targeting policy against adversary's military capability, especially its strategic nuclear weapons and key command centres, to remove the threat of retaliation. Essentially a first-strike strategy.

Countervalue: Attack or targeting policy against civilian (population and industrial) centres. Essentially a second-strike strategy, because it infers that a rival has already launched its nuclear weapons. Countervalue targeting is central to MAD.

Cruise missile: A guided missile which sustains flight at subsonic or supersonic speeds through aerodynamic lift, generally flying at very low altitudes to avoid radar detection, sometimes following the contours of the terrain. It can be ground-(GLCM), air-(ALCM),

or sea-launched (SLCM) and deliver a conventional, nuclear, chemical or biological warhead. A cruise missile falls into three categories: LRCM or long-range cruise missile (3,000-3,500 km), MRCM or medium-range cruise missile (1,000-3,000 km), and SRCM or short-range cruise missile (under 1,000).

Delivery vehicle: Vehicle, such as bomber aircraft or missile, that delivers a weapon to the target. Vehicle that delivers a strategic weapon is called Strategic nuclear delivery vehicle. *See also* launcher.

De-Targeting Agreement: US-Russian agreement, signed on 14 January 1994, to 'de-target' strategic nuclear missiles that were under their commands by 30 May 1994. The missiles will no longer contain information targeting them on the territory of the other party. A Russian-British De-Targeting Agreement was signed on 15 February 1994.

Deterrence: Condition in which a strategic power is dissuaded from attack because it believes that potential victim could retaliate effectively.

Encryption: The encoding of communications or other data---for instance, telemetric data---for the purpose of concealing information.

First-strike capability: Capability to launch a pre-emptive attack on an adversary's strategic nuclear forces that eliminates the retaliatory, second-strike capability of the adversary.

First-strike stability: The nuclear balance between adversaries is first-strike stable when neither side is strongly tempted to launch a nuclear attack against the other, even in a deep crisis, because neither could meaningfully reduce the catastrophic damage it would suffer from a large-scale retaliatory blow by striking first. An important component of strategic stability, it is also called crisis stability.

Fissile material: Material, such as plutonium and highly-enriched uranium, used in making nuclear weapons or other nuclear explosive devices.

Fissile material production ban: Proposals were made in 1993 for the negotiation of a multilateral convention to ban the production of fissile material for nuclear weapons or

other nuclear explosive devices. The cut-off was recognised in a UN General Assembly resolution in December 1993 as a significant contribution to nuclear non-proliferation. Also known as the Cut-off Convention.

Global Protection Against Limited Strikes (GASPAL): The US BMD programme which was initiated in 1990 and accelerated in 1991 to test and deploy ground-and space-based ABM systems for territorial defence of the United States against limited ballistic missile attack, whatever the source. *See also* Theatre missile defence initiative; and Strategic Defence Initiative.

Heavy ballistic missile: For the purpose of SALT II, ballistic missiles were divided into two categories according to their throw-weight: light and heavy. Heavy missiles, including ICBMs and SLBMs, are those which possess a throw-weight greater than the throw-weight of Soviet SS-19 ICBM.

INF Treaty: The 1987 US-Soviet Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles required the United States and the Soviet Union to destroy all land-based missiles with a range of 500-5,500 km (intermediate-range, 1,000 to 5,500 km; shorter-range, 500-1,000 km) and their launchers by 1 June 1991. The INF Treaty was implemented before this date.

Intercontinental ballistic missile (ICBM): Ground-launched ballistic missile capable of delivering a warhead to a target at ranges in excess of 5,500 km.

International Atomic Energy Agency (IAEA): With headquarters in Vienna, the IAEA is endowed by its Statute, which entered into force in 1957, with the twin goals of promoting the peaceful uses of atomic energy and ensuring that nuclear activities are not used to further any military purpose. *See also* NPT.

Launcher: Equipment that launches a missile. ICBM launchers are land-based, fixed or mobile. SLBM launchers are mobile tubes on ballistic missile submarines. Cruise missile launchers can be land-, air- or sea-based. Also called Delivery vehicle.

Limited Test Ban Treaty (LTBT): The multilateral treaty that prohibits the signatory states from conducting testing nuclear weapons in the atmosphere, in outer space, and beneath the surface of the seas. Also called Partial Test Ban Treaty, it permitted only underground testing.

Long-range bomber: Multi-engine aircraft with intercontinental range, designed especially to engage targets whose destruction would reduce an enemy's capacity and will to wage war. Also called Strategic bomber or heavy bomber.

Mobile missile: Ballistic or cruise missile that depends partly or entirely on mobility to ensure pre-launch survivability. It can be carried on aircraft, ship, rail or truck.

Multiple independently targetable reentry vehicles (MIRVs): Reentry vehicles carried on a missile with their warheads which can be directed to separate targets.

National technical means of verification (NTMs): The technical intelligence means used to monitor compliance with treaty provisions. Such means include electronic and optical devices such as satellites, radar and radio receivers, and are under the national control of individual signatories to an arms control agreement. *See also* Verification.

NPT: The multilateral Non-Proliferation Treaty---signed in 1968, entered into force in 1970 and extended indefinitely in May 1995---established a regime to prevent the proliferation of nuclear weapons while guaranteeing the peaceful uses of nuclear weapons. In the NPT, non-nuclear weapon states parties undertake to conclude safeguards agreements with the IAEA to prevent the diversion of nuclear energy from peaceful to weapon use.

Nuclear parity: Rough equivalence between the nuclear forces of opposing countries. Equivalence can be defined in many ways: number of launchers; number of individually deliverable warheads; total deliverable explosive power; or throw-weight. By proposing almost equal levels of warheads for both the United States and Russia, START I and START II aim at achieving nuclear parity.

Nuclear Risk Reduction Centres (NRRC): Established by the 1987 US-Soviet NRRC Agreement. The two centres, which opened in Washington and Moscow in 1988, exchange information by direct satellite link in order to minimise misunderstandings which may carry a risk of nuclear war.

Nuclear weapon: Device which is capable of releasing nuclear energy in an explosive manner and which, after explosion, causes massive destruction.

Nunn-Lugar Assistance: It refers to assistance under the US 1991 Soviet Nuclear Threat Reduction Act. On 21 November 1991, Senators Sam Nunn and Richard Lugar presented a plan to provide funds to assist the Soviet Union in dismantling its nuclear arsenal. Under this Act, the US Congress authorised \$400 million for 1992 and another \$ 400 million for 1993 to prevent nuclear weapons outside Russia from falling into unauthorised hands. From 1992 to 1995, the US Congress appropriated some \$ 1.3 billion to aid the dismantlement of nuclear weapons in Russia.

On-site inspection (OSI): Method of verifying compliance with arms control agreements using military personnel or other arms control observers on the spot where the objects to be verified are located, or where the activities to be seen are conducted. On-site inspections form the core of the two START agreements. *See Verification.*

Partnership for Peace: The NATO programme for cooperation with democratic states in the East, in such areas as military planning, budgeting and training, under the authority of the North Atlantic Council. The January 1994 NATO summit called for an evolutionary expansion of NATO membership. The states of central and eastern Europe will be included in the NATO on the basis of the steps they take to achieve the goals set in the Partnership for Peace programme.

Re-entry vehicle (RV): That part of a ballistic missile which carries a nuclear warheads and penetration aids to the target, re-enters the earth's atmosphere and is destroyed in the terminal phase of the missile's trajectory. A missile can have one or several RVs; each RV contains a warhead.

Second-strike capability: Ability to receive a nuclear attack and launch a retaliatory blow large enough to inflict intolerable damage on the opponent. *See also* Mutual assured destruction; and Deterrence.

Short-range nuclear forces (SNFs): Nuclear weapons, including artillery, mines, and missiles, with ranges up to 500 km. *See also* Tactical nuclear weapon; and Theatre nuclear forces.

Silos: Underground facilities for a hard site ballistic missile or crew, designed to provide pre-launch protection against atomic effects. Only heavy ballistic missiles can destroy silos.

Strategic Defence Initiative (SDI): The BMD programme announced by President Reagan in his 1983 'Star Wars' speech for research and development of systems capable of intercepting and destroying nuclear weapons in flight and rendering the United States safe from the threat of a nuclear strike by another state. The Clinton administration disbanded the SDI in May 1993. *See* Ballistic missile defence; Theatre missile defence initiative; and Global Protection Against Limited Strikes.

Strategic nuclear delivery vehicles (SNDVs): *See* Delivery vehicle.

Strategic stability: Condition which exists when no strategic power believes it can significantly improve its situation by attacking first in a crisis or when it does not feel compelled to launch its strategic weapons in order to avoid losing them. Strategic stability includes two major components: first-strike or crisis stability and arms race stability.

Strategic weapons: ICBMs, SLBMs and bomber aircraft carrying nuclear weapons of intercontinental range (usually over 5,500 km). US and Russian ICBMs have ranges up to about 15,000 km, SLBMs about up to 8,000 km; and heavy bombers have unrefuelled ranges up to about 6,000 km.

Submarine-launched ballistic missile (SLBM): A ballistic missile launched from a submarine, usually with a range in excess of 5,500 km. *See* Ballistic missile.

Tactical nuclear weapon: A short-range nuclear weapon which is deployed with general purpose forces. *See also* Theatre nuclear forces; and Short-range nuclear forces.

Telemetry: Data transmitted from missiles by electronic means.

Theatre Missile Defence Initiative: A 1993 initiative of President Clinton to test and develop theatre, or tactical, missile defence systems, without undermining the objectives of the ABM Treaty. *See also* ABM Treaty.

Theatre nuclear forces (TNFs): Nuclear weapons with ranges up to and including 5,500 km. In the INF Treaty, nuclear missiles are divided into intermediate-range (1,000-5,500 km) and shorter-range (500-1,000 km). The United States and the Soviet Union have eliminated their TNFs under the INF Treaty. Also called non-strategic forces. Nuclear weapons with ranges up to 500 km are called short-range nuclear forces.

Threshold Test Ban Treaty (TTBT): Signed in June 1974, the treaty banned underground nuclear tests above a level of 150 kilotons.

Throw-weight: The sum of the weight of a ballistic missile's re-entry vehicle(s), dispensing mechanisms, penetration aids, and targeting and penetration devices.

Triad: Three legs of the US and Russian strategic forces, which include ICBMs, SLBMs, and heavy bombers with ALCMs and bombs.

Verification: Process of determining to the extent necessary to safeguard national security that the other side is complying with arms control agreements. The word 'monitoring' is often used to mean the technical process of determining, for instance, how many warheads the Russians have dismantled at a given point of time.

Warhead: That part of a missile which contains the explosives or other materials intended to inflict damage. The warhead is carried by a re-entry vehicle.

Weapon of mass destruction: Nuclear weapon and any other weapon which may produce comparable effects, such as chemical and biological weapons.

Sources: Ragnhild Fern and Connie Wall, 'Glossary', in *SIPRI Yearbook 1994: World Armaments and Disarmament* (Oxford: Oxford University Press, for Stockholm International Peace Research Institute, 1994), xxii-xxxi; Bobbit, Philip, Lawrence Freedman and Gregory Traveron, eds, 'Glossary,' in *US Nuclear Strategy: A Reader* (London: MacMillan Press, 1989), 511-513; David Robertson, *A Dictionary of Modern Defence and Strategy* (London: Europa Publications, 1987), 324p. Some other latest publications were consulted to update information about START acronyms and technical terms. These include: Julie Dahlitz, *Nuclear Arms Control* (London: George Allen & Unwin, 1993); Ivo H Daalder and Terry Terriff, eds, *Rethinking the Unthinkable: New Directions for Nuclear Arms Control* (London: Frank Cass, 1993); and Joseph Goldbalt, *Arms Control: A Guide to Negotiations and Agreements* (London: Sage Publications, 1994).

Bibliography

Documents

- United Nations Institute for Disarmament Research. *Protocol to the Treaty Between the United States of America and the Union of Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms*. Lisbon, 23 May 1992. UNIDIR Newsletter 22 and 23 (June-September 1993).
- US Arms Control and Disarmament Agency. *Treaty Between the United States of America and the Russian Federation on Further Reduction and Limitation of Strategic Offensive Arms (START II)*. Washington, DC: US Government Printing Office, for ACAD, January 1993.
- . *Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms (START I)*. Washington, DC: US Government Printing Office, for ACDA, July 1991.
- . *Arms Control and Disarmament Agreements: Text and History of Negotiations*. Washington, DC: US Government Printing Office, for ACDA, 1990.
- US Congress. Congressional Budget Office. *An Analysis of the Administration's Strategic Arms Reduction and Modernisation Proposals*. Washington, DC: US Government Printing Office, for CBO, 1984.
- . *Costs of Alternative Approaches to SDI*. Washington, DC: US Government Printing Office, for CBO, May 1992.
- . *Implementing START II*. Washington, DC: US Government Printing Office, March 1993.
- . *Modernising Strategic Forces: the Administration's Programmes and Alternatives*. Washington, D C: US Government Printing Office, for CBO, 1983.

- The START Treaty and Beyond*. Washington, DC: US Government Printing Office, for CBO, October 1991.
- Congressional Research Service. *START and Nuclear Arms Control: Chronology of Major Events 1982-1992*, CRS Report for Congress. Washington, DC: US Government Printing Office, June 1992.
- US Congress. House. Defence Policy Panel. Committee on Armed Services. Hearings; *Process and Implications of the Iceland Summit*. Washington, DC: Government Printing Office, 21 November-10 December 1986.
- Report; *Reykjavik and American Security*. Washington, DC: US Government Printing Office, February 1987.
- Committee on Foreign Affairs. Sub-committee on Arms Control, International Security and Science. Hearings; *Review of ABM Treaty Interpretation Dispute and SDI*. Washington, DC: US Government Printing Office, 26 February 1987.
- ; *Status of US Arms Control Policies*. 101st Congress, 2nd sess. Washington, DC: US Government Printing Office, 1, 14 and 21 March 1990.
- ; *United States Nuclear Policy*. Washington, DC: Federal News Service, 5 October 1994.
- Report; *Breakout, Verification and Force Structures: Dealing with the Full Implications of START*. Washington, DC: US Government Printing Office, 24 May 1988.
- ; *Recent US and Soviet Arms Control Proposals*. Washington, DC: US Government Printing Office, 5 November 1991.
- ; *Verifying Arms Control Agreements: the Soviet View*. Washington, DC: Congressional Research Service, Library of Congress, May 1987.
- *Foreign Relations Authorisation Act, Fiscal Years 1994 and 1995*. Washington, DC: US Government Printing Office, April 1994.

- , Office of Technology Assessment. *Verification Technologies: Measures for Monitoring Compliance with the START Treaty*. Washington, DC: Office of Technology Assessment, December 1990.
- , Senate. Committee on Armed Services. Hearings; *Assisting the Build-Down of the Former Soviet Military Establishment*. Washington, DC: US Government Printing Office, 5-6 February 1992.
- , Report; *Military Implications of the START I Treaty and the 17 June 1992 Understanding on Further Reductions in Strategic Offensive Arms*. Washington, DC: US Government Printing Office, 18 September 1992.
- , Committee on Foreign Relations. Hearings; *Nuclear Arms Reduction Proposals*. Washington, DC: US Government Printing Office, 29 April-13 May 1982.
- ; *The START Treaty*. Washington, DC: US Government Printing Office, February, March and June 1992.
- , Report; *The SALT II Treaty*. 96th Congress, 1st sess. Washington, DC: Government Printing Office, 1979.
- ; *The START Treaty*. 102nd Congress, 2nd sess. Washington, DC: US Government Printing Office, September 1992
- ; *US Plans and Programmes Regarding Dismantling of Nuclear Weapons in the Former Soviet Union*. Washington, DC: US Government Printing Office, 27 July 1992.
- US Department of Defence. *Nuclear Posture Review*. Washington, DC: Department of Defence, 22 September 1994.
- US Department of State. *US-Russian Strategic Stability and Nuclear Security Initiatives*. Washington, DC: US Department of State, 28 September 1994.
- , *The Clinton-Yeltsin Washington Summit*. Washington, DC: Federal News Service, 26 September 1994.

US Information Agency. *A Chronology of United States Arms Control and Reduction Initiatives 1946-1987*. Washington, DC: US Government Printing Office, for USIA, October 1987.

----- . *US Disarmament Initiatives*. Washington, DC: US Government Printing Office, for USIA, 27 September 1991.

Books

Altmann, Jurgan and Joseph Rotbalt, eds. *Verification and Arms Reductions: Nuclear, Conventional and Chemical*. Heidelberg: Peace Research Institute, 1989.

Arbatov, Alexei. *Implications of the START II Treaty for US-Russian Relations*. Washington, DC: Henry L Stimson Centre, October 1993.

----- . *Lethal Frontiers: A Soviet View of Nuclear Strategy, Weapons and Negotiations*. New York: Praeger Press, 1988.

Arms Control Association. *The Administration's Proposal on Theatre Defences*. Washington, DC: Arms Control Association, December 1993.

----- . *Ukraine's Conditional Ratification of the START I Treaty*. Washington, DC: Arms Control Association, 23 November 1993.

Aspen Study Group. *After the INF Treaty*. Lanham, MD: University Press of America, 1988.

Bajusz, William. *Deterrence, Technology and Strategic Arms Control*. Adelphi Papers, 215. London: Brassey's, for International Institute for Strategic Studies, 1986-1987.

Ball, Desmond and Andrew Mack, eds. *The Future of Arms Control*. Sydney: Pergamon Press, 1987.

Bellamy, Ian. *A Basis for Arms Control*. Aldershot: Dartmouth Press, 1991.

Berkovitz, Bruce D. *A Century of Arms Control, Why It Has Failed and How It Can be Made to Work*. New York: Simon & Schuster, 1987.

- Blacker, Coit D. *Reluctant Warriors: The United States, the Soviet Union, and Arms Control*. New York: Freedman, 1987.
- Blackwill, Robert D and Albert Carnesale, eds. *New Nuclear Nations: Consequences for US Policy*. New York: Council on Foreign Relations Press, 1993.
- Boutwell, Jeffrey and Richard A Scribner. *The Strategic Defence Initiative: Some Arms Control Implications*. Washington, DC: American Association for the Advancement of Science, 1985.
- Brett, B C. *Rethinking Deterrence and Arms Control*. Working Papers, 104. Canberra: Strategic and Defence Studies Centre, Australian National University, October 1988.
- Brown, Harold, ed. *The Strategic Defence Initiative: Shield or Snare?* Boulder, CO: Westview Press, 1987.
- Brown, James. *New Horizons and Challenges in Arms Control and Verification*. Amsterdam: VU University Press, 1994.
- Brown, Michael E. *The 'End' of Nuclear Arms Control*. *Project on Rethinking Arms Control*, Paper No 3. College Park, MD: Centre for International and Security Studies, University of Maryland, March 1993.
- Brzezinski, Zbigniew. *In Quest of National Security*. Boulder, CO: Westview Press, 1988.
- Bundy, McGeorge, William J Crowe, Jr and Sidney Drell. *Reducing Nuclear Danger: the Road Away from the Brink*. A Carnegie Commission Report. New York: Council on Foreign Relations Press, 1993.
- Bush, George. *National Security Strategy of the United States: 1991-92*. London: Brassey's, July 1991.
- Calogero, F, M L Golderger and S P Kapitza, eds. *Verification, Monitoring Disarmament*. Boulder, CO: Westview Press, 1991.

- Carlton, David and Carlo Schaerf, eds. *The Arms Race in an Era of Negotiations*. New York: St Martin's Press, 1991.
- and Carlo Schaerf, eds. *Reassessing Arms Control*. Studies in Disarmament and Conflicts. London: MacMillan Press, 1984.
- Carnegie Endowment for International Peace and the Monetary Institute of International Studies. *Nuclear Successor States of the Soviet Union: Nuclear Weapons and Sensitive Export Status Report*. Washington, DC: Carnegie Endowment for International Peace and the Monetary Institute of International Studies, December 1994.
- Carnesale, Albert and Richard N Haass, eds. *Superpowers Arms Control: Setting the Record Straight*. Cambridge, MA: Ballinger, 1987.
- Carter, April. *Success and Failure in Arms Control Negotiations*. Oxford: Oxford University Press, for Stockholm International Peace Research Institute, 1989.
- Chow, Brian G and Kenneth A Solomon. *Limiting the Spread of Weapons-Usable Fissile Materials*. Santa Monica, Calif: RAND, 1993.
- Cimbala, Stephen J. *First Strike Stability: Deterrence After Containment*. Westport, Conn: Greenwood Press, 1990.
- , *US Nuclear Strategy in the New World Order: Backward Glances, Forward Looks*. New York: Paragon House, 1993.
- Committee of Soviet Scientists for Peace and Against the Nuclear Threat. *Strategic Stability Under Conditions of Radical Nuclear Arms Reductions*. Moscow: Committee of Soviet Scientists for Peace and Against the Nuclear Threat, April 1987.
- Committee on International Security and Arms Control. *The Future of US-Soviet Nuclear Relationship*. Washington, DC: National Academy Press, 1991.

- Daalder, Ivo H. *Cooperative Arms Control: A New Agenda for the Post-Cold War Era*. Project on Rethinking Arms Control. Paper No 1. College Park, MD: Centre for International and Security Studies, University of Maryland, October 1992.
- , *Stepping Down the Thermonuclear Ladder: How Low Can We Go?* Project on Rethinking Arms Control. Paper No 5. College Park, MD: Centre for International and Security Studies, University of Maryland, April 1993.
- and Terry Terriff, eds. *Rethinking the Unthinkable: New Directions for Nuclear Arms Control*. London: Frank Cass, 1993.
- Dahlitz, Julie. *Nuclear Arms Control*. London: George Allen & Unwin, 1993.
- Dallmeyer, Dorinda G, ed. *The Dynamics of Arms Control: Hiroshima to the Year 2000*.
A
- Dean Rusk Centre Monograph. Athens: Dean Rusk Centre for International and Comparative Law, University of Georgia, 1987.
- Davis, Zachary. *Nuclear Weapons: Ending US-CIS Production, Dismantling and Disposing of Inventories*. Washington, DC: Congressional Research Service, 24 March 1992.
- and Jonathan Medalia. *Nuclear Proliferation from Russia: Options for Control*. Washington, DC: Congressional Research Service, 30 March 1992.
- Dean, Jonathan. *The Final Stage of Nuclear Arms Control*. Project on Rethinking Arms Control. Paper No 10. College Park, MD: Centre for International and Security Studies, University of Maryland, August 1994.
- and Gottfried. *A Programme for World Nuclear Security*. Washington, DC: Union of Concerned Scientists, February 1993.
- , *Nuclear Security in a Transformed World*. Cambridge, MA: Union of Concerned Scientists, 1993.
- Diehl, Paul F, ed. *Through the Straits of Armageddon: Arms Control Issues and Prospects*. Athens: University of Georgia Press, 1987.

- Dunn, Lewis A. *Rethinking the Nuclear Equation: The United States and the New Nuclear Powers*. Mclean, VA: Centre for National Security Negotiations, 1994.
- Durch, William J. *Rethinking Strategic Ballistic Missile Defence*. Project on Rethinking Arms Control, Paper No 4. College Park, MD: Centre for International and Security Studies, University of Maryland, April 1993.
- Eden, Lynn and Steven E Miller, eds. *Nuclear Agreements: The Major Debates on Strategic Nuclear Weapons and Arms Control*. New York: Cornell University Press, 1989.
- Flournoy, Michael A, ed. *Nuclear Weapons After the Cold War: Guidelines for US Policy*. New York: Harper-Collins, 1993.
- Freedman, Lawrence. *Strategic Defence in the Nuclear Age*. Adelphi Papers, 224. London: Brassey's, for International Institute for Strategic Studies, Autumn 1987.
- . *The Price of Peace: Living With the Nuclear Dilemma*. London: MacMillan Press, 1988.
- Gaddis, John Lewis. *The United States and the End of the Cold War: Implications, Reconsiderations, Provocations*. New York: Oxford University Press, 1992.
- Garfinkle, Adam M, ed. *Global Perspectives on Arms Control*. A Foreign Policy Research Institute Series. New York: Praeger Press, 1984.
- Garthoff, Raymond L. *Policy Versus the Law: The Reinterpretation of the ABM Treaty*. Washington, DC: Brookings Institution, 1987.
- Gelber, Harry G. *Nuclear Arms Control After Reykjavik*. Working Papers, 118. Canberra: Strategic and Defence Studies Centre, Australian National University, January 1987.
- George, James L. *The New Nuclear Rules: Strategy and Arms Control After INF and START*. New York: St Martin's Press, 1990.
- Gertcher, Frank L and William J Weida. *Beyond Deterrence: The Political Economy of Nuclear Weapons*. Boulder, CO: Westview Press, 1990.

- Gizewski, Peter. *Towards Minimum Deterrence: How Low Can We Go?* Ontario: Canadian Centre for Arms Control and Disarmament, 1991.
- Gaines, L. L. *START II: Thinking One Move Ahead*. Argonne, IL: Argonne National Laboratory, November 1991.
- Goldbalt, Joseph. *Arms Control: A Guide to Negotiations and Agreements*. London: Sage Publications, 1994.
- Goldfinger, David and Thomas W Graham, eds. *Nuclear Deterrence and Global Security in Transition*. Boulder, CO: Westview Press 1991.
- Goldstein, Martin E. *Arms Control and Military Preparedness from Truman to Bush*. New York: Peter Lang Publishing, Inc, 1992.
- Gorbachev, Mikhail, *Speeches and Writings*. Oxford: Pergamon Press, 1987.
- Gray, Colin S. *House of Cards: Why Arms Control Must Fail*. Ithaca, New York: Cornell University Press, 1992.
- , *War, Peace, and Victory: Strategy and Statecraft for the Next Century*. New York: Simon & Schuster, 1990.
- Haley, P Edward, David M Keithly and Jack Merrith, eds. *Nuclear Strategy, Arms Control and the Future*. Boulder, CO: Westview Press, 1985.
- Hanrieder, Walfran F, ed. *Technology, Strategy, and Arms Control*. Boulder, CO: Westview Press, 1986.
- Hawes, John. *Arms Control: A New Style for a New Agenda*. Project on Rethinking Arms Control, Paper No 2. College Park, MD: Centre for International and Security Studies, University of Maryland, January 1993.
- Hippel, Frank von and Ronald Z Sagdeev, eds. *Reversing the Arms Race: How to Achieve and Verify Deep Reductions in the Nuclear Arsenals*. Philadelphia: Gordon and Breach Science Publishers, 1991.

- Huisken, Ron. Deterrence, *Strategic Defence and Arms Control*. Working Papers, 98. Canberra: Strategic and Defence Studies Centre, Australian National University, July 1985.
- Inman, Bobby R, Joseph S Nye, Jr, William Perry and Roger Smith. *Responding to the Proliferation of Nuclear, Chemical and Ballistic Missile Capabilities*. New York: University Press of America, 1993.
- International Institute for Strategic Studies. *Strategic Survey 1987-1988*. London: Brassey's, for IISS, 1989.
- . *Strategic Survey 1988-1989*. London: Brassey's, for IISS, 1990.
- . *Strategic Survey 1993-1994*. London: Brassey's, for IISS, 1994.
- . *The Military Balance 1994-1995*. London: Brassey's, for IISS, 1995.
- Kartchner, Kerry M. *Negotiating START: Strategic Arms Reduction Talks and the Quest for Strategic Stability*. New Brunswick, CT: Transaction Publications, 1992.
- Kegley, Charles W and Kenneth L Schwab. *After the Cold War: Questioning the Morality of Nuclear Deterrence*. Boulder, CO: Westview Press, 1991.
- Kenneth, George F. *The Nuclear Delusion: Soviet-American Relations in the Atomic age*. London: Hamish Hamilton, 1984.
- Kortunov, Andrei. *The End of Traditional Arms Control and the New American Role in International Security*. Adelphi Papers, 256. London: Brassey's, for International Institute for Strategic Studies, 1991.
- Krepon, Michael. *Arms Control Verification and Compliance*. Headline Series, 270. New York: Foreign Policy Association, September 1984.
- and Dan Caldwell, eds. *The Politics of Arms Control Treaty Ratification*. New York: St Martin's Press, 1991.
- Lockwood, Dunbar. *Strategic Arms Reduction Treaty: Analysis, Summary, Text*. Washington, DC: Arms Control Association, 1991.

- Malcolmson, Robert W. *Beyond Nuclear Thinking*. Montreal: McGill-Queen's University Press, 1990.
- May, Michael M, George F Bing and John D Steinbruner. *Strategic Arms Reduction*. Washington, DC: Brookings Institution, in Cooperation with Lawrence Livermore National Laboratory, 1988.
- Mazarr, Michael J. *START and the Future of Nuclear Deterrence*. London: MacMillan Press, 1990.
- . *Towards Nuclear Disarmament: An Action Agenda on the Future of Nuclear Weapons in World Politics*. Project on Rethinking Arms Control, Paper No 12. College Park, MD: Centre for International and Security Studies, University of Maryland, December 1994.
- Mikheyev, Dimtry. *The Soviet Perspectives on the Strategic Defence Initiative*. Elmsford, New York: Pergamon Brassey's, for Institute for Foreign Policy Analysis, 1987.
- National Academy of Sciences. *The Future of the US-Soviet Relationship*. Washington, DC: National Academy Press, 1991.
- . Committee on International Security and Arms Control. *Management and Disposition of Excess Weapons Plutonium*. Washington, DC: National Academy Press, 1994.
- . *Reykjavik and Beyond: Deep Reductions in Strategic Nuclear Arsenals*. Washington, DC: National Academy Press, 1988.
- Newhouse, John. *Cold Dawn: the Story of SALT*. New York: Simon & Schuster, 1973.
- Nixon, Richard. 1990: *Victory Without War*. London: Sidgwick & Jackson, 1988.
- Norris, Robert S. *British, French and Chinese Nuclear Forces: Implications for Arms Control and Non-Proliferation*, Paper No 11. College Park, MD: Centre for International and Security Studies, University of Maryland, November 1994.

- Nye, Joseph S, Jr. *Bound to Lead: the Changing Nature of American Power*. New York: Basic Books, 1990.
- and James A Schear, eds. *On the Defensive: the Future of SDI*. Lanham, MD: University Press of America, for Aspen Study Group, 1988.
- Potter, William C, ed. *Verification and Arms Control*. Lexington, MA: Lexington Books, for Centre for International and Strategic Affairs, 1985.
- Powaski, Ronald F. *March to Armageddon: the United States and the Nuclear Arms Race, 1939 to the Present*. New York: Oxford University Press, 1987.
- Powell, Robert. *Nuclear Deterrence Theory: the Search for Credibility*. New York: Cambridge University Press, 1990.
- Reiss, Edward. *The Strategic Defence Initiative: Development of an Armaments Programme*. Cambridge: Cambridge University Press, 1992.
- Richardson, J L. *Arms Control in the Later 1980s: the Implications of the Strategic Defence Initiative*. Canberra: Peace Research Centre, Australian National University, 1986.
- Roberts, Brad, ed. *US Security in an Uncertain Era*. Cambridge, MA: The MIT Press, 1994.
- Robinson, David Z. *The Strategic Defence Initiative: Its Effect on the Economy and Arms Control*. New York: University Press of America, 1987.
- Rotbalt, Joseph, Jack Steinberger and Balchandra Udgoakar, eds. *Nuclear-Weapon-Free World*. Boulder, CO: Westview Press, 1993.
- Schaefer, Henry W. *Nuclear Arms Control: the Prospects of Developing Positions*. A National Security Affairs Monograph. Washington, DC: National Defence University, 1984.
- Schaerf, Carlo and David Carlton, eds. *Reducing Nuclear Arsenals*. New York: St Martin's Press, 1991.

- Schelling, Thomas C and Morton H Halperin. *Strategy and Arms Control*. Washington, DC: Pergamon Brassey's, 1985.
- Scrivener, David and Michael Sheeham. *Arms Control Verification*. London: Dartmouth Publications, 1990.
- Shearer, Richard L, Jr. *On Site Inspections for Arms Control: Breaking the Verification Barrier*. National University Affairs Monograph Series, 7184. Washington, DC: National Defence University Press, 1984.
- Sherr, Alan B. *The Other Side of Arms Control: Soviet Objectives in the Gorbachev Era*. Boston: Unwin Hyman, 1988.
- Smith, Gerard C. *Doubletalk: the Story of the First Strategic Arms Limitation Talks*. New York: Alfred A Knopf, 1980.
- Stockholm International Peace Research Institute. *SIPRI Yearbook 1988: World Armaments and Disarmament*. Oxford: Oxford University Press, for SIPRI, 1989.
- , *SIPRI Yearbook 1991: World Armaments and Disarmament*. Oxford: Oxford University Press, for SIPRI, 1991.
- , *SIPRI Yearbook; World Armaments and Disarmament 1992*. Oxford: Oxford University Press, for SIPRI, 1992.
- , *SIPRI Yearbook 1993: Armaments and Disarmament*. Oxford: Oxford University Press, 1993.
- Stockton, Paul. *Strategic Stability Between the Superpowers*. Adelphi Papers, 213. London: Brassey's, for International Institute for Strategic Studies, Winter 1986.
- Sur, Serge, ed. *Verification of Disarmament or Limitation of Armaments: Instruments, Negotiations, Proposals*. Geneva: United Nations Institute for Disarmament Research, 1992.
- Hersh, Seymour M. *The Price of Power: Kissinger in the White House*. New York: St Martin's Press, 1983.

- Talbott, Strobe. *Deadly Gambits: The Reagan Administration and the Stalemate in Nuclear Arms Talks*. New York: Alfred A Knopf, 1984.
- , *The Master of the Game: Paul Nitze and the Nuclear Peace*. New York: Alfred A Knopf, 1988.
- Tarr, David E. *Nuclear Deterrence and International Security: Alternative Nuclear Regimes*. New York: Longman, 1991.
- Taylor, William, J, Jr and Andrew C Goldberg. *Assessing Strategic Stability: US Strategic Forces in the Year 2000*. Cambridge, MA: The MIT Press, for Centre for Strategic and International Studies, 1988.
- Thompson, Kenneth W, ed. *Unresolved Issues in Arms Control*. Lanham, MD: University Press of America, 1988.
- Union of Concerned Scientists. *Missing the Targets: SDI in the 1990s*. Cambridge, MA: Union of Concerned Scientists, 1992.
- United Nations Institute for Disarmament Research. *START and Nuclear Disarmament: UNIDIR Newsletter*. Geneva: UNIDIR, June-September 1993.
- Vigor, P H. *The Soviet View of Disarmament*. London: MacMillan Press, 1986.
- Waltz, Kenneth H. *The Spread of Nuclear Weapons: More May be the Better*. Adelphi Papers, 171. London: Brassey's, for International Institute for Strategic Studies, 1981.
- Warner, Edward III and David A Ochmanek. *Next Moves: An Arms Control Agenda for the 1990s*. New York: Council on Foreign Relations, 1989.
- Weber, Steve. *Cooperation and Discord in US-Soviet Arms Control*. Princeton, NJ: Princeton University Press, 1991.
- Weinberg, Alvin M and Jack N Barkenbus, eds. *Strategic Defence and Arms Control*. New York: Paragon House, 1988.
- Western, Burns H. *Alternate Security: Living Without Nuclear Deterrence*. Oxford: Westview Press, 1990.

Wordon, Simon P. *SDI and the Alternatives*. Washington, DC: National Defence University Press, 1991.

Periodicals

Alder, Emanuel. 'Arms Control, Disarmament and National Security: A Thirty Year Retrospective and a New Set of Anticipations.' *Daedalus* 120 (Winter 1991): 1-20.

Ahmad, Ishtiaq. 'The INF Treaty: Lessons for START.' *Pakistan Journal of American Studies* 6 (Spring & Fall): 18-28.

-----'. 'Stopping the Nuclear Spread After START.' *Pakistan Journal of American Studies* 11 (Fall 1993): 15-27.

Alperovitz, Gar and Kai Bird. 'Dream of Total Disarmament Could Become Reality.' *Los Angeles Times*, 12 January 1992.

-----'. 'A New Era of Reciprocal Arms Control.' *Arms Control Today* 21 (October 1991): 3-6.

Apple, R W, Jr. 'Ukraine Gives in on Surrendering Nuclear Arms.' *New York Times*, 11 January 1994.

-----'. 'US and Russia to Speed Disarmament.' *New York Times*, 29 September 1994.

Arbatov, Alexei G. 'Implementing START: Political, Economic and Strategic Dimensions.' *Mediterranean Quarterly* 2 (Spring 1991): 55-71.

-----'. 'START: Good, Bad or Neutral?' *Survival* 31 (July-August 1987): 29-30.

'Arms Control After START.' *Financial Times*, 30 December 1992.

Art, Robert J. 'A Defensible Defence: America's Grand Strategy After the Cold War.' *International Security* 15 (Spring 1991): 5-53.

Bethe, Hans A. 'Chop Down the Nuclear Arsenals.' *Bulletin of the Atomic Scientists* 45 (March 1989): 11-15.

- Binnendijk, Hans. 'START: A Preliminary Assessment.' *Washington Quarterly* 11 (Autumn 1988): 5-18.
- Blair, Bruce G. 'Ukraine Deserves Fair Reassurance.' *International Herald Tribune*, 2 June 1993.
- Blackwill, Robert D. 'Time for a Joint Effort to End the Nuclear Threat Once and for All.' *International Herald Tribune*, 24 April 1995.
- Blaker, James. 'Coping With the New "Clear and Present Danger" From Russia.' *Arms Control Today* 25 (April 1995): 13-16
- Boulton, Leyla. 'Yeltsin Faces Powerful Opposition to Treaty at Home.' *Financial Times*, 30 December 1993.
- Bowie, Robert R. 'Arms Control in the 1990s.' *Daedalus* 120 (Winter 1991): 53-68.
- Broad, William J. 'Star Wars' II: The Death Ray That Refused to Die.' *New York Times*, 7 December 1994.
- Brown, Michael E. 'NATO Expansion: the Need Is Dubious, the Risks Real.' *International Herald Tribune*, 17 January, 1995.
- , 'Will START Stall?' *UNIDIR Newsletter* 22 and 23 (June-September 1993): 24-30.
- Brzezinski, Zbigniew. 'Selective Global Commitment.' *Foreign Affairs* 70 (Fall 1991): 1-20.
- Bundy, McGeorge, 'From Cold War Towards Trusting Peace.' *Foreign Affairs* 69 (America and the World 1989-1990): 197-212.
- Burt, Richard R. 'Status of the Strategic Arms Talks.' *US Department of State Bulletin* 89 (October 1989): 17-22.
- Caldwell, Lawrence T. 'Washington and Moscow: a Tale of Two Summits.' *Current History* 513 (October 1988): 305-308, 337-338.
- Callaghan, Lord. 'The Strategic Panorama of the 1990s.' *International Affairs* 98 (August 1988): 57-64.

- Calvoceressi, Peter. 'World Power 1920-1990.' *International Affairs* 66 (October 1990): 663-674.
- Carter, Ashton B. 'Emerging Themes in Nuclear Arms Control.' *Daedalus* 120 (Winter 1991): 233-250.
- Cherkasov, Sergei. 'The Strategic Arms Reduction Treaty and the Future of Space weapons.' *New Outlook* (Winter-Spring 1992): 61-66.
- Cohen, Samuel and Joseph Douglas. 'Arms Control Verification and Deception.' *National Security Review* 86 (December 1985): 1-6.
- , 'The Future of Arms Control.' *Survival* 34 (Spring 1992): 51-73.
- Daalder, Ivo H. 'The Future of Arms Control.' *Survival* 34 (Spring 1992): 51-73.
- , 'What Vision for the Nuclear Future?.' *Washington Quarterly* 18 (Spring 1995): 127-142.
- Dean, Jonathan. 'The Final Stage of Nuclear Arms Control.' *Washington Quarterly* 7 (Autumn 1994): 31-52.
- Delpech, Therese. 'What Future for Nuclear weapons?' *Security Dialogue* 25 (1994): 405-407.
- Dobbs, Michael. 'Russia Must Now Sell Treaty to a Hostile Parliament.' *Washington Post*, 4 January 1993.
- Doty, Paul. 'Arms Control: 1960, 1990, 2020.' *Daedalus* 120 (Winter 1991): 33-53.
- Dunn, Lewis A. 'Rethinking the Nuclear Equation: The United States and the New Nuclear Powers.' *Washington Quarterly* 17 (Winter 1994): 5-25.
- Einhorn, Robert. 'Revisiting the START Process.' *Survival* 33 (November-December 1990): 497-506.
- , 'The Emerging START Agreement.' *Survival* 30 (September-October 1988): 387-401.
- Feiveson, Harold A and Frank N von Hippel. 'Beyond START: How to Make Much Deeper Cuts.' *International Security* 15 (Summer 1990): 154-180.

Feldman, Shai. 'Indefinite Extension of the Nonproliferation Treaty Isn't a Sure Thing.'

International Herald Tribune, 1 March 1995.

Fitchett, Joseph. 'Ex-Republics as START Signatories.' *International Herald Tribune*,

20 May 1992.

-----'. 'Proposed Global Missile Shield Can Track Anything, But Lacks Political Vision.' *International Herald Tribune*, 11 March 1992.

-----'. 'Nuclear Pact Sounds Knell for Old Ideas.' *International Herald Tribune*, 18 June 1992.

Flournoy, MA. 'A Rocky START: Optimism and Obstacles on the Road to Reductions.'

Arms Control Today 17 (October 1987): 69-75.

Freedman, Lawrence. 'Arms Control: Thirty Years On.' *Daedalus* 120 (Winter 1991):

69-82.

Friedman, Thomas L. 'The Priority with Russia Ought to be Nuclear Trims.' *New York*

Times, 11 May 1995.

Frye, Alton. 'Zero Ballistic Missiles.' *Foreign Policy* 88 (Fall 1992): 3-20.

Gaffney, Frank J, Jr. 'Beware of the Fallout of Bush's Arms Cuts.' *Asian Wall Street*

Journal, 2 October 1991.

-----'. 'The INF Treaty and Its Shadow over the START Negotiations.' *Strategic Review* 16 (Spring 1988): 33-42.

Garfinkle, Adam M. 'Obstacles and Optimism at Geneva.' *Orbis* 29 (Summer 1985):

268-280.

Garrity, Patrick J. 'The Depreciation of Nuclear Weapons in International Politics.'

Journal of Strategic Studies 4 (December 1991): 463-514.

Garwin, Richard. 'A Blueprint for Radical Weapons Cuts.' *Bulletin of the Atomic*

Scientists 44 (March 1988): 9-13.

George, James L. 'START and US Strategic Force Vulnerabilities: Can "Downloading"

Provide the Answer?' *Strategic Review* 4 (Fall 1988): 21-27.

- Glaser, Charles L. 'Nuclear Planning Without an Adversary: US Planning for a Post-Soviet Era'. *International Security* 16 (Spring 1992): 5-34.
- Gottemoeller, Rose. 'America and Russia and a Road Map to Read Together.' *International Herald Tribune*, 9 May 1995.
- Gorbachev, Michael. 'Realities and Guarantees for a Secure World'. *New Times* (5 October 1987): 3-6.
- Gordon, Michael R. 'Post-START Arms Control: Slower Pace.' *New York Times*, 17 July 1991.
- , 'Superpowers Close in on Arms Treaty.' *International Herald Tribune*, 12 February 1990.
- Gray, Colin S. 'Arms Control Does Not Control Arms.' *Orbis* (Summer 1993): 333-355.
- , 'Destination Unknown: From SALT to START.' *Strategic Review* 19 (Spring 1991): 23-43.
- , 'START II: "Good" Arms Control.' *Global Affairs* 6 (Summer 1991): 47-57.
- Green, Daniel. 'Big Savings Spur START II Nuclear Arms Meltdown,' *Financial Times*, 30 December 1992.
- Greenhouse, Steven. 'US Warns Russia of Nuclear Cutoff.' *New York Times*, 10 April 1995.
- Harrison, Selig S. 'Make the World Less Nuclear, With Zero as a Goal.' *New York Times*, 18-19 February 1995.
- Haley, P Edward. 'You Could Have said Yes: Lessons from Reykjavik.' *Orbis* 31 (Spring 1987): 75-97.
- Hiatt, Fred. 'Russians Critics Call Arms Deal Betrayal.' *International Herald Tribune*, 19 June 1992.
- , 'Russians Favouring Retention of Nuclear Weapons.' *Washington Post*, 25 November 1992.

- Hintze, Peter. 'For a Stable Future, Make the Non-Proliferation Treaty Permanent.' *International Herald Tribune*, 13 April 1995.
- Hirsch, Daniel, Peter Taylor. 'The Devil is in the Details: The Bush-Yeltsin Cuts.' *Nuclear Times* (Spring 1992): 3-4.
- Hulett, Louise Sue. 'START, Stops, and Nuclear Strategy.' *Journal of Strategic Studies* 7 (June 1984): 154-168.
- Hyland, William G. 'Reagan-Gorbachev III.' *Foreign Affairs* 66 (Fall 1987): 7-21.
- Ikle, Fred. 'Can Nuclear Deterrence Last out the Century?' *Foreign Affairs* 51 (January 1973): 267-285.
- Jervis, Robert. 'The Future of World Politics: Will It Resemble the Past?' *International Security* 16 (Winter 1991-92): 39-73.
- Kampelman, Max M. 'START: Completing the TASK.' *Washington Quarterly* 12 (Summer 1989): 5-1.
- Karpov, Victor. 'An Equation Without Unknown Qualities.' *New Times* (March 1988): 5-7.
- Kaysen, Carl, Robert McNamara and George Rathjens, 'Nuclear Weapons After the Cold War.' *Foreign Affairs* 70 (Fall 991): 95-110.
- Khalilzad, Zalmay. 'Solving Ukraine's Nuclear Dilemma and More.' *Asian Wall Street Journal*, 30 December 1992.
- Kharchenko, Maj Gen D, G K Khromov and Victor Slipchenko. 'Implementation of START in the Russian Federation.' *UNIDIR Newsletter* 22 and 23 (June-September 1993): 9-18.
- Kireyev, Alexei. 'Beating Missiles into Gardening Tools.' *New Times* (April 1988): 0-12.
- Kissinger, Henry A. 'START: A Dangerous Rush to Agreement.' *Washington Post*, 24 April 1988.
- '. 'The Dangers Ahead.' *Newsweek*, 21 December 1987.
- '. 'What Kind of New World Order?' *Washington Post*, 3 December 1991

- Kokoshin, Andrei A. 'Arms Control: A View from Moscow.' *Daedalus* 20 (Winter 1991): 133-144.
- '. 'A Soviet on Radical Weapons Cuts.' *Bulletin of the Atomic Scientists* 44 (March 1988): 14-17.
- Krepon, Michael. 'Assessing Strategic Arms Reduction Proposals.' *World Politics* 35 (January 1988): 216-244.
- '. 'Has Arms Control Worked?' *Bulletin of the Atomic Scientists* 45 (May 1989): 27-28.
- Kristof, Nicholas D. 'China Gives No Hint of Reciprocity.' *International Herald Tribune*, 30 September 1991.
- Kruzel, Joseph. 'From Rush Bagot to START: The Lessons of Arms Control.' *Orbis* 30 (Spring 1986): 193-216.
- Leggett, Jeremy K and Patricia M Lewis. 'Verifying a START Agreement: Impact of INF Agreement.' *Survival* 30 (September-October 1988): 409-428.
- Lehman II, Ronald F. 'Arms Control: Passing the Torch as Time Runs out.' *Washington Quarterly* 16 (Summer 1993): 37-52.
- Leopold, George. 'Russian Military May Hamper START.' *Defence News* (7-13 September 1992): 1, 76.
- Lewis, Flora. 'The Next Arms Treaty Is Too Important to Rush.' *International Herald Tribune*, 28 March 1988.
- Lockwood, Dunbar. 'Russia Ratifies START; Ukraine Reaffirms Conditions for Approval.' *Arms Control Today* 22 (November 1992): 26, 31-32.
- '. 'Senate Panel Ends START Hearings; Full Vote May Come Before Summit.' *Arms Control Today* 25 (April 1995): 17.
- '. 'Senate Ratifies START Agreement, Sets Groundwork for Deeper Cuts.' *Arms Control Today* 22 (October 1992): 30.

- .'START II: The Pendant for Peace.' *Bulletin of the Atomic Scientists* 48 (October 1992): 10-11, 45.
- . 'START Treaty Signed, Brings Historic Cuts in Strategic Warheads.' *Arms Control Today* 21 (September 1991): 25 and 32-33.
- .'Strategic Nuclear Forces Under START II.' *Arms Control Today* 22 (December 1992): 10-11.
- . 'Ukraine Accedes to NPT; Opens Way to START Reductions.' *Arms Control Today* 24 (December 1994): 17.
- . 'Ukraine Begins Transfer of Strategic Nuclear Warheads,' *Arms Control Today* 24 (April 1994), 20.
- .'Ukrainian Parliament Ratifies START, But Adds 13 Conditions for Approval.' *Arms Control Today* 23 (December 1993): 17.
- . 'Ukrainian Rada Clears way for START I, NPT Accession.' *Arms Control Today* 24 (March 1994): 32.
- Lodal, Jan M. 'Finishing START.' *Foreign Policy* 48 (Fall 1982): 66-81.
- Luttwak, Edward N. 'An Emerging Post-Nuclear Era?' *Washington Quarterly* 11 (Winter 1988): 5-15.
- Mandelbaum, Michael. 'Lessons of the Next Nuclear War.' *Foreign Affairs* 74 (March-April 1995): 22-37.
- Mauthner, Robert. 'The Nuclear Age Is Not Over.' *Financial Times*, 25 July 1992.
- May, Michael M. 'Nuclear Weapons in the New World Order.' *Disarmament* 15 (1992): 18-42.
- Mazarr, Michael J. 'Military Targets for a Minimum Deterrent: After the Cold War, How Much Is Enough?' *Journal of Strategic Studies* 15 (June 1992): 14-171.
- .'Nuclear Weapons After the Cold War.' *Washington Quarterly* 15 (Summer 1992): 185-201.

- McLauchlan, Gregory. 'Does the Nuclear Arms Race Matter?' *Journal of Peace Research* 28 (August 1991): 325-330.
- McNamara, Robert S. 'Conclusion, 30 Years on: Better a Non-Nuclear World.' *New York Times*, 15 October 1992.
- '. 'Nobody Needs Nukes.' *New York Times*, 23 February 1993.
- '. 'Yes, Do Our Best to Return to a Non-Nuclear World.' *New York Times*, 24 February 1993.
- Mendelsohn, Jack. 'Clinton, Yeltsin Discuss Arms Control at UN and in Washington.' *Arms Control Today* 24 (November 1994): 26.
- '. 'Why START?' *Arms Control Today* 21 (April 1991): 3-9.
- Mortimer, Edward. 'Superpowers Move the Winning Post.' *Financial Times*, 1 February 1992.
- Mueller, John. 'The Essential Irrelevance of Nuclear Weapons.' *International Security* 13 (Fall 1988): 55-79.
- Nitze, Paul H. 'Beyond the Summit: Next Steps in Arms Control.' *US Department of State Bulletin* 88 (February 1988): 81-84.
- '. 'Give the Strategic Disarmers a Mandate to Keep Going.' *Washington Post*, 16 August 1991.
- '. 'Is It Time to Junk Our Nukes?' *Washington Post*, 16 January 1994.
- '. 'Interpreting the ABM Treaty.' *US Department of State Bulletin* 87 (June 1987): 30-33.
- '. 'Keeping Nuclear Insurance.' *Bulletin of the Atomic Scientists* 48 (May 1992).
- 'Nuclear Weapons Deactivations Continue in FSU.' *Arms Control Today* 24 (November 1994): 27.
- Nunn, Sam. 'The ABM Reinterpretation Debate.' *Washington Quarterly* 10 (Autumn 1987): 45-57.

- Nye, Joseph S, Jr, 'Arms Control and International Politics.' *Daedalus* 120 (Winter 1991): 145-166.
- Perkovich, George, 'Counting the Costs of the Arms Race.' *Foreign Policy* 85 (Winter 1999-92): 83-105.
- Perle, Richard. 'Reykjavik as a Watershed in US-Soviet Arms Control.' *International Security* 12 (Summer 1987): 22-34.
- Pfaff, William. 'Nuclear Proliferation Will No Longer be Stopped.' *International Herald Tribune*, 30 January 1992.
- Pick, Hella. 'Last-Ditch Effort to Rescue START.' *Guardian*, 8 February 1991.
- 'Psst, Want to Know a Real Secret.' *Economist* (11 March 1995): 3.
- Quester, George. 'The Future of Nuclear Deterrence.' *Survival* 34 (Spring 1992): 74-88.
- and Victor A Utgoff. 'US Arms Reductions and Nuclear Non-Proliferation: the Counterproductive Possibilities.' *Washington Quarterly* 16 (Winter 1993): 129-140.
- Rathjens, George W. 'Global Security Approaching the Year 2000.' *Current History* 88 (January 1989): 1-4, 48-50.
- Reddy, Leo. 'Practical Negotiating Lessons from INF.' *Washington Quarterly* 12 (Spring 1989): 71-82.
- Ritch, John B, III and James P Rubin, 'Arms Control: Now or Never.' *Bulletin of the Atomic Scientists* 44 (December 1988): 9-13.
- Rosenfeld, Stephen S. 'But Who Really Needs 3,000 Nuclear Warheads?' *International Herald Tribune*, 22 June 1992.
- , 'How the Nuclear Haves Can Discourage Proliferation.' *Washington Post*, 27 March 1995
- Rossolimo, Alexander N. 'The Post-Soviet Nuclear Threats Are Even Bigger.' *International Herald Tribune*, 15-16 May 1993.

- Rowny, Edward L. 'Arms Control and the Future of US-Soviet Relations.' *Strategic Review* 19 (Winter 1991): 17-25.
- , 'START in a Historical Perspective.' *US Department of State Bulletin* 84 (June 1984): 45-47.
- Schelling, Thomas C. 'What Went Wron with Arms Control?' *Foreign Affairs* 64 (Winter 1985-86): 219-233.
- Schlesinger, James. 'Leadership in the New World Order: New Instabilities, New Priorities.' *Foreign Policy* 85 (Winter 1991): 3-24.
- Schmemann, Serge. 'US and Russia Sign Disarmament Pact.' *New York Times*, 4 January 1993.
- Schmitt, Eric. 'US Is Redefining Nuclear Deterrence.' *New York Times*, 26 February 1993.
- Schneiter, George R. 'Implications of the Strategic Defence Initiative for the ABM Treaty.' *Survival* 27 (September-October 1985): 213-225.
- Scowcroft, Brent, J Deutch and James Woolsey. 'The Real Danger Is in the Next Arms Treaty.' *International Herald Tribune*, 5 December 1987.
- Shapiro, Margaret. 'Ukraine Nominally Ratifies START I.' *Washington Post*, 19 November 1993.
- Shevardnadze, Edward. 'Towards a Safe World.' *International Affairs* (Moscow) 9 (September 1988): 15-22.
- Shevstov, Anatoly and Mikhail Budnik. 'The START I Treaty and Its Future: A Ukrainian Perspective.' *UNIDIR Newsletter* 22 and 23 (June-September 1993): 19-21.
- Sigal, Leon V. 'START Nears the Finish Line.' *Bulletin of the Atomic Scientists* 44 (April 1988): 14-15.
- Singer, J David. 'Slowing and Reversing the Strategic Arms Race: Some Possible Initiatives.' *Bulletin of Peace Proposals* 2 (March 1982): 69-71.

- Slocombe, Walter B. 'Force Posture Consequences of the START Treaty.' *Survival* 30 (September-October 1988): 409-428.
- .'Strategic Stability in Restructured World.' *Survival* 32 (July-August 1990): 299-312.
- .'The Continued Need of Extended Deterrence.' *Washington Quarterly* 14 (Autumn 1991): 157-172.
- Smith R Jeffery. 'In the New Treaty, Missile Destruction Means Something Else.' *International Herald Tribune*, 16 August 1991.
- Smith, Roger K. 'The Marginalisation of Superpower Arms Control.' *Strategic Studies* 1 (Autumn 1991): 37-53.
- Sorokin, K E. 'Russia After the Crisis: the Nuclear Strategy Debate.' *Orbis* 38 (Winter 1994): 19-40.
- 'Strategic Arms Reduction Treaty: Analysis, Summary, Text.' *Arms Control Today* 21 (November 1991): 2-3.
- Talbott, Strobe. 'Why START Stopped.' *Foreign Affairs* 67 (Fall 1988): 49-69.
- 'The Race to Disarm.' *The Independent*, 30 January 1992.
- 'This Is a Balanced Treaty'. *Izvestia*, 8 January 1991.
- Tirman, John. 'After the Coup: Does the START Stop Here?' *Nuclear Times* (Autumn 1991): 3.
- Trachtenberg, Marc. 'The Past and Future of Arms Control.' *Daedalus* 120 (Winter 1991): 203-217.
- Turner, Standsfied. 'Without ICBMs, a World of Greater Stability.' *International Herald Tribune*, 31 October 1986.
- Waller, Douglas, James Bruce and Douglas Cook. 'Star Wars: Breakthrough or Breakdown?' *Arms Control Today* 16 (May-June 1986): 15-22.
- Waltz, Kenneth H. 'Nuclear Myths and Political Realities.' *American Political Science Review* 84 (September 1990): 731-745.

- Warnke, Paul C, Jack Mendelsohn and Keeny M Spurgeon, Jr. 'START: The End Game and SDI.' *Arms Control Today* 21 (September 1991): 3-6.
- Weinberg, Alvin M and Jack N Barkenbus. 'Stabilising Star Wars.' *Foreign Policy* 54 (Spring 1984): 164-170.
- Weinberger, Casper W. 'Why Offense Needs Defence?' *Foreign Policy* 68 (Fall 1987): 3-18.
- .'START II: the Hidden Flaws.' *Forbes* (1 February 1993): 35.
- Weikening, Dean. 'Strategic Defences and First-Strike Stability.' *Survival* 29 (March-April 1987): 137-165.
- Welch, Larry D. 'US Strategic Forces After START.' *Global Affairs* 6 (Summer 1991): 24-49.
- William, Daniel. 'US-Russian Ties Not Always Smooth.' *Washington Post*, 3-4 July 1993.
- 'Withdrawal of Nuclear Arms From Belarus Assessed.' *Izvestia*, 17 March 1994.
- Yazov, Dimitri. 'The Military Balance of Strengths and Nuclear Missile Parity.' *International Affairs* (Moscow) 4 (April 1988): 15-22.
- Zagorski, Andrei. 'Post-Soviet Nuclear Proliferation Risks.' *Security Dialogue* 23 (1992): 27-39.