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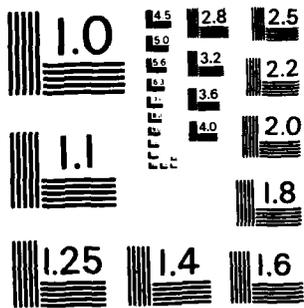
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1 NOVEMBER 1983

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## START:

### PROBLEMS AND PROSPECTS

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ISSN 0278-2972

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**STRATEGIC STUDIES INSTITUTE  
US ARMY WAR COLLEGE  
Carlisle Barracks, Pennsylvania**

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**START:  
PROBLEMS AND PROSPECTS**

**by**

**Robert Kennedy**

**1 November 1983**

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ACN 83029	2. GOVT ACCESSION NO. ADA142197	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) START: Problems and Prospects	5. TYPE OF REPORT & PERIOD COVERED Strategic Issues Research Memorandum	
	6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) Robert Kennedy	8. CONTRACT OR GRANT NUMBER(s)	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Strategic Studies Institute US Army War College Carlisle Barracks, PA 17013	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE 1 November 1983	13. NUMBER OF PAGES 43
	14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	
15. DISTRIBUTION STATEMENT (of this Report)  Approved for public release: Distribution unlimited.	16. SECURITY CLASS. (of this report) Unclassified	
	17a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Strategic arms reduction talks; START; strategic arms limitation talks; SALT; strategic arms control, deterrence; nuclear weapons balance; verification.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Despite an apparent Washington-Moscow harmony of interests--forged of imperatives which mandate that each seek to reduce the other's incentives and capabilities to initiate a strategic nuclear exchange--negotiations on limiting Strategic weapons have been difficult and a mutually acceptable follow-on agreement to the SALT I accord remains elusive. Differing strategic perspectives, strategies, and doctrine; different approaches to deterrence; dissimilar force structures, weapons characteristics and capabilities; and		

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different historical, geographical, and political/bureaucratic factors have impeded the establishment of an equitable balance of nuclear capabilities through strategic arms negotiations.

Nevertheless, many of the same factors that gave impetus to strategic arms control efforts in the late 1960's and early 1970's remain. Thus, there is reason for guarded optimism concerning the possibility of another superpower strategic arms agreement. Whether such an agreement will, in fact, contribute significantly to a curbing of the arms race and improved strategic stability, however, will depend on whether the positions taken by the United States and the Soviet Union in dealing with the problems are framed from a coherent set of guidelines which attempts to address short-term concerns in the context of the long-term objectives of balance and stability.

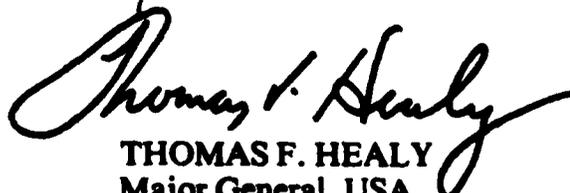
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## FOREWORD

This memorandum examines origins of SALT and the complexities of the strategic arms control process. It focuses on such problems as those that arise from dissimilar perceptions of threat, differing force structures, growing vulnerabilities, rapid technological change, and the imperatives of verification. The author concludes that many of the same factors that gave impetus to strategic arms control efforts in the late 1960's and early 1970's remain. Thus, despite the chilling of relations between Washington and Moscow as a result of such events as those in Afghanistan, Poland, and Grenada, the Soviet attack on Korean Air Lines 007 and missile deployments in Europe, there is reason for guarded optimism concerning the possibility of another superpower strategic arms control agreement.

The Strategic Issues Research Memoranda program of the Strategic Studies Institute, US Army War College, provides a means for timely dissemination of analytical papers which are not necessarily constrained by format or conformity with institutional policy. These memoranda are prepared on subjects of current importance in areas related to the authors' professional work or interests.

This memorandum was prepared as a contribution to the field of national security research and study. As such, it does not reflect the official view of the College, the Department of the Army, or the Department of Defense.

  
THOMAS F. HEALY  
Major General, USA  
Commandant

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## SUMMARY

Arms control has been a means of achieving US foreign policy objectives since the earliest days of the Republic. The advent of the nuclear weapon, however, has added a new dimension to modern warfare and has increased the urgency of efforts designed to regulate and control arms. As a result, in recent years the most visible, and perhaps most important arms control efforts have been aimed at stabilizing the strategic military relationships between the superpowers. Despite an apparent Washington-Moscow harmony of interests—forged of imperatives which mandate that each seek to reduce the other's incentives and capabilities to initiate a strategic nuclear exchange—negotiations on limiting strategic weapons have been difficult and at times strained, and a mutually acceptable follow-on agreement to the SALT I accord remains elusive. Differing strategic perspectives, strategies, and doctrine; different approaches to deterrence; dissimilar force structures, weapons characteristics and capabilities; and different historical, geographical, and political/bureaucratic factors have impeded the establishment of an equitable balance of nuclear capabilities through strategic arms negotiations.

Nevertheless, many of the same factors that gave impetus to strategic arms control efforts in the late 1960's and early 1970's remain. Thus, despite the late 1970's and early 1980's chill in relations between Washington and Moscow, there is reason for guarded optimism concerning the possibility of another superpower strategic arms agreement. Whether such an agreement will, in fact, contribute significantly to a curbing of the arms race and improved strategic stability, however, will depend not only on how well each of the difficult problems confronting the negotiations is dealt with, but also on whether the positions taken by the United States and the Soviet Union in dealing with the problems are framed from a coherent set of guidelines which attempts to address short-term concerns in the context of the long-term objectives of balance and stability.

## **START: PROBLEMS AND PROSPECTS**

Arms control has been a means of achieving US foreign policy objectives since the earliest days of the Republic. In 1817, the United States and Great Britain signed the Rush-Bagot agreement regulating naval forces on the Great Lakes. That agreement was one of the first freely negotiated arms control agreements and it is one of the oldest still in existence. Since that time, the United States, responding to an increasingly complex and interdependent world, has been actively engaged in seeking the regulation of armaments.

The advent of the nuclear weapon, however, has added a new dimension to modern warfare and has increased the urgency of efforts designed to regulate and control armaments. Total war no longer simply represents a threat to the survival of a particular state. Rather, the existence of civilization as we know it is now threatened by an awesome capacity for mass destruction which is now in the hands of mankind. In recognition of this fundamental truth, the United States has undertaken a series of international negotiations aimed at limiting the further expansion and proliferation of nuclear capabilities.

The most visible and perhaps most important arms control efforts, however, have been aimed at stabilizing the strategic

military relationships between those nations most capable of mass destruction, the superpowers. To this end, the United States and the Soviet Union have engaged in Strategic Arms Limitation Talks (SALT) I and II, and are now engaged in a new round of strategic arms reduction talks (START).

## THE BEGINNINGS

The origins of SALT can be traced to increasing concerns in Washington during the mid-1960's over growing Soviet strategic might.<sup>1</sup> Two impulses were set in motion by the expansion of Soviet strategic offensive and defensive power which followed in the wake of the Cuban missile crisis. One was to hedge against future Soviet and Chinese strategic nuclear capabilities by expanding US capabilities. The other was to seek to limit the further expansion of the strategic forces of the superpowers. Both impulses existed simultaneously and, indeed, the implications of the first impulse may have increased interest in the second in both Washington and Moscow.

In 1964, the United States took its first hesitant steps toward controlling strategic arms by formally proposing that an equal number of Soviet and American long-range bombers be removed from operational inventories. Later that same year, in what has often been considered a rhetorical effort, Washington proposed a "freeze" on the number and characteristics of nuclear offensive and defensive vehicles. The proposal, which also called for on-site inspection as a means of verifying compliance, was rejected by Moscow. Nevertheless, by late 1966 and early 1967 many in the defense community were becoming involved, in one way or another, in crafting or responding to initiatives designed to seek limits on strategic forces.

After a series of interchanges between Washington and Moscow in direct response to US initiatives by President Johnson during his 1967 Glassboro meeting with Alexei Kosygin, First Deputy Foreign Minister V. V. Kuznetsov announced at the United Nations on May 20, 1968, that the Soviet Union was "ready to reach an agreement on practical steps for the limitation and subsequent reduction of the strategic means for delivering nuclear weapons."<sup>2</sup> The Soviet invasion of Czechoslovakia in August 1968 and the change of US administrations in 1969 resulted in a postponement of the actual

negotiations until late 1969. The SALT process, nonetheless, had been set in motion.

### WHY SALT?

The answer to the question: Why did the Soviet Union and the United States engage in SALT? remains yet incomplete. John Newhouse in *Cold Dawn* noted that SALT I was a political process concerned with finding an equilibrium in which the great powers felt secure.<sup>3</sup> One might go further and argue that the Soviet-American strategic arms control process, in an abstract sense, was the natural outgrowth of an attempt by the superpowers not only to stabilize their potentially threatening nuclear relationship, but also to orchestrate their continued dominance over the other countries in the international system. In this sense, SALT could be viewed as (1) a means of achieving strategic stability at weapons levels sufficiently high to mark clearly the superpower status of both the Soviet Union and the United States; and (2) a process by which both powers maintained that status through mutually agreed upon increases in their capabilities during the successive stages of SALT. Certain other arms control initiatives, then, could be viewed as part of a complementary pattern. While the task of SALT might be seen as regulating the upper limits of superpower strategic nuclear capabilities (always insuring a safe margin of superiority over lesser nuclear powers), the nonproliferation treaty, the Latin American nuclear free zone, and other such agreements could be viewed as an attempt by the superpowers to prohibit others from entering the nuclear competition.

However, to argue that SALT was simply the result of a Machiavellian attempt by the superpowers to orchestrate their continued dominance over the international system is, of course, an oversimplification of the complex factors which drew Washington and Moscow to the conference table. Such an approach can also be faulted in that it attributes to the superpowers a greater degree of long-range thinking and planning than the historical record would support. Indeed, evidence suggests that SALT was founded on more concrete objectives sought by the leadership elites in both the United States and the Soviet Union. To be sure, bureaucratic, institutional, economic, as well as strategic factors played a role in propelling both Washington and Moscow to the conference table.

In Washington, bureaucratic and institutional factors surrounding the debate over whether the United States should deploy an antiballistic missile (ABM) system served as an immediate impetus to negotiation.<sup>4</sup> In a larger sense, however, the nagging fear of nuclear holocaust coupled with the continued expansion of Soviet nuclear capabilities and prospects of a two-sided nuclear exchange provided ample impetus for negotiations aimed at controlling and restricting the growth of strategic forces, especially at a time when increasing demands were being placed on the federal dollar and competition for funds was tight within the Department of Defense itself.

By 1967, the growth in US intercontinental ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM) forces had reached its peak, while the number of US strategic bombers continued to decline. In the winter of 1967 and in 1968, the intelligence community was reporting that the Soviet Union was nearing parity with the United States in land-based ICBMs and was believed to be deploying its first solid fueled missiles. In his January 1968 defense posture statement, Secretary of Defense McNamara told Congress that the Soviet Union had more than doubled its ICBM force—from 340 to 720—in the space of a year.<sup>5</sup> To many in the Washington community, negotiations with the Soviet Union on limiting strategic armaments suggested a means of capping the growth of Soviet strategic capabilities. To be sure, a few saw SALT as a process through which the United States might preserve a margin of strategic superiority while avoiding the costs of a full-scale strategic arms race with the Soviet Union. However, many proponents of arms negotiations believed that Moscow had come to share Washington's concern over the dangers of nuclear war and that with an impending, if not extant, parity at the strategic level, the time was ripe for an agreement limiting US and Soviet strategic arsenals. Thus, through SALT the Soviet strategic threat might be fixed. US strategic weapons procurement planning could then take place against a more predictable backdrop of SALT-constrained Soviet capabilities. The invulnerability of the US strategic retaliatory forces could be preserved. The general strategic relationship between the United States and the Soviet Union might be stabilized. Mechanisms for crisis management and conflict avoidance needed to prevent the occurrence of accidental or unintended wars might be developed; tensions might be reduced;

and, a costly arms race might be avoided. As a result, defense planning might come to be dominated by a measure of rationality as the need to hedge against the "greater-than-expected" threat receded.<sup>6</sup>

In February 1970, three months after the opening of the SALT talks in Helsinki, President Nixon emphasized the importance of the SALT process. Underscoring the precarious nature of the military balance between the United States and the Soviet Union and the potential for violence and devastation should deterrence fail, he stated:

There is no area in which we and the Soviet Union . . . have a greater common interest than in reaching agreement with regard to arms control.<sup>7</sup>

Like Washington, Moscow was driven to the conference table in response to a number of strategic and domestic economic, bureaucratic and institutional factors. While it remains impossible to determine with any degree of certainty the specific factors that led to the final decision of the leadership in Moscow to travel the SALT path, several concerns probably affected Moscow's decision to enter into negotiations.

First, by the late 1960's the Soviet Union had deployed a sizeable strategic arsenal. Nevertheless, the USSR still fell short of the United States in overall strategic nuclear capabilities and, indeed, in most other measures of national power. From a Soviet point of view, the initiation of SALT and the existence of strategic nuclear parity suggested by the talks themselves were likely to have a favorable impact on third party perceptions of the position of the Soviet Union in the world community of nations. Thus, Soviet leaders could reason that SALT confirmed the great power status of the USSR and promised to be psychologically advantageous to Moscow in the Soviet-American competition for world influence.

Second, despite its improved strategic nuclear capabilities, Soviet leadership remained concerned over the strategic military position of the USSR vis-a-vis the United States. The Kremlin had invested heavily in the early and mid-1960's to improve its strategic position. Soviet leaders were clearly concerned over the implications of US developments in the field of missile warheads, specifically the multiple independently targetable reentry vehicle (MIRV), and in the field of ABM defense. MIRV threatened to multiply US

capabilities many fold while ABM represented a potential for limiting the effectiveness of Soviet strategic forces. In combination, such developments might, once again, yield psychological advantage to the West at Soviet expense. Soviet leaders were also concerned that when President Johnson left office in January of 1969, he might be replaced by someone less committed to arms control.<sup>8</sup>

Third, Soviet domestic economic pressures, no doubt, played a role in the Kremlin's move toward SALT. Lawrence Caldwell, a prominent observer of the Soviet system, writing in 1971, noted that those in the Soviet bureaucracy who were concerned with modernization had "sensed that the Soviet economy had entered a qualitatively new stage of its development—one dictated by the elevation of science and technology to the status of direct productive forces."<sup>9</sup> This new stage of development demanded that the bureaucracy provide additional resources if further development was to be expected not only in heavy industry, but especially in lighter technologically intensive electronics and chemical industries, and in the consumer sectors, all of which had become more capital-intensive. To secure these resources, the so-called modernists, according to Caldwell, favored a tighter reign on military spending.<sup>10</sup>

Finally, by the 1950's, some Soviet leaders had come to share a more generalized concern over the effects of nuclear war. In 1954, Malenkov wrote that nuclear warfare could result in the mutual destruction of both capitalist and communist societies.<sup>11</sup> For Malenkov, the awesome destructive potential of a cataclysmic conflict between communist and capitalist camps had apparently warranted serious reconsideration of the Leninist conception of war as a precursor of world revolution. Khrushchev, initially opposed to Malenkov's unorthodox views, came to hold similar views concerning the dangers of nuclear conflict. By the mid-1950's, Khrushchev was espousing the idea of "peaceful coexistence" as the safest and most reliable form of class warfare in the international arena. In 1961, Khrushchev warned that "within 60 days of an atomic attack 500 million to 750 million people could perish" and concluded that "sober calculation of the inevitable consequence of nuclear war is an indispensable requirement for pursuing a consistent policy of preventing war."<sup>12</sup> Since then, a number of Soviet civilian and military analysts have spoken of

nuclear war between the superpowers as "a great danger for all mankind," the "extreme catastrophic threat" which would be "suicidal for both" and would bring "unprecedented calamities to all mankind."<sup>13</sup> Similarly, Leonid Brezhnev cautioned that nuclear war could result in "hundreds of millions of deaths," in the "mass annihilation of peoples," and spoke of the need to eliminate "the threat of thermonuclear catastrophe."<sup>14</sup> Such themes were reiterated in the prepared statement presented at the first business meeting of the two SALT delegations in Helsinki in November 1969.<sup>15</sup>

In sum, for the Soviet leadership, the idea of limiting or controlling nuclear arsenals through strategic arms control negotiations was consonant not only with their desire to project and maintain an image of strategic parity with the United States, their interests in precluding threatening weapons developments by the United States, and their attempts to secure resources for economic development and expansion, but also with their general concerns over nuclear war. Moreover, SALT had an appeal within the context of detente or "peaceful coexistence." At a time when Soviet leadership had become increasingly concerned with the decided anti-Soviet character of an emerging China, the idea of pursuing detente and arms negotiations with the West, no doubt, was considered a promising means of avoiding hostile confrontation on all fronts.

## REACHING AGREEMENT

Despite, however, an apparent Washington-Moscow harmony of interests—forged of imperatives which mandate that each seek to reduce the other's incentives and capability to initiate a strategic nuclear exchange—negotiations on limiting strategic armaments have been difficult and at times strained, and a mutually acceptable follow-on agreement to the SALT I accord remains elusive. Like SALT I, SALT II was criticized in the United States from both the left and the right. Some liberal critics registered their disapproval over the failure of SALT II to restrain the arms race. Even before the signing of SALT II at Vienna, Senators Mark Hatfield, George McGovern, and William Proxmire, in a letter to President Carter, announced that they found the SALT II treaty "very difficult, if not impossible" to support. They criticized the treaty for not being

**“a true step toward arms reductions.”<sup>16</sup> According to Senator Proxmire what was needed were “real reductions in the land-based missiles on both sides.”<sup>17</sup>**

**On the other hand, in testimony before the Senate Committee on Foreign Relations, Paul Nitze, a leading opponent of SALT II argued:**

**Despite the superficial appearance of equality, the agreements are unequal . . . they put no effective limit on Soviet offensive capabilities. Rather than forcing a reduction, there will be a continuous and large increase in Soviet capabilities during the term of the treaty . . . [and] in net terms, the strategic balance will move from a position not far from parity to one of Soviet strategic superiority.<sup>18</sup>**

**Similarly, Lieutenant General Edward Rowny, after serving as the Joint Chiefs of Staff representative to the SALT II negotiations, testified that SALT II:**

**. . . is not in our interest since it is inequitable, unverifiable, undermines deterrence, contributes to instability and could adversely affect NATO security and allied coherence.<sup>19</sup>**

**One critic even suggested that SALT II was “Devoid of merit,” that “the West needs the MX ICBM, and it needs cruise missiles . . . , and that SALT II and particularly the future negotiations on a SALT III can only hinder rational Western defense planning . . . .”<sup>20</sup> While the reasons offered by critics of both SALT I and SALT II have been many and varied, their objections have underscored the complexities of achieving a strategic arms limitations agreement perceived as equitable by both sides.**

**Like the three presidents before him, President Reagan has committed his administration to a continued dialogue with the Soviet Union on nuclear weapons reductions. Early in February 1981, shortly after taking office, President Reagan indicated his willingness to meet with the Soviet leadership to discuss legitimate reductions in nuclear weapons.<sup>21</sup> Mindful of the criticisms of both SALT I and II, however, he ordered an in-depth review of US arms control policy. The objectives of the review were to examine the lessons of previous SALT negotiations and to explore alternative solutions to the problem of reducing strategic nuclear forces. On May 9, 1982, at Eureka College, the President announced his intent**

to depart from what he considered the past course of events. According to Richard Burt, Assistant Secretary of State for European Affairs, instead of seeking an agreement which would do no more than codify and marginally restrict the growth of strategic forces, the President was determined to seek an equitable and verifiable arms agreement that would actually reduce the levels of nuclear weapons on both sides and make a meaningful contribution to securing a stable nuclear balance.<sup>22</sup>

Despite the President's interest in achieving a stable US-Soviet nuclear balance, differing strategic perspectives, strategies, and doctrine; different approaches to deterrence; dissimilar force structures, weapon systems characteristics and capabilities; and different historical, geographical, and political/bureaucratic factors impede the establishment of an equitable balance of nuclear capabilities through strategic arms control negotiations.

#### THE PROBLEMS OF START

*Threat Comparability.* The first major difficulty confronting Soviet and American negotiators is the problem resulting from dissimilar perceptions of threat. The problem of threat comparability focuses on the question of *whose* forces should be counted in threat calculations and why. It addresses the questions of who are the potential adversaries and what is an equitable arms control solution. Thus, the problem of threat comparability adds to a two-sided negotiation, a multidimensional aspect which further complicates equitability calculations.

The principal threat to US security, the security of US allies, and US worldwide interests is the Soviet Union. Thus, for the United States, one primary objective throughout the strategic arms control process has been to establish and maintain a balance of US and Soviet strategic capabilities. In his report to Congress in 1972, President Nixon spoke of the need to establish an equivalence of US-Soviet capabilities that would yield "no unilateral advantage and would contribute to a more stable strategic environment."<sup>23</sup> Concerned that the SALT I agreement had conceded some numerical advantages to the Soviet Union, both houses of Congress, in their approval of the SALT I treaty, signaled their commitment to nothing less than a balance of US-Soviet strategic arms by urging the President to "seek a future treaty that . . .

would not limit the United States to levels of intercontinental strategic forces inferior to limits provided for the Soviet Union."<sup>24</sup>

During the SALT II process, then Secretary of Defense Harold Brown defined what he meant by balance, or "essential equivalence" as he called it, and underscored the importance of US-Soviet equivalence as an objective. He said that by "essential equivalence" he meant:

*... any advantage in force characteristics enjoyed by the Soviets are offset by other US advantages. Although we must avoid a resort to one-for-one matching of individual indices of capability, our strategic nuclear posture must not be, and must not seem to be, inferior in performance to the capabilities of the Soviet Union."*

He went on to note that equivalence serves several major political and military purposes:

*It helps to ensure that political perceptions are in accord with military realities, and it minimizes the probability that opposing strategic forces will be used to seek diplomatic advantage over us. It reduces the chance that one side or the other will become vulnerable to charges of a bomber or missile gap and contributes thereby to strategic stability. It enhances stability in a crisis by reducing incentives for either side to strike first or preempt."*

Similarly, President Reagan has spoken of the need to achieve a stabilizing balance with the Soviet Union.<sup>27</sup> Indeed, the belief that it is essential that the United States accept nothing less than parity with the Soviet Union has been a central tenet of US strategic arms control policy.

The Soviet Union, on the other hand, has never sought through the SALT process an "essential equivalence" or a specific "balance" with the United States. Rather, Moscow has stressed the need to achieve "equal security" through an agreement which insures that neither side, "directly or indirectly" is afforded a "one-sided advantage."<sup>28</sup> This theme has been stressed by the USSR throughout the SALT/START process and has become a central issue in the negotiations on limiting intermediate-range nuclear forces (INF) in Geneva. It is rooted in a perception of threat which differs substantially from that held by the United States. From the Soviet point of view, of the five powers which possess "strategic" nuclear weapons, four must be considered potentially hostile. Thus, in the Soviet planner's view the strategic

forces of Britain, France, and China, as well as those of the United States, must be considered in calculations concerning balance, if the Soviet Union is to achieve a sense of security equal to that of the United States.

While the nuclear capabilities of Britain, France, and China are dwarfed by the strategic might of the Soviet Union and the United States, the composite of those capabilities is sufficient to destroy every city and town in the Soviet Union with a population greater than 100,000.<sup>29</sup> Thus, while Washington has been compelled to seek an agreement with the Soviet Union that prohibits Moscow from achieving a real or perceived superiority of strategic forces, Soviet leaders have been concerned that they not be placed at an overall strategic disadvantage as a result of capabilities which they see as potentially additive to US strategic might.

At the close of the SALT I negotiations, the Soviet Union registered its apprehensions over non-US strategic forces. In a unilateral statement issued on May 24, 1972 and repeated on May 26 (the day of the signing of the US-Soviet "Interim Agreement"), the Soviet Union declared that for the period of the agreement should US allies in NATO increase the number of their modern ballistic missile submarines, which they had operational or under construction at that time, the Soviet Union had the right to a corresponding increase in ballistic missile submarines. The United States rejected this attempt by the Soviet Union to include the forces of third parties in bilateral strategic arms control agreements.<sup>30</sup> Undoubtedly, the US rejection was founded on its own perceived need to maintain nothing less than a balance with the Soviet Union for military as well as psycho-political reasons. Almost certainly, the rejection was also based on two other factors. First, the nuclear forces of the British and French as well as those of the Chinese were already offset by Soviet immediate- and medium-range nuclear capabilities. And, second, no long-term effort to control and limit strategic armaments could be sustained if parties to the negotiations demanded to have strategic forces equal to those of all possible combinations of potential opponents.

During the later stages of SALT II, Moscow again demonstrated an evident concern over non-US strategic forces, especially as the United States and China moved toward rapprochement. No doubt, the Kremlin continues to have misgivings about the status of British, French, and Chinese forces; witness Soviet efforts to include British and French forces in the current INF negotiations.

No long-term solution, however, to the treatment of third party strategic nuclear forces has yet been found. Thus, the problem of threat comparability remains, as the Soviet Union and the United States seek an equitable balance of strategic armaments through arms control negotiations.

*Definition.* The problem of definition is related to the question of threat comparability in that it affects both Soviet and American perceptions of what constitutes "equal security" or "balance" at the strategic level. The problem of definition focuses on *which* forces of the two superpowers should be considered in strategic arms control negotiations and why.

Are forces "strategic" because they are of a range sufficient to strike targets at great distances? Or are they "strategic" because they can strike the territory of the other superpower? The *SALT Lexicon*, produced by the US Arms Control and Disarmament Agency, defines "strategic" broadly, contending that strategic "relates to a nation's military, economic, and/or political power and its ability to control the course of military/political events."<sup>11</sup> The *Lexicon*, however, fails to define strategic forces. Are strategic forces those that can strike strategic targets? Is an attack on Washington, whether it be by ICBMs stationed at distant points in the Soviet heartland, by sea-launched cruise missiles SLCMs stationed on ships 200 or 300 miles off shore, or by aircraft forward-based in Cuba, a strategic attack? If so, should all such weapon systems be considered strategic and, hence, included in negotiations on strategic armaments? Or are certain armaments more threatening or potentially more destabilizing in crisis situations and thus, more strategic in some sense than other armaments? While both previous SALT agreements frequently have relied on range as qualifying criterion for inclusion of a weapon system under the agreement,<sup>12</sup> the issue is far from settled.

On November 26, 1969, shortly after the opening of SALT I, Deputy Foreign Minister Vladimir S. Semenov, head of the Soviet delegation, raised what perhaps has proven to be the thorniest of issues—the forward-based systems (FBS) question. Agreements based on equal security, he asserted, has to cover all nuclear delivery systems which could hit targets in the other country regardless of whether their owners called them strategic or tactical. The US response to this attempt to define strategic armaments so broadly was that to do so would "ensnarl the conference in

extraneous political and military problems that would block any SALT agreement.'"<sup>33</sup> Thus, from the US perspective, the exigencies of attempting to achieve some form of agreement, which would constrain the growth of strategic forces, however limited the agreement might be, played a role in determining what forces should be considered "strategic" for SALT negotiating purposes. Nevertheless, the Soviet Union continued to raise the FBS issue throughout the SALT I negotiations.

According to Ambassador Gerard Smith, the head of the US delegation to SALT I, the failure to settle the FBS question blocked a comprehensive SALT I treaty limiting offensive arms. Even the interim offensive freeze of 1972—a device Smith contends was used to get around the FBS issue—to some extent, apparently reflected FBS considerations. Indeed, Henry Kissinger, President Nixon's National Security Advisor and architect of the freeze, justified permitting the Soviet Union a superior number of missile launchers, in part, by emphasizing the US advantage in FBS. According to Smith, in a briefing to congressional leaders on the SALT I agreements Kissinger said:

*It was decided to exclude from the freeze bombers and so-called forward-based systems. To exclude, that is, the weapons in which this country holds an advantage . . . . We urge the Congress to keep this fact in mind when assessing the numerical ratios of weapons which are subject to the offensive freeze.<sup>34</sup>*

The FBS issue continued to figure prominently during the SALT II process. The Soviet Union dropped its demands that FBS be included in strategic force calculations at the Vladivostok meeting between President Ford and Secretary Brezhnev in November 1974 in exchange for US concessions to include heavy bombers in the SALT II ceiling on strategic forces and not to pursue a cutback in Soviet heavy missiles.<sup>35</sup> However, when President Carter's new proposal for deep cuts was presented by Secretary of State Vance in Moscow in March 1977, Brezhnev once again sounded the FBS alarm. Already irritated over the Carter human rights campaign, the stagnation of SALT, and the apparent rejection of the Vladivostok accord by the Carter Administration, Brezhnev, categorically, rejected the US proposal. He argued, among other things, that all the US talk about the Triad was, in a way, deceptive; the United States had a fourth threat to use against the

Soviet Union—its forward-based forces in Western Europe.<sup>66</sup> Thus, the FBS issue was never far from the surface in SALT II. When the aggregate levels of strategic ICBM, SLBM, and bomber forces being proposed fell below a certain threshold, the Soviet negotiators would then argue that they would be vulnerable to US FBS. Similarly, when the United States pressed to exempt conventionally armed cruise missiles (believed by some US and Western Europeans to be needed to bolster conventional defenses in Europe) from consideration under the Protocol, Soviet negotiators made it clear that if the United States persisted in its attempt to use SALT to bolster NATO's theater forces, the Kremlin would dredge up the FBS question.<sup>67</sup>

With the opening of the INF negotiations in Geneva in November 1981, the forum for negotiations on FBS shifted somewhat. Nonetheless, the problem of definition remains. At the INF talks, the US proposals have focused on intermediate-range Soviet and US forward-based missiles—a category of weaponry it considers completely out of balance in the European theater today. The Soviet Union has attempted to include US forward-based aircraft—a category of weaponry in which it could be argued that balance already exists.<sup>68</sup> At the START negotiations, the United States, in addition to seeking significant reductions in missiles and warheads, has called for an equal ceiling on heavy bombers below the US level in SALT II and certain constraints on cruise missiles. The Soviet proposal has also called for limitations on missiles and bombers as well as cruise missiles. Yet, the question of what constitutes a strategic bomber or strategic cruise missile remains to be settled.

SALT II limited the long-range Soviet Bear and Bison aircraft and US B-52 and B-1 aircraft. Thus, unrefueled range appears to have been a major factor in determining which bombers were to be considered strategic. But does unrefueled range really matter? Today, with aerial refueling, forward staging and/or recovery at forward bases, a number of aircraft with less range which are currently in the superpower inventories would be capable of conducting intercontinental missions. These have been major points made by those who argue that the Soviet Backfire bomber should be considered as a strategic system. Rather than range, perhaps the assigned mission of the aircraft should be the controlling factor. The Soviet Bears and Bisons and US B-52s have

recognized intercontinental missions. This is also the case with the US B-1. On the other hand, Soviet leaders have argued that Backfire bombers are assigned theater not intercontinental missions and that the current basing of these aircraft supports this contention. But missions can change and aircraft can be moved to forward staging bases. Should that be taken into account? And if so, how?

Similarly, the question of what constitutes a strategic cruise missile will continue to plague strategic negotiations. Should cruise missiles on submarines or surface ships, or aircraft be considered strategic? Should they only be considered strategic if they have ranges in excess of some set distance? What should the distance be? Why? What underlying rationale should be selected?

*Force Comparability.* The problem of force comparability focuses on what strategic capabilities should be constrained and how. It addresses the issues of how "balance" or essentially equal force aggregates can be achieved when the forces of the two superpowers are dissimilar in composition and upon which measures of capabilities agreements should be based. Should only the most threatening forces, such as quick reacting ICBM and SLBM forces, be counted and should bombers be included? Should agreements be based on the total number of missile launchers and bombers? Or should the throw-weight<sup>39</sup> or numbers of warheads a missile can carry be considered, as well as the size of the bomb load of bombers? Or are the real concerns (and therefore factors that need to be constrained if balance is to be achieved) such things as aggregate deliverable megatonnage, equivalent megatonnage (EMT) or hard target kill capability?<sup>40</sup>

Because of differences in geography, technology, military strategy, and historic experience, the strategic forces of the United States and the Soviet Union have evolved in distinct ways. With its great land mass, restricted access to the seas, and few bomber recovery bases on the periphery of the United States, the Soviet Union has generally placed a relatively greater emphasis on the development of its land-based missile forces. Today, the Soviet Union has 350 more ICBM launchers than does the United States. Its ICBM forces also have a greater throw-weight than do those of the United States. Furthermore, Soviet "cold launch" techniques permit the rapid reloading of many of Moscow's ICBM silos.<sup>41</sup> The Soviet Union also has a greater number of SLBM launchers than

does the United States (950+ to 568).<sup>42</sup> However, despite Soviet modernization of its sea-based ballistic missile forces, relatively few Soviet SLBMs include MIRV and Soviet nuclear missile carrying submarines are reported currently to have lower operational in-commission rates and to be noisier than those of the United States.

On the other hand, the United States has fewer ICBMs and less throw-weight, but its ICBMs are generally held in a higher state of readiness. The United States also has MIRVs on all its SLBMs, is developing a family of sea- and air-launched cruise missiles potentially capable of high accuracy, and has more intercontinental bombers than the USSR.<sup>43</sup> Moreover, bombers constitute a reusable force which, theoretically, can be recycled for follow-on retaliatory strikes after the missiles of both sides have been expended. Such differences of Soviet and American capabilities has led one observer to remark that "to compare American and Russian systems . . . is to talk apples and oranges."<sup>44</sup>

Achieving comparability in force aggregates is also complicated by the scenario dependence of comparability calculations. For example, advantages in day-to-day alert and in-commission rates are less relevant if conflict occurs after both sides have made extensive preparations. Similarly, advantages in accuracy and throw-weight are more relevant in a no warning attack on ICBM silos in which the defender fails to launch-on-warning (LOW) or launch-through-attack (LTA). If the defender decides to launch-on-warning or launch-through-attack, most of the attackers highly accurate missiles will fall on empty silos.

In order to avoid the difficult tasks of deciding what constitutes equivalent capabilities in each general category of strategic weaponry, the "freedom-to-mix" concept has frequently guided past negotiations. Thus, to some extent each side has been allowed to choose for itself what systems provide balance at the strategic level. This concept was first set forth in the early days of SALT I when the American delegation tabled, as a series of talking points, an agreed aggregate number of launchers for fixed or mobile land-based ICBMs and for sea-based strategic offensive ballistic missiles, with the freedom for each side to vary the combination of these types of launchers as it chose.<sup>45</sup> The concept was embodied in subsequent proposals and was included, in one form or another, in the final SALT I and II agreements.<sup>46</sup>

The problem of force comparability, however, has not been resolved by such an approach. Differences in force composition have continued to spark long and heated debates in Washington, Geneva, and, most probably, Moscow over what forces should be constrained and how. For its part, the United States remains concerned that the Soviet advantage in heavy throw-weight ICBMs with MIRVs, which when coupled with improvements in accuracy, now provide Moscow with, as a minimum, the theoretical capability to destroy a significant portion of the US land-based strategic retaliatory force. From the US perspective, failure to achieve limits at START on such forces would permit a dangerous, and potentially destabilizing, asymmetry in the US-Soviet strategic relationship. Hence, the United States seeks specific subceilings on what it considers to be the most threatening class of Soviet missiles: SS-17, SS-18, and SS-19 ICBMs. The United States also seeks to set limits on the total number of strategic nuclear warheads each side is permitted, the number of warheads that can be mounted on individual missiles, and the total number of heavy bombers and cruise missiles that can be carried by bombers.<sup>47</sup>

Moscow, on the other hand, seems less inclined to restrictions on throw-weight and, thus, on their large ICBMs which they contend would force them to restructure their strategic forces. The Soviet Union, however, is seeking limits on the total number of systems with MIRVs, including bombers, as well as limits on the aggregate number of nuclear charges (by which they mean missile warheads and bomber weapons). They are also seeking to limit cruise missiles and a ban on cruise missiles with ranges in excess of 600 kilometers.<sup>48</sup>

Despite what would appear to be areas of agreement between the United States and the USSR, however, American and Soviet negotiators are likely to have to labor long and hard before a balance of essentially dissimilar strategic structures can be achieved through START.

*Vulnerabilities.* The problem of vulnerabilities is linked directly to calculations of force comparability. It focuses on the question of which side is more vulnerable to first and follow-on strikes and what kinds, if any, of qualitative and quantitative adjustments should be permitted in arms agreements in order to assure the existence of "balance" or "equal security."

In this regard, the United States has only a limited air defense capability. It has only a relatively limited capability to protect its civilian populace from nuclear attack through civil defense measures. Furthermore, the United States currently has no program for the protection or relocation of key industries.<sup>49</sup> Many of the US urban, industrial, and communication centers are located near the coasts and, hence, are vulnerable to attack by SLBMs or sea-launched cruise missiles (SLCMs), which offer little warning time when used for attack on coastal targets. Furthermore, the open nature of US society makes it almost impossible to guard against well-orchestrated attacks on the communication nodes used for strategic command and control during nuclear war.<sup>50</sup> However, the education and training of its people, multiple redundancies of communication and transportation capabilities, and a strong resources base may make the United States more capable of organizing and conducting local and national efforts in a post-attack environment.

On the other hand, the Soviet Union has a well-developed and highly regarded air defense network. It has undertaken extensive civil defense efforts to protect party and government leadership, workers, and essential industrial installations in the event of nuclear war.<sup>51</sup> Its economic system, however, is not nearly as strong or likely to be as resilient as that of the United States. The Soviet transportation system is woefully inadequate. As a result, basic supplies and food stuffs are likely to be in short supply for a considerable length of time following any strategic nuclear exchange. Furthermore, centrifugal ethnic and national forces within the Soviet Union may hinder Soviet recovery efforts following a nuclear war with the United States.<sup>52</sup>

How should such asymmetries be reconciled? Should the United States be permitted some additional number of bombers as offset Soviet air defense capabilities? Should certain strategic force imbalances be permitted in order to account for Soviet vulnerabilities? Or, are these vulnerabilities offset by a more favorable civil defense posture? Are such asymmetries too complex to judge and, thus, do they only serve to make an arms agreement impossible to achieve if such factors were considered?

*Technological Change.* One of the "banes" of the strategic arms negotiations, as Strobe Talbott noted in his analysis of SALT II,

has been that new technologies frequently render arms control measures obsolete or inadequate.”

The problem of technological change focuses on the potential *impact* of future changes in capabilities which are likely to occur as a result of technological advances. Such issues arise as: what are the probable effects on strategic stability and on the balance of intercontinental forces of advances in missile guidance technologies—not only in a theoretical sense, but in terms of actual operational capabilities should strategic war occur? What kinds of missile guidance improvements can be anticipated over the course of the agreement? Is there an upper limit on the operational accuracies likely to be obtained by inertial guidance systems because of inherent systemic errors? Will terminal or stellar guidance technologies overcome or reduce systemic errors? What will be the impact on cruise missile capabilities of continued improvements in component miniaturization, in small engine technologies, in heavy hydrocarbon fuels, or in terrain mapping or radar correlation techniques? Will there be a breakthrough in submarine detection and tracking or in antimissile defense? Within what timeframe are such advances likely? And what specific provisions should be included in arms control proposals to limit the potentially adverse impacts of such advances?

Both SALT I and SALT II attempted to impede the advance of technology. SALT I, however, is of course best known for its failure to constrain the advance of MIRV technologies. This failure has contributed to a marked increase in the strategic capabilities and vulnerabilities of both superpowers—not only by permitting a dramatic increase in the numbers of warheads that Soviet and American missiles can deliver, but also by providing either side the opportunity to strike the other's missile forces with a relatively small number of its own strategic missiles. Nevertheless, SALT I did constrain the advance of antiballistic missile (ABM) and, to a much lesser extent, ICBM technologies.” However, the “Interim Agreement” on strategic offensive forces can perhaps better be understood in terms of the reluctance of either party to constrain itself in areas where technological advance seemed to offer some potential for future improvements in capabilities. On the other hand, SALT II did attempt to constrain a variety of technologies through prohibitions in development and testing. For example, both the United States and the USSR were prohibited from

developing, testing, or deploying: (1) systems for the rapid reload of ICBM launchers; (2) ballistic missiles capable of ranges in excess of 600 kilometers for installation on waterborne vehicles other than submarines; (3) fixed ballistic or cruise missiles for employment on the ocean floor, on the seabed and so forth; and (4) mobile launchers for heavy ICBMs.

The problem of technological change was perhaps best summed up by Christoph Bertram, the former director of the International Institute for Strategic Studies.

The trouble is that, because of technological change . . . it has become almost impossible for arms-control negotiators to produce treaties which will be unequivocally fair and equitable. A bargain struck on the basis of the technological characteristics of specific weapons existing at the time of agreement will become inequitable as one side or the other introduces qualitative improvements which have not been ruled out, or deploys alternative weapons systems which bypass the restrictions agreed upon."

*Verification.* Perhaps no other strategic arms control issue has been so widely and heatedly discussed as has been the verification issue. Gerard Smith wrote that the first question that came to mind when SALT I limitations were considered was: "Can it be verified?"

Verification is the process of identifying compliance or noncompliance with the provisions of the agreement. Once defense planners have determined what forces should be compared and how, and what limitations meet the requirements for balance and essential equivalence, they must then address the issue of how compliance with such force limitations can be verified. This is, of course, frequently an interactive process in which the ability to verify compliance ultimately affects which forces are to be constrained and how. Thus, the question of what forces *should* be limited to improve crisis stability and cap the arms race frequently yields to the question of what limitations *can* be verified. This deference to verification, however, is also grounded in a desire for stability. For if an arms agreement cannot be verified, then neither party can be certain that the other is adhering to its terms. As a minimum, confidence in one's security might well erode with consequent adverse impact on the political relations between the parties to the negotiation. Ultimately, the very objective of arms race and crisis stability may be threatened as each side attempts to

hedge against what they may suspect may be covert attempts by the other side to improve its relative strategic position.

Emphasizing the importance of verification, George Seignious, while serving as director of the US Arms Control and Disarmament Agency, said in a statement before Congress:

**In SALT we don't rely on trust. Trust is not a basis for national survival. We verify Soviet compliance with the provisions of the agreement by using our diverse, powerful, and sophisticated intelligence capabilities. Taken together, these capabilities provide us with a substantial amount of detailed, accurate, up-to-date information on those Soviet forces and activities limited by SALT."**

Such National Technical Means (NTM), as the vehicles of verification have become known in both SALT I and SALT II, have been the fundamental basis upon which verification of strategic arms accords has rested. Article V of the SALT I "Interim Agreement" and Article XV of the SALT II accord permitted each party to use NTM to verify compliance consistent with the recognized principles of international law. Both SALT I and II also prohibited each party from interfering with the NTM of the other party and from using deliberate concealment measures to impede verification by NTM. Presumably, any new strategic arms agreement, as a minimum, will include similar provisions.

Despite the SALT I and II agreements on the use of NTM for verification and the considerable capabilities available to both the United States and the Soviet Union to observe each other's forces, verification remains a major problem for strategic arms negotiators. The rapid pace of technological advance has made it necessary to move beyond simple counts of missile launchers and bombers to achieve balance and stability at the strategic level. MIRV technology has multiplied the potential number of warheads a missile can carry and, thus, the number of targets it can strike. Advances in fuels technologies, small engine design, and warhead miniaturization have now made it possible to produce and deploy a new family of cruise missiles which can be used for strategic as well as tactical purposes. Advances on missile launch facilities and guidance technologies make it possible to deploy highly accurate mobile missiles. The potential development of common warhead designs and strap-on missile stages suggests a future ability to alter quickly the capabilities of one's strategic missile forces by adding to

the warheads of the missile force or by converting medium-range systems to strategic systems." All such developments seriously compound the problem of verifying compliance with any future agreement.

For example, if the number of missiles were limited instead of the number of missile launchers, as has been the case in the past, how could one side be certain that the other side wasn't building and hiding missiles which could be emplaced rapidly in silos after the first wave of ICBMs had been fired? Or, if the number of warheads to be placed on a specific family of ICBMs was limited, how could one side be certain that the other was adhering to the limits specified in the agreement? For instance, could the Soviet military be confident about the ability of a missile to release, say, twenty warheads even if they had only tested the release of up to ten in compliance with the specifics of an agreement?

Furthermore, if an agreement were reached to limit the number and ranges of strategic cruise missiles, how could one be certain that cruise missiles did not exceed the ranges specified in the agreement? Since range is, in part, a function of payload, could a signatory, through advances in miniaturization or accuracy, reduce the size of the warhead and increase the amount of fuel, thereby extending the range of its cruise missile force? Perhaps more importantly, how would one detect the deployment of cruise missiles and how could one determine if the missiles deployed were conventional or nuclear? Their small size allows them to be concealed easily aboard ships in numbers that might seriously affect the balance of strategic forces. Moreover, in the absence of intrusive inspection, would it be possible to determine if a specific family of cruise missiles were armed with conventional or nuclear warheads?

Finally, if technological advance coupled with increasing concerns over the vulnerability of fixed-site ICBM forces is leading both the United States and the Soviet Union in the direction of mobile missiles, how will either side determine if the specifics of an agreement are being observed? Mobile missiles depend for survival on confusing the opponent as to the specific location of the missiles. But if they cannot be seen, how can they be counted? Even if an opponent has multiple fixed sites, as was proposed under the MX multiple aim point (MAP) program, how does the other side determine how many missiles are actually in the fixed sites" and

how can it be sure that additional missiles have not been secreted away to be placed in position during a severe crisis?

The problem of verification has been further complicated by Soviet efforts to encode telemetric information during missile tests. US officials have long considered access to Soviet missile telemetry important. By monitoring the signals transmitted by Soviet missiles to ground stations in the USSR, the United States can estimate such features as the size, number, and type of warheads and, thus, keep track of some of the information needed to verify compliance with the specifics of agreements. The increasing use of encoded telemetry now threatens to reduce the value to NTM, just at a time when agreements are becoming more complex, and confidence in being able to verify compliance will require more rather than less information.<sup>60</sup>

*Sanctions and Ambiguity.* The problem of sanctions addresses two issues: what should be done if a violation of an arms agreement is suspected and what should be done if one is confirmed? The solution to the first question is complicated by several factors. Neither side may wish to disrupt the climate of cooperation at the strategic level by pursuing suspected violations too vigorously, especially where evidence is scanty, suspicions may prove unwarranted or violations may be unintended and minor. Also, raising an issue may compromise intelligence sources. On the other hand, both sides are likely to wish to remain confident that mechanisms exist for challenging potential violations.

Perhaps one of the least publicized outcomes of the SALT I process was the establishment of the Standing Consultative Commission (SCC).<sup>61</sup> Article XIII of the ABM Treaty established the SCC to consider, among other things, questions concerning treaty compliance and unintended interference with NTM and to provide information on a voluntary basis to assure confidence in compliance. The SCC has functioned as one of the principal means of raising concerns over suspected violations of both the SALT I or SALT II agreements. For example, in 1973 the United States observed that the Soviet Union was building silos of a different design than had been seen before. If those silos were intended to serve as ICBM launchers they would constitute a violation of the SALT I Interim Agreement which prohibited construction of additional fixed land-based ICBM launchers after July 1, 1972. Washington brought the question to the SCC and a bilateral review

panel was established. The issue was resolved when Moscow responded that the silos were not for ICBM launchers but for hardened command and control facilities. Subsequently, that explanation was confirmed.<sup>62</sup>

Similarly, the ABM Treaty prohibited the conversion of anti-aircraft installations into antimissile defenses. In 1973 and 1974, US intelligence noticed that the Soviet Union was conducting tests using air defense surface-to-air missile (SAM) radars to track their ballistic missiles during test flights. The Soviet leaders said that they were using the radars to track the navigation system of the ballistic missiles, not in an attempt to upgrade their SAMs for ABM use. The issue was taken before the SCC for resolution. A short time after the United States raised the issue in the SCC, the Soviet Union stopped using the radars for missile tests.

The Soviet Union has also used the SCC. For example, in 1973, the Air Force installed prefabricated shelters over Minuteman silos at Malmstrom Air Force Base to protect workmen from the winter snows of Montana. The workmen were hardening the silo covers so that as the accuracy and throw-weight of Soviet missiles increased, the US missiles would stand a better chance of surviving near-direct hits. The Soviet Union charged that the shelters violated Article V of the Interim Agreement forbidding measures which deliberately impede verification by NTM. The USSR contended that since the shelters were four times larger than those used during the construction and modernization of Minuteman silos from 1962 to 1972, this was a deliberate impediment. The issue was considered as phony by some in Washington who argued that because of the open nature of US society the Soviet Union knew perfectly well that the shelters were not being used to conceal the substitution of heavy ICBMs for Minuteman IIs. Nevertheless, the ambiguity of what constituted "deliberate" remained. Finally, the Ford administration agreed to reduce the size of the shelters and, by 1977, the Carter administration actually reduced them by one-half.<sup>63</sup>

One observer has written:

**SALT verification is charged with proving a negative, that is, that the activities prohibited by treaty are not, in fact, taking place. That means that considerable exactitude must be used in drafting the treaty so as to remove any doubt about what activities actually constitute a violation.<sup>64</sup>**

Eliminating ambiguity, however, has not always been easy. Indeed, a little ambiguity has frequently been the price of agreement at the negotiating table. For example, SALT I specifically prohibited the conversion of "light" ICBMs into heavy ICBMs. However, the Soviet Union refused to define what they mean by "heavy" missile launchers. Subsequently, the USSR deployed the SS-19 missile which it described as a "light" missile even though it had a volume 50 percent greater than the missile it was replacing. Thus, while the United States could detect deployment of the new missile, it was impossible to substantiate any explicit violation of the SALT I accord. Nevertheless, it was argued that deployment of this missile violated the intent of the accord and undercut unilateral US statements concerning maximum size of allowed missiles.

More recently, the Soviet Union is reported to have tested a new mobile ICBM with ten MIRV warheads in October 1982. While there is apparently some evidence to suggest that the missile tested may be a "heavy" rather than a "light" one, nonetheless, Article IV of SALT II does permit each party to test and deploy one new type of "light" ICBM. In February 1983 the Soviet Union is reported to have tested another "light" ICBM which is mobile. The SALT II agreement does permit each side to test modernized versions of existing missiles. Since no existing Soviet "light" missiles are mobile, the February 1983 test would appear to be the second test of a new ICBM and thus constitute a violation of the SALT II accords. Nevertheless, despite attempts to eliminate ambiguity through a series of "Agreed Statements" and "Common Understandings" which are an integral part of the SALT II agreement, some ambiguity as to exactly what constitutes modernization remains.

It has also been reported that the Soviet Union is constructing a "massive new" radar in central Siberia near several ICBM sites. The new radar is aimed at the Pacific Coast facing Alaska not at China to the south. Some defense specialists apparently believe that the Soviet Union intends to use the radar in conjunction with a missile defense system to protect ICBMs. This, again, would be a clear violation of the ABM Treaty. Whether and how the SCC might be used to resolve the issue has yet to be determined. However, the problem may well turn out to be one of the more difficult issues yet confronted in the strategic arms control process.

Its outcome could well affect the future of arms control agreements.

Finally, there is considerable ambiguity as to what constitutes a legitimate use of encryption of telemetry and, thus, is permitted by the SALT II agreement, and what use of encryption impedes verification and, thus, is prohibited by the treaty. Such ambiguities make it difficult to determine whether the Soviet Union is violating the specific provisions on encoding in the Common Understandings of the SALT II agreement. They also make it difficult to verify the other provisions of the accord through observations of Soviet telemetric data.

The second question addresses the issue of what is to be done if a violation is confirmed. Perhaps more importantly, what constitutes confirmation? Is a deliberate violation a statement of national intent? Should violations of different provisions of strategic arms accords be treated equally? Can sanctions be imposed which would enhance the strategic arms control process and the continued maintenance of strategic stability? Or should a clear violation be considered a unilateral abrogation on the entire treaty? Such are the questions which strategic arms control negotiators must confront if sanctions are to be considered.

## THE FUTURE

The aforementioned complexities suggest that no easy solutions to the problem of achieving "balance" or "equal security" are likely to be forthcoming. Achieving agreement on limiting strategic armaments, however, is as much a political act as it is a function of the many technical complexities which must be overcome. Despite the Kremlin's decision to suspend START negotiations, as well as INF talks, in response to the NATO deployment of Pershing II and cruise missiles in Europe, a number of the concerns which drove US and Soviet leaders to sign the SALT I and SALT II accords remain. Both Washington and Moscow continue to share the nagging fear of nuclear holocaust. Both remain interested in avoiding strategic instabilities which might lead to nuclear war. Both are likely to be concerned over the growing vulnerability of some of their strategic systems. Both are apparently interested in creating an equilibrium in which their countries can be secure.

In Moscow, there is a renewed concern over the nature and extent of Washington's strategic force modernization program and the potential impact on US-Soviet strategic relationships of America's technological edge if American technology is left unconstrained by a START agreement. Likewise, there is, no doubt, a renewed concern over the economic implications of an expanded arms race. During his brief tenure, former Soviet President Yuri Andropov had signaled his interest in improving the Soviet economy.<sup>47</sup> The new Soviet leader Konstantin U. Chernenko is also known to be interested in improving the economy. According to Western estimates, however, the Soviet Union has been spending between 10 and 15 percent of its Gross National Product on defense. It also channels a large portion of its skilled manpower into defense and defense related industries. This tends to restrain civil oriented technological progress. Thus, there is reason to suspect that any arms agreement which capped expenditures on strategic forces would be welcomed in some quarters in the Kremlin, especially since more recently the United States has signaled its intent to match continued Soviet strategic force buildups. Indeed, even Defense Minister Ustinov, while underscoring that the Soviet Union is prepared to continue the arms race and, if necessary, deploy a new class of ICBMs, seems to have indicated a preference for a strategic arms agreement.<sup>48</sup>

Another, perhaps less obvious, factor may also serve as incentive for a strategic arms agreement. While it is likely that the selection of Chernenko had the support of the security ministries, the staying power of the new Soviet leader may well depend not only on his being able to improve the economy, but also on his ability to portray himself as a world leader and man of peace and, thus, enhance the image of the Soviet Union as a superpower. In this regard securing a strategic arms agreement with the United States might strengthen even further his position within the Soviet hierarchy among those interested in economic growth as well as those who believe that it is important for the Soviet Union to be seen as in the forefront of international arms control efforts. During Andropov's long illness in late 1983 the military appeared to be in the ascendance. Nevertheless, the collective Soviet leadership has long demonstrated a firm belief in Party dominance over the military. Thus, one should not dismiss the strength of those who believe that attention be paid to a wide spectrum of

concerns which includes, but is not limited to, the buildup of military forces.

Likewise, in the United States, the growing antinuclear movement, although now somewhat muted, and public concerns over a continuing upward spiraling arms race and rising defense expenditures add to pressures to seek a strategic arms agreement. Moreover, election pressures may nudge US leaders in the direction of an agreement. Already there apparently has been an attempt by advisors to the President (as two observers of the Washington scene have put it) to "remove the Ghengis Khan cloak draped over Reagan's shoulders in the 1980 campaign and replace it with the olive branch." Although at this writing it seems only a remote possibility, summit politics played in mid-1984 with Reagan and Chernenko at center stage and strong indications that a new strategic accord is forthcoming would virtually guarantee President Reagan's reelection in November, barring, of course, any unforeseen serious domestic economic downturn.

One is cautioned against over-optimism. The aforementioned technical obstacles still must be overcome. Furthermore, relations between Washington and Moscow remain strained. Years of distrust and misapprehensions, compounded by more recent events such as Afghanistan, Poland, Korean Airlines 007, Grenada, and missile deployments in Europe cloud the future. Nevertheless, one should not be overly pessimistic concerning the possibilities of reaching an agreement with the Soviet Union on strategic arms reductions, if not within the next year, within the next few years.

Whether reductions in strategic forces achieved through such an agreement would, in fact, contribute significantly to a curbing of the arms race and improved stability at the strategic level is quite another question. In large measure, that will depend on how well each of the principal problems confronting the negotiating parties is dealt with and whether the positions taken by the United States and the Soviet Union in dealing with these problems are framed from a coherent set of guidelines which attempts to address short-term concerns in the context of the long-term objectives of balance and stability. In short, the success of the current negotiations in Geneva depends heavily on whether START is addressed as a discrete event by the superpowers or viewed as part of a long-term strategy. In this regard, strategic arms control efforts, although not a zero sum game, in many ways, are similar to the game of chess.

Each movement is a statement of policy to which the opponent must respond. It is also an attempt to structure the behavior of the opponent in a small way so that the aggregate of moves secures for the player his long-term objectives. Each move demands reassessment of one's own as well as the opponent's capabilities and a reappraisal of the opponent's short- and long-term objectives. The game, of course, must be played in constant anticipation of contingencies which may arise from the misassessments or altered objectives of either side. However, the outcome depends on how well the player has structured his game plan and on how many moves in advance he is thinking when he touches a piece. This is called strategy. It takes into consideration the opponent's capabilities and intentions. It focuses on the near and the far, but never loses sight of the final objectives. It is an exercise in behavioral modification. It is the logical link between one's capabilities and the objectives one hopes to secure.

Unfortunately, both SALT I and SALT II, by and large, were treated as discrete events by the United States and possibly as such by the Soviet Union, rather than as a continuing process to achieve strategic arms limitations. To be sure, in the minds of those in Washington and Moscow, SALT II was a natural extension of SALT I and many of the concerns raised in SALT II were an outgrowth of the uncertainties which remained in the wake of the SALT I experience. No doubt, negotiators and national leaders had longer-term objectives in mind. However, there is little evidence to suggest that these negotiations were designed as part of a longer-term process, that the goals set for SALT I and SALT II were framed as part of a grand strategy aimed at security balance and stability at the strategic level—perhaps only imperfectly through these early negotiations, but incrementally achieving a high degree of stability at the strategic level by say SALT X.

Indeed, the nature of the strategic arms limitations process in the past has suggested that for both the Soviet Union and the United States, the defense planning cycle has been dominated primarily by procurement planning considerations rather than by political-military strategies which view arms control and force structure as integral parts of the same coherent whole carefully designed to improve the security of each nation.

By and large, the United States has not had a clear set of well-defined long-term objectives for strategic arms talks to serve. As a

result, there was no way of measuring the contribution of SALT I or SALT II to the overall short- and long-term US security interests. Nor did US negotiators know precisely where they should go following the collapse of SALT II if such interests were to be served in the future. Yet, the price of indecision was borne by the American citizens who continued to pay the defense bill while receiving little in the way of an increased sense of security.

While there was general agreement in Washington on the broad objectives of strategic arms negotiations—preserving deterrence, increasing stability, and improving security at reduced cost—such objectives were too abstract to be useful. In contrast, no general consensus seemed to emerge on the more meaningful objectives of strategic arms talks. Similarly, there has been no general consensus on the direction of defense planning. What should be the long-term objectives of strategic arms reduction efforts? How should these objectives relate to the other defense objectives and to the more general desire to enhance deterrence and increase stability at the strategic level?

Parity or essential equivalence had become a guiding principal of strategic arms talks. Yet questions remained as to whether equivalence was desirable and how parity was to be measured. President Reagan, like the presidents before him, has underscored the need for balance. Others within the defense community and in academia frequently betray a certain nostalgia for the days of unquestioned US strategic superiority. Should parity be a fundamental basis for strategic arms talks and thus for defense planning with respect to the strategic weapons procurement process? Or should START and procurement planning be guided by renewed efforts to reestablish US strategic superiority? Some analysts have argued that the Soviet Union is already on the edge of mobilization for war, spending 40 percent more than the United States does for arms, from a GNP roughly half that of the United States. Thus, they contend that, the Soviet Union is near its weapons peak right now, while the United States has been resting on a lower plateau—suggesting that the United States could easily outspend and outarm the Soviet Union. Yet the question remains, can a meaningful strategic superiority be achieved in the nuclear age? McGeorge Bundy in his speech at Villars, Switzerland, at the 1979 annual conference of the International Institute for Strategic Studies, noted that despite the large difference in the strategic

capabilities of the Soviet Union and United States in the late 1950's and early 1960's, it was his view and that of President Kennedy that parity existed from the moment the Soviet Union possessed a significant number of intercontinental missiles.<sup>70</sup> Moreover, if the success of American foreign policy in securing US interests abroad during the 1960's was any indication of the political utility of strategic superiority, then one might argue that it clearly was of little value. This suggests that even with a wide margin of superior capabilities the United States might not achieve a meaningful superiority. However, even if superiority could be achieved, the question remains as to whether America's sense of security would be enhanced. Or would continued attempts by the Soviet Union to match American capabilities lead to ever increasing levels of tensions and instabilities at the strategic level?

Perhaps the adoption of parity as a guiding principle for the SALT I and SALT II negotiations masked the original purpose of strategic arms control talks—to bring stability to the Great Power equation. Parity or essential equivalence was originally conceived as a negotiating objective that might form the basis for an easing of tensions and a Soviet-American understanding on measures to improve crisis and arms race stability. However, parity conceived in terms of quantitative limitations in weapons does not seem to have served well in this regard. The task now confronting the United States is to determine just what strategic environment is desired over the next 30 to 50 years and to fashion strategies that join arms control and defense procurement in an effort to secure that environment.

We must now ask ourselves, where do we wish to go? And how are we to get there? Are we to be captive of technology? Or, can technology be made to serve strategy? Must we insure that strategic arms control negotiations do not interfere with US defense programs? Or would it be more appropriate to ask that START and defense programs both serve the ends of a national strategy designed to improve deterrence and stability at the strategic level. If we are increasingly concerned that the continued improvement in Soviet quick reacting hard-target kill capability forecasts an increase in strategic instabilities and if we are convinced that deterrence depends on each side having a truly survivable second strike capability, should we now begin to seek the eventual elimination of all forces capable of quick reaction, such as ICBMs

and SLBMs? Is this a feasible long-term objective? Can it be negotiated? Must it be pursued in conjunction with efforts to reduce active and passive defenses which might make effective retaliation a less credible deterrent threat? Or, should we begin to move toward truly mobile forces which could well be capable of defying real-time target intelligence? Can this be done in the absence of START? The MX basing mode debate suggested that strategic arms control talks were the key to the survivability of mobile systems—for without warhead limitations, the Soviet Union could simply multiply the number of warheads until they are able to cover the additional potential targets. Are there other systems that might serve better? Should the United States and Soviet Union move to sea? Is President Reagan's "build-down" strategic arms proposal<sup>1</sup> the first real attempt to restructure strategic forces for survivability and, thus, for strategic stability? If so, will the future survivability of sea forces be dependent on a further set of agreements which set aside certain areas of the seas as sanctuaries? Are such agreements already being considered for START II or START III or IV as part of a US long-term arms control strategy? What is the probability of an imminent breakthrough in satellite reconnaissance which might furnish real-time target intelligence on submarine locations? Can START assist in reducing vulnerabilities and how? In the interim can the United States justify the acquisition of counterforce capabilities to strike certain hardened targets in retaliation or as part of its limited nuclear options while chiding the Soviet Union for improvements in accuracy? These are some of the questions which must be answered if the United States is to develop effective national security strategies which include strategic arms negotiations as an integral part. Until then we will continue to be captive of an ill defined parity as the fundamental guiding principal of short-term approaches and we will continue to be disappointed with the results.

## ENDNOTES

1. For a thorough discussion of the beginnings of SALT I, see John Newhouse, *Cold Dawn*, New York: Holt, Rinehart and Winston, 1973.

2. *Ibid.*, p. 103.

3. *Ibid.*, p. 5.

4. On the ABM issue, Newhouse contends that "in a bureaucratic sense, the ABM issue may have been the toughest McNamara ever dealt with." Almost everyone in the Pentagon was for the ABM. The Joint Chiefs estimated that a thick system capable of defending US cities against Soviet missiles would cost about \$10 billion. McNamara believed that \$40 billion would be closer. He also believed the system could be easily overcome by the Soviet Union. Both the State Department and the Arms Control and Disarmament Agency (ACDA) feared an ABM deployment would increase strategic instabilities. Their views, however, were apparently little heard and less heeded. Congressional powers close to the President, namely Richard Russell (then chairman of the Senate Armed Services Committee), Senator John Stennis, and Congressman George H. Mahan all favored deployment of an ABM system. To avert total defeat on the ABM issue, McNamara suggested a compromise to which the President agreed. The Administration would not spend the initial \$375 million that had been restored to the budget for initial ABM procurement. The Administration would also delay making a final decision on whether the ABM system would be a thick system or a thin system capable of protecting against accidents and limited Chinese capabilities until the State Department had explored the idea of talks on limiting strategic arms, especially ABMs. Thus, in one sense Washington was driven to SALT by clearly bureaucratic and institutional factors related to the ABM debate in the US defense community. See *Ibid.*, pp. 77-86.

5. *Ibid.*, p. 101.

6. The greater-than-expected threat came into the defense lexicon in the mid-1960's. It signified enemy capabilities that exceeded the high end of the range of threats projected by the National Intelligence Estimates (NIEs). In an age of growing Soviet strategic capabilities, conservative force planning suggested the need to hedge against just such threats.

7. Richard Nixon, *US Foreign Policy for the 1970's: A New Strategy for Peace*, Washington: US Government Printing Office, February 18, 1970, p. 143.

8. For a further discussion of these points see J. I. Coffey, "SALT Under the Carter Administration," *Naval War College Review*, Winter 1979; Helmut Sonnenfeldt and William G. Hyland, "Soviet Perspectives on Security," *Adelphi Papers*, No. 150, Spring 1979; William D. Jackson, "Policy Assessment at the Crossroads: the Soviets and SALT," *The Bulletin of the Atomic Scientists*, April 1979; and Newhouse, p. 107.

9. Lawrence T. Caldwell, "Soviet Attitudes to SALT," *Adelphi Papers*, No. 75, February 1971, p. 2.

10. *Ibid.*, p. 3. In the author's view it would be a mistake to overdraw the role of the "modernists." Soviet leadership has long been interested in further economic advancement. However, it has shown no unwillingness to delay economic expansion when funds were perceived as necessary to meet defense needs. Efforts by Soviet leadership to prepare their citizens for a new round of belt-tightening to meet defense needs in the wake of Grenada and missile deployments in Europe should be seen in this light.

11. *Pravda*, March 15, 1954.
12. *Pravda*, December 22, 1952, cited in William D. Jackson, "The Soviets and Strategic Arms: Toward an Evaluation of the Record," *Political Science Quarterly*, Summer 1979, p. 249.
13. Raymond L. Garthoff, "Mutual Deterrence and Strategic Arms Limitations in Soviet Policy," *International Security*, Summer 1978, pp. 114-125.
14. For example see *Pravda*, April 8, 1978, p. 1.
15. Ambassador Gerard C. Smith, *SALT: The First Strategic Arms Negotiation*, as reported in Raymond Garthoff, "Mutual Deterrence and Strategic Arms Limitations in Soviet Policy," *International Security*, Summer 1978, pp. 113-125.
16. See *The New York Times*, March 5, 1979, p. A5.
17. *The Washington Post*, March 5, 1979, p. A5.
18. See US Congress, Senate, *The SALT II Treaty Hearings before the Committee on Foreign Relations*, 96th Congress, 1st Sess., Part 1, Washington: US Government Printing Office, p. 435.
19. *Ibid.*, p. 539.
20. Colin S. Gray, "SALT II: The Real Debate," *Policy Review*, Fall 1979, pp. 16 and 19.
21. See *The New York Times*, February 3, 1981, p. A1.
22. Richard Burt, "The Evolution of the US START Approach," *NATO Review*, September 1982, pp. 1-2. Also see President Ronald Reagan's speech at Eureka College on "East-West Relations," *Vital Speeches of the Day*, June 1, 1982, pp. 482-485 and his November 18, 1982 speech before the National Press Club in Washington, "US Program for Peace and Arms Control," *Current Policy No. 346*, Washington: US Department of State, Bureau of Public Affairs, November 18, 1981.
23. Richard Nixon, *US Foreign Policy for the 1970's: The Emerging Structure of Peace*, Washington: US Government Printing Office, February 9, 1972, pp. 172-173.
24. *The SALT Process*, Washington: US Department of State, June 1978, p. 9.
25. Harold Brown, Secretary of Defense, *Department of Defense Annual Report: Fiscal Year 1979*, Washington: Department of Defense, February 2, 1978, p. 56.
26. *Ibid.*, pp. 56-57.
27. See, for example, President Reagan, "US Program for Peace and Arms Control," speech before the National Press Club in Washington, on November 18, 1981, *Current Policy No. 346*, p. 4; President Reagan's speech at Eureka College, *Vital Speeches*, p. 485; President Reagan's speech before the second UN General Assembly Special Session on Disarmament, New York, June 17, 1982, "Agenda for Peace," *Current Policy No. 405*, Washington: US Department of State, Bureau of Public Affairs, p. 3; and President Reagan's address before the Los Angeles World Council, March 31, 1983, "Reducing the Danger of Nuclear Weapons," *Current Policy No. 473*, p. 3. In September 1982, Richard Burt outlined the four key objectives of the arms control policy of the Reagan Administration—security, militarily significant reductions, equality, and verifiability. Concerning equality, he wrote: "Equality is fundamental to balanced arms control, deterrence, and stability and to a US-Soviet relationship based on mutual restraint and reciprocity." See Burt, *NATO Review*, p. 3.
28. For example, see *Pravda*, January 19, 1977; February 23, 1977; and April 26, 1978.

29. According to the International Institute for Strategic Studies, at present the British have 64 strategic nuclear missiles in place on 4 nuclear submarines. In addition, they have 48 Vulcan and 50 Buccaneer strike aircraft capable of delivering nuclear weapons on targets in the Soviet Union. The French have about 18 land-based intermediate range ballistic missiles (IRBMs) and 80 sea-launched ballistic missiles (SLBMs) capable of striking the Soviet Union with plans to increase the size of their nuclear powered ballistic missile fleet by two additional submarines in the 1980's, and, thus, add an additional 32 missiles to their strategic forces. The French also have 34 MIRAGE IVA strategic bombers. While estimates of Chinese strategic nuclear capabilities vary widely, it is reported that the Chinese have deployed approximately 50 medium range ballistic missiles (MRBMs) and between 60-85 IRBMs. Both these systems are capable of reaching targets in the Eastern USSR. They also may have begun to deploy a limited number of multistaged ICBMs (CSS-3s) with a range sufficient to strike targets in the European USSR (excluding Moscow), as well as a full range ICBM (the CSS-X-4) capable of striking targets anywhere in the Soviet Union. In addition to their ballistic missiles, the Chinese have about 90 TU-16 medium bombers with a range of about 3000 km. They also have begun to deploy a nuclear powered submarine with 12 missile tubes. *The Military Balance 1983-1984*, London: The International Institute for Strategic Studies, 1983, pp. 82-84. Also see Ronald T. Pretty, ed., *Jane's Weapon Systems*, London: Jane's Publishing Co., Ltd., 1982, pp. 1-2.

30. See unilateral statements made at the close of SALT I in Smith, pp. 514-515.

31. *SALT Lexicon*, Washington: US Arms Control and Disarmament Agency, 1974, p. 16.

32. Both SALT I and SALT II frequently relied on range as the qualifying criterion for the inclusion of a weapon system under the agreements. For the purpose of the SALT I agreement, ICBM launchers capable of launching ballistic missiles with ranges in excess of the shortest distance between the northeastern border of the continental United States and the northwestern border of the continental USSR were considered strategic. SALT II further clarified the definition of ICBMs by setting the range between these two points at 5500 km. Range, although not specifically mentioned, also seemed to be an underlying qualifying criteria for "heavy bombers" in the SALT II agreement. The Soviet Bear and Bison aircraft and the US B-52 and B-1 type aircraft are all capable of what could be considered intercontinental ranges. However, aircraft such as the US FB-111 and the Soviet Backfire bomber were not included in the SALT II agreement. Likewise, the Protocol to the SALT II Treaty set limits on SLCMs based on range. See Smith, p. 509 and *SALT II Agreement*, Washington: US Department of State, Bureau of Public Affairs, Selected Documents No. 12A, June 18, 1979, pp. 27-28.

33. See Smith, pp. 90-91.

34. *Ibid.*, p. 93.

35. Strobe Talbott, *Endgame: The Inside Story of SALT II*, New York: Harper and Row Publishers, 1979, p. 33.

36. *Ibid.*, p. 72.

37. *Ibid.*, pp. 148 and 189.

38. For example, see Robert Kennedy, "Soviet Theater Nuclear Capabilities: The European Nuclear Balance in Transition" in *Defense of the West: Strategic and European Security Issues Reappraised*, edited by Robert Kennedy and John M. Weinstein, Boulder: Westview Press, 1984.

39. Throw-weight has been defined as "... the maximum useful weight which has been flight tested on the boost stages of the missile. The useful weight includes weight of the reentry vehicles, penetration aids, dispensing and release mechanisms, reentry shrouds, covers, buses and propulsion devices with their propellants (but not the final boost stages) which are present at the end of the boost phase." See *SALT Lexicon*, p. 18.

40. Equivalent megatonnage (EMT) is a measure used to compare the destructive potential of differing combinations of nuclear warhead yields against relatively soft countervalue targets. EMT is a computed function of yield (in megatons) which compensates to a degree for the fact that blast damage resulting from a nuclear detonation does not increase linearly with an increase in yield. Thus, if the destruction of a soft target is desired, it may be more effective to use two weapons each of small yield than a single weapon of a higher total yield even if its yield was much higher than the total yield of the two small weapons. Hard target kill capability is a function of both the accuracy of the weapons system and the yield of the warhead. Accuracy, however, is the predominant factor.

41. Cold launch is the technique of ejecting a missile from a silo before full ignition of the main engine. This technique leaves the missile silo essentially undamaged and available for reload. How much time it would take to actually reload a silo would depend on the location of the space missile and other factors related to the silo preparation and the physical loading of the missile. Estimates vary. Some contend that the Soviet Union would be ready to fire a second missile within 6 hours.

42. See *Soviet Military Power 1983*, Washington; US Government Printing Office, March 1983, p. 14; and Caspar Weinberger, *Annual Report to the Congress Fiscal Year 1984*, Washington: US Government Printing Office, February 1, 1983, p. 333.

43. The bomber balance has been a seriously disputed issue. The SALT II agreement only included B-52, B-1, Bear, and Bison type aircraft in the counts of US and Soviet strategic bomber forces. Today, according to US Department of Defense estimates, the Soviet Union has about 145 long-range Bear and Bison aircraft. The Bear has an unrefueled combat radius of 8300 km. The Bison's range is slightly less. The United States has about 241 operational B-52s which have a combat radius of about 8000 km. Thus, the United States has approximately 100 more operational strategic bombers than does the Soviet Union. However, the Soviet Union also has deployed over 200 Backfire bombers to perform conventional, maritime, and nuclear strike missions. The Backfire has a combat radius of 5500 km. If deployed to Arctic staging bases or refueled in flight, the Backfire can attack targets anywhere in the United States. The United States deploys 56 FB-111 medium-range bombers which would rely on inflight refueling and forward basing for intercontinental attack. If Backfires and FB-111s are added to the counts of strategic forces, the USSR would have about 50 more operational strategic bombers than does the United States. See *Soviet Military Power*, pp. 14, 13, and 25; Weinberger, *Annual Report*, p. 333; and *SALT II Agreement*, Washington; US Department of State, Bureau of Public Affairs, June 18, 1979, pp. 28-29.

46. See Smith, pp. 504-507 and *SALT II Agreement*, p. 32.

47. Michael Getler, "US Arms Reduction Plan Contains More Missile Cuts Than Announced," *The Washington Post*, April 13, 1983, p. A1.

48. *Security and Arms Control*, p. 25; and Michael Getler, "Soviets Advance Revised Proposal on Arms Limits," *The Washington Post*, July 13, 1983, A1.

49. Both President Carter, with the signing of Presidential Directive 41 (PD-41) and President Reagan, with National Security Decision Directive 26 (NSDD-26), have taken steps to improve America's Civil Defense posture. The three elements of the current US Civil Defense program now being administered by the Federal Emergency Management Agency (FEMA) are population protection, industrial protection, and blast sheltering. See S. Norris, "President Reagan's Civil Defense Program," *The Defense Monitor*, Vol. XI, 1982. For a thorough analysis of Soviet and American civil defense efforts see John M. Weinstein, "The Strategic Implications of Civil Defense," in *The Defense of the West*.

50. Direct up and down links between the national command authorities (NCA) in Washington and missile sites and bomber bases are not likely to be very vulnerable to well-orchestrated attacks except those resulting from nuclear bursts designed specifically to impede such communications. However, the multitude of other communications which rely on relay stations and ground networks are likely to be very vulnerable to such attacks.

51. See Weinstein "The Strategic Implications of Civil Defense."

52. For a wide-ranging examination of Soviet vulnerabilities see John M. Weinstein, "All Features Grate and Stall: Soviet Strategic Vulnerabilities and the Future of Deterrence," in *The Defense of the West*.

53. Talbott, p. 157.

54. Article V of the ABM Treaty specifically prohibited the development and testing as well as deployment of sea, air, space, or mobile land-based ABM systems and components. It also prohibited both parties from developing and testing ABM launchers capable of launching more than one ABM interceptor missile or capable of rapid reload. Article VI of the treaty was designed to constrain the advance of associated radar, missile, and launcher technologies which might be converted from non-ABM use to use as part of an antiballistic missile system. It could be argued that Article II of the "interim agreement" on strategic offensive forces also limited to some degree the rate of technological advance by prohibiting the conversion of ICBMs of older types deployed prior to 1964 into land-based launchers for heavy ICBMs of types deployed after that time. However, Article II was more a reflection of American concerns over the vulnerabilities to US Minuteman ICBM missile forces which were developing as a result of the Soviet deployment of its heavy throw-weight SS-9 missiles, than it was a reflection of a specific attempt to control technological advance.

55. Christopher Bertram, "The Future of Arms Control: Part II—Arms Control and Technological Changes: Elements of a New Approach," *Adelphi Papers*, No. 146, Summer 1978, p. 2.

56. Smith, p. 99. John Newhouse noted that perhaps no problem had focused more analysis and internal debate in Washington than had the problem of verification. Similarly Strobe Talbott contended that verification was the "single biggest concern of the Congress" in its deliberations on the SALT II Treaty; see Newhouse, p. 14 and Talbott, p. 96.

57. ACDA Director George M. Seignious, "Statement before the Committee on Foreign Relations of the US Senate, July 10, 1979," in *SALT II Senate Testimony*, *Current Policy No. 724*, Washington: US Department of State, Bureau of Public Affairs, July 9-11, 1979, p. 24.

58. One of the many concerns during the SALT II negotiations was the so-called SS-20/SS-16 conversion problem. The Soviet Union had tested a mobile ICBM labeled by the West as the SS-16. It then deployed the SS-20, an intermediate-range ballistic missile—essentially, the SS-16 minus its third propulsion stage. Thus, a number of strategic force analysts were concerned that the Soviet Union might be able to store the third stage of this missile and, in a crisis, quickly convert its SS-20s to ICBMs.

59. One solution to this problem was that at a specified time the United States would uncover all its map shelters so that Soviet satellites could verify the numbers of missiles the United States actually was shuffling between sites. The Soviet Union never indicated whether such an arrangement would be satisfactory. Had the United States, however, adopted a deep trench mobile basing mode for its missiles, the problem might have been more complex.

60. For a further discussion of some of the problems of verification, see Les Aspin, "The Verification of the SALT II Agreement," *Scientific American*, February 1979, pp. 38-45; Robert Perry, *The Faces of Verification: Strategic Arms Control for the 1980's*, Santa Monica: The Rand Corporation, August 1977; Amron H. Katz, *Verification and SALT: The State of the Art and the Art of the State*, Washington: The Heritage Foundation, 1979; Paul H. Nitze, James E. Dougherty, and Francis X. Kane, *The Fateful Ends and Shades of SALT*, New York: Crane, Russak and Company, 1979; Seymour Weiss, "SALT Verification" in John F. Lehman and Seymour Weiss, eds., *Beyond the SALT II Failure*, New York: Praeger Publishers, 1981, pp. 67-81; and Stockholm International Peace Research Institute, *Strategic Disarmament, Verification and National Security*, New York: Crane, Russak and Company, Inc., 1977.

61. For a detailed discussion of the SCC, see Colonel E. Asa Bates, Jr., USAF (Ret.), "The SALT Standing Consultative Commission: An American Analysis," *Millennium*, Volume 4, 1975, pp. 132-145.

62. Talbott, *Endgame*, p. 143.

63. *Ibid.*, pp. 114-117.

64. John F. Lehman, Jr., "Verification Concerns," in *Beyond the SALT II Failure*, p. 25.

65. See Rowland Evans and Robert Novak, "SALT Loophole," *The Washington Post*, February 23, 1983, p. A17.

66. Evans and Novak, "A Smoking Gun in Siberia?"

67. For example, see Dusko Doder, "Soviet Leader Calls for Economic Reform," *The Washington Post*, August 16, 1983, p. A12.

68. Dusko Doder, "Soviets Seem Near Arms Escalation," *The Washington Post*, December 8, 1982, p. A1.

69. Evans and Novak, "A Smoking Gun in Siberia?"

70. McGeorge Bundy, "Strategic Deterrence Thirty Years Later: What Has Changed?" in *The Future of Strategic Deterrence: Part I, Adelphi Papers*, No. 160, London: The International Institute for Strategic Studies, Autumn 1980.

71. Details of the "build-down" proposal remain sketchy at this writing. However in general the proposal calls for a minimum reduction in strategic forces of 5 percent per year. Thus, for each new system added older systems would have to be retired. The American proposal appears to be designed to retire the more vulnerable systems quickly. Thus, for each new ICBM with MIRV, such as the MX, two older systems with MIRV would have to be retired. However, for each three new SLBMs added, only two older systems would have to be retired.

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