FEAR, DETERRENCE AND TECHNOLOGICAL ADVANCEMENT: The Reasons for the Nuclear Arms Race and the Failure of Nuclear Arms Control

by

Süleyman Tombul

B.A. in Political Science
Rutgers University, 1982

Submitted to the Institute for Graduate Studies in Social Sciences in partial fulfillment of the requirements for the degree of Master of Arts in Political Science

Boğaziçi University
1985

FEAR, DETERRENCE AND TECHNOLOGICAL ADVANCEMENT:
The Reasons for the Nuclear Arms Race and the Failure of Nuclear Arms Control

Suleyman Tombul
April, 1985
(Revised Version)
Bosphorous University
Istanbul, Turkey

FEAR, DETERRENCE AND TECHNOLOGICAL ADVANCEMENT:
The Reasons for the Nuclear Arms Race and the
Failure of Nuclear Arms Control

APPROVED BY

Prof. Dr. Üstün Ergüder _____
(Thesis Supervisor)

Yard. Doç. Dr. Yeşim Arat Yeşim Arat

Dr. Herbert Dixon, Jr. _____

1985

Table of Contents

INTRODUCTION

One of the earliest recorded conferences on disarmament took place in China during the sixth century B.C. After realizing the futility of war, and the havoc it was producing, the Chinese powers came together at a "Hague Conference" making an effort to disarm.[1] Through the years and up until the present day, history has witnessed a multitude of other such conferences, proposals, agreements, treaties, protocols, and proclamations. Many grand and noble ideas have been expressed by devoted men in the name of peace, but their words have gone largely unheeded. As a general rule, disarmament has not been "freely negotiated" among willing and "equal" states but has on many occasions been forced upon a defeated power.

At the end of World War II, the world was not any more stable than it was prior to, and during, the struggle against fascism. The advent of nuclear weapons revolutionized man's place in the international arena. It signaled a radical transformation in the conduct of war. Within two short decades, massive nuclear arsenals were poised and ready to attack the adversary. Given the existence of such unprecedented means of destruction, the theoretical outcome of a nuclear exchange has served to make their use an irrational means of

national policy.

There is a fundamental difference between conventional and nuclear weapons. Before the birth of nuclear weapons, there may have well been an insatiable need for conventional weapons as an indicator and instrument of military and political strenth. The number of weapons could never exceed the number of targets. The world could absorb all the bombs, bullets, and artillery exploded on it.[2]

However, the potentially uncontrollable consequences of nuclear weapons, with a destructive quality that has reached such dumbfounding levels, have made their use possibly suicidal. The number of weapons completely outnumber the targets.[3]

Nearly the entire world has participated in the quest for greater and more destructive arms since World War II. The superpowers have set the pace. Together, the two superpowers possess nearly 40,000 nuclear warheads. The United States has approximately 24,000 compared to the 15,000 of the Soviet Union.[4] According to a report by the Secretary-General of the United Nations, the largest bomb ever tested was 4,000 times the destructive capacity of the one dropped over Hiroshima.[5] Furthermore, there are virtually no limits on the explosive power of these weapons. The total strength of the nuclear arsenals of today has been estimated to be roughly the yield of one million "Hiroshima strength" bombs. In different terms, it is the equivalent of thirteen thousand million tons of TNT. This would allot three tons of TNT for every individual on earth.[6]

Given the absurd levels of nuclear weapons deployment, efforts since World War II first to disarm and then later to control nuclear weapons, reflect incontestable failure.

This thesis concerns itself with the reasons why the control of nuclear weapons has been so difficult to realize. It will begin with a survey of disarmament and arms control efforts prior to World War II, and then will continue with a more detailed discussion of more recent efforts at nuclear arms control and their shortcomings as well. There will then be an examination of three underlying factors which have not only prevented successful arms control negotiations but have also acted as causes and exacerbators of the nuclear arms race. The factors are fear, deterrence, and technological advancement. Taken collectively, these three overlapping factors provide the key elements to the overall compounded and almost enigmatic problem of the nuclear arms race. Throughout the study, an attempt will be made to answer whether disarmament and arms control have been successful since World War II. That is, have nuclear weapons provided stability to the superpower relationship and was the national security of each nation enhanced?

Within this study, the term "disarmament" has been used to mean a reduction in armaments which may eventually lead to their total abolition. The term was widely used between the wars when,however, all disarmament attempts ultimately failed. Yet the Soviets prefer to use it over "arms control".[7]

"Arms Control" has had an altogether different usage. It specifically deals with management and restraints "on the construction, maintainance, or use of arms."[8] While it has generally connotated circumstances under which reductions could be made, it also implies and has actually signified an increase in nuclear weapons.

The primary purpose of arms control,however, has remained the reduction, limitation, and regulation of nuclear weapons and their costs which have weighed heavily upon both superpowers as well as the rest of the world. A second objective has been to reduce the probability of armed conflict. Finally, efforts at arms control have theoretically attempted to mitigate the destruction levels should armed conflict break out.[9]

In short, arms control has sought to increase stability during its effort to reduce the excessive levels of nuclear armaments that have been deployed since their origin as a weapon. Yet, as this paper concludes, efforts have fallen far short of this highly necessary but yet to be realized objective.

DISARMAMENT AND ARMS CONTROL EFFORTS: 1898-1907

Success and Failure

Modern efforts to control arms began with the Hague Conference of 1898. Russia's comparative weakness provoked Tsar Nicholas to become one of the initiators of the arms control conferences. The first conference occurred primarily due to the participants' desire to placate popular anxiety and concern over the rapid accumulation of arms.[10]

Russia's inferior military position became blatantly evident after a bitter defeat at the hands of the Japanese. In 1907, Tsar Nicholas called the second Hague Conference with the principal intention of bringing forth regulatory rules for the conduct of war. The Hague Conferences disallowed the further use of dum-dum bullets, poisonous gases, and the launching of trajectiles and bombs through use of balloons or any other similar delivery systems. In addition to these measures, the use of automatic contact mines and torpedoes was outlawed.[11] The European powers did, however, maintain their awesome artillery fire power as well as their large standing armies. The European failure to control arms was further exemplified by the Conferences' inability to prevent either the Balkan Wars or World War I.

Efforts to prevent the excessive destruction results of modern war continued after World War I. The League of Nations and Permanent Court of International Justice were established. They were launched to promote international disarmament and maintain peace. Article Eight of the League's Covenant stated that: "The maintenence of peace requires the reduction of national armaments to the lowest point consistent with national safety."[12] A plan was to be formulated for the League members which required their participation and adherence to the principles of disarmament.[13]

The pattern which developed after World War I is quite representative of disarmament in general. This pattern along with its sub-themes eliminated any chance of disarmament. National security and sovereignty remained lingering and pervasive issues which formed a barrier against disarmament. The League was faced with the arduous task of encouraging the disarmament of nations to levels where their security was also guaranteed. Since security was as essential prior to disarmament as sanctions against an aggressor were in achieving security, the notion of placing trust in the good faith of other nations, where trust was once placed in guns, within a system that lacked security as well as a mechanism of enforcement, would have been the equivelant of national suicide.[14]

The Washington Naval Conference of 1922 was considered a temporary success in arms control. An agreement between the United States and Britain was reached which placed the

Pacific under the American sphere of influence, while the Atlantic was left under the British sphere of influence. A freeze was placed on naval fortifications and bases in the western Pacific. Following this political settlement, a limitation was placed on the tonnage of the major warships of the United States, Britain, Japan, France and Italy in ratios of 5,5,3,1.67, and 1.67 respectively. In order to maintain the established quotas, all five participants were to scrap a fraction of their naval forces, the majority of which were by this time antiquated vessals.[15]

The Washington Agreement was coupled with a Nine-Power Treaty, the aim of which was to assure the sovereignty of China. This form of preventive arms control ultimately revealed its shortcomings. The Conference failed to take into consideration the dangers of the future. More than anything else, the treaty left Japan embittered over the fact that she would not be allowed to build her navy to the size and strength of the other powers. Japanese militarism was hardly stemmed. Resentment of the West together with domestic forces encouraged a more acute form of Japanese militarism.[16]

Further abortive attempts to control the arms race and maintain peace continued. The Geneva Protocol of 1924 was designed to buttress the League Covenant by requiring nations to resolve their differences through peaceful means such as arbitration. The forcing of arbitration on a nation implied an invasion of its sovereignty. Thus, the nobility of the

Protocol was matched only by its infeasibility. The following year another agreement was made at Geneva. Rampant use of poisonous gas during World War I caused the major powers to take measures against its future use. As such, the Geneva Protocol of 1925 placed a ban on any further use of certain chemical and bacteriological weapons. Even though the United States participated in drafting the Protocol, it was unable to acquire Senate ratification. President Nixon reintroduced the Protocol of 1925 for Senate approval in 1970. This led to the Senate's ratification of the Biological Warfare Treaty which became effective in 1975. The treaty's participants, (the United States, the Soviet Union, and Britain), agreed to discontinue the production and stockpiling of toxins and bacteriological weapons and renounced the use of such weapons during any potential war in the future.[17]

Sporadic efforts and attempts at arms control and disarmament persisted. The signatories to the Locarno Treaty of 1925 (Germany,France, Belgium, Poland, and Czechoslovakia) gave each other assurances that disputes or grievances would be submitted to arbitration. In addition, France and Germany agreed to respect and guarantee the border between the two states. Having recently reacquired the provinces of Alscase and Lorraine, France was apprehensive of losing them again.

This benevolent spirit within Europe ushered into existence perhaps the most idealistic agreement of all time: the Kellogg-Briand Pact of 1928. The treaty literally outlawed

war and was signed by the major European powers.[18] It was a grand idea. Yet, regrettably, its design had a major flaw. The pact failed to include effective sanctions against an aggressor. Disarmament or even arms control remained an unachievable, highly elusive goal.

The hopes of glossing over hostilities between the European states could not so easily be accomplished. Resentment approaching hatred brought about by the harsh provisions of the Treaty of Versailles were still very real. Additionally, while still relatively meager, a new threat was rising further east; the Soviet Union could not be overlooked. Thus, the conditions and circumstances for both disarmament and arms control were not yet conclusive as was proven within a few short years.

Nevertheless, the London Naval Conference convened in 1930. It was written off as an event which was more successful in limiting arms control than the control of arms. While minimal limitations were imposed on the signatories primarily in the area of submarines, a clause allowed individual nations to raise the maximum level of military preparedness according to each nation's "needs".[19]

The Japanese annexation of Manchuria in 1931 ended the brief era of peaceful intent. While the European continent was reluctantly pursuing arms control, in reality it was on the threshold of stumbling into war. Within a few short years, German and Italian totalitarianism would unite and

jeopardize the well-being of the democracies in the "free world." The two camps were locked into a collision course and were moving toward a conflict which would prove even more destructive than the one fought a decade and a half earlier.

Despite the prevailing restless international scene, negotiations to control arms pressed forward. In 1932, fifty-nine nations came together to participate in the General Disarmament Conference. Noble but untimely proposals were presented by many of the powers represented, including France, the United States, and the Soviet Union. The Conference concluded without reaching an understanding. It appeared that once again, the Treaty of Versailles had returned to haunt the European powers. Germany had by this time entered the League of Nations and was demanding its right to re-arm to the level of the other powers. This drove France to argue in favor of security prior to disarmament more vehemently than ever before. "Moral disarmament" had to precede military disarmament.[20] During a session of the League while Germany was still being represented, Britain, France, Germany, and Italy vowed never to resort to force in resolving any possible dispute in the future. This venerable agreement, as history recorded, has sustained itself as merely an ideal.[21]

Following Hitler's ascendence to the helm in 1933, European security began to plummet rapidly. When the League

questioned Japan regarding its involvement in Manchuria, Japan promptly withdrew from the League as well as from its commitments to the Naval Conferences of 1922 and 1930. Germany followed suit six months later and rid itself of its commitments to the Treaty of Versailles. Germany also began to re-arm and utilized the failure of the European powers' attempt to disarm as the pretext.[22] After a few short years of re-armament, Germany was able to flex its fascist military muscle. The Rhineland was once again occupied and while the western powers were pursuing a policy of appeasement, Germany was annexing bits and pieces of its neighbors' territories until finally the invasion of Poland in September 1939 triggered World War II.

The Road to World War II

A mere twenty-two years had elapsed between the end of World War I and the beginning of World War II. This poor record provides proof that the European powers' approach to a lasting and stable peace was a major delusion. A completely secure environment was never realized in post war Europe and that served to lessen the probability of disarmament on the European continent. The harsh and unjust treatment of Germany under the Versailles Treaty proved to be only a temporary expedient and failed to prevent German militarism and expansionism.

At the very outset, the integrity of the League was

compromised by concessions given to Britain and France to insure their support of President Wilson's 14 points. Britain was unwilling to allow freedom of the seas "in peace and in war," since it was the Anglo-German naval and maritime rivalry that had caused the initial friction between the two powers.[23] Likewise, the French demanded absolute security from a militarily strong Germany in the future as well as demanding exorbitant sums in the form of reperations for the heavy costs which France had incurred during the war. Germany as the bandit among the civilized European democracies suffered the most. The League of Nations, which was to be a forum for all nations to settle disputes through peaceful means, did not permit German entrance until 1926. As the defeated power, Germany was stripped of all her colonial possessions. The Saar coal mines were to be controlled by France for the next fifteen years and allied soldiers were to occupy the Rhineland during the same period. (The French actually sought to make the region an independent state.) Still, the Versailles Treaty went further. Germany was carved down in scale. German lands and German speaking people were awarded to Austria, Poland, and Czechoslovakia. Yet, perhaps the most demoralizing and humiliating aspect of the treaty had been what was termed the "war guilt" clause. Under this provision, Germany was forced to accept blame, in its entirety, for the war. This was an unprecedented embarrassment and struck a severe blow to the German national ego.[24]

Having imposed such cataclysmic demands and conditions on Germany, the allies felt somewhat assured of German tranquility for the immediate future. Absolute security as demanded by the allies, particularly by France, was still not at hand. French fears of a resurgent and hegemonic Germany never fully subsided. On the contrary, it was given room to grow when isolationist America chose not to join the League. In addition, the French were never able to secure an agreement with the United States as a guarantee against any possible German encroachment in the future. Thus, France was left to fend for itself and it did so by beginning to construct the heavily fortified Maginot Line along its eastern border. European insecurity was also expressed elsewhere on the continent. Clearly, there was a fear that the Russian Revolution would spread to other areas of Europe. As a precautionary measure, the Versailles Treaty established the "Cordon Sanitaire". The act established a string of buffer states favorable to the West from the Baltic Sea through the Balkans.[25]

The atmosphere in Europe between the great wars, particularly after the rise of fascism in Italy and Germany, was never one that would foster stability, security, and unbroken peace. Colonial ambitions of the great powers had yet to subside. New colonies were acquired as mandates throughout the Middle East at the expense of the fallen Ottoman Empire. The Versailles Treaty did more to intensify national hatred among

the defeated powers than to instill a sense of justice and fair play in international relations. Italy, which had fought on the victorious side, was rewarded with far less than it had anticipated. There were many displaced people and nationalities. Few nations were happy with their lot. Confidence that all nations would respect the others' territorial borders ran low.

The Treaty of Versailles left behind a ravaged Germany. The allies took what they could and then left Germany on the brink of economic and social ruin. By the time Hitler ascended to power, the allies were guilt ridden and largely overlooked the threat he posed. In addition, the 1930's were economically difficult and trying times for all nations. As the European powers were no exception, their national efforts concentrated on easing the pains of the depression. Finally, Hitler's earlier demands were rather legitimate. He sought to regain the Saar coal mines and reunite the German people under one flag. In the meantime, a pacifist wave had overtaken western Europe. They recalled all too vividly the millions of soldiers they had lost and how little they had gained from the war. Yet by the mid-1930's, the fascist powers had made a farce of the League. Still, no effective alliances were forged to deter what would soon amount to a fascist onslaught, until it became too late.

Between the two great wars, the international system of sovereign nation states failed to achieve lasting and peaceful relationships as well as an environment which fostered

stability and an absence of war. Absolute national security and the hegemonistic inclinations of certain nations were never able to strike a balance. Still more important, however, was that this imbalance also entered a world which now contained nuclear weapons.

The Origins of the Bomb in a Divided World

As the end of the Second World War approached, certain truths and realities which had remained unaddressed, began to emerge. The alliance between the capitalist West and communist East, against the mutual threat posed by fascism, showed cracks and ultimately disintegrated. The United States and the Soviet Union had temporarily put aside their contending differences to secure their mutual interests. However, their differences were too inexorable to be displaced permanently and quite naturally resurfaced with a vengeance once the fascist threat was extinguished. In this respect, the atomic bomb had a significant impact on policy even before its final development, as the probability of it increased.

Fear was what initially began the serious research into the possibility of a sustained chain reaction from the fission of a uranium atom. Otto Hahn began the project in Berlin in 1939.[26] It was understood that a great deal of energy could be produced if the possibility of splitting an atom within a confined area could be achieved. American physicists mostly of European origin reacted with fear and alarm to the developments in Nazi Germany. Conceivably, German nuclear

weapons would have no moral limitations. American scientists enlisted the reluctant support of a former refugee from fascism, Albert Einstein, and coaxed him to write a letter to President Roosevelt which requested the administration to undertake research to develop nuclear weapons.[27]

Albert Einstein's famous letter to President Roosevelt was instrumental in persuading him to pursue the possible discovery of the nuclear bomb. Intense research and experimentation proceeded under the Manhattan Project. However, ambivalence was to develop soon as to whom the greater enemy was.

As the war effort against Germany continued, and as the allies approached the threshold of victory, it became increasingly clear that there existed perhaps an equally great threat to European peace and sovereignty. That threat rested within the Soviet Union. In this respect, fear of the Soviet Union actually intensified research efforts to a higher degree. The shifting alliances made enemies of what were one time allies.[28] Major General Groves, Chief of the Manhattan Project, stated that: "There was never from about two weeks from the time I took charge of the Manhattan Project, any illusion on my part that Russia was the enemy and that the project was conducted on that basis."[29]

Thus, even before any tests took place, the nuclear bomb already had an impact on the course of international relations. Once the bomb was created, the United States would no doubt

view it as an instrument to use as leverage against the Soviets. Far reaching differences between the contending giants began to appear at the Conferences held during and after the war. As the fate of the politics and geography of Europe had yet to be settled, Soviet power was gaining in critical proportions. As the most formidable military force in Europe, the Soviets would eventually take advantage of their position for its optimum share in the spoils of war. However, by July 1945, the United States had successfully tested the atomic bomb. As such, the West had a unique military advantage over the Soviet Union. Earlier in October 1944, in an agreement between the "big three", governments favorable to the Soviet Union were to be established in Eastern Europe and the Balkans excluding only Greece. Now with nuclear capability, could the West successfully retract its earlier commitment?[30]

The once thriving partnership had by the end of the war become a relationship characterized by hostility. While Stalin sought to encourage revolutionary movements in Europe and advance socialism in the world by establishing Soviet dominated states between the Soviet Union and Germany, the western allies were seeking to nip the communist threat, or at least mitigate it. The European battleground became a zero-sum game whereby any gain made by the Soviets indicated a clear loss for the West.

In the meantime, the war on the far eastern front

against Japan persisted. Scientists who had developed the bomb at the Los Alamos laboratory wrote another letter to President Roosevelt urging him to demonstrate the bomb without injuring the civilian population. The letter arrived at President Roosevelt's desk on April 12, 1945.[31] He died before he was able to read it. At Potsdam, Prime Minister Churchill told President Truman that Soviet forces would not be needed in the assault on Japan. Thus, the West sought to withdraw from the earlier agreement made a Yalta which called for the participation of Soviet forces in the Japanese campaign.[32] Possession of the bomb had clearly transformed the circumstances. As was reported by Churchill of the meeting at Potsdam, when the decision to end the war with Japan was introduced, the idea of whether to drop the bomb went largely undiscussed.[33] In Churchill's own words: "The decision whether or not to use the atomic bomb to compel the surrender of Japan was never at issue. There was a unanimous, automatic, unquestioned agreement around the table, nor did I ever hear the slightest suggestion that we should do otherwise."[34]

In August 1945, two nuclear bombs were dropped over Hiroshima and Nagasaki. They wreaked havoc and destruction and took the lives of 110,000 civilians.[35] The debate whether it was necessary to drop the two bombs has become largely academic. The horrific fact remains that nuclear weapons were used. A threefold explanation has been provided to

justify their use. (1) To bring about a quick ending of the war and spare the lives of thousands of allied troops which otherwise would have been lost during an assault on Japan. (2) To have a psychological impact on the Soviet Union and portray the the West's firm will as well as strengthen Western credibility during the peace talks. (3) To preclude the possibilty of the Soviet Union entering the Japanese theater and to allow the West to retract its pledges made previously at Yalta.[36]

After the bombing of Japan, relations between the Soviet Union and the West worsened. In August, President Truman announced that Eastern Europe would be excluded from becoming any side's sphere of influence. Indeed, there were upper ranking officials who favored a preventive nuclear attack against the Soviet Union. However, the strength of the Red Army, as well as the Soviet air defense capability greatly lessened the probability of a successful strike. The Soviet Union stood firm and Western attempts to stem the communist tide in Eastern Europe ultimately failed.

Within a short time, communist governments were established in Poland, Czechoslovakia, Hungary, Rumania, Bulgaria, and Yugoslavia. The European continent had been successfully divided into two diametrically opposed socio-economic and political camps. Hostilities and fears between the East and West were such that national leaders formulated policies which only served to perpetuate this

atmosphere. Soviet fears of the American monopoly on the bomb drove it to continue research to develop their own. The two opposing camps fortified themselves and began their engagement in the "cold war".

The bitterly contested world wars that took place in the first half of the twentieth century introduced a radically different world from previous centuries. War in the twentieth century implied a modern mechanized form of violence. It became a national effort whereby every individual of a nation at war was involved or affected in some manner. Battles were not only waged on land and at sea, but were also conducted in the air and underwater as well. Unless victory was rapid and secured the immediate unconditional surrender, the ends achieved became unworthy of the cost in human life and in terms of the monetary expenditures incurred. This became emphatically clear after the second great war. At its completion, from the half dozen or so world powers emerged two nations with enormously differing ideologies which rose to superpower stature. To religion, nationalism, and expansionism (imperialism) was added another divisive force which could serve as a basis for hostility leading to war: economic and political ideology (i.e. communism vs. capitalism). All wars prior to 1939 were fought between nations that were on the same half of the political spectrum; namely, nations from the center to the far right. World War II was actually a hybrid

of this model. From the ruins of World War II, the Soviet Union emerged as the greatest single power of the left. Given the political spectrum as a quantitative barometer of political differences, the emergence of a powerful Soviet Union on the left caused the political and economic differences between nations - which traditionally have led nations to war - to enlarge and widen in scope. Likewise, the superpowers' extreme perspectives of reality made conciliation and peaceful coexistence demonstrably more difficult. The world, as it stood, was divided into two bitterly opposed ideological camps. It was into a world more divided than ever that nuclear weapons were introduced.

Post War Alternatives and the Gap Between Politics and Science

The period during which nuclear weapons were first discovered was of critical importance. As the Cold War between the Soviet Union and the United States was inaugurated, each superpower sought to protect and extend its national interests. While technological innovation in armaments had matured enough to produce nuclear weapons, the causes which throughout history led nations to war remained. In fact, political differences between the superpowers had grown more intense, which in turn made the conditions under which the world would be shared, proportionately more dangerous. This phenomenon transformed the balance of power

in the world to what Winston Churchill termed the "balance of terror", since the introduction of nuclear weapons added an entirely new dimension to the means of war.

At the end of World War II, the advent of nuclear weapons made peaceful coexistence between contending nation states essential, particularly since political and economic rivalries were also carried into the nuclear age which had produced the potential to use force beyond conventional means including the use of nuclear weapons. In the face of potential annihilation, the question of when, if ever, was "political man" to catch-up with his technology became an immediate concern?[37] The result was the institution of nuclear deterrence which sought to mitigate the dangers of the nuclear era.

Post war Soviet-American relations contained certain realities. Basically, the political abyss between the two had grown wider than any bilateral relationship in history. Out of fear, each superpower sought to safeguard its individual national security lest the other would reach a state of pre-eminence over it. Thus, it was in this context that the role of nuclear weapons was defined.

Bernard Brodie was a leading advocate of nuclear deterrence. In 1946, Brodie believed in the inevitable spread of nuclear weapons to other nations. He therefore held that the dangerous aspects regarding the potential use of nuclear weapons had to be overcome. The key was not to rely on the untold dangers of the potential use of nuclear weapons to prevent

actual use. But rather in the nuclear era, one could only rely on the "possibility" of nuclear war.[38] Since the use of force was an adjunct to the concept of independent state actors and since there appeared no sign of fundamental change in the international system, deterrence was viewed as a means of preventing the use of nuclear weapons. Thus, the possession of nuclear weapons was "to make nearly as certain as possible that the aggressor who uses the bomb will have it used against him".[39] Once the Soviet Union successfully tested its first atomic weapon in 1949, both superpowers did in fact adopt mutual nuclear deterrence to insure each side's security and at the same time prevent the use of nuclear weapons.

As Brodie's contemporary, Albert Einstein was a member of a smaller school which endorsed the idea of a world government based on mutual trust. Einstein hoped political man would come to terms with the stark realities of the nuclear age and renounce the use of force and violence. It was only then could "a supra-national judicial and executive body" be instituted and be "empowered to decide questions of immediate concern to the security of the nations."[40] Einstein called for the formation of a "restricted world government". He beleived the transfer of each nation's sovereignty, most particularly on nuclear matters, to a greater global authority "would considerably reduce the imminent danger of war".[41]

Clearly, Einstein's formula was incompatible with the the prevailing international arena. To be successful, the proposed "supra-national" body had to have adequate political power. By definition, political power requires military power. Thus, one was immediately confronted with the problem of how nations were to arrive at a "restricted" world government based on justice. The idea rested largely on the good-will, trust, and peaceful intent of all nations. It also depended on the voluntary transfer of national sovereignty to a world government. The European Community has provided one, if not the only example of such a development, but even the EC was created from the fear of a strong and bellicose Germany in the future. Finally, one is left to ponder just how "restricted" the world government's activity would be. Would it act fairly and apply its authority in an egalitarian fashion, or would its power corrupt it from within and lead to a world tyranny?

Albert Einstein was an idealist of the first order. The meager voice for a world order inevitably surrendered to the corporeal forces of deterrence. Yet it is premature to assume that an effective world government guided by moral principles which would also maintain peace throughout the world will never be realized. No national political entity in this world has enjoyed permanence. Throughout history, many prosperous, vast, and mighty empires have risen and fallen. Similarly, the current circumstance of

the international system, marked by sovereign states testing their many wills, has not been bound to any sublimanally established dictum that would prevent it from any further development or perhaps evolution. Certainly, there is no absolute guarantee that a world government based on justice shall evolve. Still, neither is there any absolute guarantee that the sovereign international state system will remain intact indefinitely.

Given the existence of an abundance of nuclear weapons and a superpower relationship based on competition to acquire more such weapons, mankind is at a difficult and dangerous crossroads. Yet the Soviet Union and the United States allied themselves against the threat of fascism and Nazism during World War II. Would it require a similar threat from this world or any other for these two giants to shed their prejudiced animosities and hostilities and ally once again; or as a consolation, share the world under genuine detente? Clearly, there already exists a threat far greater than each as a nation or ideology could ever be to the other. Possession of nuclear weapons, in such staggering proportions, has provided the potential for mutual annihilation. Above and beyond all else, it has become imperative for the leaders of both nations to realize that the greatest to human civilization rests within the excessive proportions of their mutual nuclear arsenals and not with the other as a nation.

Albert Einstein's projection was a utopian solution to

the nuclear dilemma. Likewise, the progenitors of nuclear deterrence also failed to provide a durable and safe solution. While deterrence has thus far prevented a nuclear war, it has done so at great cost. Deterrence has relied, built, and enlarged terror atop a vulnerable foundation. Jonathan Schell wrote: "If someone climbs out on the ledge of a high building and threatens to jump off, we do not stand around congratulating him on his wisdom and restraint in not having jumped yet."[42] Deterrence has relied on terror which in turn has relied on the infallibility of man and machine. In that sense it has failed to safely serve its purpose.

The fallacious belief at the end of World War II that nuclear weapons could be controlled without dominant international laws and controls led to the adoption of nuclear deterrence. Whether the nuclear arms race pursuant to deterrence together with the potential of liquidating mankind is morally justified has yet to be answered.

POST WAR DISARMAMENT AND ARMS CONTROL EFFORTS AND AMERICAN POLICY

The international scene at the end of World War II was by no means conducive to disarmament negotiations. Tensions and hostilities resulting from the East-West conflict poisoned the atmosphere for constructive negotiations. The United Nations, the primary function of which is to maintain peace and stability in the world, was established. In contrast to the League, which some believed to be forum in which the Great Powers conducted their power plays and which in its later years avoided its responsibility to apply sanctions against aggressive powers, the United Nations was more universal. It had more members than the League, including two new superpowers which held permanent positions in its Security Council.

The United Nations shared the League's idealism in preserving the dignity and freedom of every sovereign member, but like its predecessor, it lacked the authoritative voice to achieve its difficult ends. It also lacked the ultimate element of political power which was a completely autonomous and independent military force whose allegiance did not go beyond the United Nations. The United Nations was to have authority only when all the major powers agreed on a given issue. The East-West division, which was clearly

drawn within the United Nations as well, greatly lessened the frequency of any such convergence. With a world that was far from being united and without a secure international atmosphere, the goal of disarmament grew further distant and was reflected in the United Nations Charter which discussed disarmament only in Articles 11 and 26. Nevertheless, the very first resolution of the United Nations established the Atomic Energy Commission.[1] Its purpose was to work for the "elimination from national armaments of atomic weapons and all other major weapons adaptable to mass destruction."[2] Under the United Nations' auspicies, attempts were made in the direction of disarmament, yet they fell far short of achieving success.

The nuclear dilemma, however, was aided by one factor which served to buttress the concept of disarmament in the nuclear realm. The nuclear era was still in its infancy. Only three nuclear weapons had thus far been exploded: the test at Almagordo and the two bombs which were dropped on Japan. While the opportunity to eliminate nuclear weapons or at least control their proliferation was clearly possible, the superpowers chose to take a different course of action.[3]

The Baruch Plan

During President Truman's Administration, Secretary of State James Byrns appointed a committee headed by Under-

Secretary of State Dean Acheson which in January 1946 set out to formulate a policy of nuclear disarmament. The proposal was to be presented at an upcoming session of the Atomic Energy Commission of the United Nations. Studies and investigations began after the appointment of the board of consultants which included David E. Lilienthal as chairman. Upon the group's completion of its studies, the committee's recommendations and conclusions were formalized and entitled the Acheson-Lilienthal Report. The report eventually became the major component of American policy for nearly eight years.

The report stated that safety was impossible unless measures were taken to prevent the horizontal and vertical proliferation of nuclear weapons. (At this juncture the United States had a monopoly on nuclear weapons.) An International Atomic Development Authority was to be established. This group would "conduct all procurement of atomic raw materials anywhere in the world, carry on atomic research on an exclusive basis, construct atomic plants, and licence and control atomic research and production for peaceful purposes".[4] All "dangerous" nuclear related material was to come under the control and ownership of an international body affiliated with the United Nations. The United Nations agency would allow certain nations to conduct "safe" nuclear activities. It was believed that one authority which would have exclusive rights to develop and distribute nuclear materials would be able to police and regulate its own activity. Finally, the

United States was to cease production of nuclear weapons once an arbitrary level of safety had been established.[5] (i.e. Once a United Nations agency was established and began to function efficiently together with a certainty that no nation would be able to produce nuclear weapons without detection.)

In March 1946, President Truman appointed Bernard Baruch as the representative of the United States who would make this proposal to the United Nations. Upon his review of the plan, Baruch was quick to point out certain flaws which needed addressing. He set out to make the report more "workable". Baruch believed that in order to assure the passage and workability of the plan by the United Nations Security Council, the veto power of each member nation had to be revoked on decisions regarding atomic energy. There were to be inspections at regular intervals to detect any violations of the agreement. Sanctions were to be imposed on any violators of the system. They would take the form of "swift and condign" punishment and would be the key deterrent of clandestine evasion, should an agreement be reached.[6] International ownership of nuclear materials as prescribed under the earlier report was replaced by international management. Finally, Baruch proposed that the United States transfer all of its bombs and information on how to make them to the United Nations when the time called for such action to be taken. In the meantime, the United States would continue to test and develop more nuclear weapons. President

Truman approved Baruch's revisions and accepted the plan as the official American position.[7]

The Baruch Plan was proposed before the United Nations Atomic Energy Commission in June 1946. Andrei Gromyko, as the representative of the Soviet Union, rejected the proposal. As the early years of the United Nations was largely dominated by the will of the United States, the Soviet Union therefore lacked faith and trust in all proposals that originated from the United Nations. Thus, as a precautionary measure, the Soviet veto in the Security Council was a powerful instrument, one that could not be readily forfeited.[8] Secondly, inspections which were to insure compliance to the agreement would have meant American interference in Soviet life. It was viewed as a western plot to "open up" Soviet society.[9] Additionally, since centralized planning was an irrevocable part of the Soviet economic network, the Soviet Union would not allow outside control of their nuclear energy program. Gromyko believed the proposal called for the Soviet Union to forsake its national sovereignty. He went on to mention that the preservation of national sovereignty was one of the major objectives of the United Nations. He felt the American proposal "threatened" this basic principle.[10] To the Soviet Union, the American proposal portrayed an image of dictating the disarmament timetable through an agency which disallowed other nations from undertaking their own research to develop the bomb and nuclear energy.[11] While the United States

had the capability to swiftly punish violators, the Soviet Union was the sole potential recipient of an attack as a violator of the agreement.[12]

After rejecting the Baruch Plan, Gromyko put forth a counter proposal which stipulated that all nuclear weapons in existence be destroyed and a ban be placed on their further production and use. Thereafter, two United Nations committees would be initiated. The first would aid and monitor the exchange of nuclear technology among nations; the second would seek to verify the abolition of nuclear weapons. Thus, the Soviet Union's proposal made inspection of Soviet nuclear activity dependent on the willingness of the United States to first surrender its nuclear weapons and technology.[13] The United States considered the proposal equally unsatisfactory and therefore would not accept the plan. As perhaps a symbolic gesture, two months prior to the Soviet proposal, the United States exploded another test bomb over Bikini in July 1946.[14]

The following eight years were marked by insincere attempts on the part of the superpowers for genuine disarmament. A great deal of precious time was put to ill use first at the meetings of the Atomic Energy Commission of the United Nations, then later at the Disarmament Committee. There were meanderings and discourses throughout this period which was nicknamed the "parallel monologue".[15] Both sides avoided real dialogue with one another while each sought the sympathy and support of other nations for its self-righteous position.

The United States started the talks with its hand showing and declined to bargain away the chips it had gathered primarily because Baruch felt the proposal was fair at the outset. Concessions were considered out of the question because any other mode of disarmament would have been viewed as a form of appeasement by Congress.[16]

Stalin, on the other hand, was correct to assume that the United States would not carry out a nuclear attack on the Soviet Union even if the Soviets declined to disarm under American terms. Since the Soviets were only three years away from developing their own bomb, they opted to wait until they achieved a stronger position from which to negotiate. The Soviets were intent not to accept any plan of inspection since this would have required them to reveal the locations of their nuclear sites. Since the American sites were already known, the Soviet Union had nothing to gain in that regard.

During this period, the Soviets refused to accept the obvious fact that fissionable material was equally troublesome as the bombs themselves. This was the main reasoning behind the American insistence on inspection rights. In short, verification was as important to the United States as sovereignty was to the Soviet Union. Negotiations took on an increasing tone of unyielding inflexibility primarily over the issues of sovereignty and inspection. A deadlock which aborted the first and only real attempt at nuclear

disarmament ensued. Thereafter, the pattern of failure became chronic.

The Baruch Plan came to terms with the technical implications of the bomb. It would have radically shifted the procedure by which the world made its decisions, but it was denied the chance of operation. Both sides sought absolute security and were unwilling to cross the fine line of concession or sacrifice which would have placed them in the realm of productive negotiations. Without the forfeit of a necessary degree of national sovereignty, the proposal was doomed to fail.[17]

The Ambivalence of the Truman Administration

The Truman Administration was marked by ambivalence with respect to the role of nuclear weapons in relation to the national security and defense policy of the United States.[18] It was believed that the American monopoly on the bomb would last as long as a decade, perhaps even beyond. There were individuals who supported an expansion in the realm of nuclear weapons, including a preventive strike against the Soviet Union. United States' fears multiplied with the Soviet Union's explosion of the bomb in 1949. Thus, the Truman Administration sought to maintain superiority in nuclear technology and weaponry, By Truman's instruction, research was undertaken to develop the hydrogen bomb. The international climate served to increase America's depen-

dence on the bomb. The United States responded to the Soviet threat of expansion at the expense of Turkey and Greece with the Truman Doctrine. European defense and security became linked with that of the United States under the North Atlantic Treaty Organization. The Berlin Blockade heightened the Cold War, and finally the Korean War erupted. Deterrence of the Soviet desire from spreading its revolution became the official doctrine. Superiority of American nuclear forces became its policy adjunct, all in the effort to "contain" communism.

Nuclear Dependency

By 1952, the nuclear forces of the United States overwhelmingly outnumbered those of the Soviet Union. The United States was capable of launching a nuclear attack on the Soviet Union with 150 bombers stationed in various parts of the world. The Soviet Union had very few bombs or bombers that could reach the United States.[19] At this point, bombers were the only means of delivering nuclear weapons. Sophisticated and advanced delivery systems had yet to be introduced.

During President Eisenhower's Administration, John Foster Dulles became Secretary of State. The President was firmly committed to a strong and vibrant economy, and a balanced budget was viewed as the key to achieve it.

From the very outset and up to President Eisenhower's tenure, nuclear weapons were regarded as something of a bargain. It seemed impractical to maintain large armies and conventional forces when nuclear weapons could deter the enemy, cause equal and far greater levels of destruction and do it for a lower price tag. Dulles referred to nuclear weapons as a "bigger bang for the buck". Consequently, the administration reduced emphasis on conventional armed forces and increased expenditures in the nuclear field. As a result, the United States increased its reliance on nuclear weapons. In 1954, John Foster Dulles launched the doctrine of "massive retaliation". It became the official American position which basically meant that any encroachments made by the Soviet Union upon vital American interests would be met by an instant American response "of its own choosing" not excluding the possible use of nuclear weapons.[20] These words came in light of the realization that the American homeland was no longer completely safe from a nuclear attack.

However, the cost-effective description of nuclear weapons was realized shortly thereafter to be erroneous. While nuclear weapons were initially money saving devices which allowed a nation to rely less on conventional forces, the spiraling arms race meant that delivery systems were reliable only for a limited period of time. Newer and more advanced systems cost more and more, thereby negating any savings made in cutbacks of conventional forces. To develop nuclear weaponry

and to keep it secure as possible, meant great expenditures had to be made.

"Atoms for Peace"

After the death of Stalin, there appeared glimmers of hope of lessening the pace of what was by this time an arms race that was gaining momentum. Matters had intensified since both sides had exploded the vastly more destructive hydrogen bomb. In April 1953, President Eisenhower introduced the "Atoms for Peace" proposal. It essentially suggested that each of the two sides transfer to the United Nations Authorities an "x" amount of fissionable material.[21] This proposal circumvented the obstacles of lack of trust, verification through inspection, and sovereignty. Neither side would have had to accept foreign inspectors as a means of verification, since the basis of the proposal focused on the prevention of vertical nuclear proliferation. However, the plan was received coldly by the Soviets and was never inaugurated.

By this time, the nuclear deterrence forces of each were becoming increasingly expensive and elaborate. The "game" of the superpowers required each side to raise the ante. There clearly was lacking the willingness to alter the rapid escalation of nuclear weapons. The failure to disarm or even to control nuclear weapons in the early stages represented a failure of statecraft and diplomacy with ramifications

of potentially tragic proportions. As the race became increasingly dangerous, negotiations to curtail new discoveries lagged far behind.

The nuclear arms race could not be abated through the work of the United Nations. Both sides would put forth all-encompassing proposals to the other. However, national security dictated to each side that each proposal favor the home country. As such, there were elements of each proposal which the other party could not accept. Creative negotiations were in short supply. In hindsight, one can only challenge and question the sincerity of the superpowers' intentions. Had the will to disarm been reflected in both words and deeds, the fruits would have been demonstrably greater.

Signs of Promise

By 1954, the stormy atmosphere of international relations had settled somewhat. The tensions of the Cold War appeared to be abating. The Korean War had concluded in 1953, and in 1954 the French appeared to be on the threshold of withdrawal from Indochina. Conflict between the super-powers had subsided. Both sides were armed with hydrogen-bomb capability. Khrushchev had come to power and suggested reconciliation through the reopening of cordial relations with Austria and Yugoslavia. A "thaw" was to occur within the Soviet Union within two years and was reflected in Soviet foreign policy.

In June 1954, as members of the Five-Power Subcommittee

of the United Nations Disarmament Commission, the French and British made a joint proposal which served as a prospect for hope. The proposal suggested that each superpower disclose its military expenditures and nuclear installations upon which ceilings would be attached. After forswearing and renouncing any further manufacture and use of nuclear weapons, both superpowers were to enter into the various stages of reduction of the number of nuclear weapons, military manpower, and conventional weapons.[22] While the Soviets initially rejected the Franco-British proposal, in May the following year, they introduced their own proposal which greatly resembled the West's. This Soviet maneuver was viewed as an attempt to undermine the entrance of Germany into NATO which signaled it remilitarisation.

Under the proposal, the Soviets belatedly acknowledged the possibility of one side successfully producing nuclear weapons without detection by the other for the purpose of a suprise attack. They therefore agreed to allow inspection in the form of ground control posts to detect any clandestine nuclear activity. The Soviets met the earlier Western proposal of a timetable which favored the idea of simultaneous conventional and nuclear disarmament. They incorporated a cutoff of new nuclear atomic production after the treaty had been operational for a year's duration until finally the existing stocks would be destroyed after a 75% reduction of conventional forces.[23]

During the adjournment of the subcommittee's meeting in the Summer, the Geneva Summit Conference was held in June 1955. At the meeting, President Eisenhower presented an idea which was referred to as the "open skies" proposal. He suggested that both sides resort to aerial photography to control and monitor the other's activities.[24] The Soviets preferred the land based control posts. Presumably it was conceivable to limit the number of posts which at the same time would have made it impossible to monitor all nuclear activity within the Soviet Union. While aerial photography did not reach the potential comprehensiveness of individual land inspection posts, it covered a greater portion of Soviet territory. Therefore, the United States began to conduct unilateral flights over the Soviet Union.

Maintaining secrecy with respect to the location of atomic weapons and production sites was in the greatest interest of the Soviet Union. Compliance with the American proposal of inspection prior to disarmament would have revealed Soviet weakness. Contrary to the Soviet propaganda efforts which gave the West an impression of continuous Soviet progress in nuclear weapons, the Soviets had a vastly inferior nuclear force with respect to the number and capability of bombers and nuclear bombs. Later, in 1957, the Soviets decided not to mass produce and deploy first generation ICBMs and opted to wait for more advanced models. This information was made available after the initiation of satellite technology. It

was then discovered that the Soviets had deployed only 3.5% of an ICBM force which the United States had estimated in 1959.[25]

In August, 1955, the Disarmament Subcommittee meetings resumed. At this juncture, however, the United States re-entered the negotiations with a dramatically different posture. Harold Stassen, the U.S. representative, announced that the United States would suspend "all of its pre-Geneva substantive positions."[26]

The newly held American posture settled and made final a transformation that had begun with the "Atoms for Peace" proposal. This transformation was a marked shift from the earlier proposals for complete disarmament to the more modest goal of arms control. Both the "Atoms for Peace" plan and the "open skies" proposal illuminated the new American posture. The American transition was to become a permanent feature in American nuclear policy. The impractical aspect of total disarmament had gradually become apparent to the United States. Yet, lip service to the United Nations' and other disarmament proposals continued.

The unsuccessful attempt, however, to control nuclear arms in 1955 once again dimmed the prospects for ending the race. While Soviet actions appeared to indicate a desire for detente, the mood in the United States was somewhat less conclusive to forge an agreement with the Soviets. Senator McCarthy's "Red Scare" campaign had only recently begun to

wind down. This was the substantive reason for a lack of public support for an agreement with the Soviet Union. President Eisenhower and the chief American negotiator, Harold Stassen, were confronted with less than supportive elements of government (i.e., Congress, the Pentagon, and the State Department). In addition, the western alliance expressed concerns of possible United States neglect of Western Europe's security. There was alarm over a possible bilateral agreement between the superpowers from which the European states would have been excluded. Prospects for successful and meaningful arms control were further weakened by the souring of the international climate. Within one year, Britain and France became involved with the Suez intervention, while the Soviets ruthlessly oppressed the Hungarian effort for independence.[27] Thus, what initially presented itself as a promising new course for arms control reverted back to the pattern of failure.

In 1959, ten NATO and Warsaw Pact nations came together to resolve the grave issues under debate. A "general and complete" attempt at disarmament was yet another failure. A timetable was to be established for a gradual reduction of nuclear weapons and conventional military forces while maintaining each nation's security needs. An ambitious proposal such as this was doomed to fail from the very outset. The varying security needs of each nation as well as great variances or asymetries in military forces prohibited any chance of success. At work once again were the forces of differing

ideologies, distrust, and fear as well as the acceleration of nuclear weapons technology, united to prevent either disarmament or arms control.[28] The same year, however, a partial breakthrough was made when the United States and the Soviet Union agreed on the Antarctic Treaty which "froze" any activity on the Antarctic continent other than the pursuit of peaceful research.

The Cold War

While the Cold War between the superpowers developed during the years immediately following World War II and has been marked by continuity, the period between 1948 and 1960 was its climactic era. There were individual positive developments and years during which tensions subsided, yet the momentum of the nuclear arms race could not be reversed or slowed. Efforts at achieving disarmament and arms control were defeated during the peak years of the Cold War. Sentiments of fear and distrust ran deep in both camps. The Cold War made competition for more nuclear weapons appear sensible and pragmatic. The competitive spirit engulfed both superpowers in the quest for an ever increasing degree of military preparedness and capability. National security became synonomous with superiority rather than controlling their respective competitive drives. The Cold War took on the properties of a self-fulfilling prophecy and propelled itself forward. Each rival had to respond to every area of compe-

tition or otherwise face the consequences of falling behind in the arms race. Thus, weapons had to be equally matched, as did all espionage, covert operations, and multi-lateral military and economic alliances.[29] Throughout this period, neither the quantitative nor qualitative aspects of the arms race were stemmed. On the contrary, nuclear weapons were allowed to proliferate both vertically and horizontally to encompass greater and more advanced weaponry. Likewise, their ownership was extended to include lesser powers. There appeared no ending to the pattern of escalation as the Cold War and the arms race provided fuel for one another.

The greater American reliance on nuclear forces during the Eisenhower Administration and the height of the Cold War became manifest through a marked growth in nuclear weaponry. During this period the number of American bombers jumped from 150 to 540.[30] Still worse, the successful Soviet launching of the first earth orbiting satellite (Sputnik) in 1957 intensified the superpowers' race in the realm of intercontinental ballistic missiles(ICBMs). ICBMs were long-range rockets that were armed with nuclear warheads. After launching, they penetrated the atmosphere then could fall freely along a ballistic path onto an enemy target. The introduction of ICBMs to each side's ever growing arsenal meant that each superpower had the capability of launching an attack on the other's heartland from its own territory. This development made the arms race more lethal than ever before. The Soviet breakthrough was surpassed only by the

discovery of the bomb in 1945. ICBMs had a resounding impact on the qualitative aspect of the race, as the capability dramatically reduced nuclear weapons' launch/strike time to within one half hour.

Detente and Flexible Response

By 1960, the United States had 12 ICBMs and had deployed three submarines equipped with nuclear ballistic missiles. The entire strategic force hovered around 4,400. (The figure includes bombers, missiles, and tactical and strategic nuclear weapons.) By contrast, the Soviet Union had yet to deploy any submarines capable of launching ballistic missiles. They possessed roughly 150 bombers and only about four ICBMs.[31] They lagged far behind the United States in both the quantity and quality of nuclear weapons.

During the Kennedy Administration's tenure in office, as well as that of President Johnson, the United States shifted away from John Foster Dulles' "massive retaliation", to the strategically more sound and pragmatic policy of "flexible response". It was maintained by Secretary of Defense Robert McNamara that the former policy heightened the possibility of initiating a nuclear war. Recent Soviet ICBM capability made the American homeland increasingly vulnerable, since European and American security had already been linked through NATO. A Soviet invasion of Europe meant in effect an attack on the United States. Likewise, American nuclear superiority

had thus far proved incapable of preventing Soviet adventurism abroad. The United States was confronted with the high probability of being able to check any Soviet aggression in Europe only at the expense of incurring heavy damage to North America. Thus, it was through the American commitment to European security that a credibility gap arose. That is, would the United States be willing to lose New York to save Paris or Bonn? Clearly, there was a need to extend United States' credibility on the European continent by providing an alternative to an immediate American use of nuclear weapons.

Robert McNamara's new approach sought to delay the specter of forfeiting cities during a potential nuclear exchange to a later stage of the crisis. The result was a broad based scheme to increase the options available to the United States and was referred to as "flexible response". The new doctrine renounced any immediate automatic massive nuclear response to a Soviet assault on Europe. Instead, the focus was placed on achieving a greater conventional military capability. In the event of Soviet aggression, the United States would respond at the necessary level (conventional or nuclear) and escalate should the circumstances warrant such action. "Flexible response" called for greater expenditures in both conventional and nuclear weapons. As a result, during President Kennedy's tenure, the American armed forces grew by some 200,000 men who were provided with more ships, planes, tanks, and artillery with which to engage in battle.[32] More-

over, American nuclear forces witnessed an improvement in areas such as command and control centers, missile accuracy, and diversity of delivery systems. These measures produced a more vigorous American defense capacity; one that augmented the ability to follow through on U.S. commitments in Europe without an immediate resort to nuclear weapons.

"Flexible response" was launched to lessen the potential of nuclear confrontation. It was a safer and more resourceful use of American conventional and nuclear capability. Likewise, it was a prudent strategy which was more compatible with the prevailing balance of military forces. In this respect, it was more successful than the earlier strategy of "massive retaliation".

The Aftermath of the Cuban Missile Crisis

The nominal detente worked out by President Kennedy and Premier Khrushchev was dealt a sharp blow by the Cuban missile crisis. The balance of power which had hitherto rested clearly in favor of the United States was about to witness a transformation. Undisputed American nuclear as well as "local" naval superiority had been proven earlier with the Soviet agreement to withdraw its missiles from Cuba. The Soviet Union did so, however, after an American promise not to interfere in domestic Cuban affairs or launch an attack on that island. The dangerous situation prompted the establishment of the "Hot Line" between Washington and Moscow.

Given the recent experience, it was an essential link between the two national leaders.

After the removal of Khrushchev from office, the Brezhnev-Kosygin regime felt hard pressed to mollify the military forces that had tolerated Khrushchev's "subjectivism" for so long. A general disenchantment had developed regarding Khruschev's policy of detente with the West. Excessive accommodation was viewed as harmful to Soviet interests particularly as American involvement in Indochina deepened. Therefore, the "lessons of Cuba" had to be re-evaluated to prevent other miscalculations and embarrassments.[33] The Soviets vowed never again to be left so militarily inferior to the West. By this time, satellite technology had also revealed Soviet weakness and deficiencies which could no longer be hidden behind their massive geography. A viable alternative for the Soviets appeared to be the ability to argue from a "position of strength". Consequently, the Soviets decided to accelerate the production and deployment of enough strategic missiles to achieve rough parity with the United States by the end of the decade. Until this goal was realized, strategic and defensive arms control negotiations were considered highly undesirable by the Soviet Union. Having recoiled from the Cuban crisis, the Soviets abandoned their intentions to establish "forward based" missile systems. They instead chose to deploy first-strike and retaliatory long range missiles. These large missiles have remained the

bulwark of the Soviet defense system up to the present.

American Credibility

In 1962, Secretary McNamara suggested that American missiles be targeted on the Soviet Union's military sites and missile installations (counterforce) rather than on its cities (countervalue). It was assumed that this would minimize the damage and loss inflicted on the United States as well as avert the necessity of a full scale attack on the Soviet Union. However, opponents argued this caused the United States to shift to a "warfighting" posture predicated on the prospect of a "winnable" nuclear war. Therefore, by 1963, Secretary McNamara began to heed the critics' arguments with regard to counterforce. With improved reconnaisance and information gathering capability through satellite technology, the administration's earlier fears of a "missile gap" were placated. Thus, the United States continued to target the Soviet Union's population centers and maintained its strictly deterrent policy.[34] It was not until the introduction of more accurate missiles during the 1970's that both sides were compelled to target the other's missile installations for fear the other had already done so.

Secretary McNamara believed a credible deterrent force had to be invulnerable to a first strike by the adversary. That is, enough weapons had to survive an attack so that an

"unacceptable" retaliatory attack could be launched upon the enemy. In the attempt to combat MAD, (Mutual Assured Destruction), Secretary McNamara launched the Triad format of nuclear defense. United States nuclear forces were to be divided into three modes of delivery systems (land based missiles, submarine launched ballistic missiles, and long range bombers). Should one of these "legs" be knocked out by the Soviets, the remaining two would be sufficient to conduct an unacceptable level of damage on the Soviet Union. As a result, vulnerability of the American nuclear forces was substantially diminished.

According to Secretary McNamara, a credible deterrent was not to exceed 400 one megaton bombs. However, earlier fears of the "missile gap" had already set into motion the machinery that sought to enlarge the nuclear arsenal of the United States. American nuclear strength multiplied as large scale Polaris and Minuteman missiles were deployed. Were it not for Secretary McNamara's efforts to slow the process, the figures of new missile deployment would have jumped much higher. According to a report by the Arms Control Association, through the end of the Johnson Administration, the number of United States ICBMs went from 12 in 1960 to 1054 by 1968. Similarly, SLBMs (submarine launched ballistic missiles), increased from 48 to 656. During this period, 20 new bombers were included in the force which brought their total to 560. While the Soviet nuclear force substantially increased during the same period, the American force maintained its superiority.

The Soviet ICBM force grew from approximately four in 1960 to 1050 by 1968. Their SLBM force grew from 48 to 160 during the same period. The level of bombers remained constant at 155.[35]

The nuclear forces of each side continued to experience growth into the 1970's. By 1976, the Soviet Union possessed 1,549 ICBMs and 826 SLBMs. Since 1968, the Soviet Union had added five more bombers to their force and raised the total to 160. The United States had by this time completely mastered MIRV (multiple independently targetable re-entry vehicles) capability. This permitted each missile to launch and carry more than one nuclear warhead to different destinations. Therefore, the combined ICBM and SLBM force of 2000 contained roughly 9000 warheads. The Soviets completed the "MIRVing" of their available missiles later in the decade at which time full asymetrical parity developed and continued into the 1980's.[36]

MAJOR TREATIES OF THE 1960'S

Unfulfilled Hopes

During the 1960's, both sides became further drawn into the nuclear arms race. Measures to control the runaway race were too few and insignificant. Instead, both sides hedged toward an erroneous sense of security by relying on a greater number of nuclear weapons. Both sides fell victim to a myopic view of nuclear weapons as their overall mutual security actually diminished in the sense that in the event of a nuclear war, fewer American and Soviet citizens would survive. Solly Zuckerman wrote: "ignorance, mutual suspicion, the belief that more destructive power implies greater military security, and the simple difficulty of reducing the momentum which drives the arms race in which thousands are engaged, were the reasons why the two sides did not get together before 1970 to consider how to stop the process."[1]

The uncontrollable race of the 1960's was reflected by the lack of success of arms control negotiations. Innocuous treaties and agreements which became obsolete before their time were the rule. Throughout the period, the United Nations continued its effort at arms control and disarmament.

In 1961, a United Nations General Assembly resolution denounced the use of nuclear weapons as an act which defies international law

and the United Nations Charter, as well as being an act incompatible with sound and justified moral behavior.

The Limited Test-Ban Treaty

There were hints of a test ban agreement as far back as the 1950's owever, the Limited Test-Ban Treaty did not enter into force until 1963. The treaty prohibited its signatories, which included the United States and the Soviet Union, from conducting nuclear explosions above the ground,"in outer space, and underwater (territorial or high seas)."[2] In addition, Article One of the treaty stated that the concerned parties were to seek an end to all nuclear test explosions.[3] The treaty did not prohibit nations from testing nuclear devices underground; nor did it block the testing of more advanced missiles. Therefore, from 1963 onwards, nuclear tests were merely conducted underground with no halt in sight. On the contrary, testing has actually increased since the treaty. Moreover, had a "comprehensive" test ban been achieved in the 1950's, many of the subsequent technological developments would not have occurred. The ability to attach multiple warheads onto missiles (MIRVing) in the next decade would have been significantly hindered and perhaps would not have developed at all since testing was a crucial element in the miniaturization of parts. Thus, the rapid escalation of the arms race would not have been possible.[4]

The Limited Test-Ban Treaty did not slow down the pace of discovery. Nor did it prevent other nations from "going nuclear". The treaty was, however, successful on two counts. While nuclear weapons were left intact, the treaty was a symbolic achievement which made evident that agreement over something could be reached. Secondly, the radiation levels in the atmosphere were demonstrably reduced. This had a resounding impact on the safety of the helpless individuals over whose heads the test explosions had been taking place, most particularly Southeast Asians. The tests had caused a significant rise in the radiation level of their food and water. At base, however, a major opportunity to curtail the arms race was missed.

In 1967, the Outer Space Treaty emerged as another partial solution to the arms race. Both superpowers ratified the treaty during that same year. Given the advances made in space travel as well as the potential military opportunities it held, the two superpowers came together to prevent the militarization of outer space. The treaty called for the exploration of outer space for "peaceful purposes" which "should be carried on for the benefit of all people." [5] Under the guidelines of the treaty, "military activities and installations" were prohibited in outer space. More specifically, it called "upon States to refrain from placing in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction or from installing such weapons on celestial bodies." [6]

Ostensibly, the treaty gained ground in the search to prevent each superpower from using the heavens as a future battleground and to exploit space as a means of causing destruction on Earth. However, in a sense, outer space had already been militarized. With ICBM capability, both superpowers possessed a vast number of missiles whose trajectories soared beyond the atmosphere. Moreover, both superpowers were by this time utilizing satellites which provided surveillance of the other's military installations and activities. More recently, they have become an integral part of the missiles' launch/strike pattern as they serve as an essential element of a missile's guidance system. Only weapons and their support systems which neither side had, (e.g., attack missile stations and energy storage bases) were outlawed by the treaty.

The Treaty of Tlateloco was also signed in 1967. The agreement resulted largely from a Latin American effort and brought together the Soviet Union, the United States, France, the Caribbean and Latin American countries. Each signatory agreed not to "test, use, manufacture, receive, store, and deploy... any nuclear weapons by anyone on their behalf or in any other way" in Central and South America.[7] In effect, Latin America became a "nuclear weapon free" zone for nations who participated in the treaty. A level of importance may be attached to the treaty in that it was the first which outlawed nuclear weapons in an "inhabited" setting.[8]

The Non-Proliferation Treaty

During the 1960's, as more nations acquired the "know how" to make nuclear weapons, the dangers of nuclear proliferation became increasingly apparent. The emergence of other nuclear powers raised the concern of not only the superpowers but of non-nuclear nations as well. With the growth of the "nuclear club" new dimensions of danger were added as the potential chances of nuclear war, whether accidental or intentional, increased. Initiative taken by the United Nations ultimately led to a joint Soviet-American proposal in 1968 which sought to end nuclear proliferation. The Non-Proliferation Treaty became effective two years later.

Parties to the treaty which possessed nuclear weapons agreed not to "transfer" nuclear weapons or "assist, encourage or induce non-nuclear States to manufacture or acquire such weapons."[9] Likewise, non-nuclear weapon States which were parties to the treaty were not to "receive" nuclear weapons "directly or indirectly" and "not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices."[10]

Since 1970, the Non-Proliferation Treaty has acquired 116 signatories. Nations which have chosen not to participate include France, China (PRC), India, Pakistan, South Africa, Israel, and several other nations with the potential to "go nuclear". While the reasons to acquire nuclear weapons are unique to each nation, there is a more general pattern

which may serve to explain the proliferation of nuclear weapons.

In the cases of Britain, France,and China, development and deployment of nuclear weapons clearly served to enhance their prestige in the eyes of the world. More importantly, nuclear weapons made each more of an independent actor rather than a wholly dependent and subservient junior partner in their alliance with one of the superpowers. To be sure, France and Britain as nuclear powers exercise greater leverage within the Atlantic Alliance. At the same time, their nuclear forces function as an extra deterrent against the Soviet Union. The situation in China during the 1950's was similar only their incipient nuclear force was to be aimed at the United States. The era of severe Chinese fears of the United States coincided with the gradual breakdown of the Sino-Soviet bloc. Thus, the imperative for an independent Chinese nuclear force was made even more compelling.[11]

The longstanding military rivalry between India and Pakistan cannot be excluded as the key reason why India has already developed nuclear weapons capability and why Pakistan seeks it. Similar to the British and French, no doubt the prestige factor as well drives Pakistan and India to develop atomic weapons. Both Israel and South Africa confront pressing national security problems. Israel, which allegedly possesses nuclear weapons, realizes that its next war with the Arab states may prove to be its last. Thus,

for Israel, nuclear capability serves as an indispensable necessity when facing its enemies.

Finally, South Africa which faces domestic problems concerning race relations fears a radical solution to the inequities of its political, social, and economic structure-one which may be initiated from beyond its borders. Thus, as a nation surrounded by others where majority rule exists, South Africa may choose to exercise its nuclear option to deter any action brought against it from without.[12]

The Sea-Bed Treaty

The Sea-Bed Treaty of 1970 was another agreement which fell within the framework of avoiding the real issues of the spiralling arms race. Essentially, most of the arms race is conducted above ground. A major weapon system such as nuclear ballistic missile submarines was altogether overlooked by the treaty. The treaty instead focused on and outlawed the deployment of weapons systems the superpowers would not have deployed regardless of the treaty. The implanting of stationary nuclear weapons underwater would have made them highly vulnerable to easy destruction for the simple fact that they would have been defenseless.[13] Yet it was precisely these types of weapons which the treaty prohibited each superpower from deploying on the ocean floor. The treaty failed to inhibit the development of "sophisticated

anti-submarine warfare systems; moored platforms for refueling, bunkering, repairing, signaling, etc."[14] The treaty basically allowed for extensive and diversified military activity beneath the seas. The sea-bed was left open for deployment of new and imminent discoveries such as submarine tracking and targeting systems. In short, the treaty allowed more dangerous aspects of military technology to proceed unobstructed. Similar to other arms control treaties that preceded it, the Sea-Bed Treaty was a "paper tiger". It was designed more to placate public fears of the arms race than it was an attempt at genuine arms control and security.

THE 1970'S

The Need for a Treaty

As a continuation in the line of partial efforts in the battle against nuclear weapons, the Strategic Arms Limitation Talks were the next major attempt at arms control. Regrettably, they did not become a milestone in the history of arms control as one would have hoped. By the late 1960's, rough parity between the superpowers became increasingly real. The dangerous levels of weapons which had been accumulated aided both sides to entertain the notion of engaging in negotiations. By this time, the economic strains of a ubiquitous arms race had been felt. The United States was involved in a costly war in Southeast Asia as the Soviet Union was entering the final stages of a costly nuclear armament plan aimed at achieving parity with the United States.

United States policy had matured to the point of accepting certain realities of the nuclear age. American military technology, while highly dynamic, would not be able to create "the ultimate" weapon that would forever keep the Soviets at bay. Soviet technology would match the advancements and achievements made by its American counterpart. As the concept of arms limitation was indeed in the best interest of both parties, a desire for it cascaded through the leadership

of each superpower. President Johnson made overtures regarding nuclear arms control in 1967. However, any hopes for a sudden halt to the race were abandoned when Soviet troops moved into Czechoslovakia in 1968. Had negotiations gotten underway, the likelihood of MIRV deployment by the United States would have been substantially reduced. MIRV technology greatly increased the opposition's vulnerability. Success in this area was paralleled by the Soviet Union in 1975.

Nixon's Sufficiency

Further reason for the realization of SALT was given by the Nixon Administration's emphasis on "sufficiency" with respect to American defenses. "Sufficiency" was a highly rational stance which took into account more political and economic factors than the earlier concepts of superiority or "mutual assured destruction" (MAD). The doctrine held that the United States would continue to maintain enough military power to deter a first strike by the opposition. Second, "sufficiency" would continue to protect the United States and its allies from any coercive action of the Soviet Union. Finally, it was to keep a level of strategic balance that would be invulnerable to technological innovations.[15] Excesses were trimmed in the Armed Forces. The United States reduced its war-fighting capacity to wage only "one and a half wars" at any given time and in any part of the world instead of the "two and and a half wars" of the earlier

decade. The "two and a half wars" policy was based on the belief that the United States was morally obligated and committed to fight against insurgents around the world.[16] Therefore, the possession of "two and a half wars" capability became mandatory. Prior to the inauguration of "sufficiency", any erosion of even redundant American military capacity was seen as highly undesirable.

Given the reasons why the superpowers came together to discuss arms limitation, there was skepticism as to how much an accord would accomplish. Over the years, there developed many intricacies and variations in advanced weapons systems. These asymetries made all arms control measures infinitely more complex than they had been in earlier years. Nevertheless, attempts were made to minimize these difficulties as the Soviet Union and the United States entered into bilateral arms limitation talks between 1970 and 1972. It appeared as though detente was finally "paying off".

The SALT I Treaty

The treaty itself contained two basic parts. The first was the Anti-Ballistic Missile Treaty which was signed on May 26, 1972. This first part of the treaty consummated the inability of each superpower to protect their citizens. The non-feasibility of an ABM system had been established earlier during President Johnson's tenure in office. In 1967, President Johnson called together top government scientists to discuss the matter. The participants

included his Chief Scientific Advisor, Dr. Don Horning, the Joint Chiefs of Staff, three former Presidential Advisors, as well as other notables in the scientific field. When the President asked ..."Will it work (the ABM system) and should it be deployed?" Everyone present answered with a negative.[17] Any system would be fallible because the margin for error was so small. Even one missile would be sufficient to devastate Washington D.C. The Soviet Union could quite easily "saturate" the area with enough real and "dummy" missiles and increase the possibility of one or more missiles penetrating the system.[18]

Thus, it was only after discovering that a "fool proof" ABM system was not feasible, that an agreement was reached. The treaty allowed both sides to increase the number of anti-ballistic missiles. While the United States was first to successfully test an ABM system, the Soviets had already deployed roughly 64 interceptor missiles. Each side was allowed to deploy 100 launchers and 100 interceptors at two separate sites.[19] During a later meeting between Nixon and Brezhnev, it was agreed that each side would have only one site. The Soviet chose to protect Moscow, while the United States opted to place its ABM installation near a missile site.[20] In effect, the Soviet Union sought protection for its political leadership from a nuclear attack. The United States on the other hand chose to enhance its retaliatory capability by protecting a missile site from a low level

or accidental attack by China and the Soviet Union.

The Interim Agreement for the limitation of strategic weapons was signed on the same day as the ABM Treaty. It established ceilings on the number of ICBMs and SLBMs. The agreement bound the two countries to these levels for five years or until a more comprehensive agreement could be reached. Under the treaty provisions, the United States was allowed a maximum of 710 SLBMs and 44 modern ballistic missile submarines. The Soviets were allowed a maximum of 950 SLBMs and 62 modern ballistic missile submarines. ICBM levels for the United States and the Soviet Union were agreed to stand at 1054 and 1618 respectively.[21] By this time, the United States had begun to "MIRV" its missiles. It therefore had a commanding lead in terms of the number of warheads.

SALT I resembled greatly earlier agreements in that it fell far short of complete success. It disregarded almost entirely concepts such as reduction and elimination. "The quantitative ceilings were so high that there was no sacrifice of either operational or construction capabilities."[22] In addition, the "qualitative" improvements of missiles and warheads were left unrestricted. Each side was allowed to possess as many MIRVs on each missile as their technology would allow. This virtually nullified the limitation of the "rise" in the number of missiles. In addition, advances in replacements and improvements had also not

been halted.

Indeed, the shortcomings of SALT I ran high. In essence, the two superpowers united and provided further allowances under which the arms race could persist in an "institutionalized" format. This made the goal of disarmament more distant and therefore less likely. The superpowers became "even more shackled than before by domestic interests, military, industrial and political, which construe continued arms build-up to match the enemy as an assured right." [23]

The SALT II Treaty

Under Presidents Ford and Carter, SALT II negotiations were carried out. Its scope was to achieve broad based limits on strategic offensive weapons. Attention was also focused on the pursuit of symetry in numbers of delivery systems. There was also an attempt to achieve stability through the curtailment of qualitative advancements of both sides.

In November 1974, United States President Ford and Soviet Communist Party General Secretary Brezhnev agreed on a general framework for discussion at Vladivostok. Basically, the formula stated which weapon and delivery systems would be limited and included ICBMs, SLBMs, and bombers, as well as setting numerical limits on them. However, negotiations therafter reached an impasse over issues each side believed to be critical. It was not until

the election of President Carter that arms control was again emphasized in American foreign policy. [24]

While not very popular among "hard line" circles within the Carter Administration and the Pentagon, the dialogue over SALT II continued. In 1977, a protocol that would last three years, was negotiated which resolved the Soviet "Backfire" bomber and the American cruise missile issues. It was agreed that the "Backfire" bomber which is a medium-range bomber, would not be modified to provide the capabilities of a "heavy" bomber that would allow it to reach the United States. Likewise, the deployment of missiles with a range of over 600 kilometers was prohibited. Issues that had arisen over mobile ICBM units and further qualitative improvements were to be addressed and negotiated under SALT III. Still, further basic points remained unresolved. After several additional high level meetings, the final draft for the treaty was agreed upon. The SALT II Treaty, based largely on the Vladivostok accord, was signed by General Secretary Brezhnev and President Carter and would have been operational until 1985. Although, the United States Senate never ratified the treaty due to the Polish military crackdown, both the United States and Soviet leaderships have opted to adhere to its provisions. [25]

The SALT II agreement basically set an equal aggregate ceiling of 2400 on strategic nuclear vehicles (ICBMs, SLBMs, heavy bombers, and air-to-surface missiles (ASBM). From this equal aggregate figure a limitation of 1320 was placed on

MIRVed ballistic missile launchers and heavy bombers that were equipped to launch cruise missiles with a range not in excess of 600 kilometers. An equal aggregate limit of 820 was placed exclusively on MIRVed ICBMs. Finally, both sides could not deploy more than 10 RVs (re-entry vehicles) on each ICBM and not more than 14 on each SLBM.[26]

SALT II also placed certain marginal limitations on the qualitative aspects of the superpowers' competition for new and improved weapons. For example, a maximum launch-weight (the total amount of weight a missile can carry at launch time) and throw-weight (the amount of armaments after separation from the launcher) was established for ICBMs. The testing and deployment of any air-launched cruise missiles (ALCMs) with a range over 600 kilometers was prohibited. A ban was also placed on the deployment of certain offensive systems which both sides had yet to deploy. One example was an ICBM system with a range that exceeded 600 kilometers when fired from a surface ship.[27]

Similar to its predecessor, the SALT II Treaty secured the right to use national technical means (the use of satellites) by both parties to insure compliance to the treaty. A group of specialists from both sides were to participate in the Standing Consultative Commission (SCC). The SCC would serve to promote the terms of and objectives of the treaty. In addition, any problem or grievance was to be brought to the SCC's attention.

On paper, the agreement appeared to be a formidable attack on an otherwise uncontrolled arms race. Similar to

SALT I, it provided a forum in which the two superpowers could join forces against weapons more destructive than each could otherwise ever be to the other. It continued to "shed light" into the atmosphere of darkness which has charachterized relations between the superpowers since World War II. At the most fundemental level, the agreement symbolized the ability of the competitive superpowers to come together and unite against common dangers. The agreement also instilled a degree of mutual confidence by alleviating some of the fears based on "worst case" images each side had of the other.[28]

On the other hand, the treaty did little to reduce the already exorbitantly large numbers of weapons that have been accumulated. Actual reductions came in only two areas. The treaty provisions compelled the United States to scrap only 60 MIRVed Minuteman III ICBMs. It also required the retirement of 145 B-52 bombers which were already kept in storage.[29] On the other hand, both sides were permitted to add thousands of additional bombs and warheads to their arsenals. Each side was allowed to continue to conduct testing and development (qualitative improvement) in almost every area of nuclear armaments, including weapons in space. Each side was permitted to introduce one new ICBM system. (The length, diameter, throw weight, launch weight, and fuel type as specified in the treaty constituted a new missile system.) The 1986 scheduled deployment date of the United States' MX "Peacekeeper" missile

system conveniently fell outside the expiration date of the ban of such weapons. Likewise, according to reports issued by the United States Defense Intelligence Agency, the Soviets appear to be developing two new missile systems. Thus, at base, the treaty set generously high limits on the deployment of new and technologically more advanced weapons.[30]

Certain arms control experts such as 1982 Nobel Prize Laureate Alva Myrdal have referred to the culmination of the SALT initiatives as the "institutionalization" of the arms race in the sense that the two superpowers came together to legitimize and regulate their mutual accumulation of nuclear weapons.[31] In both the Soviet Union and the United States, the bureaucratic drive to acquire more weapons has allowed each to become better established. The "defense" institutions, vast armament industries, and the many employment opportunities they provide have in effect institutionalized the nuclear arms race.

Similar to its predecessor, the SALT II Treaty persuaded the superpowers to reach toward the marginal fringes of the agreement. Yet, as insignificant as they may be, when compared to the immense armament stockpiles, the SALT agreements as mentioned earlier served a definitive purpose. However, the Reagan Administration branded the SALT II Treaty as being "fatally flawed". In its place, President Reagan in May 1982, introduced START(Strategic Arms Reduction Talks). Thereafter, negotiations convened at Geneva. No

conclusive results had been achieved when the talks collapsed in December, 1983. Both sides have since accused the other of violating SALT II provisions.

The "Euromissiles"

The causes of the most recent escalation of nuclear missiles in Europe date back to the late 1970's. As part of the Soviet effort to modernize their outdated liquid fueled fleet of missiles in the European theater, in the late 1970's they began to replace their single warheaded SS-3s and SS-4s with their highly advanced SS-20s which were equipped with three warheads. As the NATO allies became wary of the new developments, a unanimous vote was taken by the alliance members in December 1979 to counter what appeared to be a new Soviet challenge. It was thus agreed that 572 new Pershing II and cruise missiles be deployed in Western Europe. If,however, an agreement could be forged with the Soviets which would substantially reduce the number of SS-20s, the new "Euromissiles" would not be deployed. Western strategy was entitled "double track": (making preparations for the "Euromissiles'" deployment while conducting negotiations to reduce the intermediate-ranged nuclear missiles in Europe).[32]

Critics of the "Euromissiles" have asserted that the new Soviet deployment was merely an excuse to deploy the new American missiles. Both the cruise missile and the Pershing II had already been procured prior to the Soviet modernization

of European theater nuclear weapons.

Nevertheless, INF (Intermediate Nuclear Forces) negotiations got underway on November 30, 1981. As both sides began with introductory offers, the chief United States negotiator, Paul Nitze, presented what became known as the "zero-option" plan. Under this proposal, the United States would not deploy the planned 572 cruise and Pershing II missiles provided the Soviet Union dismantled all of its SS-4, SS-5, and SS-20 missiles in Europe and Asia.[33] A counter proposal was made by the chief Soviet negotiator, Yuli Kvitsinsky, who stated that the Soviet Union's 600 European missiles would be reduced by some "hundreds" provided the West forgo all new American missiles destined for Europe.[34]

Negotiations took place for the next two years. As the designated time for the NATO missiles approached, concessions from both sides increased. By this time, the European peace movement had erupted and threatened to divide the Atlantic alliance. In early November 1983, with the arrival and deployment of the first "Euromissiles" scheduled for later in the month, negotiations took on a more urgent and compelling tone. Proposals to reduce the number of missiles in Europe increased in frequency. On November 15, 1983, Paul Nitze proposed the deployment of 420 American missiles (420 warheads) which excluded roughly 162 British and French missiles, while the Soviets reduced their intermediate missile count to 140 (420 warheads) in both Europe and Asia.[35] On

November 18, Kvitsinsky offered to reduce Soviet missiles to a sum of 120; while British and French missiles would be allowed to remain, no new American missiles were to be permitted.[36] With deployment of the American missiles only days away, there indeed remained a credible "missile gap" in the negotiations. The decision to deploy a portion of the "Euromissiles" was made by the German Bundestag just one day prior to the first shipment of missiles. As scheduled, the first shipment of Pershing II missiles arrived at Stuttgart, West Germany on November 23, 1983. The Soviet delegation walked away from the negotiations without a pledge to return. Arms control had suffered yet another defeat.

There emerged one overbearing certainty from the defunct INF talks. The negotiations currently being held in Geneva, will have to take into consideration a greater number of missiles than before the INF negotiations began. Moreover, there is no absolute guarantee that new negotiations will reduce the dangerously high levels of European nuclear armament. In all likelihood, as demonstrated in the past, ceilings will merely be placed on those missiles that already exist and those which are to be deployed. To assume the security interests of either side have been enhanced is a miscalculation. The latest failure or perhaps what Alva Myrdal terms "lost opportunity" to control intermediate range nuclear weapons epitomizes brilliantly not so much arms control, but rather a legitimation of the nuclear arms race. Neither side can escape blame or responsibility, as both superpowers have

blessed the newest round of escalation.

The Soviet Union and the United States resumed nuclear arms control negotiations in March 1985. The Geneva Talks have incorporated three different weapon systems: medium range nuclear weapons, strategic nuclear weapons, and space based ABM systems. While both the Soviet Union and the United States have enunciated their wishes to reduce the current levels of nuclear weapons, an inherent dilemma made such reductions perhaps too difficult to achieve.

Even though the ABM Treaty of 1972 prohibited the deployment of ABMs beyond a fundamental level, verification problems compelled each side to continue research and development for more feasible ABM systems. The superpowers are currently attempting to limit and reduce nuclear weapons while R and D continues on ABMs. Yet, in the event one side develops an effective ABM system, the logical alternative for the side which does not possess such capability would be to increase offensive weapons in the attempt to negate as much as possible the defensive capabilities of the other. In sum, preventive measures such as this may prove to be an impediment in reducing offensive nuclear weapons.

The Reagan Administration has committed 30 billion dollars over the next five years to the Strategic Defense Initiative (SDI, a.k.a. "star wars").[37] The project will involve research on the possible use of laser and particle beam technology for an ABM system based in space. While not as advanced, the Soviet Union has its own program underway for similar

defensive weapons. Under these circumstances and given that neither side is able to renounce its commitment to R and D of such technology, any reduction of offensive nuclear weapons resulting from the Geneva Talks will be exceedingly difficult.

The Failure of Arms Control

If one compares the number of bombs that existed at the end of World War II, (For a brief period after the two explosions over Japan, neither side had a single nuclear bomb. However, the United States possessed the technology to make more.) and those that currently exist, the destructive capabilities of then and now, and the instability caused by the progressive state of technology, then one may well argue that advancement of what was first disarmament then later arms control negotiation has gone little beyond nil. Instead of moving towards disarmament and a more secure world, the superpowers have spawned a quantitative and qualitative proliferation of nuclear weapons in both the vertical and horizontal sense. Indeed, "misarmament" and insecurity have become the order of the modern world.

The arms race as embodied in the behavior of the two superpowers through what may be labelled as a lack of constructive engagement, expresses certain themes which have served as important catalysts that drove and continue to drive the arms race forward. These themes were rooted

and derived from historical, international, and domestic sources. The themes of fear, deterrence, and technological advancement hold great importance as they are the dynamic causes of the nuclear arms race. Concentration will now be upon these themes in the proceeding chapters.

FEAR

Throughout history, fear of an adversarial power has caused nations to accumulate arms. While the primary objective of maintaining armaments has been to lessen fear and extend national security, the reciprocal quality of the effects of fear has served as an exacerbator of various arms races. That is, one side's need for "defensive" weapons was cause for alarm by the other who in response "necessarily" as well. The possession of nuclear weapons has not been an exception to this rule. Fear among individual nations remains a detrimental national emotion that has yet to subside. Modern day mutual fears between the competing superpowers have caused the nuclear arms race to flourish together with less destructive weapons (e.g. conventional, chemical, and bacteriological). Concomitantly, it has been a fear of a different sort which has prevented a nuclear exchange from occurring. The fear of MAD (mutual assured destruction) has been the cornerstone of this logic.

Political Solutions and Agreement First

Fear of the opposing superpower has been based on historical difficulties, hostilities, and conflicts of interest that have been capped with the assumption that the past circumstances will continue to prevail. Suspicions

together with a profound distrust of the other's intent have compounded to become the features which sustain the mutual fears of the superpowers. National security interests have thus dictated to each the necessity of relying on more weapons to deter any hostile behavior of the competitor.

Therefore, within the framework of the international system, the recurring line of political differences between sovereign states has produced fear of each other which has in turn caused each to arm. As Hans Morgenthau has stated, "the arms race is a mere particular manifestation of the political conflict".[1] Therefore, prior to disarmament, the reasons why nations fight with one another must first be removed. "Nations don't distrust one another because they are armed; they are armed because they distrust each other. And therefore to want disarmament before a minimum of common agreement on fundamentals is as absurd as to want people to go undressed in winter."[2]

Historically, few attempts at complete disarmament prior to the settling of political differrences have been successful. A successful example of disarmament was provided by the United States and Britain when the two converged on the idea of military disarmament of the Canadian and American border as well as a naval disarmament of the Great Lakes well over a century ago. After the War of 1812, the United States gave up altogether the idea of extending its border into Canada. As a result,armaments in the area became unnecessary since there was no longer any conflict. Thus, the political purpose

of an arms race resulting from the fear between Canada and the United States was laid to rest. In this rare example of successful disarmament, political understanding and an ending of the political conflict preceded disarmament.[3]

Since the birth of the nuclear age up to the present, the political differences of the superpowers have served as the critical basis of fear. The East-West struggle in all corners of the globe has dictated to each that it be prepared for the worst. As a result, the superpowers have extended their mutual military strength, particularly in the nuclear realm. Throughout, however, a far lesser degree of effort was made in the area of reconciling their political differences.

Distrust

The relationship between the Soviet Union and the United States which has been characterized by fear, has inevitably led to distrust. Distrust has divided, alienated, and at times isolated each superpower. As a result, accurate perceptions have in many instances been replaced by miscalculations and misperceptions. Such was the case after World War II when the Soviets perceived an imminent Western threat, at a time when the Soviet Union was economically and militarily inferior. Thus, Stalin sought to keep the West ambivalent with respect to Soviet intentions in Western Europe. An ostensibly strong Red Army proved a viable deterrent

against any hostile western initiatives including a nuclear attack. Likewise, the West led by the United States, maintained the nuclear bomb and sought to keep the Soviet Union's activity at bay. Both sides miscalculated the other's intent. While the "inevitable" clash between Capitalist and Communist forces has yet to occur, the basic pattern of the arms race had long since been established. Historically, statesmen have invariably opted to be cautious and suspect the worst of all intentions of the other side, rather than take a chance in the name of peace. The example of appeasing Hitler provided too dangerous an example to follow. However, the superpowers chose to be too careful and as a result have developed the capacity to obliterate one another.

During the period immediately following the Second World War, each side's fear of the other prevented any meaningful or conclusive disarmament negotiations. Since the Soviets were relatively strong in the area of conventional forces and lacked nuclear capability, they pushed the popular slogan "ban the bomb" and nuclear disarmament. Contrarily, the West had the nuclear edge and therefore was in favor of reductions in the area of conventional forces. There was also debate over whether security or disarmament should come first. The West's objective of first securing controls over weapons was viewed by the Soviets as a Western goal of gaining intelligence over Soviet forces. Thus, while the West sought controls and inspection, the East favored reductions

first.[4] In each instance, the fear and severe distrust of both sides prohibited the establishment of a common vantage point to allow further understanding to occur. As the doctrine of deterrence became firmly emplanted, mutual adversarial fear became the catalyst which stimulated the arms race and caused it to escalate. Fear that the other side had superiority or first strike capability compelled each superpower to improve its military capabilities. However, nuclear escalation has reached a stage where there could probably never be a nuclear war without first sacrificing humanity.

Mutual fear has served to taint each side's perceptions of the other. Each side often exaggerates the level of organization, discipline, and coordination of the other. Coupled with this principle is the difficulty a decision-maker has in viewing himself as a menace which is how he is regarded by his competitor. Still more difficult is to understand that an issue important to him is considered unimportant to the other. Misperceptions ultimately result in the historical irony that the end results of particular policies do not always fully reflect the original intention.[5]

The statements and policies of each side have abounded in self-righteousness; the Soviet Union views itself as the champion of the proletariat and the United States as the bastion of freedom and democratic principles. As each has chosen alternative political means to achieve their ends, they

remain forever unempathetic to the other's problems, grievances, and limitations. Each side has given itself a virtual cart blanche with respect to its international behavior. Each side has self-justified its behavior by citing its benevolence and integrity. At various times, actions and measures of each superpower have been directed by the one dimensional notion that policies which extend its national security are also beneficial to its allies and other nations alike. During this process, each side's behavior is often perceived as a subversive plot by the other. History since the last great war has recorded a myriad of East-West confrontations. Each side, frequently through the use of proxies, has sought to extend its influence and national interest throughout the world. While the perceptions of this example have been largely correct, it has been the fear of the ascendence of the other which has compelled each to follow such a course. The result of fears and misperceptions has clearly had a negative impact on disarmament and arms control efforts. Even when proposals were put forward in earnest, the lack of faith and trust regarding the other's intent, has prevented the proposals from being received in a positive fashion.

American Fears

American fears of the Soviet Union stem from the Soviet Union's expansionist history, political ideology, and its use

of oppression. It remains the estimate of both the Pentagon and the Department of State that a complete Soviet conquest of the Eurasian landmass is clearly possible should that move be perceived to serve the best national interests of the Soviet Union. This has been the point of view of many influential persons in Congress as well as those presenting cases before it. Churchill believed that the American bomb rescued a beleagured Europe from the clutches of Stalin. Every increase in Soviet power (even during a period when the West enjoyed a monopoly on the bomb, then for many years an overwhelming superiority), has been interpreted as a challenge. The American ability to retaliate has presumably remained the only check on Soviet behavior. Both implicit Soviet ideology and its behavior in the international arena cannot be given the benefit of doubt since leading communist ideologues, including Lenin, have had difficulty with the topic of disarmament.

Initially, Marxist-Leninist ideology regarded disarmament with distinct contempt, then later with ambivalence. This approach to disarmament has served as a partial source of Western fears. Lenin espoused two policies regarding arms control with the West. These two policies which came in stages ultimately were transcended by a third stage which the modern Soviet leadership of today adheres to. The first stage of policy regarding disarmament was conducted between 1905 and 1917.[6] That was a period during which disarmament was looked upon with great disdain; when pacifism was

considered harmful to a revolutionary ideology. Prior to disarmament, the proletarian class would first have to disarm the bourgeoise. Under no circumstances could disarmament take place prior to this prerequisite. For disarmament to succeed, the communist revolution would first have to be complete. Armaments would then become obsolete in a world that had undergone a revolution.[7]

Lenin felt that the capitalist powers were the key stumbling blocks of disarmament. He also believed that the competitive nature of the capitalist system was the primary cause of war. As unilateral or even multilateral disarmament would have made communism vulnerable to capitalist forces, disarmament during this period was not sought but rather attacked. To Lenin, all wars were not deplorable. Wars in the name of the revolution were particularly good. As violence has consistently served as a catalyst for change, the degree of change which was achieved became the "barometer" of whether a war was "just" or "unjust". A "just" war enhanced the cause of communism while an "unjust" war hindered it.[8]

Conciliation and less revolutionary fervor was displayed by the Soviet leadership with regard to disarmament during the early 1920's. It became increasingly felt that arms control would serve a particular purpose. Lenin was moved to consider the usefulness of disarmament as a ploy to weaken the enemy. In this manner, future Soviet objectives might be realized. Thus, by 1922, Lenin to tacitly support arms

control. At the Geneva talks, the Soviet Regime offered the first of a series of across-the-board proposals of arms limitations. This attitude bore little resemblance to the communist/Bolshevik declarations regarding a "just" war a few short years ealier.[9]

More modern Soviet leadership continued to shift toward the support of arms control measures. Likewise, Soviet rhetoric has considerably lessened in regard to the capitalist system as the primary cause of war. The prophecy of Armageddon had been revised to take into consideration the ability of capitalism to stablize and the emergence of one capitalist superpower to a role of leadership.[10] Additionally, the radical change in the conduct of modern warfare as an all encompassing national effort coupled with the added detrimental threat posed by nuclear weapons caused the shift to occur. To be sure, even the most fervent communist came to realize that capitalist nations would refrain from allowing economic circumstances to drive them to national suicide. The maintenance of tremendous nuclear arsenals has nullified the ultimate imperial duel. During Khrushchev's reign in power, when criticized by other party members for being too lenient with the West in pursuit of detente, he replied that the "atomic bomb does not adhere to the class principle."[11]

Indeed, it has been largely due to the advent of nuclear weapons that the revolutionary Soviet ideology has realized the mutually beneficial aspects of arms control. Nevertheless, it has been difficult for the West to disregard altogether the

skepticism that had been established earlier by their chief ideologue. It has been precisely the contradiction between the expansionary tendency of the Soviet Union, ("to extend the revolution or be conquered" perspective), and its propaganda regarding disarmament and arms control that has served to accentuate Western fears. Ultimately, this conflicting posture has plagued Soviet-American relations and prevented fruitful disarmament and arms control negotiations.

Also contributing to Western fears has been the role of violence, force, and terror in both domestic and international usages by the Soviet Union. Lenin was firmly committed to the use of force and violence as a necessary ingredient that would bring the Communist Regime to power and maintain it within the Soviet Union. Thus, force and violence have become a way of life and have been embodied in the military forces of the Soviet Union. Lenin believed the army was essential in fighting internal as well as external enemies of the state. While Lenin devised the use of force and violence, Stalin epitomized the notion of ruling by terror. The overwhelming physical force of the Soviet army aided him in the consolidation of his power.[12]

Soviet Militarism

The characteristics of Soviet society have indeed provided unique conditions for the establishment and continuation

of a nation with far fewer civil liberties and rights afforded to its people than are in the West. The Soviet use of force and terror has led the West to perceive and interpret the Soviet Union as a nation which has subjugated its people to promote the needs of its military. David Holloway has stated "that the Soviet society is, for various reasons, peculiarly suited to building up military power; among the reasons given are the disciplined, hierarchial, military-like organizations of the Party to mobilize resourses for military purposes."[13] The defense sector of Soviet industry is given the highest priority and prestige. Likewise, the best available resourses as well as personnel are drafted into the defense sector of the economy.[14] The Soviet military has perpetuated an ever increasing representation within the Party's Central Committee. Between 1956 and 1971, representation rose from 4.5% to 8.3%.[15] The pattern has continued, although not as rapidly, and has served to aid the development of a military-industrial scientific complex similar to that of the United States. Yet, it also has to be recognized that while the military has strong representation in government, they are clearly not its dominant force.[15@] In short, however, the structure of Soviet society has become geared in accordance to the needs of the military. Communism's enduring goal to spread has been embodied in a military state which has maintained its commitment to revolutionary war. Both communism and the military state, as established and institutionalized by the

Soviet Union, have demanded personal sacrifices by many individuals in order to achieve political objectives for the greater "good". Political objectives, i.e., the spread of communism and the prevention of any action by the West against the Soviet Union and their East European allies, have endured as the key reason for Soviet military strength.

The leadership of the Soviet Union has softened over the years. Indeed, police-state tactics have diminished considerably since the death of Stalin. The modus operandi of control has become more subtle and sophisticated. While the basic pattern has yet to follow a more liberal and different route, improvements have nevertheless been achieved. In the final analysis, however, the Western fears of a superpower which has opted to use force, violence, and terror in its domestic and international politics have been given reason to persist.

Soviet Fears

Similar to the United States and other Western nations, the Soviet Union has its own fears. The roots of Soviet fears can be traced to its history and geography. Within the last century and a half, Soviet territorial integrity was violated several times. It was the unforgiving Russian winter which rescued her from the Napoleonic conquests. A century later, Germany made an attempt to seize Russia.

While the Treaty of Brest-Litovsk concluded the war with Germany, after the Bolshevik Revolution, the allies (Britain, France, Japan, and the United States), conducted an unsuccessful attack in an effort to subvert the revolution. Scarcely a generation later, a belligerent Germany once again penetrated Soviet territory, only to be routed later. During World War II, one out of ten Soviet people was killed totalling 20 million deaths. It has remained a widely held Soviet conviction that the sizeable Red Army was all that stood in the way of a Western allied attack. Western encirclement is an uninterrupted Soviet fear and has been for a great many years. The Soviet Union's insecurities have have compelled it to view itself as a nation under constant siege. The defense effort, as a national phenomenon, has been the natural result. Hence, strong military forces have become essential to the Soviet sense of well-being and security.

To the southeast of the Soviet Union lies another adversarial power of a different variety. A substantial portion of the Soviet military is tied down on the extensive Chinese border. Approximately 25% of its army and roughly one-third of the air force is poised against China.[16] Border incidents between the two nations resulted in actual armed conflict in 1969. Thus, historical experiences and geo-strategic juxtapositioning has allowed the Soviet Union to draw its fears from a broad range of criteria. The end result has been an over zealous pursuit to defend its far and wide borders.

More recent Soviet fears have included wariness over the loyalty of the satellite East European nations. Discontent expressed by Hungary, Czechoslovakia, and Poland has been representative of other nations under Soviet domination. In the event of war with the West, blind East European obedience of the Soviet will, remains a perplexing question. Large scale defection cannot be ruled out.

The inefficient agricultural sector of the Soviet Union's economy has proven its inability to feed the population. As the Soviet "breadbasket", the Ukraine has been overwhelmed by demand which has made necessary the importation of various grains and other essentials from the West. While a victory for the cause of interdependence, reliance on the West for such basic human needs could hardly have been a goal of the Soviet leadership past and present.[17]

In addition to these factors, there is no doubt fear and concern of a rapidly growing non-Russian population. Most particularly, the alarming rate of growth of the Moslem population within the Azerbaijan and Turkistan Republics and other non-Russian Republics.

Finally, there is a general fear, generated through propaganda, within the Soviet populace of the United States. While the Soviet people do not fear a direct confrontation or attack, there is great anxiety that the United States will bury the Soviet Union with superior and technologically advanced military forces. They greatly fear an imminent

revolutionary discovery which will leave the Soviets defenseless and incapacitated to act.[18] The potential American deployment of a proven and highly effective ABM system may serve as a possible example. In short, the many concerns and fears of the Soviet Union have allowed a fearful and cautious leadership to persist and covet what it believes to be military supremacy as a natural right.

Russia's and the Soviet Union's relationship with the West which acted as a partial basis of Western fears has simultaneously created and added to its own fears. An expansionist imperial Soviet history has had to grapple with many encroachments made upon its own territory. The contradictory Soviet circumstance imposed on Soviet policy characteristics which at the fundamental level have been difficult to reconcile. The deeply engrained insecurities, fears and its expansive ideology have compelled the Soviet Union to be highly defense conscious. As the durable forces of fear and distrust between the East and West have persevered, the causal result has dictated to each to rely on potent and viable military forces, most particularly nuclear weapons.

Nuclear Weapons and the Soviet Union

Similar to the West, nuclear weapons have afforded the Soviet Union an opportunity to realize and maintain certain goals and objectives. Nuclear weapons have held a prominent

position in Soviet foreign policy. The Soviet nuclear force has reached the achievement of parity vis-a-vis the military capability of the West which was an end in itself. The developments of the late 1960's marked a substantial first in Soviet history. Much political significance has been attached to the achievement of rough nuclear parity. "It indicated a military balance in real terms and it was a symbol of Soviet prestige and of the advance of Socialism in the world."[19] It also allowed the Soviets to stabilize somewhat the generations of accumulated fears of the West.

A priori, Soviet nuclear weapons serve to deter a Western attack on the Soviet Union and the other members of the communist commonwealth. Nuclear weapons have allowed the Soviet leadership to maintain and strengthen its influence on the international communist movement around the world, particularly in less developed countries. Thus, through the possession of nuclear weapons, the Soviets seek to deter any move on the part of the West to hinder any Soviet advance made in what it considers its national interests.[20] In this realm, dangers of confrontation have been consistently high because in most cases the national interests of both superpowers have been at stake. The degree of interest has become merely a matter of interpretation.

Over the years, the fears and dangers of potential armed conflict between the superpowers have served as a divisive force between defense policy and arms control. The same re-

lationship has also served as a wedge to further divide the superpowers and thwart arms control efforts. Given the competitive history of relations between the superpowers, the negative forces overwhelmed arms control with relative ease. In the process, political elites became more receptive to overtures made by the "hawks" than those of the "doves". Individuals on both sides who pursued personal gain through an arms race along with zealous patriots have demonstrated more prowess than advocates of arms control, brotherhood, and those who value human life.[21] Regrettably, the effects of individuals' folly has left the responsibility to be shared by mankind in general.

Political Realism

The inability of the superpowers to limit or effectively reduce weapons has clearly buttressed the argument of the disciples of political realism. Since the school has maintained that all nations "lust" for power as its principle maxim, concepts such as disarmament and arms control were virtually inconceivable. Nuclear weapons have become the ultimate means of power and control over thers. They have the power to "move the immovable", a "glitter" all their own.[22] Such qualities have proved too seductive to be abandoned and sacrificed by the nuclear club, particularly the superpowers. Had nuclear disarmament occurred after World War II, neither side would

have had any control over nuclear weapons. Both superpowers would have been denied the power to influence and guide the course of the nuclear phenomenon. They stood to have less clout in a disarmed world. Each would have lessened its respective ability to intervene in revolutionary and counter-revolutionary movements around the globe. They would have become less influential and would have had less authority to influence the direction of world events on terms favorable to each. Instead, "power politics" and nationalism, which have traditionally been detrimental to peace, prevailed. The nuclear club opted to maximize its prestige and national greatness by developing and extending its nuclear arsenals.

Currently, 95% of all nuclear weapons are under the superpowers' control.[23] Henry Kissinger has held that a significant descent from this level would allow other lesser powers to rise to superpower status. Thus, the superpowers have committed themselves to maximize political power and prestige derived from nuclear weapons.

Economic power centers have mushroomed since World War II which led the world to become a loose bi-polar system. However, if one were to take only nuclear weapons as the criterion for international political power analysis, the conclusion would indicate that there exists a rigidly bi-polar nuclear world. While some maintain that bi-polarity is even more stable than multi-polarity, the rise of perhaps China to equal nuclear superpower status, which at the same

time preserved its non-aligned stature, may serve as a "balancer" and promote stability. For the immediate future, however, neither China's currently antiquated generation of nuclear missiles nor the combined British-French force, will pose any serious threat to the existing nuclear power structure in the world.

DETERRENCE

Ever since the revolutionary discovery of nuclear power as a military weapon, it has had and continues to have a profound impact on international relations and the nature of war. Thus far,nuclear weapons have adopted the role and function of deterrence. However, deterrence has actually buttressed and moved the arms race forward. Its fundamental element has been competition. The result of the utility of deterrence was an intense competition between the two superpowers which caused asymetries to occur within the respective nuclear forces. In sum, the highly volatile and extremely unstable aspects of deterrence were allowed to exacerbate and flourish while minimal advances were made to lessen the pace of competition.

Deterrence as defined by Joseph Kashi is "the dissuasion by terror of an unwanted action or attack by a foreign nation through severe explicit or perceived threats of massive retaliation by the aggrieved nation's second strike force." [24] Indeed, deterrence is a form of "posturing". It is the avoidance of combat by showing each side's capabilities. It is a competitive but non-combative test of the other. In the nuclear realm, it is a test of the economic and political capabilities of each superpower.[25]

The initial nuclear monopoly of the United States kept

what was perceived to be the potential expansion by the Red Army in check. Soviet needs for its own nuclear deterrent which derived from the fear of Western encirclement motivated the Soviet Union to develop its own nuclear weapons. Since the world failed to disarm the world at the completion of World War II, except for the defeated forces, unilateral nuclear deterrence was conducted by the United States until 1949. When the Soviet Union procured nuclear weaponry, deterrence became the doctrine of each superpower. There were indeed contradictory forces at play which vitiated successful negotiations. The basic problem of how to disarm while maintaining national security and negotiating with an adversarial power that one may ultimately face in a bitter conflict or "hot war" situation could never be reconciled. It was extremely difficult for an expansionist dynamic state with a revolutionary ideology to have complimentary relations with another power that was viewed in a similar fashion. While "protracted war" was advocated by Mao Tse-tung, which described the arduous battle with the capitalist West, the circumstances for the settlement of controversies never appeared and the path towards disarmament and arms control went unpaved.

The superpowers have demonstrated that tasks such as mutual reconciliation and compromise over the highly lethal subject of nuclear arms were too great to be expected of them. Instead, both sides reluctantly plunged headlong into deterrence

as a haven from their insecurities, possibly because the leadership of each superpower perhaps had a feeling that nuclear disarmament and international control of the nuclear phenonmenon should have been the sensible and proper course of action, but were unable fully to avoid the complications their policies would produce a generation and a half later.

Superiority

A stable system of deterrence required parity to be maintained at all times. However, during the attempt to capture first-strike capability, superiority of forces became the implicit goal. If a power possessed first-strike capability, that meant that it would be able to absorb an "acceptable" level of destruction from the opposition's retaliatory second-strike force after having launched a first-strike. Superiority implied that in the event a nuclear volley got under way, the weaker side with less weapons would ultimately succumb to the superior power's demands. Theoretically, the more nuclear weapons that nation had, the safer that that nation was. As such, the pressures mounted on both sides to expand their nuclear forces for fear the other side would gain superiority through first-strike capability. Virtually no limits were placed on the number of weapons that would be required to devastate the other's retaliatory forces and population.

Superiority, or the desire to possess it , has survived as a constant source of danger to both the strong and weaker power. If ever the superior side presses the opposition to a point where the weaker side fears an imminent attack, the weaker side in an effort to protect itself, may perceive no alternative but to resort to a pre-emptive first strike.("A use them or lose them" framework of thought.) Likewise, the temptation for a pre-emptive strike increases when one power the capability of launching a successful one. During an imbalance of forces which favors almost exclusively one side, the temptation for a pre-emptive first strike also rests with that side. In either case, there has historically been a compelling tendency to "catch-up" and re-establish parity by the side that has fallen behind. At various times the weaker side often overachieved its goals, only to give itself temporary superiority. Each superpowers' approach to defense has led it to pursue a certain pattern or escalating cycle. When superpower "A" is challenged by superpower "B", (in the form of a new or more strategic weapons), "A" invariably moves to neutralize the new force or "gap" with an over-exaggeration of "B's" threat and extends its strategic forces accordingly. "B" then responds in a similar fashion and perpetuates what appears to be a cycle with no end. [26]

All forms of disarmament and arms control were doomed to fail to achieve success. Each side sought to retain a

certain amount of weapons, invariably in areas over which it had the edge, "just in case". The positions of the aggressor and defender became increasingly unstable as their roles can be readily manipulated and reversed. "To a political victim, a power armed for defense and a power armed for attack appear identical. The difference between the two is purely a matter of national intention."[27] The secrecy between pluralistic and totalitarian states vary. Motives for nuclear strike capability may in both cases be strictly defense purposes. Regardless of intentions, both sides have guarded against the other's treachery by fortifying themselves with an abundance of nuclear armaments. The result has been a never ending and spiralling escalation of these weapons. In order to feel secure, neither side will rest until it has what it assumes to be a formidable deterrent with a minimum of vulnerabilities against a first-strike.

The fact that neither side has ever captured the capability of a fully successful first-strike prevented each side to resorting to one. The United States maintained a monopoly on nuclear weapons from 1945 to 1949. However, this position could not be converted into a successful first-strike capability. First, a successful American first-strike required an adequate penetration of Soviet air space to ensure a sufficient level of destruction of strategic Soviet targets. (e.g., armament production facilities and military installations) However, the utility of

American bombers was reduced by the effective Soviet air-defense network. Second, a successful first strike also required an ability to follow through after a nuclear attack and mount a conventional assault culminating into a sustained military occupation of the Soviet Union. Since the Red Army was the largest in Europe, an American or even an allied Western effort would have faced great, perhaps insurmountable difficulty.[28]

Since the inception of deterrence, the "nuclear ante" has been continuously raised which in turn has made the potential use of such weapons increasingly suicidal. The scenario was eloquently painted by Winston Churchill. During an address to a session of the House of Commons he said: "We may now have reached a stage in this story where safety will be the sturdy child of terror and survival the twin brother of annihilation."[29] By the mid 1960's, strategic nuclear deterrence was fully entrenched. There was to be no turning back of the clock. Since that time, deterrence encouraged both sides to deploy a greater number of more efficient nuclear weapons. Deterrence as a solution to the nuclear dilemma as envisaged by Bernard Brodie and others at the end of World War II became a permanantly solidified feature in international politics.

Since its origin, nuclear deterrence has resided on an island of contradiction. In essence, deterrence has acted as both an offensive and defensive strategy. Each superpower

was compelled to maintain enough weapons to launch a potential first-strike on the other; while at the same time, maintain a vast nuclear arsenal so that enough would survive a possible first-strike of the opposition which would then allow it to inflict an unacceptable level of damage in return. Thus, while disarmament and arms control sought quantitative reductions of nuclear weapons, the dynamics of deterrence pushed each to expand their arsenal. Forces guiding notions of being best prepared to wage nuclear war as well as having enough weapons to survive a first-strike not only overwhelmed disarmament but also spurred on and made the nuclear arms race necessary.

Fierce Competition

Parity remains the key for a stable deterrence. However, no controls or true limits have ever been placed on technological development and innovation which have acted as a perennial threat to each side's national security. The imperatives of the nuclear age encouraged development of greater weapons to enhance deterrence and prevented the concerned parties from objectively comparing each respective nuclear arsenal to the other. The period of the Washington Naval Conference had become a by-gone era. Asymmetries and ambiguities perpetuated by deterrence, have all but made nuclear disarmament an impossible ideal.

Nuclear weapons as well as their delivery systems never been tested under actual battle conditions. It has been extremely difficult to accurately assess and compare the defense and assault capabilities of each superpower's nuclear arsenal. Chances of comparison were reduced as newer, more creative, and more effective weapons of destruction were introduced. Deterrence indeed pursued a dangerous trail. Competition lessened the incentive to control the race in areas where it would have bolstered stability. Arms control has been achieved in mainly superfluous areas; often in the form of an inefficient system taken out altogether and replaced by more modern weapons and delivery systems. Additionally, it has been conducted unilaterally by both the United States and the Soviet Union. The primary objective of both has remained the maintenance of the largest of all possible leads in as many areas of defense as possible.

The nuclear defense policy of the Reagan Administration came under strong criticism which reached a peak during the Presidential election process of 1984. Candidates of the Democratic Party, particularly Senator Gary Hart, politicized the issue and argued that the administration had not viewed nuclear parity as the keystone to stability in Soviet-American relations. According to Hart, the administration had sought superiority with ultimate goal being the establishment of undisputed American military supremacy. The Reagan Administration had in fact raised defense expenditures during its first four years in office, a trend which was initiated during the

final year of the Carter Administration. President Reagan contended that the United States had fallen behind the Soviet Union in military preparedness which in turn had undermined United States credibility. Greater military expenditures were viewed by the administration as means of strengthening deterrence forces. Secretary of Defense Caspar Weinberger stated that the United States was preparing itself for a "limited" or "extended" nuclear war with the capability to "prevail".[30]

However, this particular style of reasoning cannot be exclusively ascribed to the Reagan Administration. Military strategists have had to deal with fighting and winning a potential nuclear war since the very origin of the bomb. The awakening of the general public with regard to the nuclear dilemma has merely allowed such information to reach a greater number of people. Nor is the notion of "prevailing" in nuclear war or "counterforce" strategy exclusive only to the United States. The Soviet Union is committed to the same "gaming" strategies, images, and models which are absolute requirements of deterrence. The result, however, has continuously allowed the nuclear stockpiles of each superpower to grow. After having accumulated such overwhelming forces of destruction, the superpowers have, by default, adopted "nuclear realism". That is, what is to done if ever a nuclear war occurs. In so doing, however, "doctrine" has been erroneously attached to "military science" which in turn has caused confusion and extended mutual

fears, depending on who says what.[31]

Dimitri Simes of the Carnegie Endowment for International Peace has clearly spelled out the distinction between the two. He maintains that "Soviet 'doctrine', which is deterrent in principle, is formulated jointly by political and military leaders. It defines basic strategic goals, suggests ways and means to achieve them through the force of arms, and it distinguishes between acceptable and prohibitive costs and risks. It unambiguously states that nuclear war is unwinnable and should be avoided."[32] However, the same "nuclear realism" is practiced by the Soviet Union which dictates "military science" to address "the best way to organize forces and to enhance deterrence and to fight a war should deterrence fail. This science is developed exclusively by the unifomed military; it deals with the practical problems of waging war - not with the question of whether to initiate a nuclear exchange."[33]

Neither side is unique in its approach to "what to do" with their overabundant nuclear weapons. What is certain, however, is that statesmen and military strategists of both superpowers have never given up the quest for superiority. Perhaps the most alluring quality of superiority, or a disarming first strike capability, is that it affords the side that has it the ability to extract concessions, make demands on the weaker side, or leave it incapacitated to to act. Thus, there remains an instilled fear in each super-

power of being left inferior which, in turn, has apparently made the desire for superiority altogether reasonable. Current Soviet-American relations are highly representative of the very same pattern or perhaps cycle of escalation described earlier.

Superiority or "gaps" at the current armament levels can almost never be measured accurately. The level of defense spending has offered only a partial assessment of the prevailing situation; while features such as quality and utility of weapons systems as well as the will of the personnel have in most instances been overlooked.[34] One can never be certain of where or with which side superiority rests. Incontestably, whichever side has it, the other side maintains enough of a credible second strike force to prevent a pre-emptive strike. Never has any "war game" or computer analyzed first-strike left the attacked power so devastated that it could not obliterate the other's population.[34@] Indeed, American "vulnerability" holds little merit as an issue. An American submarine fleet, which is invulnerable to attack, constantly roams the seas and is equipped with approximately 3,000 warheads, which have the capability of "knocking out" every Soviet city whose population is over 100,000.[35] In addition, they have the ability to strike military centers, although they are not accurate enough to destroy land based missile sites. However, former Central Intelligence Agency Director, Stansfield Turner, has stated that SLBM accuracy will be comparable

to that of an ICBM by 1990.[36]

"Finality"

Through the years, massive nuclear arsenals have been accumulated by the two opposing sides, for no other reason than to deter and prevent their use. Nuclear weapons have become a potentially destructive force unparalleled by any armaments previous to their existence. A force so devastating, so utterly perverse that a potential nuclear exchange has raised the question of the future existence of mankind on the face of the earth. The "unthinkable" has by this time become thought. Possession of nuclear weapons at such alarming levels has ushered in with it the possibility of what Barbara Tuchman refers to as "finality". It has been reported by Carl Sagan and other notable scientists that even a "medium level exchange" (5,000 megatons) of nuclear weapons would be enough to cause what has been described as a "nuclear winter". There would be enough damage done to the ozonosphere that it would allow harmful ultra-violet rays to cause immediate and prolonged damage to human beings and promote various diseases. A thick cloud of radiation would engulf a wide area and and a severe drop in the earth's temperature would follow. Crop failures and starvation would result in the grandest scale of death imaginable.[37] The area struck by nuclear weapons would retain virtually none of today's living standards and style of life. Havoc

and devastation would be omnipresent. It was fear of just such a calamity which promted John F. Kennedy to say, "the living would envy the dead," should nuclear war ever take place.

The scenario is hardly a pleasant one. Yet while nuclear deterrence has delivered mankind to such a perilous circumstance, no new safe and viable alternative is ready in the wings to provide an effective substitute. Nor is there any indication that the race will be slowed in the near future. The potentially ruinous flaw of actually "thinking" the "unthinkable", which was allowed to develop under nuclear deterrence, has based itself on the underlying premise that the threat of complete annihilation must be used in order to prevent it. The notion of defending one's nation even if one has to cause its destruction makes little sense.[38] A stable deterrence was constantly undermined by the irregularities and idiosyncracies of international relations. The inability of the superpowers to converge on effective agreements which would have curtailed the qualitative and quantitative advancements in nuclear weapons has consistently placed deterrence in jeopardy. The prevailing situation of today has never been more critical. Enough political and technological safeguards have not been constructed to allow deterrence to thrive and preserve world security. Instead, the inherent quality of nuclear deterrence sought security through superiority in both a greater number

and more advanced weapons.

Deterrence has failed to control the potentially suicidal numbers of nuclear weapons that have come into existence. Fortunately enough, it has yet to fail in preventing a nuclear war from taking place. While the momentum of deterrence and arms control moved in opposing directions, the record has shown that deterrence outdistanced and overpowered arms control and ultimately furnished the arms race with the logic to continue. Deterrence established a dependency on an ever increasing number of nuclear weapons in the early years. International control of nuclear weapons stands even less of a chance today than when it was first introduced. In the meantime, the great irony is allowed to persist. Never has there been a more urgent need of a mutually beneficial and verifiable arms control treaty that would establish stability than at the present time; yet never has the potential for such a diplomatic success seemed more remote.

TECHNOLOGY

Momentum

Intimately linked to fear and deterrence is the theme of technology which too has contributed to the arms race. Innovations and refinements in nuclear weaponry and their means of delivery has made the superpower relationship even more precarious. New frontiers in nuclear related military technology have been systematically and at times haphazardly crossed for the enhancement of deterrence. At the same time, the "other side" of technological advancement brought the United States and the Soviet Union closer to capturing the ability to conduct a disarming first-strike.

In essence, the purpose behind the research into nuclear related areas has been to increase the efficiency of nuclear weapons f political ends. Both the United States and the Soviet Union have been in the vanguard of research and development in their attempt to upgrade their armaments and keep abreast of developments. Solly Zuckerman has written: "From the mid-thirties onwards, there has been an unceasing technological race between the great powers in every field of armaments, in the effort to increase the range, speed, accuracy and payload of aircraft; in developing a varied

family of missiles; in improving the firepower, armour, speed and maneuverability of tanks; in improving arms; in developing night sight techniques; and in exploiting radar and laser technology."[1] This tradition was faithfully carried on by the superpowers in the nuclear realm as well. Otherwise, one side would have had to face the consequences of falling behind or be caught on the "short end" of an imbalance. Unrestrictive qualitative improvement has endured as one of the greatest sources of insecurity and instability. To discontinue research and development unilaterally would be laden with even more danger. What has desperately been needed is an agreement which would limit the technological advances for destructive ends of both superpowers. Most agreements in the past have been only partial ones which have not bound the parties from making major breakthroughs. Instead, they have allowed the participants to take advantage of loopholes to further advance their myopic interests.

While nations that held a lead in certain weapons technologies should have been the ones to exercise restraint in their development and deployment, the opposite has been the rule. The Soviet Union exploded its first nuclear bomb in 1949. That development led the United States to pursue research in fusion (hydrogen) bombs even more vigorously. The American hydrogen bomb was exploded in 1952, and surpassed the destruction level of the bombs delivered to Hiroshima and Nagasaki a thousandfold. Success was

paralleled by the Soviet Union only several months later. Thus, ordinary fission bombs were considered not destructive enough; both superpowers moved to escalate the race and placed their respective population in a sphere of greater danger.

During the late 1950's, the Soviet Union lacked the forward based missiles the United States had. In 1957, after the successful launching of Sputnik, the Soviets successfully tested ICBMs. Rockets armed with conventional warheads had already been used by Germany during World War II. However, the heavy cost of the rockets when weighed against the yield, proved to be too inefficient. The exceedingly high destruction levels of nuclear weapons changed all of this. Possession of ICBMs offered a nation an opportunity to rely less on its jet bomber force which required trained pilots and crew. More importantly, ICBM technology greatly enhanced the means of delivering nuclear weapons. Finally, ICBMs traveled at great speeds which diminished their vulnerabilities to anti-aircraft defense systems. Thus, the venture into ICBMs was a natural step for both superpowers, particularly for the Soviet Union.[2] During this period, it was precisely their lead in this area of weaponry which prompted the United States to call for a ban on these lethal weapons that could fly beyond the earth's atmosphere. The Soviets agreed provided the United States dismantled all its foreign bases. In this

manner, the idea to ban ICBMs was stillborn.

The momentum to acquire more efficient and potent nuclear weapons and their delivery systems continued to accelerate. The demand began to exceed what could be produced, as was dictated by the inconsistent reasoning of deterrence. Each technological advancement gave one side a shortlived superiority. Recent history suggests that the adversary was not too far away from eventual deployment of the same or similar strategic weapon system. Once the contending opponent caught up and matched the other's actions, the effectiveness of the initial discovery was neutralized. While heavy expenses were subsequently incurred, little was gained in the realm of security.

Once again, the fear that the other side will soon acquire first-strike capability pushed the side that had fallen into danger to follow suit. The logic of deterrence was highly vulnerable to the forces of new developments in military oriented technology which forced both sides to seek an almost limitless number of nuclear weapons. The ever present and pervasive threat that the opposition would take a lead in a yet to be discovered area of scientific discovery prevented the control of this momentum. In effect, the arms race has been perpetuated by the race in technological novelties, procurements, and inventions. The newest development which will create an imbalance has been estimated to be laser and particle beam technology to be used as anti-satellite and ABM systems in space.

The end result of unrestricted technological advancement has merely been an elevation of the danger level in the plane of deterrence. Deterrence systems of today serve the same purpose of twenty years ago.[3] Yet their costs have multiplied significantly and the potentially destructive consequence has increased geometrically. Rather than the achievement of security, there has been an extention only of danger. A substantial rise in the accuracy and speed with which nuclear weapons can be delivered has placed the general public in greater jeopardy.

Accuracy

While the accuracy of the first missiles were rather remarkable, they have since improved at an astounding pace. The early missiles, after having flown 6,000 miles, could land within one mile of their target. This relative inaccuracy had to be compensated by carrying large and very heavy warheads. Thus, whether the missile destroyed the intended target or not, much unnecessary (collateral damage) would occur. Given a situation where accuracy was imprecise, it would take an eightfold increase in explosive power for a nuclear bomb to double its circumference of devastation. Yet, the most compelling argument to improve missile accuracy was the fact that most targets were lodged in underground silos and "hardened" with reinforced concrete. In order to knock out these hard targets,

highly accurate missiles became a necessity. Both sides have spent painstaking effort to improve the accuracy of their weapons with very fruitful results. As a result, it has brought each side closer to the specter of achieving a successful first-strike.[4]

Increased accuracy has to a large degree made hard targets vulnerable. Accuracy of missiles has outpaced the ability of both sides to harden its targets. For example, a little over a decade ago, a hardened silo could withstand a few thousand pounds of pressure per square inch applied from a warhead that exploded 600 feet away. However, as the CEP "(cicular error propable, which is the radius of a circle, in which 50% of the warheads will land)" lessened, the required hardness to protect targets reached unattainable heights.[5] Modern ICBMs are nearing the 350 CEP level. This would call for targets to withstand well over 50,000 p.s.i. During a test, the American MX "Peacekeeper" ICBM, which is to be deployed in 1986, landed only 242 feet away from its target after a 5,000 mile journey. The accuracy of most modern missiles is so great that no matter how resistant or "hardened" silos may be, if an incoming warhead lands close enough, it will dig out the silo causing the missile inside to vibrate heavily and shatter into pieces. A crater about the size of three football fields and roughly 80 feet deep would stand where the land based missile once rested.[6]

Speed

Speed is another area that witnessed significant improvement and as a result multiplied potential danger. Each side has ICBMs capable of reaching the other's targets in the "heartland" in less than one half hour. "State of the art" intermediate range missiles based in Europe could be exchanged in a matter of twelve to eighteen minutes. Given the proper and accurate functioning of computers, the blinding speed of these missiles drastically reduced the reaction time and margin of error in a crisis situation. This in turn has brought each superpower closer to adopting a "launch on warning" posture which takes for granted the proper functioning of computers and satellites. The human population has been left at the will of decision makers and rely greatly on their ability to exercise reason during a crisis situation. Although, it has indeed been a clear lack of it which has placed mankind in this rather obscene circumstance at the outset.

MIRVs

Technological inventiveness recorded yet another landmark discovery in the late 1960's when the United States achieved MIRV capability. The advent of MIRVs was a development overshadowed only by the initial discovery of the bomb. With undisputed first-strike implications,

it edged forward the potential to disarm the other's second-strike force. In this case, the potential initially rested with the United States. Rather than bargain away the MIRV system during the SALT I negotiations, the United States chose to compete with the Soviet Union in their deployment. The danger caused by the unbalanced capabilities between the superpowers stablized when the Soviet Union deployed its own MIRV systems a few years later.

The urge of the superpowers to harness all technology had to offer played up to each side's drive to [illegible] their mutual deterrence. To each superpower, the MIRV systems was unsurpassed by any weapon to date. MIRVs did not require the construction more missiles, silos, or launch control centers as ten individual re-entry vehicles (warheads) with [illegible] targets were installed into already existing missiles. As a result, both sides multiplied their firepower several times without having to increase the number of missiles.[7]

Another virtue of MIRVs, if one could call it that, was their elusiveness. They were designed to frustrate an ABM system which both sides were rigorously experimenting with. Once a MIRVed missile was launched, the "bus" carrying the warheads separated from the missile which then individually aimed the re-entry vehicles and released them beyond the atmosphere. This drastically reduced the time that radars and satellites had to pinpoint the re-entry

vehicles' location. Prior to MIRVs, neither side had enough missiles to successfully launch at all the opposition's military targets. MIRVs shattered the stalemate by providing each side with warhead numbers that greatly outnumbered the opposition's land based launch sites (targets). The Soviet Union was far more vulnerable to a first-strike in that two thirds of their nuclear weapons were, and are still in the form of land based missiles. The United States' nuclear force were more evenly distributed between land based missiles, submarine launched missiles, and bombers. The fact that bombers are less vulnerable and submarines altogether invulnerable from a first-strike has been all that stood in the way of both superpowers from capturing successful first-strike capability. More than anything else, MIRVs raised the stakes of the arms race and made the consequences of a nuclear exchange more perilous than ever.[8]

The fact remains that if a new weapon system has the potential of being developed, it is, but at times has not been deployed. In the case of MIRVs, even though ABM deployment went no further than a fundamental level, far reaching deployment of MIRVs went ahead. As political leaders tend to alleviate their insecurities with the help of technological advances, strategic rationality is forsaken. Danger is compounded when national leaders lack the vision to pursue a policy that is in the mutual interest of the involved parties. In this realm, decision makers may be left incapacitated to act rationally when faced with the momentum of particular

domestic insistence to follow a certain course of action. Thus, national leaders may become prisoners of policy not strictly of their own making. [9]

The Internal Race

Due to the imperatives of deterrence and the ceaseless momentum of technology, the superpowers have maintained a competition within themselves as well as with each other. Decision making has been ultimately reflective of competing forces within government. There have been instances in recent history where internal developments have dominated international events as the prime motivation to develop new weapon systems. Thus, unilateral internal pressures moved the arms race forward and were justified by the need to increase employment or aid industry, sometimes done so while disregarding completely the activity of the competitor.[10]

Within the United States, there is much "interservice competition" for shares in the military budget which sets the tone, goals and limits of the national security effort. It is during this competition that the interests of the "military-industrial complex" are served. Almost all American arms control policy and defense expenditures must run through a labyrinth before final policy and amounts are established. The network includes the White House, National Security Council, Departments of State and Defense, and the Arms Control and Disarmament Agency. Each effort at arms

control by any one of these government sectors is under the constant influence of the Congress and various businesses and political lobbies. No doubt there have been many corporate concerns that have profited from various defense systems such as multiple warheads. Representatives from business, labor, and various segments of government all converge and influence defense spending and indirectly arms control. While particular interests are pursued, more general interests are often overlooked.[11]

Likewise, as mentioned earlier, there also exists an internal bureaucratic system which approaches a rough equivalence of the American "military-industrial complex" within the Soviet Union. The Soviet Union has organized itself well enough to make the defense effort function relatively efficiently unlike other sectors of the economy. This is due primarily to the great importance attached to national security. The Soviet system provides for continuous interaction between individuals in the defense industry and military forces. Yet, while these institutional and individual ties have proven their ability in creating a militarily powerful state, it has not occurred because the military forces and defense industry willed it to be.[12] "No doubt the defense industry and the military do propose new weapons and ask for a greater defense effort, but it is the Politburo that disposes of the resources. Close ties exist between the military and the defense industry, but it is still the vertical relationships, culminating in the Party leadership, that predominate:

it is far more important for the military to have allies in the Party leadership than in the defense sector." [13] Nevertheless, the dynamics to pursue a course which will enhance military preparedness, in this case nuclear weapons, is firmly entrenched in the Soviet Union as well. In sum, the military establishments of both superpowers reacting to similar stimuli draw each down a path marked by an erroneous sense of security.

Within technological development, there is an "inner logic" or bureaucratic momentum, whose foundation is based upon irrational and political needs. In this respect, military scientists and technicians have been confronted with a double edged sword. Scientists in both the United States and the Soviet Union have been tempted by greater financial and intellectual incentives; greater opportunities for accomplishment and achievement.[14] In the meantime, the more essential question whether the breakthroughs were actually necessary or morally proper was neglected. Technology for technology's sake has become the raison d'etre for further advancement.

Progress in strategic weapon technology has merely enlarged the abyss between political circumstance and scientific discovery which condition it to be oblivious to political and military necessities. That is, technological advancement has been separated from the real issue of settling the political differences between the superpowers and reaching comprehensive agreements which focus on a

reduction of nuclear weapons. Instead, greater potential destruction levels and the enhancement of already superfluous military capabilities have emerged as the apparent solutions.

The men in the laboratories have risen to a position of great prominence. It has been the military technicians who formulated the military's wants and needs; those who have "succeeded over the years in equating, and so confusing destructive power with military strength, as though the former were the single and sufficient condition of military success."[15] Military scientists and technologists have been instrumental in creating an insecure and volatile superpower relationship upon which a more stable political framework has had to be constructed.

The exploitation of technology in the name of destruction has clearly spelled out an unparalleled failure for mankind. Rather than securing greater liberties, prosperity, and diminishing the pains of millions who suffer, toil, and die in misery; technology has instead sown the seeds of mankind's extermination. Taken in this context, technological development has betrayed morality and defied reason. Ultimately, however, it has not been the men and women of sciences who are to blam With certain exceptions they are not entirely removed from the potential devastation of nuclear war. While different areas would experience different levels of destruction, nuclear weapons are generally thought to be relatively equal opportunity killers. Nuclear weapons are unforgiving, they hold few favorites and prejudices. The neutrality of the sciences

has rather been channeled toward unproductive and potentially destructive ends. It has been a world infested with tension and hostility in which technology has had to operate that has created this unpopular and dangerous circumstance for mankind.

Verification

Perhaps the single most important impediment to disarmament and arms control during the early years of nuclear weapons centered around the issue of verification. Varying degrees of importance were placed on it by the superpowers. The United States pressed for on-sight inspections whereas the Soviet Union chose to protect its national sovereignty and avoid any such means to detect evasion of a treaty. In addition, the Soviet Union was extremely wary of being kept in a militarily subordinant position. Thus, without the luxury of having even partial certainty as to what the other side was up to, nuclear arms negotiations of the 1940's and 1950's, as discussed earlier, proved unsuccessful.

Unilateral U-2 flights conducted by the United States during the late 1950's improved intelligence gathering capability, but it was not until around 1960, when both sides began exploiting satellite technology, that verification was revolutionized. Verification as a problem was not removed entirely, but nevertheless, the negotiation process was facilitated and arms control agreements, even though

they were few and involved only partial limitations on nuclear weapons and delivery systems, were realized during the 1960's and 1970's.

Over the last twenty years, many improvements were made in surveillance satellite technology. Each side had grown so dependent on satellite surveillance by the time SALT I was signed, that the treaty clearly condoned mutual use of such technology. National technical means (NTM) thus became the primary assurance of compliance. Indeed, satellite surveillance has attained remarkable capabilities. For example, in addition to more fundamental aspects such as the detection of new missile deployments, missile sites, and trajectories of missiles in flight; satellites also have the ability to detect test missile launches, the launch and throw weights of missiles, the number of warheads they carry, their accuracy, and they do so with a high degree of reliability. Estimates can even be made in the developmental stages of new missiles.[16] Former Director of the Central Intelligence Agency William F. Colby has stated that: "We have a strategically adequate, in my mind, view of the development of substantial Soviet weaponry."[17] While no verification technique will yield absolute certainty, former Secretary of Defense Harold Brown spoke with confidence in his statement to the Senate Foreign Relations Committee regarding the SALT II treaty. He said: "It is inconceivable to me that the Soviets could develop, produce, test, and deploy a new ICBM in a way that would evade this monitoring network.

We have missed some data on some firings -- and will continue in the future. But we have not erred significantly in our assessment of any Soviet ICBM."[18]

Over the years, however, as the ability to gather strategic intelligence has improved, strategic weapons have also become more elusive to detection. Mobile missile systems, cruise missiles which are comparatively small and can carry nuclear or conventional warheads, and finally ABM systems, all of which will be relied upon heavily by each superpower in the future as major components of their deterrent forces, hold pressing challenges to verification. As it has stood, weapon systems which have been monitored with relative ease and accuracy have been extremely difficult to control or limit. Will these new weapons which are more difficult to keep track of, prevent any further arms control? Not if both sides cooperate and promote verification measures which was practiced under the SALT II Treaty. Here, certain procedural requirements in the deployment of nuclear weapons must be secured prior to any future treaty. In recent years, more controversy has surrounded the substance of negotiations rather than the treaty's verification, e.g. the defunct INF talks.[19]

The history of Soviet-American agreements over nuclear weapons has recorded no single major evasion on either side.[19@] Regardless of this positive development, current arsenal levels are so high that even hundreds of undetected warheads would pose no significant threat to either side. In addition,

it is highly unlikely that any destablizing weapon system could be deployed completely undetected by the other. To sum up the issue of verification, according to a report issued by the staff of the Carnegie Endowment for International Peace, very few negotiated treaty provisions "can be ruled out on the grounds of being technically impossible to verify adequately (even without unprecedented cooperative measures). There will have to be more cooperation and cooperative measures to strengthen verification by national technical means, and such measures will require clear treaty language and compliance procedures. Both are difficult; neither is impossible."[20]

CONCLUSION

As has already been noted, the entire history of disarmament and arms control has recorded many dismal failures and in other instances only partial successes. Insignificant attempts have largely placed emphasis on control of nuclear weapons by placing artificial barriers on the rate of new deployments. In the meantime, new technological discoveries which introduced new imbalances and asymetries were left completely unchecked. Only in cases where deployment of a new weapon systems, invariably for reasons of impracticality, were they controlled through negotiated agreements. Mammouth sized quantities of nuclear weapons, while highly lethal in their own right, have nevertheless been overshadowed by qualitative advancements made in delivery systems.

Technology has indeed advanced in leaps and bounds since the initial invention of the bomb. Yet, the spirit of antagonism and hostility still dominates the relationship of the superpowers. Insincere detente proved incapable of resolving the deep currents of political differences. Implacable fears which led to severe forms of distrust caused the superpowers to trust only deterrence in managing their relationship and in preventing an unwanted nuclear war. Deterrence which required each superpower to increase its nuclear defenses ultimately played up to their fears and allowed technological

advancements a free hand in placing humanity in peril of calamity.

It would be of little use to retort: "if only it were not for the other side", the entire world would live in endless peace. No doubt the same was said by adversarial tribesmen millenniums ago. The fact remains that the "other side" does exist. Responsibility to exist peacefully together rests solely in the hands of decision-makers.

History does not necessarily have to repeat itself. Slavery, the one time burden on humanity, was an institution that was considered a staple of civilization. It was an accepted societal norm which preyed upon the "many" for the priviledged "necessity" of the few. Yet, the civilized world, through conditioned reasoning dismantled slavery's illegitimate foundation and came to view it as a moral crime. It was finally outlawed but only after severe privations and great losses of human life and spirit had occurred. While an analogy between slavery and the potential to destroy humanity which currently rests within the nuclear arsenals of the superpowers may be considered too extreme, it nonetheless may serve to underscore a parallel in mankind's historical ability to reason and provide ethical solutions to its misbegotten and undesirable circumstances. Lessons drawn from the fallacy of superiority among races may perhaps in the future be applied to each superpower's quest for nuclear sup-

eriority. Afterall, slavery and nuclear weapons have both been human enterprises.

Victor Hugo once said: "Greater than the tread of mighty armies is an idea whose time has come". The time and necessity for a global system of stable deterrence through a mutually beneficial and verifiable treaty between the two superpowers; one that fully reconciles the forces of technological innovation, has never been greater. While efforts to turn the clock back may be quixotic, a demand must be placed upon the leaderships of the superpowers, at the very least to stop the clock of potential disaster. Otherwise, the condemnation of this generation by posterity may well be the only catastrophic alternative.

NOTES-(including original sources)

Part I (pp. 1-26)

[1]Trevor N. Dupuy, Gay M. Hammerman, eds., A Documentary History of Arms Control and Disarmament, (New York: R.R. Bowker Co., 1973) p. 3. originally in Edward Harper Parker, Ancient China Simplified, (London, England: Chapman & Hall, 1908) App. III pp. 315-316.

[2]Hans J. Morgenthau, "Some Political Aspects of Disarmament", in The Dynamics of the Arms Race, ed. David Carlton, Carlo Schaerf (New York: Halsted Press, 1975), p.61.

[3]Ibid.,p.61.

[4]Nuclear Weapons: Report of the Secretary-General of the United Nations (Brookline, Mass.: Autumn Press, 1980), p.8.

[5]Ibid.

[6]Solly Zuckerman, Nuclear Illusion and Reality (New York: Viking Press, 1982), p. 18.

[7]Walter C. Clemens, The Superpowers and Arms Control (Lexington, Mass.: D.C. Heath & Co., 1973) p. 89.

[8]Ibid., p.89.

[9]Ibid., p.70.

[10]Barbara W. Tuchman, "The Alternative to Arms Control", New York Times Magazine, April 18, 1982, p. 46.

[11]Arms Control and Disarmament Agency, Arms Control and Disarmament Agreements, Texts and Histories of Negotiations, (Washington, D.C., 1982), p. 3.

[12]Walters, F.P., The Covenant of the League of Nations, (Adopted April 28, 1919) in A History of the League of Nations, (London, England: Oxford University Press, 1952.

[13]Tuchman, p.47.

[14]Ibid.,

[15]U.S. Senate, 67th Cogress, 2nd Session, Doc.124, reprinted in Dupuy, pp. 107-119.

[16]Tuchman, p. 91.

[17]U.S. Arms Control and Disarmament Agency, p.4.

[18]R.R. Palmer, Joel Colton, A History of the Modern World Since 1815, (New York: Alfred A. Knopf, 1975), pp. 745-46.

[19]Tuchman, p. 91.

[20]Tuchman, p. 91.

[21]Tuchman, p. 91.

[22]Tuchman, p. 92.

[23]Palmer, et. al., p.682.

[24]Ibid., pp. 682-684.

[25]Ibid., pp. 684-689.

[26]Everett Mendelsohn, "The Historian Confronts the Bomb", in Proceedings of the Symposiun: The Role of the Academy in Addressing the Issues of Nuclear War, Hobart and William Smith Colleges (Geneva, New York: Hobart and William Smith Colleges, 1982), p.44.

[27]Ibid., p. 44.

[28]C. Raja Mohan, "Why Nations Go Nuclear: An alternative to History", in Nuclear Proliferation in the 1980's, ed. William H. Kincade, Christoph Bertram (New York: St. Martin's Press, 1982), p.20.

[29]Mohan, p. 30, quoted from R. Palme Dutt, Problems of Contemporary History, (London, England: Lawrence & Wishart, 1963), p. 50.

[30]Mohan, p. 30.

[31]Mendelsohn, p. 45.

[32]Mohan, p. 30.

[33]Robert A. Strong, "The Nuclear States: Why They Went Nuclear", in Nuclear Proliferation in the 1980's, William H. Kincade, Christoph Bertram, eds., (New York: St. Martin's Press, 1982), p. 20.

[34]Sir Winston Churchill, Triumph and Tragedy, (Boston, Mass: Houghton Mifflin, 1953), p. 639., quoted by Strong, p. 20.

[35]Stuart C. Finch, "Hiroshima: Immediate and Long-Range Medical Effects," in Proceedings of the Symposium: The Role of the Academy in Addressing the issues of Nuclear War, Hobart and William Smith Colleges, 1982), p. 44.

[36]Mohan, p. 30.

[37]Jonathan Schell, "Reflections: The Abolition", The New Yorker Magazine, January 2, 1984, p. 53.

[38]Bernard Brodie, ed. The Absolute Weapon: Atomic Power and World Order, "Implications for Military Policy", Bernard Brodie (New York: Harcourt Brace and Co., 1946) p.75.

[39]Ibid.

[40]The H Bomb, introduction by Albert Einstein (New York: Didier Publishers, 1950), p. 15.

[41]Ibid.

[42]Schell, p. 56.

Part II (pp.27-51)

[1]Alva Myrdal, The Game of Disarmament, (New York: Pantheon Books, 1976), p. 73.

[2]United Nations, The United Nations and Disarmament 1945-1970 (New York: United Nations) p. 12, quoted in Myrdal, p. 73.

[3]Myrdal.

[4]The International Control of Atomic Energy - Growth of a Policy (U.S. Government Printing Office, 1946), p.47, quoted by Richard J. Barnet, Who Wants Disarmament? (Boston: Mass.: Beacon Press, 1960) p. 12.

[5]Ibid. p. 13.

[6]Barnet, p. 15-16.

[7]Myrdal, p. 78.

[8]Schell.

[9]Myrdal.

[10]Schell.

[11]Barnet.

[12]Myrdal, p. 75.

[13]Barnet.

[14]Myrdal.

[15]Barnet.

[16]Ibid, p. 23.

[17]Schell.

[18]Arms Control Association, Arms Control and National Security (Washington, D.C.: Arms Control Association, 1982) p. 5.

[19]Ibid, p. 5.

[20]J. F. Dulles, Address to Council of Foreign Relations, January 12, 1954, quoted by Solly Zuckerman, p., 43.

[21]Documents on Disarmament, 1945-1959, I, Doc. 92, Atomic Power for Peace (Dept. of State Publication 5314; 1953), reprinted in Dupuy, pp. 358-364.

[22]U.N., The United Nations and Disarmament 1945-1970, p. 51, quoted in Myrdal, p., 81.

[23]Documents on Disarmament, 1945-1959, I, Doc.112, pp. 460-467, reprinted in Dupuy, pp. 373-378.

[24]Documents on Disarmament, 1945-1959, I, Doc. 120, The Geneva Conference of Deads of Government, July 18-23, 1955, reprinted in Dupuy, pp. 379-381.

[25]Horelick and Rush, Strategic Power, pp. 36-38, quoted by Walter La Feber, America, Russia and the Cold War: 1945-1980, 4th ed., (New York: John Wiley and Sons, 1980) p. 200.

[26]U.N., The United Nations and Disarmament 1945-1970, p. 51, quoted in Myrdal, p. 82.

[27]Myrdal, pp. 82-83.

[28]U.S. Arms Control and Disarmament Agency, p.6.

[29]Clemens.

[30]Arms Control Association, p. 10.

[31]Ibid., p.9.

[32]Ibid., p.10.

[33]Clemens.

[34]Arms Control Association, p. 10.

[35]Ibid., p. 10.

[36]Ibid., p. 11.

Part III (pp. 52-75)

[1]Zuckerman, p.47.

[2]Documents on Disarmament, 1963, pp. 291-293, TIAS, reprinted in Dupuy, pp. 224-227.

[3]Ibid.

[4]Mendelsohn, p.54.

[5]Documents on Disarmament, 1967, pp. 38-42. Treaty on Outer Space: Hearings Before the Committee on Foreign Relations,

United States Senate, Ninetieth Congress, First Session, on Executive D, reprinted in Dupuy pp. 531-535.

[6]Ibid.

[7]Documents on Disarmament, 1967, pp. 69-83, Dept. of State Files, reprinted in Dupuy pp. 536-547.

[8]Ibid.

[9]Documents on Disarmament, 1968, pp., 461-465, Arms Control and Disarmament Agency files, reprinted in Dupuy, pp. 559-564

[10]Ibid.

[11]Mohan, pp. 33-36.

[12]Ibid.

[13]Stockholm International Peace Research Institute, Prospects for Arms Control in the Ocean, SIPRI Research Report no. 7, (Stockholm: Almqvist & Wiskell, 1972) p. 16, as quoted by Myrdal, p. 100

[14]Myrdal, p. 101.

[15]Clemens.

[16]Ibid.

[17]Dr. Herbert F. York, Race to Oblivion, (New York: Simon & Shuster, 1970), quoted by Zuckerman, p. 50.

[18]Zuckerman, p. 53.

[19]Article III of the ABM Treaty, reprinted Arms Control and Disarmament Agency, Texts and Histories of Negotiations, pp., 139-142.

[20]Clemens.

[21]Protocol to the Interim Agreement(SALT), reprinted by Arms Control and Disarmament Agency, Texts and Histories of

Negotiations, p. 153.

[22]Myrdal, p. 105.

[23]Ibid., p. 107.

[24]U.S. Arms Control and Disarmament Agency, pp. 239-241.

[25]Ibid.

[26]The SALT II Treaty as interpreted by the U.S. Arms Control and Disarmament Agency, p. 242.

[27]Center for Defense Information, "SALT II: One Small Step for Mankind", in The Defense Monitor, (Washington, D.C.: Center for Defense Information, July, 1979), p.3.

[28]Ibid.,p. 5.

[29]Ibid., p. 2.

[30]Ibid., p. 5.

[31]Myrdal, p. 107.

[32]George Russell, "A Soviet Walkout", Time, December 5, 1983, p. 13.

[33]New York Times, November 19, 1981, p. 1.

[34]New York Times, November 23, 1981, p. 12.

[35]New York Times, November 15, 1983, p. 1.

[36]New York Times, November 19, 1983, p. 1.

[37]New York Times, March 5, 1985, p. 1.

Part IV (pp.76-108)

[1]Morgenthau, p. 58.

[2]General Manager of Disarmament at U.N.,Madariaga, quoted in Tuchman, p.98.

[3]Morgenthau, p. 60.

[4]William Epstein, Disarmament: Twenty Five Years of Effort, (Ottowa, Canada: Canadian Institute of International Relations, 1971).

[5]Clemens, p.99.

[6]Clemens.

[7]"Lenin on Disarmament", Slavic Review, XXIII, No. 3, September 1964, pp. 504-525, in Clemens, p. 80.

[8]V.I. Lenin, Sochinenijia,(3rd ed., Moscow, 1935), Vol. VI, p. 475, in Barnet, pp. 61-62.

[9]Clemens.

[10]Barnet, p. 65.

[11]"Open Letter" of the CPSU Central Committee "To All Party Organizations and all Communists of the S.U.", Pravda, July 14, 1963, quoted in Clemens, p. 50.

[12]Barnet, p. 66.

[13]David Holloway, "Soviet Militarism", in Alternatives: A Journal of World Policy, March, 1980.

[14]Ibid.

[15]Clemens.
[15@]Holloway.

[16]Richard A Stubbing, "The Imaginary Defense Gap: We Already Outspend Them", The Washington Post, February 14, 1982.

[17]Tuchman, p. 95.

[18]Ibid.

[19]Alan F. Neidle, Nuclear Negotiations: Reassessing Arms Control Goals in US-Soviet Relations,(Texas: University of Texas Press, 1982), p.11.

[20]Ibid.

[21]Clemens, 108.

[22]Mendelsohn, p. 46.

[23]Liang Yufan, "on the Question of Preventing Nuclear War", Disarmament: A Periodic Review by the United Nations, Vol. VI, No. 3, Autumn/Winter 1983, p. 18.

[24]Joseph Kashi, "The Role of Deterrence in Disarmament", in Carlton, et. al., p. 92.

[25]Kosta Tsipis, "The Arms Race as Posturing", in Carlton, et. al., p. 61.

[26]Clemens, p. 108.

[27]Barnet, p. 47.

[28]P.M.S. Blackett, Fear, War and the Bomb, (New York: Mcgraw Hill Book Co., 1949).

[29]Hansard, Parliamentary Debates Commons, Vol. 537, col. 1899, March 1, 1955, quoted by Strong, p. 11.

[30]November 3, 1981, quoted in the Defense Monitor, Vol. X, No. 8.

[31]Fred Kaplan, Mutual Delusions: Soviet and American Thinking on Fighting and Winning a Nuclear War,(Boston, Mass: Council for a Livable World, 1982), p. 2.

[32]Dimitri Simes, "Moscow and War," New York Times, November 8, 1981, Op-Ed 21.

[33]Ibid.

[34]Tuchman, p. 99.
[34@]Kaplan.

[35]Herbert Scoville, "The Current Situation and Sketch of its 36-Year History", in Proceedings of the Symposium, p. 17.

[36]New York Times Magazine, March 13, 1983, p. 94.

[37]Carl Sagan, To Preserve a World Graced By Life, (Boston, Mass: Council for a Livable World, 1982), p.2.

[38]Schell.

Part V (pp. 109-125)

[1]Zuckerman, p. 90.

[2]James Meacham, "The Technology of Nuclear Weapons: A Survey," in The Economist, September 1, 1984, p. 5.

[3]Zuckerman, p. 90.

[4]Meacham, p.5.

[5]Ibid, p.12.

[6]Ibid, p. 6.

[7]Ibid, p.6.

[8]Ibid, p.8.

[9]Clemens.

[10]Myrdal.

[11]Clemens.

[12]David Holloway, The Soviet Union and the Arms Race, (New Haven: Conn: Yale University Press, 1983), p. 159.

[13]Ibid

[14]Myrdal.

[15]Zuckerman, 103.

[16]Challenges for U.S. National Security, (Washington, D.C.: Carnegie Endowment for International Peace, 1983).

[17]William F. Colby, quoted in Challenges for U.S. National Security, p. 32.

[18]Harold Brown, quoted in Challenges for U.S. National Security, p. 32.

[19]Challenges for U.S. National Security.

[19@]Ibid.

[20]Ibid., p. 59.

BIBLIOGRAPHY

Books

Barnet, Richard J. Who Wants Disarmament? Boston: Beacon Press, 1960.

Blackett, P.M.S. Fear, War and the Bomb. New York: McGraw Hill Book Co., 1949.

Brodie, Bernard., ed. The Absolute Weapon: Atomic Power and World Order. New York: Harcourt Brace and Co., 1946.

Carlton, David, and Carlo Schaerf., eds., The Dynamics of the Arms Race. New York: Halsted Press, 1975.

Clemens, Walter C. The Superpowers and Arms Control. Lexington, Mass.: D.C. Heath and Co., 1973.

Dupuy, Trevor N. and Gay M. Hammerman., eds., A Documentary History of Arms Control. New York: Bowker Co., 1973.

Einstein, Albert., The H Bomb. New York: Didier Publishers, 1950.

Hobart and Smith Colleges. Proceedings of the Symposium: The Role of the Academy in Addressing the Issues of Nuclear War. Geneva, New York: Hobart and Smith Colleges, 1982.

Holloway, David. The Soviet Union and the Arms Race. New Haven, Conn: Yale University Press, 1983.

Kincade, William H., and Christoph Bertram, eds., Nuclear Proliferation in the 1980's. New York: St Martin's Press, 1982.

Kissinger, Henry A. Nuclear Weapons and Foreign Policy. New York: Harper and Bros., 1957.

La Feber, Walter. America, Russia and the Cold War: 1945-1980. 4th ed. New York: John Wiley and Sons, 1980.

Myrdal, Alva. The Game of Disarmament. New York: Pantheon Books, 1976.

Neidle, Alan F., ed. Nuclear Negotiations: Reassessing Arms Control Goals in Soviet-American Relations. Texas: University of Texas Press, 1982.

Palmer, R.R., and Joel Colton. A History of the World Since 1815. New York: Alfred Knopf, 1975.

Rosen, Steven and Walter Jones. The Logic of International Relations. Cambridge, Mass.: Winthrop Publishers, 1974.

United Nations. Nuclear Weapons: Report of the Secretary-General of the United Nations. Brookline, Mass.: Autumn Press, 1980.

U.S. Arms Control and Disarmament Agency. Arms Control and Disarmament Agreements, Texts and Histories of Negotiations. Washington, D.C.:1982.

Walters, F.P. A History of the League of Nations. London, England: Oxford University Press, 1952.

Zuckerman, Solly. Nuclear Illusion and Reality. New York: Viking Press, 1982.

Magazines, Newspapers, Journals and Institution Publications.

Arms Control Association. Arms Control and National Security. Washington, D.C.: Arms Control Association, 1982.

Carnegie Endowment for International Peace. Challenges for U.S. National Security. Washington, D.C.: Carnegie Endowment for International Peace, 1983.

Forsberg, Randall. "A Bilateral Nuclear Freeze" in Scientific American. November, 1982.

Holloway, David. "Soviet Militarism" in Alternatives: A Journal of World Policy. No. 1, March, 1980.

Kaplan, Fred. Mutual Delusion, Soviet and American Thinking on Fighting and Winning a Nuclear War. Boston, Mass.: Council for a Livable World, 1982.

Liang, Yufan. "On the Question of Preventing a Nuclear War" in Disarmament, A Periodic Review by the United Nations. New York: United Nations, Vol. vi, No. 3, Autumn/Winter 1983.

Meacham, James. "The Technology of Nuclear Weapons" in The Economist. September 1, 1984.

New York Times Magazine. March 13, 1983.

New York Times. November 19, 1981.

New York Times. November 23, 1981.

New York Times. November 15, 1983.

New York Times. November 19, 1983.

New York Times. March 5, 1985.

Simes, Dimitri. "Moscow and War" in The New York Times. November 8, 1981, Op-Ed 21.

Sagan, Carl. To Preserve a World Graced by Life. Boston,Mass.: Council for a Livable World, 1982.

"SALT II: One Small Step for Mankind" in the Defense Monitor. Washington, D.C.: Center for Defense Information, July, 1979.

Schell, Jonathon. "Reflection: The Abolition" in The New Yorker Magazine. January 2, 1984.

Tuchman, Barbara W. "The Alternative to Arms Control" in the New York Times Magazine. April 18, 1982.

United Nations Center for Disarmament. Relationship Between Disarmament and Security. New York: United Nations, 1982.