Forrestal to order the reconstitution of planning for an atomic offensive.4 Forrestal, Secretary of the Army Kenneth Royall and the Air Force leaders sought some definition of the circumstances that might justify an atomic war. The Air Force placed a paper before the National Security Council staff, discussing the possible repercussions of any policy statement on the use of atomic weapons. The NSC received it in September with two additions - the military must be ready to use a) appropriate means available including atomic weapons, in case of hostilities, b) the decision to employ their use was assigned to the President.5 These additions were approved by the President on 16 September 1948 in NSC 30. That document remained the sole statement on American policy on atomic warfare approved by the NSC until 1960.

Two pertinent questions were asked by the Air Force General Hoyt Vandenberg: a) What was the purpose to destroy the Russian people, industries, party hierarchy, or a combination of all? b) Would the Americans occupy and reconstruct Russia or would they leave it to the Russians to work out their own salvation? 6

The questions were addressed in part in the NSC 20/4 on 23 November 1948. It declared that in a general war it would seek to reduce or eliminate Soviet control inside and


6. Ibid.
CHAPTER II

NUCLEAR DETERRENCE
and
NUCLEAR TARGETING

From 1945-1960, American nuclear strategy progressed at three levels of government:

a) The National Security Council with the President's approval defined the National Security objective and promulgated the policy guidance. The President had the final authority regarding nuclear weapons.

b) The military planners who attempted to translate high policy guidance into strategic plans and concepts. The two most directly concerned with nuclear conflict were the Joint Outline Emergency War plan which was changed to Joint Strategic Capability Plan (JSCP) in 1952 and the Joint Mid Range War Plan which was changed to Joint strategic Objective plan in the same year.

c) The Strategic Air Command (SAC) had the Primary responsibility for operational planning to decide how best to employ available nuclear arsenal to achieve the objective contained in the JSCP. SAC was both a separate major Air Force Command and a specified command within the Joint Chiefs of Staff (JCS) national unified command structure.

The main factors which influenced the development of nuclear strategy were: a) technological changes,

b) the work of strategic theorists, and

c) the intelligence estimates—though accurate and timely information was always lacking.

President Truman laid the foundation for the post-war nuclear planning. The US Atomic Energy Commission was set up in 1946 to supervise the military and peaceful uses of atomic energy. The nuclear stockpile was initially very small. The secrecy was almost total. As late as February 1947 Secretary of the Navy and the Chief of Naval Operations each thought that the other knew the size of the nuclear stockpile when in fact neither had been told. Not even President Truman was given the exact figures of the stockpile. His conception of the atomic bomb as an apocalyptic terror weapon of last resort compounded the secrecy. By setting up the AEC he sought to evade the military gaining control of the stockpile.

A lack of high level policy guidance plus extreme secrecy, slowed down any coordinated planning for nuclear war for two years after Hiroshima. The JCS did not approve any planning which contemplated the use of atomic bombs. The first atomic target list was prepared by war planners (who generally on the use of atomic arsenal in a major confrontation with the USSR) in the summer of 1947, incorporating it into the emergency war plan - BROILER in the Fall of 1947. The JCS war plans HALFMOON and FROLIC emphasized an atomic air offensive. On July 28, 1948 the worsening Berlin crisis encouraged the Secretary of Defense James

3. Ibid., pp. 25-30.
outside Soviet Union. There was no predetermined requirement for unconditional surrender established in it nor did it foresee the need to occupy the Soviet Union. This paper, aimed at total victory in a Russian-American conflict, was the last under the Truman administration. The burden of moral responsibility of using the bomb was left to the President. What was ignored was the increasing number of prospective Soviet targets, the growing complexity of atomic weapons and their delivery systems and the acquisition of atomic bombs by the Soviet Union.

Due to the absence of specific policy guidance, the most critical determinant in the strategic and operational planning was capability. During the periods of American nuclear monopoly (1945-1948), the stockpile and delivery capability remained limited. At the end of 1945, there was only two weapons in the stockpile, nine in July 1946, thirteen in July 1947 and fifty in July 1948 and none of them were assembled. They were all MARK 3 "Fat Man" implosion bombs weighing 10,000 pounds each, were inefficient in their use of fissionable material and took 39 men over two days to assemble. To load these weapons into the bombers, a special hoist in a deep pit was required. There were only some 30 B-29s in the SAC, modified to drop the atomic bombs. By the Fall of 1947, 100 urban centers for an atomic attack had been identified. By 1949, Soviet government control centers and urban industrial concentrations became the target. SAC unable to even maintain this distinction gave priority to the annihilation of population, industrial locations being treated as incidental targets.7

7. Ibid., p.132.
Plans for an air offensive against Russian targets increased with the nuclear stockpile. The target list in the war plan BROILER called for 34 bombs on 24 cities. The Air Force HARROW war plan, which served to support JCS war plans FROLIC and HALFMOON, contemplated 50 bombs on 20 Soviet cities. Joint war plan TROJAN, approved in December 1948, called for attack on 70 cities with 133 atom bombs. In May 1949, LT. General H.R. Harmon, reported to the JCS that even if all 133 bombs detonated with precision, this would neither bring capitulation, nor destroy communism or destroy the Soviet leadership. The air offensive would in fact produce reactions detrimental to the achievement of the allied war objectives.8

The October 1949 target annex for Joint Outline Emergency War Plan OFFTACKLE called for attack on 104 urban targets with 220 atomic bombs plus a reattack reserve of 72 weapons. The only retardation targets were the petroleum refineries, electric power plants, submarine yards and synthetic ammonia plants, some of them in Eastern Europe.

The third targeting category soon appeared on 15 August 1950, in the midst of the ongoing conflict in Korea. The JCS formally assigned 'first priority' to the destruction of known targets affecting Soviet capabilities. Second priority was assigned to the retardation mission and 'third priority' to attack on Soviet liquid fuel, electric power, and the atomic energy industries. These categories were code-named BRAVO, ROMEO and DELTA. With the broadening of the industrial targets targets

category and other changes, they formed the basic framework for US nuclear targeting for a decade. 9

Bernard Brodie then a Yale University Professor, criticized the target list in December 1950 as there was no calculated strategy for destroying the Soviet capacity to make war. General Curtis LeMay emphasised the need to target industries located in urban areas, so that even if a bomb missed its target, a "bonus" could be derived from its use. Such a policy, according to him, would conserve the nuclear stockpile while SAC could inflict maximum damage on the Soviet Union's war-making capacity. Brodie characterised these targeting schemes as "sheer frivolousness and stupidity with respect to the number one strategic problem confronting the US at the time." 10

At the time General LeMay assumed command of the SAC in October 1948, there was a lack of operational readiness. He initiated a crash program to build a mobile operational force to building SAC into a "cocked weapon" to deliver at least 80% of its atomic stockpile simultaneously. 11 Its nuclear capable aircraft increased from 60 in December 1948 to 250 by June 1950. By 1952, SAC was training in earnest for its blunting mission and its intelligence gathering improved with SAC RB-36 and RB-50 aircraft flying electronic and photo reconnaissance missions. However only a few crossed Soviet...

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11. ibid, p. 136.
borders. Between 1949 and 1953, the bulk of intelligence on the USSR came from Project WRINGER.

Interestingly the increasing importance of the SAC, was due to the role of the Air Force in the strategic targeting of Germany and Japan, during the second World War. They also feared, quite unnecessarily, that the Navy and its aviators, were attempting to takeover the strategic bombing mission. With Truman’s reluctant acceptance of nuclear weapons as the centrepiece of American armed forces, the NSC 68/4, in December 1950 established objectives for a phased and balanced build up of American armed forces through June 1952. With the forceful arguments of the Air Force Secretary Thomas K. Finletter and Chief of Air Staff Vandenberg, in favour of the utility of adequate delivery capabilities, to transport the expanding nuclear production, the JCS assigned primacy to the Air Force and SAC build up. The Fiscal Year 1953 budget embodied Air Force objective for June 1954: of 143 wings, 48 more than proposed in NSC 68/4. The escalatory target estimates influenced this growth of the nuclear stockpile just as the stockpile itself encouraged the expansion of SAC. In January 1952, Truman approved a 50% increase in plutonium and a 150% increase in enriched uranium as according to Vandenberg, there seemed to be “perhaps 5-6000 Soviet targets which would have to be destroyed in the event of war.” Labelled as “boot strapping” the Air Force generated target lists justified the weapons production which in turn justified the increased appropriation to provide matching delivery capabilities.

As intelligence improved, the Air Force target list outpaced the growth of the stockpile. By January
1953, there were 8 plutonium production reactors in place of 5, and 10 gaseous diffusion plants in place of 2. The stockpile of approximately 1000 weapons in the summer of 1953, grew to nearly 18,000, by the end of the decade. The weapons were more powerful and sophisticated. The 20 KT yield of a Mark 3 bomb multiplied more than 25 times between 1948-52.

There were advances in the design, composition, stability and power of the high explosives used to detonate a fission core, as well as improvements in the mechanical structure and composition of the fissile pit itself. This resulted in higher yields and increased efficiency in the use of fissionable material, permitting the November 1952 test of Mark 16 Super Orally (U 235) bomb which yielded 500 KT. The new "boosted" weapons which employed a small amount of fusion fuel within a "hollow implosion" core to further increase the efficiency and yield of nearly one megaton, was first tested in April 1951. In October 1952, the US fired the first true thermonuclear weapon.

By the time Truman left office, in January 1953, the framework for nuclear strategy had emerged and the era of nuclear plenty was launched. American war planning was conducted with an incomparable intensity during peacetime. A "new family" of war plans on the authority of the Joint Chief of Staffs was created: A) The Joint Strategic Capability Plan (JSCP) was


created to deal with the military situation as in the year of formation.

b) Joint Strategic Objective Plan (JSOP) which established force and mobilisation requirements for the next three to five years.

c) Joint Long Range Strategic Estimate (JLRSE) to guide research and development.

Contrary to Truman's belief that a preventive atomic war was irrational and the need for civilian control over these weapons within six months of assuming office, Eisenhower transferred a sizeable number of atomic weapons to the military for deployment to specific bases afloat and ashore. This was to reduce the vulnerability of the stockpile and to increase its operational readiness. Contrary to Truman's view of these weapons as weapons of last resort, Eisenhower found them to be important as weapons of first-use. A high level review of policy options of containment, spheres of influence and roll-back code named Operation SOLARUM, was undertaken. On October 30, 1953, Eisenhower approved NSC 162/2 as the basic national policy.

NSC 162/2 was the first statement of national policy to address the issue of tactical nuclear weapons directly. It sanctioned the use of nuclear weapons as any other munitions. The 1953 defense program outlined for the first time the provision for tactical atomic support for US and allied military forces.

The move towards the development of an

14. n. 5, p. 141.
effective system of continental defense was accelerated when in July 1953, Soviet Union tested a 300-400 KT fission weapon and announced its thermonuclear capability which might force US to initiate a war in self defense. In August 1953, an Air Force study entitled "The Coming of National Crisis" stated that in the following years the US would find itself in a militarily unmanageable position and soon it would have to choose whether to trust its future to the "whims of a small group of proven barbarians" in the Soviet Union or be militarily prepared to support decisions which might involve a general war.15

The new strategy required not only defense against local aggression but also massive retaliation, striking power and tactical nuclear weapons. Project VISTA, a study undertaken for use of a specific number of atomic bombs by the Navy and 'soon-to-be-deployed' Air Force tactical air units, concluded that the tactical employment of atomic weapons was necessary for defending West Europe and that a strategic offensive be withheld for humanitarian, political and military reasons.

By 1953, SAC had identified 409 airfields from which the Soviet Union could launch nuclear strikes. In March 1954, SAC's Basic War Plan called for upto 735 bombers to hit Soviet early warning screens from all directions simultaneously using chaff and other electronic countermeasures to overwhelm the Soviet defenses. This would minimize the time the American bombers

would remain in hostile air space, maximize destruction and reduce the need for costly follow-up strikes.

In October 1953, JCS Chairman, Arthur Radford, urged a graduated use of nuclear weapons. Priority was given to the destruction of military forces operating against the US and its allies and the facilities which supported them before the launching of unrestricted retaliatory operations.16

The expansion of the Soviet nuclear arsenal forced the Eisenhower administration to reevaluate its defense strategy. The Technological Capabilities Pannel (TCP) chaired by the President of MIT, James F. Killian Jr., submitted in February 1955, a report entitled "Meeting the Threat of Surprise Attack". It predicted a geometrical expansion of threat as Soviet acquired true thermonuclear weapons and long-range delivery aircraft. The report observed that the US could maintain strategic superiority for three to five years but would be vulnerable to a devastating surprise attack. Priority was attached to improved intelligence, tactical warning capabilities and the preparation for instantaneous response, including the use of nuclear armed air defense missiles. It recommended the grant of "advance authority for instant use of the atomic warheads wherever needed over the land areas of the US and Canada" and the dispersion of nuclear weapons to offensive and defensive forces. The report reaffirmed the BPAVO, ROMEO and DELTA targeting priorities while stressing

the interrelationship between the offensive and defensive forces. It also predicted a period of instability for US in the late 50s once the advantage would rest with the side which acquired ballistic missiles in large numbers.

The Weapons Systems Evaluation Group (WSEG-12), submitted a report and predicted in February 1955 that the atomic offensive could achieve the ultimate goal of ending a general war in a single blow. It would destroy all Soviet atomic production capabilities, obliterate 116 out of 184 major cities, cause 80 million deaths, eliminate Soviet bloc industrial capabilities and destroy any chance of recuperation for at least a year. However even if SAC destroyed 645 targeted airfields, at least 240 would still survive. To destroy all Soviet airfields, one would require twice the number of weapons allocated and hit first to avoid a Soviet first-strike.17

In May 1955, a National Intelligence Estimate (NIE) estimated that the Soviet Union had some 20 "Bear" turbo-prop and 20 "Bison" jet heavy long-range bombers. Much more disturbing was the forecast that the Soviets would have approximately 700 heavy bombers by mid-1958, as well as 700 "Badgers". Advances in weapons technology merely complemented the expanding Soviet delivery capability. In November 1955, a 1.6 megaton test confirmed Soviet achievement of a true two-stage thermonuclear capability.18


With such weapons the USSR could seriously damage the US even if only a few bombers manage to penetrate the American defense. The "bomber gap" represented a serious threat to the country's ability to disarm an impending Soviet strike.

In mid-January 1956, Eisenhower sought to impress on the National Security Council the appalling "chaos and destruction" the US would suffer in a thermonuclear war. He urged the NSC to continue to maintain a five-year strategic materials stockpile, believing that it was "crazy" to think that any war could be "won or lost" in a period of thirty days. Yet he asked his strategists to consider seriously the consequences "if we reach a point where we will have the passed the limits of what human beings can endure."

On March 15 1956, the NSC adopted flexible military plans and emphasised the importance of containing limited conflicts. The NSC 5602/1 maintained use of nuclear weapons in military operations short of general war as authorised by the President. It rejected preventive war but affirmed the national determination to prevail in a general war. Most significantly, it anticipated the need for pre-authorization for the use of nuclear weapons.

In 1956 the Air Force began to address the problem of bomber force vulnerability and the need to recognize the drastically reduced tactical warning time. In 1956 RAND analysts recommended improvements in Early Warning Systems and SAC response time, dispersal of the bomber force, and more effective airfield defenses. In response the SAC moved to construct or acquire additional bases in the United States and
Canada. It conducted a series of tests from November 1956 through September 1957 to evaluate the human and material requirements of holding one-third of the bomber force on fifteen minute ground alert.18

The Gaither Committee Report entitled "Deterrence and Survival in the Nuclear Age", expressed only moderate support for fallout shelters, and instead assigned highest priority to the improvement of SAC survivability. The report stated the country's requirement of an effective deterrent in the form of secure and effective retaliatory striking force, as "by 1959 the USSR may be able to launch an attack with ICBMs carrying megaton warheads against which SAC will be almost completely vulnerable under the present program. It urged acceleration of the ballistic missile programs, with particular emphasis on the Polaris submarine launched IRBM because of its advantages of mobility and reduced vulnerability. Three committee members, the President was informed privately, had advocated the reconsideration of the option of preventive war as a means of avoiding a situation of extreme jeopardy.

Despite its political volatility, the Gaither Report was more a symptom than a cause of change. Eisenhower believed that the United States was facing a gradual deterioration of strategic advantage, not an immediate crisis.

This "missile gap" despite Eisenhower's efforts to dispel it became an exploitable political issue for democratic Presidential hopefuls and would not prove to be an illusion until the first Discover and SAMOS satellites documented the miniscule size of the Soviet missile capability in 1960-61.2D

Eisenhower's approach to protecting US bombers in the missile age was not to increase their survivability on the ground, but to ensure that they would be in the air at the time of any surprise attack. The government did not implement the program of bomber-blast shelters recommended by the Gaither Committee. On the other hand it made a concerted effort to increase tactical warning time and rapid response. In January 1958, Defense Secretary Neil McElroy, approved the development of the Ballistic Missile Early Warning System (BMEWS) to complement the Distant Early Warning Line activated in August 1957. To reduce the reaction time further, Eisenhower on May 22, 1957, issued an authorisation, still classified, for the employment of nuclear weapons. This gave permission for an immediate nuclear response under a variety of emergency conditions. So complex were the instructions needed to implement this authorisation that the Departments of Defense and State did not approve it until February 17, 1959. Finally, in late 1960, each of the unified and specified commanders received a series of still classified directives regarding the immediate use of nuclear weapons.

In 1959, SAC achieved its goal of holding one-third of the bomber force on ground alert. On March 1958, the Chief of Staff of the Air Force authorised SAC to implement the "fail safe" or "positive control" system, which would permit rapid response without the risk of initiating war through miscalculation. SAC plan to establish an airborne alert consisting of one-fourth of the B-52 force was approved by the JCS in 1959. However because of the considerable cost of continuous operations it was recommended that the plan be put into operation only when the President considered such special precautions necessary. Advances in weapons design greatly facilitated the development of SAC alert plans. SAC delivery capability continued to expand. At its peak in 1959, SAC had nearly 500 B-52s, more than 2000 B-47s, and over 1000 propeller and jet driven tanker aircraft; the supersonic B-58 would enter service in August 1960. This growth in the bomber force remained linked to expanding target lists, which totaled 2,997 in 1956, and 3,261 in early 1957. By the end of the decade, SAC had analysed over 20,000 potential Soviet-bloc targets, grouping the most important of these into Desired Ground Zeros (DGZs) consistent with the blast radii of large yield thermonuclear weapons. Expansion of the list resulted largely from the identification of additional "counterforce" targets, especially airfields and suspected missile sites, and to the poor quality of target intelligence that encouraged creative guesswork.

In the Spring of 1957, Army Chief of Staff Taylor and Chief of Naval Operations Arleigh Burke instructed their staffs to prepare a joint analysis of high yield weapons requirements, focusing on the radiation and fall-out that would follow any implementation of the SAC war plan. On August 28, 1957, the hastily prepared but devastating critique—Project BUDAPEST—reached the JCS. It demonstrated that far more weapons were being assigned to targets than were required to achieve the damage required by the JSCP, and that the resulting radiation and fallout would be dangerously and unnecessarily high. There were as many as 17 overlaps on a single location. Additional and duplicate weapons had been assigned in profusion, even when the supplemented damage they would achieve, was minimal. Air Force leaders, including nathan Twining, who had become JCS Chairman, Air Force Chief of Staff, Thomas White and the new Air Force Vice Chief Curtis LeMay, were incensed by this indictment. Every additional gallon of fuel oil destroyed, he declared, could otherwise help carry another Russian bomber towards the United States.\(^\text{22}\)

The JSCP guidance regarding nuclear targeting was only applicable to the situations in which general war began gradually or with enough strategic warning to permit SAC to launch its strike force before the Soviet attack arrived. The US needed alternate guidance to provide for the possibility of a general war initiated under disadvantageous conditions. The alternative planning required that each unified and specified commander “select from his target list those high priority...”

\(^{22}\text{n.55.160.}\)
which would be attacked if only 25% of his atomic delivery forces would be available for employment." The least number of weapons would be assigned to achieve at least a moderate damage to each target ensuring maximum utilisation of the depleted resources."SAC would target the Soviet nuclear delivery capability only to the extent where it would be profitable on the assumption that much of the capability would have been expended." This alternative was to supplement the existing target lists. The plan would be implemented on the assurance that the American forces had been depleted enough to make 'primary undertaking impossible. This policy introduced into the JCS guidance, for the first time, the concept of a strictly retaliatory nuclear strategy which would necessitate the preparation of a high priority target list. This scheme for an alternative undertaking was approved by the JCS in early 1958. However the preparation of the new target list preceded slowly.

The efforts of the Army and the Navy to place limits on the strategic offensive reflected their concern about the US requiring improved capabilities for a limited conflict. Secretary of State Dulles emphasised the need to prepare for local conflicts. On the other hand Eisenhower believed that an increased conventional force would result in the increased defense spending or reduced strategic forces, the former resulting in the formation of a garrison state.23 His policy of minimum force requirements became the American policy in 1959. Targeting an industrial

military combination with emphasis on urban-industrial areas would require fewer weapons and their delivery systems. He had begun to question the effectiveness of maintaining a completely counterforce capability. However, he was critical of the military requirements which had reached the level of capability to destroy "every conceivable target all over the world" and had a reserve three times more than what was required. The JCS believed that 70 targets would be enough to defeat the Soviet Union. An adequate minimum striking force was as yet unclear. A new approach was worked out with three alternate target systems:

a) Primarily military,

b) Primarily urban-industrial (as proposed by the Army and the Navy), and

c) A mix of the two.

This was analysed on the basis of not just deterring a war but with the object of 'prevailing' in a general war. This policy embodied the assumption that there was no link between deterrence and target selection as deterrence depended on Soviet perceptions and they were not privy to the American target list.24

In July 1958, Admiral Burke laid out the basic elements of his concept of "finite deterrence" as an all-out war was no more valid due to the deployment of the Soviet ICBM force in unknown sites, rendering it impossible for the Americans to disarm the Soviets. A mobile and concealed force, according to Burke, would be effective. This would provide the American security strategists the necessary time to think without the pressures for a first strike. The US could choose to respond gradually while

24. n.5, p.164.
trying to apply political coercion. This would require a small force just enough for deterrence (i.e. for an ability to destroy major urban areas) and the US would be in a position to achieve a thermonuclear stalemate. All this was done by the Navy to exploit the flexibility and invulnerability of the Polaris submarines.

By the summer of 1959, the Navy strategists had further refined finite deterrence. The most effective retaliatory targeting system would be political and military command and control centers and critical industries. The Navy projected a fleet of 45 submarines, 29 deployed all the time capable of destroying 232 targets. The total costs would be 7-8 billion. Budget Director Maurice Stans raised the very pertinent question of the utility of having "other IRBMs or ICBMs, SAC aircraft and overseas bases." Finite deterrence policy and the importance attached to Polaris replacing SAC was a serious challenge to the Air Force.

Unable to fault the Polaris technically, the Air Force prepared a systematic defense of the counterforce targeting. Finite deterrence was regarded as incapable of discouraging limited Soviet strikes. The US required forces adequate to maintain the initiative under all circumstances of war. In May 1959, General White approved an estimate of future force objectives necessary to implement the Air Force strategy. It predicted that by 1963 some 8400 Soviet targets would require destruction and by 1970, 10,000. Since multiple weapons would be assigned to each DGZs to achieve 90% destruction specified in Air Force war plans, the US would require by 1968 a force of 3000 Minuteman, 150 Atlas and 110 Titan ICBMs and a combined total of
nearly 900 B-52, B-58 and B-70 and nuclear powered bombers.

RAND analysts Herbert Goldhammer and Andrew Marshall further supported the argument against a counterpopulation strategy by stating that "there are few things so bad that not thinking about them won't make them worse." A strike on civilians could be taken as a symbol of weakness. They proposed a strategy of "partial withholding", launching only a portion of surviving SAC forces against selected targets while threatening destruction of Soviet cities unless they agreed to American terms. This would have the advantage of extending the pre-war deterrence threat into the intra-war period, and might terminate the nuclear exchange. 25

In March 1960, the Air Force intelligence Directorate completed a detailed analysis of targeting requirements. The target planners estimated that there would be a total of 3560 targets in 1960, 6300 in 1965 and 6955 in 1970, reflecting an increase in Soviet missile sites. The Air Force rejected the argument of the Army and the Navy of deterrence as the sole objective, and that counterforce had become too costly in the missile age.

There was also the problem of reviewing target lists and war plans for inconsistencies and duplication. Out of 2400 targets, there were 300 duplications which could have led to the killing of friendly aircraft in the

chaotic wartime conditions. A report prepared in 1960 recommended a target list for 1962 Fiscal Year consisting of 2021 targets, including 120 ICBM sites, 140 air defense bases, 200 bomber bases, 218 military and government control centers, 124 other military targets - naval bases, nuclear weapons facilities - with the remaining targets located within 131 urban centers. It rejected non-city counterforce and finite deterrence and opted for combining a decisive blow with a blunting attack on Soviet nuclear delivery capability. 26 By late 1959, Eisenhower's concept of massive retaliation had been reduced to a strategy of desperate resolve. Eisenhower believed that the US must have the ability to destroy anyone who strikes first "because the biggest thing today is to provide a deterrent to war." 27

In the meantime, he had ruled out making a full commitment to the Polaris program till it was fully tested. The Eisenhower administration's top secret review of "US Policy in the Event of War", approved by the NSC in March 1959, retained the option of preemptive response to an impending Soviet strike without specifically endorsing it.

On July 6, 1960 Secretary of Defense Gates reported to the President that in fifteen meetings with the JCS since taking office in January, he had been unable to resolve the basic disagreements over targeting and coordination. On August 11, 1960, Eisenhower approved the creation of the Joint Strategic Target Planning Staff (JSTPS) under SAC to prepare the National Strategic Target List and the Single Integrated Operational Plan

27. Ibid.
On 27 November, Eisenhower received Burke’s memorandum and was shocked by the level of overkill which had been achieved. The high assurance criteria had been negated.

Although SACs commitment to maximize the impact of available forces accounted for the level of overkill, it was the emphasis on the need for plenty of nuclear weapons and its delivery vehicles that made such a move possible. Both Truman and Eisenhower administrations promoted the expansion of the strategic striking force. The overlapping and duplication which accompanied the induction of missiles in lieu of bombers worsened the situation. On December 2, 1960, the JCS approved SIOP-62. When Eisenhower left office, SAC had 538 B-52, 1,292 B-47 and 19 B-58 bombers and 1,094 tankers. The US had deployed 12 Atlas ICBMs and 60 Thor IRBMs in Britain. It was deploying 30 Jupiter IRBMs in Italy and had agreed to deploy them in Turkey as well. Over 650 Atlas, Minuteman and Titan missiles were under contract as were 14 Polaris submarines carrying 16 missiles each. The first Polaris submarine U.S.S George Washington departed on deterrent patrol in November 1960. 28

Eisenhower remained committed to tactical nuclear weapons in limited conflict situations, though he doubted if a war could ever be limited once nuclear weapons were used. Between 1958-1960, the stockpile of tactical nuclear weapons grew from 6,000 to 18,000. When he left office, SAC had trained and prepared for massive retaliation and massive preemption for a decade. Gross overestimation of Soviet nuclear forces due to

inadequate intelligence also contributed to the unnecessary expansion of US forces. Despite such increase in weapons, the ability to disarm the Soviet Union seemed to be impossible.

The Kennedy Period

With the coming of the Kennedy administration, Secretary of Defense Robert McNamara, disturbed by the rigidity of defense planning and the absence of a clear and lucid strategic rationale for the urban industrial target mix and counterforce, initiated a reevaluation of the American strategic posture. He incorporated second-strike counterforce and the partial withholding of strategy 29 which RAND analysts had advocated. McNamara believed that a nation must respond to surprise attacks first by striking Soviet bomber bases, missile sites and other installations dealing with long-range nuclear forces. This would limit the damage done to the US by Soviet follow on forces, while still holding in reserve, forces that could destroy Soviet urban society.

To adapt the SIOP to the new strategic posture, new directives of 1961, for SIOP 63 mandated the separation of the optimum mix target system into its major components. The new targeting categories were the reformed version of BRAVO, ROMEO and DELTA established in 1950: Soviet strategic nuclear capability, other nuclear capability (nuclear command installations), and the urban industrial base. Plans were to withhold attacks against one or more of these targets and against China and the satellite nations. These plans followed a series of

29. Ibid., pp. 119-120 & 186-190.
preemptive and retaliatory options designed to permit flexibility in response to varied political and military conditions.\textsuperscript{30} Despite these restraints there was a continued upswing on force developments.SIOP continued to emphasise capabilities rather than the objectives, emphasising that never fewer than "thousands of weapons" be applied to areas targeted.\textsuperscript{31} For more than two decades, SIOP dominated the US thinking about nuclear war. Arleigh Burke has aptly remarked,

"You very seldom see a cowboy, even in the movies, wearing three guns. Two is enough." \textsuperscript{32}

\textbf{The Nixon Administration: From 'Superiority' to 'Sufficiency'}

Accepting McNamara's idea of desirability of 'parity' or rough equivalence with the U.S.S.R in strategic forces, the principle of "sufficiency" became the watchword of the Nixon administration. The problem was, as John L. Gaddis explains, that "objectives tended to expand as means did, thereby producing not only eventual exhaustion but also increasing resistance from other nations."\textsuperscript{34} Economic necessity had led the Johnson administration to the same conclusion and wisdom was "elevated to the status of doctrine." \textsuperscript{34}

However Nixon discovered that the administration had inherited a much larger strategic nuclear force than was needed to destroy Soviet (and even Chinese) cities. The long-range missiles equipped with 5,300 warheads, each of which could be targeted separately went to station around early 1970s.

\textsuperscript{30} Ibid,p.190-192  
\textsuperscript{31} Futrell, n.21, pp.622-27.  
\textsuperscript{32} Remark made at Kissinger's seminar at Harvard, in Spring 1960, in n.5, p.178.  
\textsuperscript{34} Ibid, p.280.
Since no more than 200 Soviet cities then had a population of over 100,000, the US possessed a significant "overkill" capacity.

The surplus remained targeted as before on Russian military sites (i.e. counterforce targets.) The US was now saddled with a new and destabilizing technology and the Soviet Union now had an incentive to develop the MIRV technology as well, which it did some five years later.

The development of MIRV induced U.S. strategic planners to rethink their deterrent strategy. In January 1974, Secretary of Defense James Schlesinger announced the policy of flexible targeting whereby America would modify its nuclear deterrent strategy to strikes only against military targets in response to a limited firing of Soviet missiles against US military targets.

This new nuclear doctrine was promulgated by the National Security Decision Memorandum 242 (NSDM). This doctrine provided more credible deterrent and escalation control through the development of a wider array of planned limited nuclear options. A major component of this doctrine was emphasis of destruction of Soviet economic recovery capabilities. But the ability to destroy urban industrial targets continued to be indispensable. As Schlesinger himself put it in 1975:

"Even after a more brilliantly executed and devastating attack than we believed our potential adversary could deliver, the US could retain the capacity to kill more than 75% of Soviet industries." 37

The basic idea behind the new policy, as publicity explained, was that in a moment of national crisis, the President needed a 'menu' of options rather than launching an all-out attack against the Soviet Union or taking no action at all.

Schlesinger arguments that nuclear war could be kept limited were challenged by many. He did not explain why Society would take the terrible risk of launching a limited nuclear attack in the first place. Further, Kremlin could hardly be sure of an equally limited relation. Even if American retaliation were limited it could still be severe and hostilities would not be likely to end there. 44 Kissinger wrote in 1965

"No one knows how the government or people will react to a nuclear explosion under conditions where both sides possess nuclear arsenals." 39

It was not clear whether this strategy off selective options meant the capability to strike Societe military targets in general or the Soviet land-based missile silos in particular.


Schlesinger's policy was given the official name "Flexible Targeting". Critics called it a little nuclear war searching for a place to happen'. In case of the latter, it would represent, as Smoke says, "a great change in American strategy." 40

Carter and PD -59

A Nuclear Targeting Policy Review (NTPR) was conducted which resulted in American strategy of nuclear deterrence being further elaborated during the Carter administration through the Presidential Directive 59 issued in July 1980 41. It was the first executive order requiring the US armed forces to fight a prolonged nuclear war and to demonstrate America's ability to respond in a credible fashion without having to escalate immediately to an all-our nuclear war. The US would fin-tune its nuclear responses, especially against the military targets, with the intention of escalating gradually and to hold larger protons of nuclear warheads in reserve. It assigned Priority to hardened underground shelters that would be used by Societe leaders in the event of a nuclear war. The US had thus begun to emphasize "nuclear decapitation".

This was a shoot-look-shoot capability. The main idea was for limited stroked against political and economic targets rather.


than exclusively against military targets. This policy officially christened 'Countervailing Strategy' remained the main feather of American nuclear strategy during Crater and Reagan administrations. "The biggest difference that PD-59 introduced, Secretary of Defense Harold Brown explained to Congress in September 1980." is a specific recognition that our strategy has to be aimed at what the Soviets think is important to them not just what we might think would be important to us in their view. 42 This policy drew flak for four reasons: First, the capability to destroy hard targets is indistinguishable from that needed to launch an all-out attack on Soviet union. Second, the Soviets could have followed the American lead. Third, if Soviet leaders feared annihilation in the midst of a crisis, logic would dictate a preemptive strike. Fourth, a threat to strike on command, control. Communications and intelligence requires C3I and the command centers of both powers would contribute to East-West tensions and make nuclear war more likely by accident or miscalculation. 43

The Reagan Administration

A new SIOP, formally designated SIOP 6, came into effect on 1st October, 1983, integrating as in other SIOPs, new targeting chimes, SOP 6 included some 50,000 potential target installations compared to about 25,000 in 1974 as contained in SIOP-5. The new

42. 50 Sagan, n, 27, p. 49.

SIOP divided targets into four categories, each of which contained a wide range of target types. The four principle groups were: Soviet nuclear forces, general purpose forces, Soviet military-political leadership centers and Soviet economic and industrial base.44

A new SIOP cam into force on October, 1989. Designated SIOP 6F, it was the most extensive revision of American nuclear war plans in a decade. It emphasized the destruction of Soviet leadership, which was defined to consists of "some 100000" people. Considering the fact that Gorbachev, after coming into power in 1985, had initiated the process of 'Perstorika' and 'Glassnost' which eventually culminated in the dissolution of the Warsaw pact and the disintegration of Soviet Union itself, this new SIOP showed utter insensitivity of American nuclear war planners to the changes in the global, political and the strategic environment.45

Allen Krass observes, "The strategy of limited counterforce is built entirely on hope; that the weapons will not as they are supposed to; hope that control can be maintained; hope that once a war starts both sides will be able to recognize a commor

44. The most comprehensive book on strategic nuclear targeting is Ball, Desmond, ed., Strategic Nuclear Targeting, P.80.
45. Ball, Desmond & Toth Robert C., "Revising the SIOP'. International Security (Spring 1990), Vol.14, No.4, pp.65-92 p.73
point at which all cost-benefit calculations balance and they can stop it; but, above all, hope that 'when the time comes', when it's 'eye ball-to eye ball', they will blink first' and we 'win without a short being fired'. These hopes have extremely fragile foundations.46

Technological development strike at the roots of stability posture. The growth of highly accurate delivery systems and warheads destabilize the deterrence postures by increasing fears of preemptive strikes leading to increasing readiness to use faces quickly before destroyed by an adverse. The availability of accurate weapon systems increase pressures for counterforce targeting which, in turn, require more warheads and delivery systems. It was through technological development that the number of targets in American warplane increased from 70 in 1949 to 50,000 or more, by 1980s.47

There was an endeavor "to increase the element of threat to the maximum while decreasing the risk of use to the minimum.' This self contradictory effort was like 'trying to make use of the shadow of an object without having the object itself,' It was against this background of confusion and discord that the peace movement of early 1980s arose. For members of the peace movement nuclear deterrence began to look "like a death sentence for the human race.48 The contradiction within deterrence led to serious challenges to its postulates and underlying assumptions especially in early 1980s. As Shell put it,

"The inescapable truth was that possession inevitably implied use and use was irredeemable senseless.49

By the 1980s some pillars of American National Security Establishment themselves began to challenge the basic postulates of American nuclear deterrence strategy. George Kennan made a passionate appeal to the American policy makers in October, 1980. Kennan made a passionate appeal addressed to those engaged in the game. "For the love of God, of your children and of civilization to which you belong, cease this madness, you have a duty not just to the generation of the present. You have a duty to civilizations past, which you threaten to render non existent. You are mortal men. You are capable of error. Your have no right to hold in your hands ... destructive powers sufficient to put an end to civilized life on a great portion of your planet. No one should wish to hold such powers.50

A group of former NATO Generals and Admirals first met in 1981 and formed the group called 'Generals for Peace and Disarmament', who had begun challenging nuclear deterrence. Admiral Sangunietti, said,

"A man who has witnessed a nuclear explosion asks no further questions but changes his thinking habits radically. He realizes once and for all that he is no longer dealing with explosives, not even in massive or gigantic dosages. One is overawed in the face of a horrible and inconceivable catastrophe that has been triggered by man but cannot be controlled by him.

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49. Ibid, p.66.

50. Kennan, George F., The Nuclear Delusion p.144
It does not matter which side you are on, you will ever use the same arguments you did before. I personally witnessed six nuclear explosions.

The French President Discard d'Estaing hurriedly discharged Generals die Bollardiere, Binoche and Admiral Sanguinetti when they publicly criticized France's and NATO nuclear policy. But the danger of an atomic war sets limits so military obedience. The soldier should obey first and foremost the human right to live in peace.51

A major figure in the peace movement described deterrence as "a pitiful, lightweight theory. It is espoused in its pristine purity, only by a handful of monkish celibates, retired within the walls of centers of strategic studies. It cannot endure any intercourse with the actual world. It appears always as a gloss as a theoretical legitimation of actions which are taken for quite different reasons.52 "He maintained that its major procedures were predictive yet its predictions were of a kind which could never be verified or falsified. It was not a branch of scholarship but scholasticism, whose practitioners were trapped within the enclosed circularity of their own self-validating logic.53


52. Thompson, E.P., "Deterrence and Addiction" in Thompson, Beyond the Cold War (New York: Pantheon, 1982), pp. 1-23

53. Ibid.
The Strategic Defence Initiative

On 23 March 1983, President Reagan presented a speech of a "vision of the future which offers hope." He said, "Would it not be better to save lives than to avenge them? Are we not capable of demonstrating our peaceful intentions by applying all our abilities and our ingenuity to achieving a truly lasting stability. I think we are... indeed we must."^54

"...It revolutionized the strategic debate in the US without changing the world's nuclear arsenals in the slightest."^55 By this policy speech, Reagan stole the moral high ground from the Peace Movement and the Pastoral Letter of the American Catholic Bishops and he did so in a manner that appealed to the American isolationist and technological optimism.^56

The casual chatter of the members of the first Reagan administration about the nuclear warning shots and 'prevailing' in a nuclear war had produced an undercurrent of general public unease which resulted in the sudden popularity of the movement in the United States, to freeze the existing nuclear stockpiles leading to the eventual reduction and possibility of elimination of thermonuclear armouries. It also generated a massive peace movement in Western Europe.

An additional complication for the nuclear warriors was the difficulty in finding a suitable basing mode for the MX missile. At the beginning of the 1980s, the missile alone was estimated to cost about $10 billion. Construction of 4,600...

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shelters for it was to add another $16 billion. The 200 missile sites would have required the construction of 8,000 miles of roadways in addition to the shelters and command facilities. The gigantic enterprise called for 600,000 tonnes of cement, between 32 to 48 million tonnes of sand, 210 million gallons of liquid asphalt, 125 million gallons of fuel and 17.9 billion gallons of water. The Mormon Church expressed its vehement opposition to the construction of the missile. Lieutenant General Daniel O. Graham, former Director of the Defense Intelligence Agency and founder of a lobby for space-based defense called the High Frontier and Edward Teller, a veteran of the Manhattan Project during the Second World War which resulted in the atomic bomb and the so-called Father of the H-bomb; Admiral James Watkins, Chief of Naval Operations; Reagan's so-called Kitchen Cabinet, which consisted of Karl Bendetsen, a retired businessman and a former Assistant Secretary of the Army, William Wilson, a rancher and an oilman, and Joseph Coors, a beer magnate formed the privileged group of elderly advisors which influenced Reagan more than his regular advisors within the administration. George Keyworth, his science advisor and a protege of Edward Teller, was "surprised and shocked, even stunned," when he was told on 19 March 1983, that the President wanted to know whether it was "a good time to renew efforts in strategic defense." Despite his early misgivings and advice by his scientific colleagues that he should 'fall on the sword' and resign, Keyworth prudently supported the President's search for strategic defense.

57. This analysis is based on a very comprehensive and neat account provided in Zuberi M., "Swords and Shields: A Scientific Controversy, Man & Development (March 1991), pp
Reagan had announced a major revolution in the nuclear orders based on the supremacy of the offensive without an analytical effort within his scientific and strategic bureaucracies and without any consultations with the governments of America's military allies.

A underlying idea was to devise a defensive technology which would restore the protective insularity of the United States threatened by essential equivalence in offensive thermonuclear armouries between the United States and the Soviet Union. 'Star Wars' promised to regain the moral high ground which the critics of nuclear strategy had claimed for themselves. 'Star Wars', said E.P. Thompson, 'is the ultimate decomposition of the deterrence theory, and the attempt by the United States nuclear ideologists to return to the womb of Hiroshima.' 58 Edward Teller had in the past advocated work on the Hydrogen Bomb, an offensive weapon, and now he supported research on defensive weapons. The Hydrogen Bomb was a single weapon being pushed by its supporters within the closed circle of decision makers. Strategic defense was to be based on the coordinated operation of a whole series of weapon systems and devices. The most obvious similarity between the decisions is a resort to technological fix for a security problem which is primarily political. The main difference, however, is that while a strategy had to be devised to accommodate the awesome power of the H-Bomb, the Strategic Defense Initiative (SDI) demanded technological innovation to satisfy the requirement of strategy. The scientists engaged in research for the S.D.I. were driven by intellectual curiosity and technological challenge of

58. Ibid., p. 46.
reaching into exotic regimes of high energy physics, where they deal with cataclysmic energies, distant frontiers of computer science and remotest reaches of sensing and communications. "Having recognised that there is little more to be done in improving offensive weapons", Hans Bethe remarked, "they are enthusiastic advocates of defensive weapons and in this advocacy they are finding a very receptive government." We are working on weapons of life, said Larry West, 'ones that will save people from the weapons of death.'

Spurgeon M. Keeny and Wolfgang K.H. Panofsky argue that, for such a system to work effectively, it must be "leakproof", since the penetration of even a single warhead would cause tremendous destruction. They observe that,

"...a single modern strategic weapon could have a million times the yield of the high explosive strategic bombs of World War II, or one hundred to a thousand times the yield of the atom bombs that destroyed Hiroshima and Nagasaki, killing 250,000 people."

Teller had argued as early as 1963, in favour of such high altitude nuclear testing in order to devise an X-ray laser pumped into outer space by nuclear explosions to destroy missiles in flight. Teller maintained that a leak proof defense against missiles is however not possible, yet what the United States must aim at is "some defense, not a perfect defense." Reagan's idea of an 'impenetrable umbrella' was based on the development of such new technologies as laser and particle beam weapons. However the particle beam weapons were still in the conceptual stage.


The intensity of the scientific opposition can be seen by the fact that when alternative sources of research support were dwindling, thousands of scientists had pledged not to accept any funding from the Star Wars projects. By the Spring of 1986, 3,700 Professors and 2,800 junior faculty members had signed the pledge. Matters worsened when in November 1985, it was revealed that there were some unresolved difficulties regarding measuring some properties of X-ray laser.61

There were also some problems regarding the complex requirements of battle management systems. It was estimated that 25-61 million lines of error free computer code would be needed for the system; i.e. the size of 100 text books. There were some programming errors too, compounded by the fact that the software would be based on assumptions about the adversary's capabilities and plans. A computer miscalculation could lead to a computer-generated holocaust. David Parnas said,

"...a weapon you can't trust is of no use to you. We will make decisions as if it were not there, and they will make decisions as if it might work."* 62

McNamara as Defence Secretary had contributed considerably to American defence policy and during whose tenure there was a steady build up of American weapon systems came to view that,

"nuclear weapons have no military purpose whatsoever ... except only to deter one's opponent from using them". 63

61. Zubedi, n.57, p. 68.