

The Strangelove Legacy:

Institutionalism, the Arms Race, and Arms Control in the Post-Cold War World

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Introduction

“Is it possible to forge a global consensus on the propositions that nuclear weapons have no defensible role; that the broader consequences of their employment transcend any asserted military utility; and that as true weapons of mass destruction, the case for their elimination is a thousand-fold stronger and more urgent than for deadly chemicals and viruses already widely declared immoral, illegitimate, subject to destruction and prohibited from any future productions?”

- General Lee Butler, USAF (ret), Last Commander of the Strategic Air Command, to the National Press Club, 4 Dec 1996.

“...we do not believe that removing nuclear weapons from alert status and placing the warheads in controlled storage or further restricting US nuclear declaratory policy is in our security interests...”

- White House Press Secretary Michael McCurry, 4 Dec 1996.

The Plan of this Paper

The Strategic Arms Reduction Treaty II was signed in January of 1992. While ratified by the US Senate over two years ago, it was only in April of this year that it was ratified by the Russian Duma. Even while this ratification appears to indicate a desire to work toward more progressive arms control, the atmosphere of tension and distrust on behalf of the two nuclear superpowers is telling of a great institu-

tional reluctance. Indeed, while both sides claim to support further arms reductions, neither has invested the political capital necessary to fundamentally change the international strategic dynamic, nor do they appear willing to take the political risks necessary to advance the arms control agenda. Meanwhile an historic opportunity to further reduce strategic arsenals to one-fourth their Cold War levels seems to have passed us by.

While there are mountains of literature—both during and after the Cold War—offering structuralist and realist explanations for the triumph and failures of arms control, very little attention has been devoted to the institutional and internal cultural influences on national strategic planning and policy. There are four glaring pieces of evidence which would make any observer suspicious of a purely realist, interstate explanation of the failure of arms control in the last eight years.

The first observation has to do with the manner in which the strategic institution has chosen to undertake the arms reductions called for in the START I treaty. The treaty specifies only operational, fielded nuclear weapons. It does not address the reserve and inactive components of the strategic arsenal. Currently the US maintains an operational force of 6,000 weapons as called for in the treaty. When totaled, however, the number of reserve and inactive weapons currently being maintained by the Department of Energy numbers nearly 3,700. And now that START II is scheduled to go forward, the US Department of Energy has promised to place every weapon removed from the deployed arsenal into the reserve force. This will, for the first time in the history of nuclear arms, make the reserve force of

a nation larger than the active force. The administration justifies such huge reserves as necessary in order to maintain a “hedge” against a possible Russian resurgence to hostile or other nuclear ambitions. They also insist the threats from the so-called “rogue nations” such as Iran and North Korea justify the preservation of every possible capability. On the surface at least, this huge reserve component is militarily unnecessary and fiscally burdening.

The second observation regards the manner in which the strategic institution has chosen to adopt itself to the elimination of all nuclear testing. Rather than eliminate the test program from the budget, the administration has opted to retool this program and enable it to test nuclear weapons without actually testing them. Under the auspices of the Stockpile Stewardship program, the US will be spending \$4.5 billion this year alone (a \$3.3 billion increase from Cold War detonation test spending)¹ to simulate nuclear tests and improve nuclear weapons designs using the most advanced (and expensive) computer technology available today. This includes the development of new nuclear capabilities (such as the B-61-11 earth-penetrating bomb) for future deployment.

Last year the Senate rejected the Comprehensive Test Ban Treaty, indicating to the world that despite our vast infrastructure for maintaining the viability of our nuclear forces without detonation testing, and our denouncement of countries like India and Pakistan which have conducted detonation tests, we intend to detonate our weapons anyway. The US therefore has opted to preserve, in its entirety, the

structure useful to develop every conceivable type of new nuclear weapon (even though the Departments of Defense and Energy insist that detonation testing is not necessary to upgrade and maintain the arsenal.) On the surface at least, an increase in expenditures on the development and testing of nuclear weapons, to include the fielding of brand new and more capable systems, is unwarranted and dangerous.

The third observation has to do with the expansion and improvement of a military alliance initially created to counter the Soviet threat—NATO. While the ability and political inclination of Russia to harm its Western neighbors has only decreased since the end of the Cold War, the US has insisted NATO expand to include former Soviet block countries with little regard for either the enraged Russian reaction or the tremendous cost (both financially and security-wise) to the US government. With the inclusion of Hungary, Poland, and the Czech Republic in NATO, the tremendous military capability of the West now stands at the very borders of Russia—while Russia’s ability to lash out with force grows increasingly feeble. The administration has explained the expansion as necessary to both guarantee the integrity of European security and to promote the stable development of these three infant democracies.

But besides Russia (which the administration insists is not seen as a threat), there is no conceivable threat to the Western nations that would necessitate the expansion of the alliance. What’s more, if NATO’s new role in the post-Cold War world is one primarily of peacekeeping and UN support (as the administration

1 Stephen I. Schwartz, ed., *Atomic Audit, The Costs and Consequences of US Nuclear*

claims), the tremendous cost involved in upgrading the military forces of the three new allies and integrating them into the NATO military apparatus can only hinder NATO's overall peacekeeping capabilities. On the surface then, the expansion of NATO seems militarily unnecessary and (considering the Russian anxiety over possible invasions) risky.

Finally, the fourth observation has to do with the behavior of the US government and its apparent lack of regard for arms control progress. As the Soviet Union disintegrated from 1989-1991, the Bush administration struck an uncodified deal with the new Russian government led by Boris Yelstin. Yelstin would not only permit the breakup of the Soviet Union to occur in a peaceful manner, he would agree to sweeping (and to the Russians, militarily disadvantageous) nuclear reductions—along with the withdrawal of Russian troops from Eastern Europe. In return, the US would not only continue to treat Russia as a major world player, we would both consult Russia on all strategic matters and seek the near-abolition of nuclear weapons with all deliberate speed and sincerity.

While the world saw tremendous progress from 1990-1992 (signing both START treaties, the Conventional Forces in Europe treaty, the Open Skies agreement, and opening negotiations on the Comprehensive Test Ban Treaty, the Chemical Weapons Convention, and START III) the years since then have seen the arms control agenda all but disappear from the list of US security priorities. Over the past two years, the Clinton administration has displayed what can only be de-

Weapons Since 1940, The Brookings Institution, Washington D.C., 1998., p. 30.

scribed as casual disregard for the impact its behavior has on the efforts to reduce the nuclear danger.

Last year, the administration refused to sign (on threat of Senate rejection) the treaty eliminating the production and use of conventional land mines. In this action the US has joined forces with a tiny minority of infamous countries including China, North Korea, and Libya.

In 1996, when the Russian Duma appeared finally ready to ratify the START II treaty, the administration announced—with great fanfare—the expansion of NATO. The Duma reaction was to postpone ratification. In December, two days before the Duma was scheduled to ratify START II, the US began its latest bombing campaign (still underway) against Iraq, prompting the Russians to postpone ratification in protest. Last year, *on the eve* of Duma ratification of START II, the US began the Kosovo bombing campaign inciting the Duma once again to postpone ratification in protest. Most recently, in March, three days before the Duma was scheduled to at last ratify START II, the US Senate overwhelming passed a bill to develop a national missile defense that would almost certainly violate the 1972 ABM treaty—the integrity of which the Russians have long declared is an absolute prerequisite to any further advancement of the arms control agenda. The Russian (by then routine) reaction to this was to postpone the ratification of START II.

Certainly the recent ratification of the treaty can be seen as encouraging (although it's interesting that this action was taken almost immediately after the confirmation of Vladimir Putin as the new Russian President), but this progress has

taken place despite US efforts, rather than because of it. And it's still not a done deal. The US has vowed to develop an ABM system contrary to the 1972 ABM treaty, and the Russian Duma has declared compliance with START II contingent upon the US upholding that ABM treaty. Combine this with the reluctance of the US over the past year to continue START III negotiations or even consider unilateral implementation of any part of START II and it appears, on the surface at least, that the US government as a whole has effectively lost interest in reducing the world's ability to destroy itself.

At first glance, these four observations indicate that a purely structural explanation of the stagnation of arms control over the past eight years is inadequate. Indeed, institutional interests and the methodology behind US nuclear strategy appears to be at the very heart of the matter. The plan of this paper therefore is this: Part I will review the institutional inheritance of the American nuclear state. In the years before the first atomic weapon was used, an entire subculture was grown from the seeds of aviation technology as a mode of warfare. This subculture—in the form of an independent strategic air force—would take the new atomic know-how (which Eisenhower first thought of as “just another weapon,”) and erect it as the center of gravity of fifty years of world history. Of primary interest to this study is the rise of the doctrine of strategic bombardment, and the use of value-free analysis on behalf of the US strategic institution as the basis for the most important of policy decisions. It will be demonstrated that these two intellectual and institu-

tional forces have had a tremendous—and heretofore little-acknowledged—impact on recent US behavior.

Part II will call attention to the institutional explanation of both the arms race and the development of arms control theory. Strategic bombardment and value-free analysis will be revisited here within the context of the arms race of the fifties and sixties and, finally, the current US nuclear policies. An institutional analysis will be contrasted, briefly, with examples of more standard realist and structuralist explanations. This institutional explanation will be offered as both a complement to, and an alternative to, the standard structural accountings.

Part III will investigate our four initial observations in an effort to determine if the current US nuclear policy can be reconciled with Western notions of sound military planning and execution. In many ways, nuclear strategy was seen at the outset—and throughout the Cold War—as an alternative to conventional military conflict (rather than an extension of it). A few pages will therefore be devoted to examining this conclusion in light of the end of the Cold War.

Part III will also include commentary and analysis on the latest developments in strategic arms control. The rejection of the Comprehensive Test Ban Treaty, and undermining of the ABM and Non-Proliferation Treaties, the adoption of START II to the concerns of internal political motives on both sides, and the rise of new nuclear ambitions at home and abroad will be reviewed in some detail.

In a concluding section, this paper will offer comments on the need for moral thinking in strategy and recommendations for a progressive arms control policy.

I

“A very significant thing to me was that we could cross the lines of these contending armies in a few minutes in our airplane, whereas the armies have been locked in the struggle, immovable, powerless to advance for three years. ...The bombardment people are sure that if they are given enough planes and explosives, there would be nothing left of Germany in a short while.”

- Major Billy Mitchell on the potential of Airpower to end the trench stalemate of the Western Front WWI, 22 April 1917.

Douhet, Mitchell, and the Rise of Strategic Bombardment

By the end of WW II, some 147,000 tons of bombs had been dropped on Japan by B-29s under the command of Maj Gen Curtis LeMay.² Under the auspices of the doctrine of strategic bombardment, the idea was to bypass the battlefield and bring the war directly to the people responsible for the war’s instigation—the citizens of the enemy nation. Having their homes and factories, not to mention their children, incinerated by invulnerable bombers was supposed to instantly sap their will to fight. A nation under strategic air attack, the theory argues, is supposed to be so demoralized that they would rather surrender quickly and give up their war aims

² United States Strategic Bombing Survey Summary Report: Pacific War, Washington D. C., 1 Jul 1946, US Government Printing Office, p. 22.

rather than continue to absorb such punishment—even if they still have substantial military capability remaining.

The original architect of the doctrine of strategic bombardment was the Italian general Giulio Douhet. In 1927 he wrote:

...it *was impossible* [for land forces] to invade the enemy's territory without first breaking through his defensive lines.

...now *it is possible* to go far behind the fortified lines of defense without first breaking through them. It is air power which makes this possible.

...the repercussions of war are no longer limited by the farthest artillery range of surface guns, but can be directly felt for hundreds and hundreds of miles over all the lands and seas of nations at war. No longer can areas exist in which life can be lived in safety and tranquillity, nor can the battlefield any longer be limited to actual combatants. On the contrary, the battlefield will be limited only by the boundaries of the nations at war, and all of their citizens will become combatants, since all of them will be exposed to the aerial offensives of the enemy. There will be no distinction any longer between soldiers and civilians...

The brutal but inescapable conclusion we must draw is this: in face of the technical development of aviation today, in case of war the strongest army we can deploy in the Alps and the strongest navy we can dispose on our seas will prove no effective defense against determined efforts of the enemy to bomb our cities.³

³ Giulio Douhet, *The Command of the Air*, Coward-McCann inc., 1942, reprinted in 1983 by the Office of Air Force History, Washington D. C., pp. 9-10, emphasis original.

Douhet went on in this landmark work of airpower theory to explain how strategic bombardment alone can make traditional combat obsolete. Indeed, Douhet promised that combat on the ground would become an anachronism:

A nation which once loses the command of the air and finds itself subjected to incessant aerial attack aimed directly at its most vital centers and without the possibility of effective retaliation, this nation, whatever its surface forces may be able to do, must arrive at the conviction that all is useless, that all hope is dead. This conviction spells defeat.⁴

Hence, he tells us that the issue of greatest importance in war is the morale of the citizens and the maintenance of their will to continue to resist. Douhet concluded, "...the World War was decided by the collapse of the moral resistance of the defeated peoples." His conclusion then, is that by bombing cities you can so demoralize a nation that they will surrender no matter what the actual battlefield situation may be.

And if on the second day another ten, twenty or fifty cities were bombed, who could keep all those lost, panic-stricken people from fleeing to the open countryside to escape this terror from the air?

A complete breakdown of the social structure cannot but take place in a country subjected to this kind of merciless pounding from the air. The time would soon come when, to put an end to horror and suffering, the people themselves, driven by the instinct of self-preservation, would rise up and demand an end to the war. This before their army and navy had time to mobilize at all!⁵

⁴ Ibid., p. 140

⁵ Ibid., pp. 57-58.

General Billy Mitchell, a rather influential and admirable character who choose to face court-martial rather than give up his views on airpower, agreed with Douhet. “It is unnecessary that these cities be destroyed, in the sense that every house be leveled to the ground. It will be sufficient to have the civilian population driven out so that they cannot carry on their usual vocation. A few gas bombs will do that.”⁶

From there it is a short trip to suggest that not only should a nation who wishes to prevail in war establish their own independent air service, but that this service should eclipse the army and navy of that nation in both political and material importance. Douhet writes: “...there is no *a priori* reason why the air arm cannot become the predominant power in its relations with surface forces.” “In examining these relations we come to the conclusion that an air force is destined to predominate over both land and sea forces...”⁷ Later: “...an Independent Air Force which conquers the command of the air and keeps up enough strength to crush the resistance of the enemy will be able to achieve victory regardless of what happens on the surface.”⁸

Of course, just about everything Douhet predicted turned out to be incorrect. During WW II tactical airpower—the bombing of military forces rather than urban-industrial centers—completely changed the nature of land and naval warfare in a way that most historians now agree did far more to shorten the war than did the

⁶ William Mitchell, *Winged Defense*, New York, 1925, pp. 126-127.

⁷ Douhet, *op. cite.*, p. 29.

strategic bombardment campaign. As was seen quite clearly in the case of Germany, and with greater obstruction in the case of Japan (due to the distraction of the atomic bombings), the subjects of strategic bombardment did not suddenly lose the will to fight. Indeed, during the Battle of Britain the German air forces conducted their bombing campaign exactly as Douhet prescribed, and the result was an increased resolve on behalf of the British citizens to fight to the bitter end.⁹ Furthermore, Douhet almost completely ignored the issue of target selection, a matter that was discovered to be of definitive importance in all matters of strategic bombing during WW II. Finally, Douhet vastly underestimated the ability of a determined nation to put up an effective defense against incoming bombers.¹⁰

Still, one can't help but be impressed by the power of Douhet's proposition. Douhet had witnessed the horror of WW I first hand. During the course of that war, he was first frustrated, then finally exasperated, by the tremendous waste and futility of the current modes and doctrines of ground combat. He was captivated by the new aviation technology, and saw within it the potential to end wars quickly without the tremendous loss of life that was trench warfare. Douhet believed that wars were inevitable and that the moral soldier therefore had a human duty to win them quickly and decisively so as to minimize the carnage. Airpower promised to

⁸ Douhet, *op. cite.*, p. 103

⁹ Spitfire pilots were consequently elevated to the status of near-mythic warrior-heroes. Of the Spitfire pilots, Churchill remarked "never have so many owed so much to so few."

¹⁰ Hitler ended the Battle of Britain when he erroneously concluded that Britain had an inexhaustible supply of fighters and that his bombing campaign would never be effective.

do this, and in a way that was also materially cheaper than either land or naval combat. In essence, Douhet's conviction was that airpower, and airpower alone, could make war a manageable proposition.

So Douhet's principles were followed, to the letter, in WW II--with disastrous results. By wars end, 20,000 bombers and 18,000 bomber escorts had been lost by the combined 8th and 15th Air Forces in Europe and Britain's Bomber Command, with 40,000 airman killed. The Germans dropped 60,000 tons of high explosives on England, and the Anglo-American forces dropped 600,000 tons of blockbusters and incendiaries on German cities.¹¹ But nowhere did civilian morale collapse. Nowhere was war production completely halted. Indeed, German war production rose steadily until August 1944, by which time the German forces had been effectively beaten on all fronts.¹² Far from producing an immediate end to the war, the effect on war-supporting industry by strategic bombing was protracted and attritional, and took the entire length of the war to have a direct impact on the battlefield. The firebombing seems to have done nothing to shorten the war, and may even have prolonged it. It seems obvious that Hitler would have fought on until complete defeat no matter what strategies the allies employed (making the firebombings superfluous to the cause of crushing the German will). Concerning the Japanese however, is some evidence suggesting that the Japanese high command

¹¹ P. M. S. Blackett, *Studies of war, Nuclear and Conventional*, Hill and Wang, 1962, p. 9.

¹² Many argue that this was more the result of a delay in full German war mobilization than the ineffectiveness of bombing. Regardless, strategic bombardment failed to produce the decisive results Douhet promised.

could not arrive at a consensus on surrender. Some of its members had been so incensed by the allied bombing campaign that they wished to exact whatever measure of revenge they could.¹³ In 1946, the US Strategic Bombing Survey remarked:

...In June 1944 approximately two percent of the population believed that Japan faced the probability of defeat. The fall of Saipan could not be kept from the Japanese people. Even though the psychological effect of this disaster was far greater on the Japanese leaders and intellectuals than on the mass of the population, all indices of Japanese morale began thereafter to decline. By December 1944 air attacks from the Marianas against the home islands had begun, defeats in the Philippines had been suffered, and the food situation had deteriorated; 10 percent of the people believed Japan could not achieve victory. By March 1945, when the night incendiary attacks began and the food ration was reduced, this percentage had risen to 19 percent. In June it was 46 percent, and just prior to surrender, 68 percent. Of those who had come to this belief over one-half attributed the principal cause to air attacks, other than the atomic bombing attacks, and one-third to military defeats.¹⁴

Roughly then, 35% of the population were willing to surrender as a result of the strategic bombardment campaign. This was after many months of bombing. When the bombing first began, only ten percent of the population were demoralized. While this may be significant, and, depending on the psychological impact of the bombings on the Japanese elite (which we still don't know), may have hastened the end of the war by a period of months, it is not decisive. According to Douhet,

¹³ Rufus E. Miles Jr., "Hiroshima: The Strange Myth of Half a Million American Lives Saved," *International Security*, Fall 1985, Vol. 10, No. 2, p. 129.

¹⁴ US Strategic Bombing Survey, *op. cite.*, p. 21.

the Japanese will to fight should have collapsed after only a few days bombing. But night after night, the Japanese absorbed tremendous losses and endured the most horrific of suffering, and still wished to fight on.¹⁵

The US Strategic Bombing Survey of Germany was even more pessimistic. The survey concluded that during British night bombing, only one-third to one-half of the bombs hit the correct city, let alone the correct industrial complex. It went on to remark that with the exception of the bombing of transportation and liquid fuels toward the very end of the war, the economic effect of strategic bombing on Germany was slight at best. Douhet had remembered the senseless slaughter of WW I, such as that at the grisly battle of the River Somme (where three men died for every square foot of land that was fought over). He hoped that airpower could prevent such a massacre from ever occurring again. Far from achieving such a vision, the strategic bombardment campaign in Europe came close to producing a new Somme in the skies over Germany and France. If there had been no Manhattan Project, the doctrine of strategic bombardment would now reside on President Reagan's Ash-heap of History.

But on 6 Aug 1945 the US dropped the first atomic bomb. On 9 Aug, we dropped another. One day later Japan sued for surrender. For the Japanese High Command and an exasperated Emperor Hirohito, the bombs (along with the Russian declaration of war on Japan) was only the torrent of their great river of trag-

¹⁵ On March 29, for example, 83,000 Japanese were killed or injured during the fire-bombing raid on Tokyo. This number is estimated to be higher than the total number of immediate casualties at Hiroshima (70-80,000). Rufus E. Miles Jr., *op. cit.* p. 125.

edy. For the protégés of strategic airpower however—like Maj Gen Curtis LeMay—there could not have been a more fortuitous sequence of events.

The Bomb and the Creation of SAC

As to whether the bombs actually ended the war without the need for invasion has been the subject of intense debate. The intuitive conclusion is that atomic bombs, being as tremendously big and powerful as they are, must certainly have played a decisive role. If anything could end a war, after all, surely that thing would be an atomic bomb.

But a more thorough analysis of the evidence would lead us to a different conclusion. By the time the bombs were dropped, Japan had already been more or less defeated and the war was over save the paperwork. In 1946 the US Strategic Bombing Survey Committee concluded:

There is little point in attempting precisely to impute Japan's unconditional surrender to any one of the numerous causes which jointly and cumulatively were responsible for Japan's disaster. The time lapse between military impotence and political acceptance of the inevitable might have been shorter had the political structure of Japan permitted a more rapid and decisive determination of national policies. Nevertheless, it seems clear that, even without the atomic bombing attacks, air supremacy over Japan could have exerted sufficient pressure to bring about unconditional surrender and obviate the need for invasion.

Based on a detailed investigation of all the facts, and supported by the testimony of the surviving Japanese leaders involved, it is the Survey's opinion that certainly prior to 31 December 1945, and in all probability prior to 1 November 1945, Japan would have

surrendered even if the atomic bombs had not been dropped, even if Russia had not entered the war, and even if no invasion had been planned or contemplated.¹⁶

Regardless, the immediate conclusion by most Americans, and certainly by advocates of airpower, was that the bomb and the long-range strategic bomber made an almighty combination.

So on March 21, 1946, the Strategic Air Command was founded. Her mission:

...to be prepared to conduct long range offensive operations in any part of the world either independently or in cooperation with land and naval forces; to conduct maximum range reconnaissance over land or sea either independently or in cooperation with naval forces; to provide combat units capable of intense and sustained combat operations exploiting the latest and most advanced weapons; to train units and personnel for the maintenance of the Strategic Forces in all parts of the world; and to perform such special missions as the Commanding General , Army Air Forces may direct.¹⁷

This was a decidedly open-ended mission statement. It not only allowed the Air Force to mold SAC into whatever it saw fit, but also made it very easy to make large budget and procurement requests. Indeed, the Air Force would go on to command a loin's share of the defense budget. From 1954-1957, the years of fastest build-up, the Air Force received 47% of the total defense budget, while the Navy received 29% and the Army only 22%.¹⁸

¹⁶ US Strategic Bombing Survey, *op. cite.*, p. 26

¹⁷ General C. A. Spaat, *Letter to Commanding General SAC*, 12 Mar 1946.

RAND, Kahn, and the Value-Free Institution of Strategic Thinking

In 1964 the Stanly Kubric film *Dr. Strangelove; or How I Learned to Stop Worrying and Love the Bomb*, debuted in American theatres. In this film, the title character (a deranged scientist with a German accent and a right hand still-loyal-to-Hitler mind of its own) advises the President on how to best take advantage of the nuclear situation after a psychotic bomber-commander and a surprise Russian doomsday device threatens to destroy humanity. The character of Dr. Strangelove was not without real-life inspiration. A few years earlier a RAND corporation scientist and operations analyst named Herman Kahn had proposed just such a device, as he felt the current SAC warplan already spelled the complete annihilation for both sides in retaliation for even the slightest provocation.¹⁹

From the beginning, SAC was at the center of an entire institution of what would eventually become value-free, analytical thinking. This institution was originally composed of analysts with mostly physical science backgrounds, reflecting the tremendous influence the scientific establishment had on early nuclear strategy. It was, after all, the scientists of the Manhattan project at Los Alamos that created the bomb, and many of these same scientists (such as Oppenheimer, Kahn,

¹⁸ Alfred Goldberg, ed., *A History of the United States Air Force, 1907-1957*, D. Van Nostrand, Princeton, 1957, p. 117.

¹⁹ Kahn's and Kubric's Doomsday machines had the same idea: a huge stockpile of hydrogen bombs would be deployed around the world and placed under the control of a central computer. If anyone in the world started a nuclear war, the computer would detonate the bombs and the resulting fallout would destroy all life on Earth. The 1956 Sac warplan, if executed, would have had nearly the same effect.

and Teller) would be enlisted to advise presidents and generals on the ramifications and functions of the new weapons. Beginning with the Frank Report of 1945²⁰, and continuing to this day, scientists have played a major role as not only technical advisors, but as strategists, policy advisors, and even department secretaries.²¹ But scientists tend to view things quantitatively rather than qualitatively. Indeed, physical scientists are trained to reduce systems to their most elemental components, and derive their explanations from the interactions of the basic particles. This would eventually lead to an obsession in nuclear strategy with all things numeric. Scenarios, force levels, blast effects, contamination rates, casualty estimates, etc., as the securing of options, became the central focus of the entire strategic analysis institution.

Early nuclear theorists, such as Bernard Brodie and Jacob Viner, brought their new ideas to the RAND Corporation. RAND was founded by the Air Force in 1946 to give it the intellectual muscle necessary to advance its own agenda. Fred Kaplan described the early RAND as:

...the place where ideas came together. It was an Air Force creation, independent in title but contracted to do research for the Air Force. The Army and Navy had their bands

²⁰ Written by James Frank and a group of Manhattan Project scientists, and sent to Secretary of War Stimson on 11 Jun 1945, this report reflected the concern of many of the Los Alamos scientists on how the bomb would be used and urged the administration to exercise restraint. The Frank Report also predicted the possibility and implications of a runaway arms race and the need for international control.

of hired intellectuals too, but through the 1950s American military policy and defense budgeting emphasized nuclear power, and the Air Force had the big bomb...

...they were rational analysts, and they would attempt to impose a rational order on something that many thought inherently irrational—nuclear war. They would invent a whole new language and vocabulary in their quest for rationality, and would thus condition an entire generation of political and military leaders to think about the bomb the way that the intellectual leaders of RAND thought about it.²²

During those years the thinkers at RAND considered themselves the heart and sole of the nation's nuclear defense. There was an air of self-confidence and self-importance about the place. Within its corridors, its hundreds of scientists and analysts would do little more than think, write, speak, trade memos, and dream up all sorts of new ideas about nuclear war. In this isolated world, it was the complete preoccupation—complete intoxication—with all things nuclear that elevated their ideas from mere nuclear strategy to nuclear *doctrine*.

RAND has its origins in the underground planning rooms of WWII. It was the first war to rely so heavily on the talent of scientists to exploit the new technologies that seemed to appear almost daily. Such technologies as radar, sonar, radio, high explosives, high-performance aviation, long-range rockets, cryptography, depth charges, and of course, atomic weapons, brought scientists to the forefront of mili-

²¹ Edward Teller, the inventor of the hydrogen bomb, was one of President Reagan's top advisors on nuclear matters—particularly SDI. Former Secretary of Defense William Perry started his career as a weapons designer at the Lawrence-Livermore National Labs.

²² Fred Kaplan, *The Wizards of Armageddon*, Simon & Schuster, New York, 1983, pp. 10-11.

tary planning. This led to the birth of a whole new field called operations analysis. Analysts were concerned with such questions as: how much explosive force must a bomb release to cause a certain amount of damage to a certain target? What's the best formation for bombers to survive anti-aircraft artillery? How many fighters, and in what pattern of deployment, will best protect a group of bombers? Should an aircraft be heavily armored to withstand attack, or should it be lightly armored in order to fly faster? If the precise location of a submarine is unknown, at what depth should depth charges be set to explode? Etc., etc., etc.

By the end of the war, every Air Force wing had its own operations analysis division, whose job it was to advise the air commanders on the best tactics for the new weapons. Scientists were even asked to sit right alongside the colonels and generals in Washington and participate directly in war planning.

At the end of the war, General Hap Arnold was concerned that demobilization would gut the intellectual resources of the entire Army Air Force, and all the brilliant scientists and analysts would go back to their university and corporate jobs. This would leave the US unable to plan effectively for the next war. RAND was born of the idea that neither academia nor government could produce the kinds of thinking needed to keep the Air Force on the cutting edge of technology and strategy. RAND started out as a four-man outfit in an emptied-out portion at the Douglas Aircraft main hanger in Santa Monica California. Their first report was entitled *Preliminary Design of an Experimental World-Cycling Spaceship*, which de-

tailed the requirements of a primitive satellite. Two years later, with 150 employees, RAND would get its own building in downtown Santa Monica.

From the very beginning, the thinkers at RAND viewed themselves as the pre-eminent rationalists of their time. At a RAND conference in September of 1946, William Weaver, a RAND director, remarked in his opening address:

I assume that every person in this room is fundamentally interested in and devoted to what can broadly be called the rational life...He believes fundamentally that there is something to this business of having some knowledge...and some analysis of problems, as compared with living in a state of ignorance, superstition and drifting-into-whatever-may-come.²³

Herman Kahn was the epitome of the RAND analyst. He was so determined to think seriously and rationally about the more horrible aspects of the nuclear question, that he would end up producing a truly dizzying and disturbing list of ideas to prepare for and fight a nuclear war—ideas ranging from the interesting to the truly absurd. He described the role of the operations analyst:

...the analyst should try to restrain himself from indulging too often in recommendations based only on some intuitive ideas...to preserve a detached professional attitude. If he is always giving intuitive judgements he is much more likely to become embroiled in day-to-day policy fights. He then not only tends to become partisan but, what is worse, he will lose that feeling of relative leisure and detachment which is often essential to good work. It is not that considered opinions are always or even usually correct or non-partisan, but that intuitive judgements, by their nature, cannot be explicitly justified

²³ Quoted in Kaplan, *op. cite.*, p. 72

and, therefore, almost automatically increase the possibility that one will take sides as an enthusiast rather than an analyst.²⁴

Kahn goes on in that particular paper to outline a technique of systems analysis which leads him to the conclusion that the United States must possess a capacity to destroy 60% of the urban-industrial value of the Soviet Union, and that the tremendous weapons build-up being done by SAC at that time was entirely appropriate. Later, after being accused of being a cold and callous warmonger,²⁵ Kahn would write in a chapter entitled *In Defense of Thinking*:

A variation of the objection to careful consideration of these problems focuses on the personality of the thinker. This argument goes; Better no thought than evil thought; and since only evil and callous people can think about this, better no thought. Alternatively, the thinker's motives are analyzed: This man studies war; he must like war—much like the suspicion that a surgeon is a repressed sadist. Even if the charge is true, which in general it is not, it is not relevant. Like the repressed sadist who can perform a socially

²⁴ Herman Kahn and I. Mann, *Techniques of Systems Analysis*, Memorandum RM-1829-1-PR, The RAND Corporation, June 1957, p. 9. Emphasis original.

²⁵ In 1960, Kahn wrote *On Thermonuclear War*, in which he outlined not only the operations requirements of a SAC deterrent force that could destroy 60% of the Soviet urban-industrial value, but techniques for surviving and recovering from a Soviet nuclear attack. In a chapter entitled “Will the Survivors Envy the Dead,” Kahn details the problem of Strontium-90 contamination of the post-attack food supply and outlines a plan to divide the uncontaminated food among different groups in society according to their dietary needs. For example, Kahn suggests that pregnant women and infants receive only uncontaminated food and children and healthy workers receive partially-contaminated food. This leaves the sick and elderly no choice to eat the fully-contaminated food for as long as they can hold out. After all rationed food had been handed out, the left-overs would be sold to the highest bidder (Kahn had a near-idyllic belief in the virtue of the free market).

useful function by sublimating his urges into surgery, the man who loves war or violence may be able to successfully sublimate his desires into a careful and valuable study of war. It does indeed take an iron will or an unpleasant degree of detachment to go about this task. Ideally, it should be possible for the analyst to have a disciplined empathy.²⁶

The implications of this statement, and its connotations regarding its author, are obvious and disturbing. And Kahn made no attempt to sugar-coat or dilute the horrific implications of his work. Many of the lines of Dr. Strangelove's dialogue in the movie are taken directly from Kahn's book, *On Thermonuclear war*, which (as alluded in the title), Kahn intended to be the definitive classical study on the subject, doing for nuclear strategy what Clausewitz did for land warfare.

Kahn seemed to enjoy conjuring up images of dread and suffering. His lectures were filled with passages such as this:

Now just imagine yourself in the postwar situation. Everybody will have been subjected to extremes of anxiety, unfamiliar environment, strange foods, minimum toilet facilities, inadequate shelters and the like. Under these conditions, some high percentage of the population is going to become nauseated, and nausea is very contagious. If one man vomits, everybody vomits. It would not be surprising if almost everybody vomits. Almost everybody is likely to think he has received too much radiation. Morale may be so affected that many survivors may refuse to participate in constructive activities, but would content themselves with sitting down and waiting to die. Some may even become violent and destructive.

²⁶ Herman Kahn, *Thinking About the Unthinkable*, Horizon Press, New York, 1962, pp. 23-24.

However, the situation would be quite different if radiation meters were distributed. Assume now that a man gets sick from a cause other than radiation. Not believing this, his morale begins to drop. You look at his meter and say, You have received only ten roentgens, why are you vomiting? Pull yourself together and get to work.²⁷

Kahn would even suggest that nuclear war was not as bad as everyone thinks. He would point out that while nuclear war would increase the number of children born with genetic defects, four percent were already born with these defects. His conclusion: “War is a terrible thing, but so is peace. The difference seems in some respects to be a quantitative one of degree and standards.”²⁸ Nuclear war, Kahn would say, "...would not preclude normal and happy lives for the majority of survivors and their descendants...we can imagine a renewed vigor among the population with a zealous, almost religious, dedication to reconstruction, exemplified by a 50- to 60- hour work week."

In his review of Kahn's book for *Scientific American*, mathematician James R. Newman wrote: “This is a moral tract on mass murder: how to plan it, how to commit it, how to get away with it, how to justify it.”

It would be far less disconcerting if Kahn had been an isolated enthusiast whose ideas were rejected by the establishment. But this was not the case. Indeed, Kahn was only the most extreme of a whole generation of extreme thinkers—many of them working for RAND for a good portion of their careers. They included Bill

²⁷ Quoted by Helen Cadlicott, *Missile Envy: The Arms Race and Nuclear War*, Bantam Books, New York, 1984, p. 38.

²⁸ Quoted in Kaplan, *op. cite.*, p. 228.

Kaufman, Andy Marshall, and of course, Albert Wohlstetter.²⁹ Such perspectives as Kahn's contributed to the tremendously high weapons requirements of SAC warplans in the '50s and '60s.

But not everyone who thought about nuclear war strove for such pure rationality. Bernard Brodie was one of the first RAND strategists and the intellectuals who had perhaps the most influence on SAC strategy during the late 40s. His 1946 Book *The Absolute Weapon* was the first serious work on the subject of nuclear war-fighting strategy.

By the late 50s, Brodie came to realize that the Soviet leaders where not irrational monsters. Rather, they were at least as concerned with a possible conflict escalating uncontrollably as anyone in the US. (Indeed, history shows that in times of crises, the Russians have always tended to be rather prudent.) But by then Brodie, the scholar of philosophy and strategic studies, saw his preeminent position in the strategic intellectual establishment displaced by the mathematical logicians and number crunchers led by Albert Wohstetter. Eventually, Brodie was snubbed entirely and was never offered a department or administration position. His change of views then was probably driven as much by personal reasons as by academic, as he typically took up whatever position was the exact opposite of Wohlstetter's. That is not to say, however, that Brodie's later views had no sound theoretical basis.

²⁹ Wohlstetter's 1958 *Foreign Affairs* article entitle "The Balance of Terror" argued that SAC bombers were vulnerable to first-strike. He argued that this deficiency could not be overcome with the present technology. Therefore, it was necessary to consider the possibility launching our own preventative and preemptive first-strikes.

His views later in life, which more than anything represented a return to basic strategic principles, were based on the core belief that the Soviets had no real interest in starting any kind of nuclear war. In 1965 he wrote:

Unless we are dealing with utter madmen...it is virtually impossible to discover in the real world the considerations that could make the Soviet leaders undertake to do such a thing in the face of the enormous risks they would be incurring—risks that are certainly not slighted in their military and political doctrines.³⁰

The Vietnam War solidified Brodie's departure from RAND thinking. To Brodie, Vietnam raised questions as to the value of his twenty-five year profession. He saw Vietnam as the Waterloo of the institution of strategic analysis. The conflict demonstrated that despite exhaustive planning and the preparation of countless options and scenarios, in an actual conflict the United States would not be capable of escalating or de-escalating—at will and leisure—the scope of the war (as Kahn and Wohstetter assumed we could).³¹ The President and his advisors would not be able to make whatever policy adjustments they saw as desirable with any degree of efficacy. As Vietnam demonstrated—and as Brodie alone pointed out—it was the obsession with options and contingencies during the Eisenhower and Kennedy ad-

³⁰ Quoted in Kaplan, *op. cite.*, p. 339

³¹ One of the central presumptions of *On Thermonuclear War* was that the US, if properly armed, would be in a position to escalate or de-escalate the war at will. He proposes the inclusion into nuclear war planning of his “ladder of escalation,” whose 44 “rungs” ranged from “Ostensible Crises” to “Spasm or Insensate War.” Rungs in between included “Harassing Disarming Attack,” and “Slow-Motion Countercity War.”

ministrations that was one of the principle causes of the elephantine arms build-up of that period.

Another theorist who rejected the value-free analysis of RAND and the strategic establishment (and who was shunned for it) was Dr. J. Robert Oppenheimer. Almost immediately, he foresaw an inclination, on behalf of the scientific establishment, to become so preoccupied with the numbers and minutia of the operational situation that they would forget the true nature of the subject they were studying. In this case, even if one accepted Oppenheimer's estimation of Soviet strength—that the Soviets were about four years behind the US in terms of technology and that the size of the Soviet atomic program was about half the size of that of the US—full comprehension of the meaning of those numbers would still leave one very uncomfortable. In 1953, Oppenheimer demonstrated a foresight far ahead of his peers when he wrote:

...I have never discussed these prospects candidly with any responsible group that could steadily look at the facts, whether scientists or statesmen, citizens or government officials, that did not come away with a great sense of anxiety and somberness at what they saw. The very least we can say is that, looking ten years ahead, it is likely to be small comfort that the Soviet Union is four years behind us and small comfort that they are only about half as big as we are. The very least we can conclude is that our twenty-thousandth bomb, useful as it may be in filling the vast munitions pipelines of a great war, will not in any deep strategic sense offset their two-thousandth.³²

³² J. Robert Oppenheimer, "Atomic Weapons and American Policy," *United States Foreign Policy*, July 1953, p. 190.

Oppenheimer believed that the establishment of strategic thinking and targeting had gone terribly wrong in several ways. First was the total neglect of defense against atomic attack. The strategic bombardment advocates had proceeded from the assumption that defense against atomic attack was impossible in any meaningful way. The best course of action, therefore, was to place an emphasis on offense and removing the enemy's ability to attack. This despite the obvious evidence from WW II that a determined nation could put up quite an effective defense against bomber attack. Certainly new technologies, such as jet fighter/interceptors, radar-guided anti-aircraft artillery, and air-to-air guided missiles, could make defense against bombers even more effective and dramatically decrease the damage inflicted during an atomic attack. But for the Air Force to admit that there could be an effective defense against bombers, it would have to admit that its own bombers were vulnerable. As documented by Goldfischer, Mutual Defense Emphasis was never seriously considered by the mainstream of strategic thinking.

Oppenheimer was also concerned about the plan to bomb Soviet cities as opposed to the tactical use of nuclear weapons. In the fall of 1952, Oppenheimer was involved in Project Vista at CalTech, which studied the impact of the new H-bomb on strategic targeting. The study concluded that with the H-bomb, bombing cities made no sense. It was immoral and suicidal, as such wholesale destruction of life was bound to elicit an H-bomb retaliation from the Soviets. A better use for the H-bomb would be to bring the battle back to the battlefield. One of the early problems with the tactical use of nuclear weapons was locating the enemy army. With the H-

bomb, the point was moot. The entire rear areas of divisions could be wiped out with great speed, ending an invasion as soon as it began. This would not only win the war, but also save countless millions and prevent Soviet strategic retaliation.³³

But Oppenheimer's biggest concern with strategic thinking, and his greatest liability, was his opposition to even developing the H-bomb in the first place. As head of the Atomic Energy Commission's General Advisory Committee, Oppenheimer had recommended halting the H-bomb project, as he believed such a bomb would be far more powerful than any legitimate military requirement would call for. It would also prompt the Soviets to build one of their own. The H-bomb debate became a public battle between Oppenheimer and Edward Teller.

Unfortunately, Oppenheimer took up this view during the McCarthy era, when to even suggest that the US ought not to be purchasing as many offensive weapons as possible and instead concentrate on defense was tantamount to treason. In 1953, Oppenheimer, the man who invented the bomb, was labeled a security risk and removed from his post.

Despite the protestation of the analysts such as Kahn and his RAND colleagues that their methods were purely rational with no value judgments, we can conclude that value judgements were inescapable since the end result of their work was policy recommendations. Kahn in particular prided himself on having broken

³³ In the early '60s it was determined that nearly any type of tactical nuclear weapons use was infeasible, due to the difficulty of coordinating forces and conducting reconnaissance once the first bomb had been dropped. Regardless, tactical nuclear weapons were deployed to Europe and remained active until the START I treaty of 1992.

the moral inhibitions that prevented others from thoughtfully considering the morbid implications of nuclear war. He could stare into the face of horror and not blink. Kahn likened himself to the surgeon who could dispassionately cut into human flesh for the greater good. This comparison might have been valid if nuclear war were a natural disaster bound to inflict itself upon us despite our best efforts. But nuclear war is not a natural disaster. It is a human-created beast. It is a carefully planned and prepared-for thing, with armies of analysts, strategists, and targeteers locked away in windowless rooms, burning the midnight oil to make sure the whole thing goes off right. Without this institution, without the likes of Kahn to put forth arguments on the need for nuclear capabilities and the will to use them, nuclear war simply could not happen. In that regard, the detachment of the analyst is less like that of the surgeon more like that of the slaughterhouse operator, the concentration camp commandant, or any other organizer of mass homicide. Rapoport writes:

Those technicians too were for the most part detached in the sense that their work was not charged with effect. German chemists were detached when they prepared the poison gas; German engineers were detached when they built the gas chambers; German transportation experts were detached and efficient as they kept the trains moving, carrying people to the slaughter sites; German bookkeepers were detached while keeping tallies of the dispatched, etc. Doubtless, many of those responsible for this activity took a certain pride in having overcome any inhibitions they might have had in this matter. They might have been sincerely convinced that the Jewish Question was a problem to be solved in a detached and definitive manner, possibly for the good of humanity. In other words, the charge of depravity, sadism, etc., can be made convincingly only against cer-

tain isolated individuals. It cannot be made against the entire corps of specialists who planned, designed, and carried out the exterminations of the 1940s.³⁴

Like the Nazi engineers, the operations analysts are but human beings who enjoy the same gifts of life and suffers the same grief as the rest of us. What accounts for their inhuman capacity? Rapoport assigns it to the power of abstraction. The monstrosity of their work carries no emotional impact for them. Equations on a chalkboard are just equations. Targets to be bombed are just dots on a map. Casualty estimates are just a function of the number of bombs dropped. Nuclear capacity is exactly akin to an electrical charge and therefore nothing more than the potential energy of a system. This is the power of mathematics. When everything is reduced to an equation, the content disappears and only the form remains. The competence of an analyst is derived from an ability to formulate chains of abstract reasoning devoid of content. To analysts such as Kahn, moral considerations are not only irrelevant in strategy, they are *inappropriate*, because they distract us from certain realities, place certain options out-of-bounds, and make it impossible to balance the equation.

In this regard then, infusing moral considerations into value-free strategic thinking may prove impossible. Rapoport further comments:

...I often wonder whether it is worthwhile to try to bridge the chasm between strategic and conscience-inspired thinking. It may be feasible and advisable to broaden the views of both management and labor: The industrial process must keep functioning, and both sides may stand to gain from increased mutual understanding. It is imperative to establish ave-

³⁴ Anatol Rapoport, *Strategy and Conscience*, Schocken Books, New York, 1964, p. 191.

nues of communication between Blacks and Whites and between East and West, because they all must either learn to live with each other or perish. In the case of strategy and conscience, I am not sure. Here, I believe, is essential incompatibility, not merely a result of misunderstanding. I do not believe one can bring both into focus. One cannot play chess if one becomes aware of the pieces as living souls and of the fact that the Whites and Blacks have more in common with each other than with the players. Suddenly one loses all interest in who will be champion.³⁵

In all fairness to RAND and the Air Force, not everyone in their ranks felt as LeMay and Kahn did. The members of the social science department at RAND were especially that Kahn's way of thinking about nuclear war was only bound to make war more likely. Kahn's idea of threatening the Soviets with a credible first-strike capability was particularly disquieting. In 1954 RAND strategist James Digby and future head of ballistic missile development Brig Gen Bernard Schriever began to quietly promote a no-cities strategy that would focus SAC striking power against the nuclear and conventional military forces of the Soviet union. Urban and industrial centers would be untouched, leaving the Russians with no incentive to attack US cities. Their proposal had little impact.

³⁵ Ibid., p. 195.

II

“The only way to deal with these barbarians is to blow them all up. ...I would be satisfied if there were just two Americans left and one Russian.”

- General Thomas S. Powers, Commander in Chief of SAC, to McNamara Advisor William Kaufman, 1960.

Race to the Brink: SAC and Strategy in the 1950s

From 1945 to 1960, US nuclear strategy was developed at three levels: The National Security Council (NSC), the highest level, had the President as its head, and defined national security objectives and policy. The NSC also consisted of such figures as the Secretary of Defense, the Secretary of State, and the Chairman of the Atomic Energy Commission (AEC). Specifically, they made decisions concerning such matters as weapons production, weapons deployment, and the sharing of technology and assets with allies. The President, by virtue of the Atomic Energy Acts of 1946 and 1954, had the final authority on all nuclear weapons decision, and he was the only one who could authorize their use.

At the second level were the military planners who translated the policy guidance of the NSC into actual strategic plans. From 1948 on, the Joint Chiefs of Staff approved these plans, typically on an annual basis. Their products were the Joint Outline Emergency War Plan (later known as the Joint Strategic Capabilities Plan {JSCP}). This plan outlined the actions of immediately available forces during gen-

eral war during the current fiscal year. Their other product was the Joint Mid-Range War Plan (later the Joint Strategic Objectives Plan {JSOP}), which set force requirements for the next four to six years. The JSCP also specified damage requirements. This is important because it was these damage requirements which dictated the number and type of weapons allocated to each target. The number of targets identified by intelligence sources would therefore translate directly into weapons requirements.

These JCS documents were what drove the target lists and the operations plans of Strategic Air Command. The target lists were prepared primarily by Air Force Intelligence (the Air Targets Division), while SAC had primary responsibility for turning these target lists into operations plans. The main goal of the SAC planners was to use their available forces to achieve as much of the JCS damage requirements as possible with minimum losses. While SAC was an Air Force major command, it was also a unified command reporting directly to the JCS. This gave it an ability to act more or less independently of the rest of the Air Force.

The third level of strategy was the aforementioned intelligence community. The CIA controlled most US intelligence resources, but SAC owned and operated the U-2 spyplanes so vital to identifying targets inside Russia. Later, the CIA had to battle the Air Force who controlled the new spy satellites. This combined with the relatively primitive reconnaissance technology of the era led to a great deal of dispute over the conclusions and ramifications of the intelligence reports (with the Air Force estimates of Soviet strength typically being far greater than any other opin-

ion). The resulting paper war made it almost impossible for the JCS to muster the time or the manpower to challenge these conclusions. The target lists grew unchecked, rising steadily the number of weapons SAC wanted.

From the beginning, the second and third levels of atomic decision-making were not subject to tight executive control. Truman remained isolated from the issue of nuclear strategy. This was due primarily to the extreme secrecy surrounding all information relating to atomic weapons. This information was highly compartmentalized and high-level decision-makers did not have ready access to even such basic knowledge as how many weapons were in the stockpile. From the fall of 1945 to the spring of 1947, President Truman was not informed of the size of the American nuclear stockpile. At the same time the Secretary of the Navy and the Chief of Naval Operations each thought the other knew the size and nature of the arsenal, when in fact neither did.³⁶ This secrecy combined with the unwillingness of Truman to consider the bomb as anything but a last-resort terror weapon meant that there was no executive guidance of nuclear strategy. In fact, all of the executive policy initiatives concerning nuclear weapons of this period focused entirely on establishing civilian control over nuclear resources. Such questions as how the bomb might be used in war were never addressed.

This left the job to the military. The first operational atomic target list was prepared in 1947. This list anticipated that nuclear weapons would not be em-

³⁶ David Alan Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960, *International Security*, Spring 1983, Vol. 7, No. 4, p. 121.

ployed in any general war with the USSR. It was not until the Berlin crises of 1948 that the Joint Chiefs of Staff began preparing plans to use atomic bombs against Russia. But even these plans did not articulate the strategic goals of the use of atomic bombs. In the absence of specific policy guidance, therefore, the chief determinant of atomic strategy in the age of American nuclear monopoly was capability. The US stockpile and delivery capability until 1950 was extremely limited. In 1948, the US had only 50 unassembled bombs available for use. They were all the Mark-3 Fat Man type used against Nagasaki. They each weighed 10,000 pounds, required a crew of 39 two days to assemble. Each bomb had to be loaded into their aircraft via a special eight-foot deep pit the aircraft would roll over. The Air Force had only 30 specially-modified B-29s able to carry the bombs, located in the 509th Bomb Group in Roswell, New Mexico.

This limitation in bombs and planes was complicated by superlatively poor intelligence on Russia. The Russian territory was vast and unknown. The target planners had to rely on pre-war, and in some cases Tsarist-era maps. The first atomic bomb plans required the disruption of the Russian transportation system. Since crippling the entire rail network of Russia and Eastern Europe was infeasible, the plans focused on destroying the petroleum industry located primarily near cities. But even this task proved a strain on the poor resources and intelligence of the period. From 1947 to 1949 therefore, SAC targeting focus became less one of specific Russian systems and more one of urban strategic bombardment. Air Force planners began talking of bonus industrial damage. The rhetorical question, "what

was a city besides a collection of industry?" was common. SAC's targets were selected with the primary objective of the annihilation of population, with industrial targets incidental.

As the size of the stockpile grew, so did the target lists. In 1947, the plan called for dropping 34 bombs on 24 cities. By 1950, the plan called for the dropping of 220 bombs on 104 cities, with 72 bombs held in reserve. In December of 1950, Bernard Brodie was asked by Air Force Chief of Staff Hoyt Vandenberg to review the SAC target list and give his impression. Brodie was sharply critical of the plan. Specifically, he decried their failure to locate all the Russian power grids, calculate the complete effect of the bombs dropped, and estimate how much power the USSR could really need. There was no set strategy for destroying the Soviet ability to make war. The targeteers referred to the plan as the Sunday Punch—an all-out attack against the Soviets with everything SAC had. The planners seemed to feel that the Soviet Union would simply collapse once the bombs had been dropped. Brodie recommended a new target list be drawn up based on the complete known effects of the bomb so that overkill could be avoided. He also suggested the prospects of a no-cities plan be studied.³⁷

But the Air Force had other ideas for a new system of target planning. In January of 1951, commander of SAC General Curtis LeMay met with the Joint Chiefs Air Staff target panel to explain the unreasonable demands the old plan had placed on his aircrews. He complained of having to conduct visual pre-strike re-

³⁷ Bernard Brodie, Letter to David Alan Rosenberg, 22 August 1977.

connaissance and the difficulty of locating isolated target complexes in hostile territory. His main criticism of the plan, however, had to do with the idea of bonus damage. Since many of the targets of the old plan weren't located in urban areas, an off-target bomb would be so much wasted ammunition. If the plan focused on industry in urban areas, even a bomb that missed by several miles would hurt the enemy. LeMay's criticisms were accepted as significant problems in the current plan, and the panel agreed to submit future plans to SAC for review before seeking JCS approval. From that point on, SAC would be the driving force in the preparation of atomic target lists. Brodie's recommendations appear to have had little impact.³⁸

LeMay's aggressive campaign to gain control of all strategic targeting came at a opportune time in the development of nuclear technology. The Sandstone weapons test in the spring of 1948, with its new techniques of implosion and yield boosting, suggested that nuclear weapons no longer need be in such short supply. The new bomb designs made much more efficient use of the costly plutonium, with much greater yields. Nuclear weapons now produced much more bang for the buck than any conventional munition, and the manufacturing and plutonium refinement techniques had become so routine that atomic bombs, for the first time, could be mass-produced. This combined with the budget ceiling of FY 1950 made nuclear weapons a very attractive alternative to large conventional forces.

³⁸ This is evidenced by the fact that by all accounts, the Joint Chiefs never questioned SAC's and LeMay's insistence on a city-centered strategy. In transcripts and accounts of Joint Chiefs meetings, Bro-

The SAC targeting campaign was complemented by great strides in intelligence. By the late 40s, photo reconnaissance flights around the periphery of Russia were being conducted at a steady pace. What's more, from 1949 to 1953, Air Force intelligence interrogated some 1300 repatriated prisoners of war who had been held inside Russia. As a result, the list of targets grew from a few hundred in the late 40s to six thousand by 1952.³⁹ The production of weapons became linked to the target list, and the growth of SAC became linked to the stockpile.

In 1949, the last piece of the puzzle was put into place when Truman became convinced that international control of atomic materials would never happen. He concluded that in the absence of international control, the US must remain the strongest in atomic weapons. Truman agreed to three increases in the nuclear stockpile over the next two years. Nuclear weapons in general, and the build-up of SAC in particular, had become the centerpiece of US defense policy.

Eisenhower entered office with a tremendous amount of knowledge and experience regarding nuclear weapons. His military career had given him more direct contact with the atomic establishment than any president before or since. One of his first acts as president was to reverse Truman's long-standing policy of civilian control over the stockpile and make the bulk of US weapons immediately available to the military. By 1961, less than 10% of the nuclear arsenal remained in civilian

die ideas are never given serious consideration.

³⁹ "Strategic Air Command Progress Analysis, 1948-1953," pp. 37-38, 44-50.

hands.⁴⁰ To Eisenhower, the bomb was a legitimate military weapon to be used whenever needed.

Eisenhower was also bent on significantly reducing the overall military budget, which meant an even greater reliance on SAC and the doctrine of massive retaliation as it had come to be known. From 1954 to 1957, the Air Force portion of the total defense budget averaged 47%.⁴¹ Increases in technology also brought about the possibility of true tactical nuclear weapons. Where the original Fat Man weighed 10,000 pounds, the new Mark 64 weighed only 1,000 pounds, and had a much higher yield. This meant it could be delivered by all varieties of combat aircraft, and could be deployed on land and sea. Eventually, nuclear weapons would be developed and deployed as surface-to-surface missiles, air-to-air missiles, anti-aircraft missiles, long-range artillery shells, depth charges, and land mines.

The reluctance of civilian leaders to authorize the use of atomic weapons in Korea, however, convinced Eisenhower formal guidance on the use of tactical atomic bombs had to be created. In October of 1953, NSC-162/2 was published. It stated that in the event of hostilities, the United States would consider nuclear weapons to be as available for use as other munitions. Over the next few years, tactical nuclear weapons were increasingly calculated into force requirement estimates. By the late 50s, requirements of the use of tactical nuclear weapons were

⁴⁰ Andrew J. Goodpaster, MCP, 13 January 1961, dated 17 January 1961, in AEC, December 1960-January 1961, Vol. III, Folder #6, Subject Series, Alphabetical Subseries, WHO-SS, DDEL.

⁴¹ Alfred Goldberg, ed., *A History of the United States Air Force, 1907-1957*, Princeton, NJ, Van Nostrand, 1957, p. 117

routinely submitted by all unified and specified commands for inclusion in the JCS overall atomic production plan.

In 1951, rumors began to circulate at RAND and the AEC of a new "super-bomb" that could produce 1,000 times the power of ordinary atomic bombs. These new hydrogen fusion bombs promised, to the analysts at RAND, to complete the obsolescence of all other forms of warfare. It wasn't long before the term "megaton" was invented. Whereas the Hiroshima bomb destroyed an area of about seven square miles, the new bomb promised to severely damage *hundreds* of square miles with each bomb. The first RAND study on the subject concluded that dropping 55 hydrogen bombs on Russia could completely destroy Russia's fifty largest cities, killing some thirty-five *million* Russians in a matter of hours. Even attacking isolated industrial targets in an attempt to limit civilian casualties, at least 10 million Russians would be killed by these 55 H-bombs. The next generation of RAND analysts and Air Force strategists would casually throw much larger casualty numbers around and call them "acceptable."

Bernard Brodie, one of the authors of this first RAND report on the H-bomb, concluded that any plan for the indiscriminate bombing of Russian cities with the new bomb would be dangerous at best and suicidal at worst. The damage estimates drawn up by his RAND colleagues convinced him that strategic bombardment using H-bombs would be militarily futile and could only encourage the Soviets to attack American cities in return. By leaving Russian cities more or less intact and attacking purely military targets, Brodie surmised that the Russian capacity for

making war could be eliminated while simultaneously deterring them from retaliating for fear of bringing down the final Armageddon on their cities. Brodie articulated other concerns about the H-bomb: mainly that they would remove all restraint from war and therefore make it impossible to achieve political goals. To destroy industrial and military targets with regular atomic bombs required at least some accuracy, mandating a significant military effort and significant cost. The H-bomb, on the other hand, could destroy *any* target you might want to destroy even if you miss that target by miles and miles. What's more, while atomic bombs were considered to be relatively scarce and expensive since any attack would still require hundreds of them to effectively knock out Russian industry, the H-bomb effectively gave SAC an unlimited supply of nuclear destructive power on the cheap. The result of these two H-bomb characteristics was that all of Russia could be destroyed in a single attack, cheaply, effortlessly, thoughtlessly.

When Clausewitz wrote that war was a continuation of policy by other means, he was saying something quite profound. The purpose of war is to secure political objectives. In order to do this war must be planned and controlled, and limited to rational goals. The amount of violence employed must be appropriate for the political goal being pursued. If the violence is uncontrolled, the objective is irrational, and the political goal cannot be secured.

Brodie understood this. He further understood that rationality couldn't be preserved where H-bombs were used. H-bombs are so powerful, that an attack on *any* strategic target in Russia will be destructive enough to demand retaliation, so

that both societies will be destroyed. He wrote, "national objectives cannot be consonant with national suicide."⁴² Ironically, it was Brodie's plea for finding a rational use for the H-bomb that further encouraged RAND to adapt a completely value-free method of analysis.

While such strategists as Brodie and Oppenheimer were fiercely opposed to using the H-bomb in a strategic role (Oppenheimer was opposed to even building the thing at all), they were in a minority. The rest of RAND, led by Edward Teller, rallied around the H-bomb cause. Teller, a passionate anti-communist, was by all accounts desperate to see the bomb built. Truman approved the development of the H-bomb, and in September of 1952 the Lawrence Livermore National Lab was founded in California to build it. Teller led the physics team at Livermore and on November 1st, the first H-bomb was detonated, erasing the tiny island of Elugelab from the face of the Earth, and causing Edward Teller to joyfully declare to the world, "It's a boy."⁴³

But if the H-bomb looked like a tremendous offensive weapon to some, it looked like a serious defense problem to others. Sooner or later, the Soviets would develop their own H-bombs (indeed, the Soviets detonated their own H-bomb only nine months later). In 1953, the ability of the US to deliver strategic nuclear weapons lay entirely within its bomber force. The bomber was at the heart of all things nuclear and its operation and defense was the focus of the vast majority of RAND

⁴² Kaplan, *op. cite.*, p. 80.

⁴³ Telegram to Norris Bradbury.

and other strategic thinking. By the mid-50s, SAC doctrine called for increasingly specialized bombing roles. This was due in large part to the fact that SAC was operating six different types of bombers (B-36, B-47, B-58, B-60, B-46, and B-50), with the B-52 prototype in testing and the B-70 in early development. Up until then, RAND and SAC warplans started with the assumption that SAC would have its entire bomber force available for its attack. Any considerations of attrition or malfunction began with the entire SAC inventory as its base number. The underlying assumption, indeed the central SAC perspective as championed by Gen Curtis LeMay, was that the US would get in the first blow. LeMay wrote:

When I led the Strategic Air Command I operated on the premise that we should have some warning of enemy preparations to attack us. Toward this end we spent a great deal of our energies learning what the opposition was doing day to day. Believing I could foresee an attack, I was prepared to beat him to the draw and attack all of his bombers and missile bases. In accordance with the Joint Chiefs of Staff my purpose was to destroy his war-making capability, particularly in the strategic nuclear area. Of course, I had no authority to order such attacks. All I could do was have the capability and hope that the orders would be given if necessary.⁴⁴

The H-bomb called this assumption into question. Fusion power in the hands of the Soviets gave them a tremendous offensive strength. SAC preparations anticipated this Soviet offensive capability to be directed at US cities and industrial resources—as SAC's was. With a RAND study published in 1953, Albert Wohlstetter

⁴⁴ Gen Curtis E. LeMay with Maj Gen Dale O. Smith, *America is in Danger*, Funk & Wagnalls, New York, 1968, pp. 82-83.

asked the question: “What if the Soviets got in the first blow?” Armed with the H-bomb, a Soviet attack directed at US bomber bases could destroy the bulk of the US strategic arsenal on the ground. Since nearly all of the 200 Nike Ajax surface-to-air missiles defense sites in the US were clustered around our largest cities and industrial complexes, the bomber bases were highly vulnerable to attack. Additionally, the Air Force had thus far been unable to implement airborne alert or rapid ground alert (response in less than two hours) for the bomber force. Wohlstetter was convinced that the US was about to enter a period of alarming vulnerability.⁴⁵ A few years later, when the Soviets launched their *Sputnik* satellite, Wohlstetter’s worst fears were confirmed.

During this period, indeed throughout the Cold War, the confidence SAC leaders publicly maintained regarding their own ability to thwart any Soviet intention was simultaneously contradicted by the public assertion of these same leaders that they were on the cusp of being outmatched by the Soviets. The generals would make statements implying that the Soviets were doomed to defeat if they were to start a war (in fact, the implication of many of these statements was that the Soviets would not prove much of a match for SAC). Then (often in the same breath) the generals would warn that the Soviets could deploy new weapons at any time giv-

⁴⁵ Wohlstetter was convinced of the validity of his study when, on 1 Sept 1952, a surprise tornado tore through Carswell Air Force Base in Texas, destroying one B-36 bomber and incapacitating 81 more. The combined damage to the aircraft and the support facilities grounded the entire wing for nearly two months. As a result of this storm, the inquiry board ordered by Air Force Chief of Staff Gen Hoyt Vandenberg commented that “changes of policy concerning the dispersion of aircraft may be advisable.”

ing them the strategic edge, so we must remain vigilant by developing and fielding new offensive systems.

Of course, the Air Force leaders charged with our nuclear defense were pilots. They liked to fly planes, and the faster and more capable the planes they were given to fly, the better. This is certainly understandable, as flying is loads of fun. But there's more to it than a simple enthusiasm for aerosport. Sophisticated technology was at the heart of the Air Force identity and culture. With new and advanced technologies comes the feeling that there is nothing one can't accomplish. The wispy reaches of the upper atmosphere was like a different world to the people of 1950s America, and it took a special sort of hero to brave those reaches. Recruiting posters of the day invariably showed gleaming, silver jets streaking across a blue skyscape. The 1950s were also the Renaissance of science fiction in America—a time when the possibility of sending heroic Americans off on epic journeys to strange new worlds seemed not only possible, but also just around the corner. The SAC brass, with the greatest assemblage of destructive power in history under their command, felt like the most important humans alive—so long as Congress continued to allow them to dwell within the state of the art.

And SAC was implicitly trusted with this job. In his memoirs Eisenhower commented: “My intention was firm: to launch the Strategic Air Command immediately upon trustworthy evidence of a general attack against the West...” leaving

the rest to LeMay.⁴⁶ Ultimately, it was this confidence—combined with technological advantage—which led to the institutionalization of SAC as the final arbiter in all matters of nuclear planning. In 1960, when the fierce debate as to who would control the targeting and employment of the new Navy Polaris submarines came to a head, only SAC had the computer resources needed to compile the increasingly complex and elephantine nuclear operational plan. With the creation of a unified planning command under SAC, the Navy was virtually eliminated as a significant voice in the targeting and planning process. Eisenhower took little interest in the types of targets chosen for strategic attack, leaving LeMay free to project his own priorities into the targeting process. The 1960 SIOP was essentially a nuclear version of the firebombing campaign authored by LeMay to destroy the remnants of Japan’s warmaking capabilities. Cities were placed into the same category of “sound military targets” as airfields and missile bases. The misgivings regarding unnecessary overkill reported to Eisenhower by his science advisor, George Kistiokowsky, did not reach the president until after the 1960 election, leaving the president in no position to effect reform. The SIOP inherited by Kennedy called for a single, overwhelming attack on the USSR, China, and the Eastern block countries using every available strategic asset to essentially wipe the communist countries from the face of the world.

But Kennedy, and his Secretary of Defense Robert McNamara, were not interested in having massive retaliation as their only option in dealing with Soviet ag-

⁴⁶ Eisenhower, *The White House Years: A Personal Account 1953-1956*, Doubleday & Com-

gression. Indeed, McNamara was intent on developing a strategic force that could give him an entire range of options from purely conventional war, to conventional/tactical nuclear, to full-scale strategic war. It was this enumeration of options that occupied the McNamara administration in early '60s, and it took McNamara nearly three years to define the central criteria for his (and for everyone that would come after) future nuclear force planning. That criterion was the concept of assured destruction.

When McNamara entered office in 1961, he found a whole host of weapon systems under development (such as the B-70 and the skybolt missile) that were either strategically unnecessary, technologically inadequate,⁴⁷ or just plain too expensive to consider.⁴⁸ But it was this notion of assured destruction that allowed the US to maintain the claim of nuclear superiority even when the most far-reaching research programs were being eliminated.

“How much was enough?” was the central question of the early '60s. McNamara's answer: enough to achieve a “certainty of suicide.” Of course, what constitutes suicide for the largest nation on Earth can be a source of some rather macabre debate. While McNamara believed that this certainty had been achieved by the time he left office in 1968, his military underlings did not. What's more, while

pany Inc., New York, p. 453.

⁴⁷ Due to new countermeasures such as the Russian SA-2 surface-to-air missile for example, the B-70 was obsolete even before the prototype was built.

⁴⁸ \$10 billion was spent on researching atomic powered aircraft with not a single deployable design to show for it.

McNamara placed the emphasis on the word “suicide,” the Air Force planners charged with building such a force were far more concerned with the “certainty” part of that equation.

For Curtis LeMay, achieving certainty gave him license to pursue a strategy of pre-emptive counterforce. As Chief of Staff of the Air Force in the early McNamara years, LeMay believed a decisive nuclear victory against the Soviets was still possible so long as his government gave him the proper weapons to go about it.

Strategic Bombardment Revisited: The Historical Failure of the Basic Doctrine

There is a multitude of further historical examples of the ineffectiveness of strategic bombardment. It is widely acknowledged, for example, that the Luftwaffe lost the Battle of Britain when it switched from attacking the Royal Air Force to the strategic bombing of London.⁴⁹ Additionally, this German bombing of cities encouraged many neutral Americans to support military aid to Britain.

This central component of the logic of strategic bombardment—the crushing of the enemy civilian will—is the fatal flaw of the theory, as it is quite completely contradicted by the historical evidence. Clausewitz described war as a “remarkable trinity,” composed not only of political objectives (as is so often quoted), but war’s practical instruments, public passions, and social forces as well. War in the Twentieth century involves—indeed, requires—the support and toil of the masses in a

⁴⁹ John Terraine, *A Time for Courage: The Royal Air Force in the European War, 1939-1945*, Macmillan Publishing, New York, 1985, p. 218.

way the wars of Alexander and Napoleon never could. So while strategic bombing may have an ultimate, indirect effect on the battlefield situation, it is known to have an immediate, counterproductive political effect. For when homes and schools are destroyed from the air, public passions are inflamed. Typically, these passions transform normally peace-loving, conscientious civilians into warmongers, ready to support even the most suspect of dictators. Hitler, for example, was, by many accounts, not only an incompetent military strategist. but an unsavvy politician. After several years of war, with Germany on the defensive, it was expected that the German people would have been so fatigued of war as to reject Hitler's continued rule. Yet they fought on until their means to resist were completely destroyed and Germany had been effectively removed from the modern world. While the fire-bombing of German cities may not completely account for this stamina of will, it is certainly not blameless. At the very least, we cannot deny the inability of strategic bombardment to effect the will of the populace as doctrine argues it should.

Prior to the attack on Pearl Harbor, Japanese strategists determined that if a war with the United States lasted for more than 18 months, the war would be lost. Their only hope would be to so delay the US en mass entry into the Pacific, and to so entrench themselves in their Pacific conquests, that the material and human costs of prying the Japanese Army out again would be simply too high for the US public to accept. This strategy had worked against the Russians in 1904, and the isolationist tendencies of internal US politics suggested it could work again.

But the Pearl Harbor attack aroused a great American anger. The intensity and rapidity of the American response took the Japanese entirely by surprise. But it did not take the Japanese leadership long to realize the gravity of their situation. Three months into the war with America, the Emperor ordered his government to “miss no chance for concluding an advantageous peace.”⁵⁰ By the end of 1943, studies commissioned by the Japanese high command reported that the war effort was utterly doomed to defeat—the only variable remaining being the conditions of surrender.⁵¹ When the US B-29s began their bombing runs in the winter of ‘44, the effect was not one of crushing the remnant of Japanese war resolve. Rather, the opposite was true. And when the campaign produced no results, strategic planners changed tactics so as to produce even more civilian casualties. Yet, the Japanese continued their hopeless struggle. As Bergami wrote:

The [Tokyo] firebombing convinced the Japanese lower classes, as no propaganda ever could, that surrender was, indeed, out of the question and that Americans really were demons bent on exterminating all Japanese.⁵²

In America, Pearl Harbor was indeed the day that lived in infamy. While this attack was a tactical one, the manner in which it roused a war cry from the collective throat of the American public gives us some clue as the social nature of industrial war. The American people considered themselves directly attacked, and therefore directly offended, by the Japanese military. To say that the nearly unanimous

⁵⁰ David Bergamini, *Japan's Imperial Conspiracy*, William Morrow, New York, 1971, p. 61.

⁵¹ *Ibid.*, p. 62.

⁵² *Ibid.*, p. 1039.

approval by the public of the congressional war declaration was driven, by and large, by a desire for revenge, is no great stretch—especially considering that by 1944, 50% of American war materials and troops were being sent to the Pacific theatre. As the US had no real interests in the area to begin with, and the vast majority of industrial war material had to be shipped not only across the Pacific but from the industrialized Eastern seaboard across the American continent (a total journey of some 9,000) miles, this is an incredible fact indeed.

In the wake of Pearl Harbor, Americans were thirsty for Japanese blood. For Roosevelt to concede that Germany would be defeated first was no small thing. Even in the closing days of the war, nearly four years after Pearl Harbor, opinion polls showed the public was still bent on revenge against the Japanese. So when the atomic bomb was finally dropped on two Japanese cities (Germany being the intended target of the Atomic bomb project from its inception) there was no public outcry. When the new reels showed a Hiroshima all but completely annihilated by a single bomb, when reports came of the tens of thousands of injured, of children made blind and crippled, of old women with clothing burned into their skin, America celebrated the defeat of a truly loathsome enemy. So from even this very casual review of the psychology of attack in industrial war, we can conclude that we should not expect to see the masses fleeing when their cities are attacked from the air. Indeed, we should be lucky if any kind of negotiated settlement is even possible after bombs have been dropped.

Even most recently in the air campaign in Kosovo, the notion that strategic bombardment can sap the will of a population is quickly struck down. Slobodan Milosevic, while certainly an enduring feature on the Yugoslav political landscape, did by no accounts carry the kind of popular support at home before the bombing as he did immediately after. In fact, there's some evidence to suggest the Kosovo non-violent resistance movement posed a serious threat to Milosevic's political dominance in Kosovo prior to NATO intervention. When it came time to negotiate peace in however, the US did not rely on the power of the Kosovo people to influence the Serb regime. Rather it threatened an unending rain of bombs, which would supposedly remove continued Serb public resistance to the will of the West.

It is not surprising that the US would expect strategic airpower to have an immediate and all-powerful political effect. One has to look no farther than the basic US Air Force Doctrine—the one distributed to all new Air Force officers to read and heed—to find suggestions that this is entirely appropriate:

Just as air and space power has changed how we look at traditional warfare, it has also changed the face of crisis and peacetime engagement. Air and space power may be applied to international situations across the range of military operations and offer critical, rapid global capabilities to the nation. It can help *shape the international environment by promoting regional stability, thus preventing emergence or growth of conflicts*. It can rapidly *respond to crises across the spectrum of conflict to deter, resolve, contain, or engage and win*. ...Air and space forces can deter an adversary from taking actions contrary to US or allied interests by providing the capability to project potent military power anywhere on earth in a matter of hours. It is the knowledge that air and space intelligence, surveillance, and reconnaissance systems are closely watching their activities; that long-range

bomber and air mobility forces are ready to respond over intercontinental ranges with a large variety of capabilities; that land-based fighter and attack aircraft are available to sweep the skies and prevent movement of ground forces, which gives an adversary's leadership reason to pause and reconsider their objectives and plan of action.⁵³

The above passage is particularly interesting as it has been entirely disproven every time it has been applied in recent memory. Most obviously in the case of Kosovo, the Serbs did not pause, and the tremendous airpower they knew they were taking on, in no way discouraged their resistance. Indeed, it was when the NATO bombs began to fall that the greatest atrocities and the most flagrant attacks against US interests were committed. What's more, not only did dissatisfaction with domestic leadership on behalf of the Serbian population not materialize once the bombing began, the masses immediately (and with great endurance) rallied near complete support for the Milosevic regime, despite the persistent efforts of the NATO air forces to make life for the Serbian people as inconvenient as possible short of killing them outright.

For the Serbian people, the West has waged a personal and direct war against them. It was not hard for them to see on TV the streams of refugees emerging from Kosovo and conclude it is the NATO bombs, and not Milosevic's thugs, they were fleeing. It is countless historical observations such as these, which suggest—perhaps even demand—that the old idea of strategic airpower as a first and

⁵³ US Air Force, Air Force Basic Doctrine Document 1, Department of the Air Force, 1997, p. 43. Emphasis original.

effective means to influence on an adversary's social cohesion, should be abandoned in whole and with all deliberate haste.

Kill and Overkill: Examples of Absurdity

The absurd and unrealistic conclusions made by the value-free strategic institution led to the creation of plans and strategies that are inappropriate and, in some cases, quite completely insane. This is particularly the case when Air Force targeteers were not looking to RAND or anyone else (except perhaps Douhet and Mitchell) for guidance. Take the case of the first integrated plan to launch a combined, coordinated, all-out atomic attack on the Soviet Union (the Single Integrated Operational Plan, SIOP). Planning began when the JCS issued the National Strategic Target and Attack Plan (NSTAP) which established damage criteria for SIOP targets. The plan (before SAC got ahold of it) opened by stating that it “would consist of a minimum number of specific targets whose timely and assured destruction will accomplish the specific objectives...” It was the Navy's idea to specify that only a minimum number of targets would be attacked. But SAC was in charge of determining how many targets that minimum would be. As soon as work began on the SIOP, the SAC Chief of Intelligence, General Bob Smith, issued an order that the NSTAP would be interpreted to mean that the “minimum number of targets” was the number below which the SIOP planners could not go. In essence, General Smith was ordering that the NSTAP had no upper limit, and that SAC would hit as many targets as there were bombs to drop.

SAC also used its own intelligence estimates, which were the highest of all the different US intelligence agencies, to identify targets. SAC figured that the Soviets would have 700 ICBMs by 1962; the Navy expected them to have 200. SAC estimated the number of Soviet airfields from which bombers could be launched at 1,115; the Navy 770. The list went on. SAC also figured that through attrition, enemy action, equipment malfunction, and crew error, only one-third of the total bomber force would make it to their targets. Therefore, the SAC bomber force would have to be three times bigger than the number of bombs they wanted to actually hit their targets. Navy nuclear assets, such as the new Polaris submarine missile fleet, were either directed at targets of no strategic interests, or at targets that Polaris could not destroy on its own.

The NSTAP had specified that certain targets be destroyed so that there was at least a 75% certainty of incapacitating damage. The SAC planning, however, required the 202 most important targets be attacked with 97% certainty of complete destruction. This meant that these 202 targets were targeted with multiple weapons (typically many multiples of weapons). What's more, the targeteers took into account only the blast effects of the bombs with no consideration given to such nuclear effects as heat, radiation, fireball, EMP, or ground shock. Omitting these factors altogether meant that the total destructive power of each bomb was drastically underestimated, requiring far more bombs than were needed to destroy any given target. For example, in order to reproduce the damage done to Hiroshima by the first 13 kiloton atomic bomb, the SAC planners assigned, to a city of roughly the

same size and composition as Hiroshima, one 4.5 megaton bomb as the primary weapon, and three 1.1 megaton weapons as backup in case the first one was a dud. That equals 7.8 *megatons* to equal the amount to damage that could be done by a 13 *kiloton* bomb.⁵⁴

In November of 1960, Eisenhower began hearing reports that SAC was getting out of hand and was trying to wipe Russia off the face of the Earth with its war-plans. In response, he sent his science advisor, George Kistiokowsky, to SAC headquarters in Omaha to investigate. Kistiokowsky discovered that the SAC plan called for the entire alert force to be executed simultaneously, dropping some 1,459 bombs (2,164 megatons worth) on 654 Russian, Chinese, and Eastern European targets. SAC estimated that this attack would kill 175 million Russians and Chinese. This was for the retaliatory strike. If the entire nuclear arsenal was launched in a preemptive strike (as the plan called for), 3,423 nuclear weapons, totaling 7,847 megatons, would have been delivered—killing 285 million Russians and Chinese and injuring 40 million more. None of these figures included the millions upon millions of European fallout victims.⁵⁵

Kistiokowsky was horrified. He was a scientist, and he could see very little rationality in many of the SAC planners' underlying assumptions. He considered SAC computer-generated analysis to be "sheer bull". He reported to Eisenhower: "I believe that the alert force is probably all right, but not the follow-on forces

⁵⁴ George B. Kistiokowsky, *A Scientist at the White House*, Harvard University Press, Cambridge, 1976, p. 406.

⁵⁵ Kaplan, *op. cite.*, p. 271.

which carry megatons to kill 4 and 5 times over somebody who is already dead.”⁵⁶ The absurdity of such plans, produced by men whose main interest was in building and maintaining a mammoth nuclear arsenal, is apparent indeed.

Then there is the case of Hermann Kahn and his value-free methods of analysis. While Kahn may have allowed himself to entertain even the most grizzly and horrific visions of apocalypse, his studies were, all too often, based on unrealistic expectations and wishful thinking. Kahn’s civil defense study, for example (upon which most of *On Thermonuclear War* was based) arrived at very optimistic conclusions regarding the ability of the bulk of the population both to survive an atomic attack aimed at cities and to rebuild in the post-war environment. This study depended on what Kahn called “seven optimistic assumptions”. These assumptions were: “favorable political environment, immediate survival and patch-up, maintenance of economic momentum, specific bottlenecks alleviated, bourgeois virtues survive, workable postwar standards adopted, and neglected affects unimportant”. Kahn acknowledged that if any one of these assumptions proved false, his conclusions just didn’t hold up. But none of these assumptions were subjected to the kind of rigorous analysis Khan always championed. Kahn had such a blind faith in the virtues of the free-market system, and on the triumph of human ingenuity, that he believed his civil defense system would work even if nothing went off as planned.

In fairness to Kahn, he was at least aware of the shortfalls of his studies. He was one of the first to realize that SAC warplans were unrealistic and suicidal. He

⁵⁶ Quoted in Rosenberg, p. 118.

saw that the plan was too rigid, and therefore both inadequate for retaliation and far too much for preemption. Kahn was not in favor of a preventative war or “sneak attack”, but rather the maintaining of the will to use nuclear weapons first if the circumstances warranted it. He was in favor of a no-cities strategy, and he was aware that many of his proposals made nuclear war more rather than less likely, since the Soviets would be encouraged to strike first against the US if they suspected the US was preparing for a first-strike against them (which we were). He was also aware that none of his civil dense studies were able to take all factors into account, and therefore stood a very good chance of not working. Regardless, Kahn confidently presented his proposals to anyone who would listen.

A Brief Note on Keohane and Cooperation

Keohane's book, *After Hegemony*, is about how international cooperation can be organized when states have common interests. While Keohane wrote specifically about cooperation between advanced market economies, his arguments can be applied to East-West relations and the dynamics of the arms race, particularly because avoiding nuclear war was an interest the two sides shared.

In the immediate post-war era, the US was, by all accounts, the hegemonic power. In economic, political, and military terms, the US was in a position of complete dominance. This was particularly the case in the years of nuclear monopoly—and later nuclear superiority. The US, confident that her nuclear might could be used to wield ultimate influence, therefore pursued a sweeping global agenda of

liberal internationalism. This agenda included the advancement of free trade, the establishment of a stable world financial system with the dollar as the global reserve currency, and a collective security system enforced by a US-dominated UN. According to any realist reasoning this hegemonic US position should have led to stable and easy international cooperation. And indeed, for nearly the entire Western world, and most of the newly emancipated colonies, cooperation with the powerful US seemed the only sensible course of action.

When the significance of the Soviet challenge to US hegemony made itself clear (beginning with the Berlin crises), the US built a new agenda designed to undermine the political power of the Soviets and nullify Soviet influence on the rest of the world. The effectiveness of this policy of "containment" was a function of the strength and credibility of the US nuclear arsenal.

As Keohane explains, the basic realist presumption regarding international cooperation is that hegemony is good. Hegemony encourages cooperation and the building of international institutions. But in the history of the Cold War arms race, the American hegemony yielded very little in the way of an arms control regime. Indeed, Truman was very interested in complete international control of all atomic materials. Later, Eisenhower would wish out loud for a comprehensive disarmament agreement as he was convinced that despite Soviet conventional superiority, the industrial might of the US meant that, in the long-run, the Soviets could never prevail in general war. Complete disarmament would also have been in the best interests of the Soviets since not only would it give the fact of their greater conven-

tional forces more diplomatic weight, it would save them the tremendous expense of trying to keep up with the US in the nuclear arms race—a race they were aware they could never win. But despite this common interest in disarmament—and the hegemonic position of the US—no cooperation ever materialized. In fact, there were no substantive strategic arms control agreements until the Soviets had achieved nuclear parity and the US hegemony had been eroded in the late 1960s.

This fact supports Keohane's criticism of realist perspectives on cooperation and his argument that hegemony is not necessary for valid cooperative regimes to form. True cooperation, which Keohane defines as mutual adjustment, is evident in the way both the US and the USSR abandoned their low-level nuclear warfighting doctrines (flexible response) and adopted MAD doctrines. The SALT I and ABM treaties made this adjustment official. They were based not only on the common interest of avoiding nuclear war, but also an honest desire to preserve nuclear parity and end the arms race. Despite the lack of common government, an international arms control regime was created and served as the basis for cooperation. Contrary to the conclusions of game theory and the security dilemma, the two sides were able to create this regime motivated by rational self-interest.

Keohane argues that regimes contribute to cooperation not by implementing rules for states to follow, but by changing the context within which states make decisions based on self-interest. A quick review of the history of the arms race supports this idea. In the 50s, due in large part to the value-free strategic institution, the US was unwilling to adjust its position on nuclear weapons based on interests

shared with the Soviets. The result was not only the expense of building a tremendous arsenal to counter a threat that never really existed, but a guarantee that the Soviets would eventually acquire the capacity to annihilate the US. The Soviets would not—could not—stand idly by while the US got better and better at completely destroying them. And it was not until nuclear parity was achieved, and the US hegemonic position challenged, that a cooperative regime was built. This regime ultimately made it possible for both sides to enter into mutually beneficial agreements (this is particularly the case with the START I treaty which cut both nuclear arsenals by half).

III

“The majority of my colleagues regard enlargement as a moral and strategic imperative consistent with the very essence and purpose of the North Atlantic Treaty. Indeed, over the last six years... The Founding Act has reinforced support for NATO enlargement by demonstrating that cooperation with Russia and the expansion of the Alliance are not contradictory, but complimentary goals.”

- Senator William Roth addressing the North Atlantic Council at the Madrid Summit, 7 July 97.

“A central strategic rationale for expanding NATO must be to hedge against the possible return of a nationalist of imperialist Russia.”

- Senator Jesse Helms on the requirements for Senate ratification of the NATO enlargement agreement, 17 September 97.

Super-Hedge: The Department of Energy and Stockpile Stewardship

In President Bush’s landmark speech of September 1991, he promised to take us back from the brink of nuclear war. At the conclusion of this speech, he ordered all Minuteman II missiles to be removed from alert status (far ahead of the schedule set by START I), and the recall of all nuclear weapons stationed abroad or aboard ship to US soil. He further vowed that the current round of arms control negotiations (START II) would ban all MIRVed missiles and cut the total arsenal in half again (down to one-quarter of Cold War levels). It looked like the arms race had finally

come to an end. Arms control advocates hailed President Bush's bold action—as well as his later order to place a moratorium on all detonation testing—and immediately began talking of a new peace dividend—the savings we would invariably reap by no longer having any need to develop new nuclear weapons or test the old ones through detonation. A new age was at hand.

But while the Departments of Defense and Energy immediately went on record as supporting the new cuts, their support came at a cost. When President Clinton entered office in 1993, the DOE demanded a secure budget of \$40 billion over the next ten years to fund the newly created Stockpile Stewardship program. This was an increase of \$32.8 billion from the previous ten year detonation testing budget.⁵⁷ Even after adding the testing budget to the total nuclear research and development budget for the period 1948-1991 (\$3.6 billion in 1998 dollars), the new Stockpile Stewardship budget tops that by some \$700 million annually.⁵⁸ The justification for this tremendous increase was that a ban on detonation tests now required the development of the most sophisticated computational modeling and diagnostic technologies ever. In his 1995 testimony before congress, C. Bruce Tarter, the Director of Lawrence Livermore National Labs, reported that “To simulate more realistically all of the complex physical phenomena that occur in a nuclear weapon, we need over a thousand-fold increase in computer speed and data storage capacity.” As a result of that request, the most powerful computer ever built

⁵⁷ Stephan J. Schwartz, ed., *Atomic Audit: The Costs and Consequences of US Nuclear Weapons Since 1940*, Brookings Institute Press, Washington D.C., 1998, p. 84.

⁵⁸ *Ibid.*, p. 552.

now resides at Los Alamos National Laboratory where it simulates nuclear detonations around the clock.

And the increases in funding continue every year. The DOE's budget request for next year (including a \$273 million increase) is detailed in Fig. 1 below:

	FY 2000 Approp	- Change - Dollar	Percent	FY 2001 Request	
Stockpile Stewardship					
O & M	\$3,558.6	\$281.5	7.9%	\$3,840.1	
Directed Stockpile Work (DSW)	760.0	76.6	10.1%	836.6	Meet production schedules in Master Nuclear Schedule and Production and Planning Directive.
Campaigns	928.6	121.3	13.1%	1,049.9	Continued development of scientific capabilities required to certify without Underground Nuclear Testing.
Readiness in Tech Base and Facilities (RTBF)	1,870.0	83.6	4.5%	1,953.6	Operate an aging infrastructure. Provide ASCI platforms.
Secure Transportation Asset	91.5	24.2	26.5%	115.7	Provide security enhancements for shipments.
Program Direction	203.6	20.4	10.1%	224.1	Re-engineering Federal Staff and Scientific Recruitment and Retention Initiative.
Construction	530.2	(116.0)	-21.9%	414.2	NIF program under review. Established preliminary Project Design and Engineering Pilot Program.
Use of Prior Year Balances	(7.7)	7.7	-	0	New construction: - Distributed Information Systems Laboratory (SNL) - Highly Enriched Uranium Storage Facility (Y-12) - Weapon Evaluation Testing Laboratory (PX)
Proposed FY2000 Production Readiness Supplemental	(55.0)	55.0	-	0	
Total Defense Programs	\$4,321.2	\$272.8	6.3%	\$4,594.0	

Fig. 1: 2001 DOE Office of Defense Programs Budget Request (In Millions)⁵⁹

The Institute for Environmental and Energy Research, the Bulletin of the Atomic Scientists, and others have argued that the DOE has used their new wind-fall to fund a new weapons development apparatus—one whose main purpose is not to preserve old weapons, but to build new ones:

⁵⁹ Presidents FY 2001 Budget Request for the DOE Office of Defense Programs, Feb 2000, p. 8.

While the [Science-based Stockpile Stewardship] (SBSS) program's claims in regard to improving safety of the arsenal appear dubious at best, it has a clear relationship to increasing U.S. capability to design new warheads and to design major modifications to existing ones. The new SBSS facilities are of the types used previously as part of the weapons design program. One of the main goals of the program is to retain and attract new weapons designers. Furthermore, various official documents indicate that the ability to maintain weapons design capabilities is a priority of the DOE. Another purpose appears to be to maintain the reliability of the nuclear arsenal at extremely high levels. Such high levels of reliability may be necessary only if the United States pursues a strategy of first strike against opponents with large nuclear arsenals rather than retaliatory nuclear deterrence.⁶⁰

They may be on to something. The Navy, for example, has advertised its Trident D5 upgrade program as a plan to add significant new capabilities to the arsenal. Rear Adm George P. Nanos, director of the Navy's Strategic Systems Programs, wrote:

Our capability for [the] Mk4 [re-entry vehicle], however, is not very impressive by today's standards, largely because the Mk4 was never given a fuze that made it capable of placing the burst at the right height to hold other than urban industrial targets at risk.

With the accuracy of D5 and Mk4, just by changing the fuze in the Mk4 reentry body, you get a significant improvement. The Mk4, with a modified fuze and Trident II accuracy, can meet the original D5 hard-target requirement.

⁶⁰ Hisham Zerriffi and Arjun Makhijani, *The Nuclear Safety Smokescreen: Warhead Safety and Reliability and the Science Based Stockpile Stewardship Program*, Institute for Environment and Energy Research, 1996.

Why is this important? Because in the START II regime, of course, the ICBM hard-target killers are going out of the inventory and that cuts back our ability to hold hard targets at risk. The Air Force has some plans for how to upgrade their ICBM force to restore that capability. We can do that with the Mk4 reentry body for 10 cents on the dollar in terms of investment because of the accuracy of our system, and we have made this option available to the strategic CINC.⁶¹

The DOE claims that all of its recent facilities upgrade and construction programs are necessary in order to preserve the reliability of current arsenal in the absence of detonation testing. But while each individual component of the Stockpile Stewardship infrastructure can indeed be used to test and retest aging weapons, they can also be used to develop new ones. Indeed, the DOE spending spree of recent years to build new advanced facilities leaves us with a Stockpile Stewardship institution that is much better suited at building and expanding new nuclear capabilities rather than preserving existing ones.⁶²

The DOE has embarked on a rush of construction not unlike the one approved by Eisenhower in the fifties—a rush whose chief ambition was to attain nuclear supremacy. The Department, for example, intends to add three new hydrodynamic

⁶¹ Adm George P. Nanos, "Strategic Systems Update," *Submarine Review*, April 1997, pp. 12-17.

⁶² In this regard, it is not unlike the offense vs. defense distinction illuminated by Goldfischer. While bridge building equipment may be used for both offense and defense, a vast inventory of bridge building equipment implies a offense-oriented doctrine. Likewise a Stewardship program heavy on studying the effects of detonations and weapons employment rather than the effects of aging on components implies a developmental rather the preservative set of priorities.

facilities—to study the reliability of nuclear components—to the five it already operates. Two of these existing five will also be upgraded. Weapons designers will use these facilities to determine the physical behavior of uranium and plutonium under the extreme temperature and pressure conditions found during nuclear detonation.

The new facilities include the Dual Axis Radiographic Hydrodynamic Test facility (DARHT) under construction at Los Alamos (which was initially proposed in the 1980s as a weapons design facility), and the proposed Advanced Hydrotest Facility (AHF). The Energy Department further plans to expand its high-energy-density facilities in order to examine the processes that take place during detonation. This will enable them to develop computer models that could be used to validate new warhead designs. Chief among these facilities are the National Ignition Facility (NIF) at Livermore, which carries a total life-cycle cost of \$4.5 billion, and the Atlas and LANSCE II facilities at Los Alamos. Two billion dollars have been set aside for the construction of these facilities. Another \$2 billion is budgeted for the Accelerated Strategic Computing Initiative (ASCI). The DOE fact sheet states that the “ASCI will create virtual testing and prototyping capabilities based on advanced weapons codes and HPC [High Performance Computing].”⁶³

The DOE’s own studies indicate that these tremendous new resources significantly exceed any capability needed to merely preserve existing forces and safety standards. A 1996 reports cites 2,400 discrepancies discovered in the stockpile since

⁶³ Quoted in Zerriffi and Makhijani, *op. cite.*, page 4.

1958.⁶⁴ Of these, 400 were considered serious enough to merit redesign or repair. Of those, only 245 had anything to do with safety or reliability. The Department concluded that one or two “actionable” problems were likely to be found every year, with the number increasing slightly as the weapon systems eventually exceed their design life cycles.

The DOE advertises that these flaws result primarily from the age of the weapons and components. But of the 66 safety problems discovered by the Department, 58 were the result of design or production flaws, leaving only eight attributed to aging—none of which involved the nuclear components themselves. And of those eight, six were in weapons that have already been retired, leaving only two for weapons that will remain in the “enduring stockpile.”⁶⁵ The final result: two age-related problems in an inventory of some 30,000 weapons over a fifty year period.

The DOE’s own conclusions would indicate that the weapons hold up very well over time and that countering the effects of age has never been a top concern of the department:

In the past, weapon types (i.e., weapon Mk numbers) have remained in the stockpile a minimum of 2 (W66) and a maximum of 35 years (W33). The average (and median)

⁶⁴ Draft Programmatic Environmental Impact Statement for Stockpile Stewardship and Management. DOE/EIS-0236. Washington, DC: US Department of Energy, Office of Reconfiguration, February 1996.

⁶⁵ One was a problem with the parachute system and the other affected the gas transfer system, which is used to bring in tritium gases and enhance the explosion. Neither of these problems required a retrofit or major design change.

duration has been around 20 years which coincidentally is the ‘minimum design lifetime’ referenced in weapon requirements documents for much of the current stockpile. However, the duration of a weapon type in the stockpile does not help in determining how long nuclear weapons last unless the reason for removal is understood... A review of the history of those weapon types retired to date reveals that most weapon retirement decisions are made due to several factors and that these factors are almost always driven by DoD and political considerations (e.g., delivery system retirement or complying with arms control treaties). Of the weapons types retired, history does not indicate any retirement decision based primarily on the fact that the weapon was aging and not performing adequately.⁶⁶

An analysis of the redistribution of weapons from the active to the reserve stockpiles as a result of START II implementation further illustrates the point. In 1990, the US counted nearly 14,000 strategic warheads in the inventory and 7,000 nonstrategic—12,000 of those strategic weapons being deployed in operational status. Over the next six years, while some 8,000 weapons total were dismantled and not replaced, the operational strategic force was reduced to some 6,000 weapons (see fig. 2 below). This left a operational tactical force of 1,075 weapons and a total reserve of 3,700 *weapons*. So while the overall stockpile was reduced by 38%, the reserve component of that force *increased* by nearly one-third.⁶⁷

⁶⁶ Robert A. Paulsen, Jr., *An Overview of Nuclear Weapon Stockpile Lifetimes and Past Problems*, Sandia National Labs., 15 Mar 96, p. 1.

⁶⁷ Stephen Schwartz, *op. cite.*, p. 46.

In May, on the heels of Russian ratification of the START II treaty, the DOE announced that every weapon removed from operational status will remain in the enduring stockpile and be transferred to the reserve force.

Fig. 2: US and Russian Strategic Forces Under START I

Delivery Vehicles	1,600
Bombers, ICBMs, and SLBMs—no more than 154 heavy ICBMs	
Warheads	6,000
No more than 4,900 ICBM or SLBMS, total	
No more than 1,100 mobile ICBMs	
No more than 1,540 heavy ICBMs	
Throw-Weight	3,600 metric tons

Fig. 3: US and Russian Strategic Forces under START II

United States		Delivery Vehicles	Warheads
ICBMs	(Minuteman III)	500	500
SLBMs	(Trident I, 4 Warheads)	192	768
	(Trident II, 4 Warheads)	240	960
Bombers	(B-52H, 8-12 ALCMs)	93	952
	(B-2, 16 gravity-bombs)	20	320
Totals		1,045	3,500
Russia		Delivery Vehicles	Warheads
ICBMs	(SS-25 in SS-18 silos)	90	90
	(Mobile SS-25)	500	500
	(SS-19)	105	105
SLBMs	(SS-N-18, 3 Warheads)	192	576
	(SS-N-23, 4 Warheads)	112	448
	(SS-N-20, 6 Warheads)	120	720
Bombers	(Bear-H, ALCMs)	60	800
Totals		1,179	3,239

Cold War II: Big Money and the Enlargement of NATO

Despite its lack of an obvious strategic-nuclear dimension, the enlargement of NATO (and the failure to consider Russia as a candidate for NATO admission), has not only had a direct negative impact on the advancement of the arms control agenda, but it further demonstrates the efforts of the Western security institutions to preserve Cold War paradigms at the cost of enhanced global security. The Clinton administration has listed the goals of NATO enlargement as follows:

Democratic reforms and stability. ...several prospective members have adopted laws to provide greater civilian control over the military, eschewed nationalist policies, expanded freedom for civil society and enacted other measures essential to the success of democracy in the region. ...inclusion in the Alliance will place new members within a community of security and strong political norms that will provide both the structure and incentive to consolidate their democratic advances.

Stronger collective defense and ability to address new security challenges. ...recent acts of terrorism and clear dangers from the proliferation of weapons of mass destruction demonstrate that threats remain that affect the region's security. Admitting new states to the Alliance will create a larger circle of like-minded nations committed to defending each other from these and other threats and to working together to build a more stable Europe.

Improved relations among Central and East European states. Growing cooperation with NATO and the desire to join the Alliance have provided a powerful impetus for resolving past disputes among Central and East European states. ...NATO membership has proven its power in the past to help reconcile former adversaries such as France and Germany; to underpin democracy, such as in Italy and Spain; and to help moderate conflicts among members, such as between Greece and Turkey. This record provides strong reasons for believing enlargement will continue to promote improved relations within Central and Eastern Europe.

Burden sharing and contributions to NATO missions. ...NATO membership will better enable the new allies to restructure their armed forces so that they can participate in the full spectrum of current and new Alliance missions including both Article V [collective self-defense] missions and other kinds of missions both within and outside of the

NATO region. ...Through enlargement, the United States will gain new allies willing and able to share the burdens of protecting Alliance interests.

Broader European stability. ...By fostering stability and confidence, NATO enlargement will advance the longer-term security interests not only of those states but of the United States, Western Europe, Russia, Ukraine and others throughout the region.

Prosperity. ...it will also foster a more stable climate for economic reform, trade and investment. ...NATO enlargement, coupled with the anticipated enlargement of the European Union, will help this record of success continue to grow.

A stronger Europe as a partner for the United States. ...With a broader circle of states in the Alliance, many West European countries will be able to shift more focus to such priorities as mobility, deployability and reinforcement missions. Thus, enlargement will also help our current allies become better equipped to operate with U.S forces in a broader range of contingencies in the years ahead.⁶⁸

In essence then, NATO enlargement is supposed to turn the new members into better democracies, counter terrorism and WMD proliferation, encourage other countries to also make themselves into better democracies with membership as an incentive, and ease the peacekeeping burden on the US by passing on these responsibilities to the new members. But these points bear close scrutiny. As regards costs, for example, the Clinton administration has reported that the total cost (to be divided among all NATO members) to admit Poland, Hungary, and the Czech Re-

⁶⁸ US Department of State, Bureau of European and Canadian Affairs, *Report to the Congress on the Enlargement of the North Atlantic Treaty Organization: Rationale, Benefits, Costs and Implications*, 24 Feb 1997, pp. 4-5.

public to NATO and see to the modernization of their forces will total on average about \$2.1 to \$2.7 billion per year, for a total of \$27-35 billion. The administration further predicts that the US will pay no more than \$2 billion of that total.⁶⁹

But a study released by the Cato institute puts the cost closer to \$70 billion to \$167 billion. The report states:

The U.S. Department of Defense, which made the cost estimate for the administration, did not develop a detailed list of military enhancements needed for expansion, estimate the cost of each enhancement, and add those costs up for a total. Instead, in many cases DoD analysts used a "macro" approach to select a level of spending (what they termed "level of effort") for a particular category of military improvement, with little or no military rationale or analysis to back it up. In other cases, where DoD made micro-assumptions, they were very questionable and designed to hold costs down. In addition, DoD analysts felt constrained in how much military infrastructure they could assume would be built on the territories of new member nations. All of those dubious methods were needed because the DoD's estimate resulted from negotiations within the administration; it was not a valid estimate of costs based on military requirements.⁷⁰

Why such an underestimate? Certainly Congressional and Russian concerns may have had something to do with it. In July of 1997, under the leadership of Russia expert Susan Eisenhower, a letter with the signatures of 50 prominent critics was sent to the President asking for an as-yet-unprovided rationale for the expansion. In particular, the letter called into question the need for such tremendous

⁶⁹ Ibid., p. 6.

⁷⁰ Ivan Eland, *The High Cost Of NATO Expansion: Clearing the Administration's Smoke Screen*, Cato Policy Analysis No. 282., 29 Oct 97, p. 1.

costs to bring the new NATO members up to NATO standards in the absence of any identifiable security threat. This letter echoed congressional concerns over these costs. The letter also highlighted the inevitable negative Russian reaction to expansion and the destabilizing influence any expansion eastward was bound to have on US-Russian relations.

Indeed, while support for NATO expansion remained high in the US senate, the costs of expansion was a sticking point for congressional leaders. In response, the Clinton administration pressured NATO administrators to calculate an even more optimistic prediction of expansion costs—which it did unblinkingly on 13 November 1997, lowering the official cost estimates from \$27-35 billion to an unbelievable (and not entirely credible) \$2 billion.⁷¹

In April of 1999, at the celebration of the fiftieth anniversary of the organization's founding, Poland, Hungary, and the Czech Republic were formally admitted into NATO.

The Rejection of Arms Control Treaties and the Rush to Build

On 13 October 1999, with a vote of 51-48, the US Senate voted to reject the Comprehensive Test Ban Treaty, the first arms control treaty this century to be formally rejected. In doing so the Senate denied the US not only the opportunity to conduct extensive nuclear test monitoring and on-site inspection as allowed for in

⁷¹ John Isaacs, "The Senate's Strange Bedfellows," *the Bulletin of the Atomic Scientists*, January/February 1998, Vol. 54, No. 1.,

the Treaty, but it deprived the US of the moral and legal authority to discourage other nations from conducting nuclear tests or denouncing those that do. With one vote, the Senate has removed the US from the moral high ground and has eliminated any US ability to provide international arms control leadership.

This is only the latest and most severe in a series of administrative setbacks for arms control progress. The failure of President Clinton to sign the Treaty to Ban Landmines, the lack of US enthusiasm for commencing START III negotiations, and the rush to build a missile defense that will—by the administration’s own account—violate the 1972 Anti-Ballistic missile treaty, are all chief examples.

The rejection of the CTBT in particular highlights the American interest in preserving the Cold War nuclear weapons institutions and phobias. In fact, the Republicans who led the charge against the CTBT have admitted as much. In a press conference immediately following the October vote, Senate Majority Leader Trent Lott remarked that the vote was not simply about “the substance of the treaty,” and that his aim was to “strengthen US nuclear deterrence.”⁷²

It has been argued by the treaties opponents that the ending of nuclear testing would place the continued viability and reliability of the enduring stockpile. In a 7 Oct 99 statement, Senator Lugar wrote:

“The most likely problems facing our stockpile are a result of aging. This is a threat because nuclear materials and components degrade in unpredictable ways, in some cases

⁷² A rather curious statement considering that, by nearly all accounts, the US has achieved a state of obvious nuclear superiority.

causing weapons to fail. This is compounded by the fact that the United States currently has the oldest inventory in the history of our nuclear weapons program.”

But (as documented in a previous section) less than one percent of the age-related failures of nuclear components were discovered during detonation testing since 1958. Rather the impetus of the US nuclear test program since its inception has been the development and deployment of new nuclear weapons. The Departments of Energy and Defense has stated repeatedly that the viability of the US stockpile can be maintained without testing and that “...underground tests were never part of the formal stockpile evaluation program...”⁷³ The Senate claim then that the CTBT will hamper the US ability to maintain its arsenal is either ignorant or disingenuous.

This rejection takes place against a background of what can only be described as the rise of a new American unilateralism. On any given weekday you can tune in to see a C-SPAN broadcast of congressional hearings on the deficits of US military readiness, the threats from “rogue nations”, the need for new military weaponry, or the international and intra-national assaults on our nuclear secrets. But the hawkish battle cries from Washington aren’t exactly a resurgent American isolationism. The increasing globalization of economy, technology, and security make that impossible. Rather the new American paranoia can be best viewed as a drive to establish and promote an America-as-Hegemon in the post-Cold War world.

⁷³ Kent Johnson et. Al., *Stockpile Surveillance: Past and Future*, Sand National Labs, Jan 1996, p. 10.

This movement is characterized by a right-wing backlash against any international conventional or association which could potentially limit US freedom of action—including security, economic, environmental, agricultural, and technological agreements. George W. Bush on the campaign trail described this as the “terror of missiles and madmen.”

According to this view, arms control treaties designed to restrict the actions and freedoms of its signatories are worse than no treaties at all. They promote US complacency and inaction through a false sense of security—meanwhile our enemies are busy developing and acquiring their own capabilities to do us harm. Combine this with tremendous partisanship on Capital Hill, and a defense procurement system that has masterfully developed itself into nationwide subcontracting network (with nearly every congressional district in America relying on defense dollars in one form or another), and we are left with a prescription for a new arms race and a federal disregard for the opinions of the world community.

The growing movement to deploy a treaty-violating ABM system as fast as possible is yet another example of US unilateralism being placed ahead of arms control interests. Indeed, with the Republicans eager to denounce the Democrats as “soft on defense” in an election year, the Clinton administration has allowed itself into being pressured to commit to the deployment of an ABM system long before the technology warrants any such decision. In July of last year, President Clinton signed legislation making it the policy of the US to deploy a national missile defense system “as soon as technologically feasible.” He promised to make that de-

ployment decision this month, after the conclusion of three interception tests of ABM rockets. Of the two tests conducted, one has completely failed, and questions have been raised regarding the validity and realism of the other. The final decision on deployment is therefore not expected until this fall.

The Ballistic Missile Defense Organization has stated that 19 intercept tests will be necessary to certify the system, and that this test series could be concluded as early as 2005. The Republicans, however, have suggested that the system be built so as to achieve initial operating capability in 2005. It has been widely argued that this decision schedule is inspired by Washington partisanship rather than any legitimate security concerns.⁷⁴ Meanwhile the principal suspect (as asserted repeatedly by the Clinton administration), North Korea, has held only two tests of any missile capable of delivering even a very small payload over intercontinental distances. What's more, at last month's historic summit between the leaders of North and South Korea, the North Koreans pledged to end their nuclear ambitions and begin working toward the normalization of relations with the West. To decide to deploy a system which has not proven itself, at a time when there is no identifiable threat, makes no strategic sense. The push to do so then must be about something other than any purely international concerns.

⁷⁴ It would no doubt take more than one year to determine the technological viability of a system predicted to cost anywhere from \$60 billion to several hundred billion dollars.

The Department of Defense itself has concluded that there is no real threat on the horizon or anywhere else. Testifying before congress, Lt Gen Patrick Hughes (director of the Defense Intelligence Agency) said:

"From a national security standpoint, the threats facing the United States have diminished in order of magnitude, and we are unlikely to face a global military challenger on the scale of the former Soviet Union for at least the next two decades. The world is spending in real terms some 30-40% less on defense than it did during the height of the Cold War, the 'rogue' states are relatively isolated, and at least one—North Korea—is probably terminal."⁷⁵

The implications of deploying an ABM system for arms control are obvious and disconcerting. The Russians have not wavered in their opposition to NMD, and the Duma, when it ratified START II earlier this year, made it clear that treaty implementation was dependent upon US continued compliance with the 1972 ABM treaty. Should the US opt out of the ABM treaty—as the Republicans have repeated suggested—the Russians intend withdraw from START II and deploy as many weapons as are needed to overwhelm the US defense.⁷⁶

⁷⁵ Lt Gen Patrick M. Hughes, Director, Defense Intelligence Agency, "Global Threats and Challenges to the United States and Its Interests Abroad," Statement before the Senate Select Committee on Intelligence, February 5, 1997.

⁷⁶ Rather ironic considering this was exactly what McNamara promised to do in 1970 if the Russians insisted on developing their own NMD systems

IV

“ . . . [not achieving a nuclear test ban] would have to be classed as the greatest disappointment of any administration— of any decade—of any time and of any party. . . ”

-President Eisenhower, 29 May 1961

"Every man, woman and child lives under a nuclear sword of Damocles, hanging by the slenderest of threads, capable of being cut at any moment by accident or miscalculation or by madness. The weapons of war must be abolished before they abolish us . . . The logical place to begin is a treaty assuring the end of nuclear tests of all kinds . . ."

-President Kennedy, 25 September 1961

"I am very disappointed that the United States Senate voted not to ratify the Comprehensive Nuclear Test Ban Treaty. This agreement is critical to protecting the American people from the dangers of nuclear war. It is, therefore, well worth fighting for. And I assure you, the fight is far from over."

-President Clinton, 13 October 1999

Conclusion: The Life You Save Could Be Your Own

The state of the US nuclear institution can be summarized as follows: The US maintains more than 12,000 nuclear weapons of nine distinct designs refined through 1,030 nuclear tests conducted over 47 years. These weapons are maintained by an elaborate scientific complex with tens of thousands of scientists, tech-

nicians, strategists, and operators. The US has spent more than \$5.5 trillion on these weapons, currently paying \$25 billion a year to sustain and operate the nuclear weapons complex. This year the US has allocated \$4.5 billion for the Science-based Stockpile Stewardship Program.

Even if all the strategic arms accords now under consideration are implemented, the US will still maintain more than 10,000 nuclear warheads in various stages of operational use or storage for the indefinite future. Under the START I and II treaties (and potentially under START III) only the number of deployed warheads will vary. We can conclude then that by 2015, if Russian nuclear forces continue to deteriorate at the present rate, and even if China pursues its current modernization plans, the US arsenal will be five times the size of the arsenals of all the other nations in the world combined.

Clearly, no simple structural or realist explanation can entirely account for this. The Cold War is over. The Soviet threat has receded. The Russians are no longer in any position to maintain nuclear parity with the United States. There are no other nuclear threats in the world. The Chinese are decades behind. So why should the US continue to maintain such a colossal nuclear arsenal? Why should the US take such a casual—and increasingly hostile—attitude towards reducing the nuclear danger? Why should the US increase its capacity to develop new nuclear weapons and refuse to give up its right to test them through detonation (even though the US is the only nation on earth capable of developing and deploying new weapons without detonation tests)? Why should this be?

This paper has argued that, far more than any international strategic dynamic, the institutionalism of the past and the unilateralism of the present are at the core. From the beginning, US nuclear development and deployment decisions were based on our notions of strategic bombardment and the proper role of airpower, as well as the rise of value-free strategic analysis. In the dying days of World War II, strategic bombardment was on the brink of being proven a bankrupt doctrine. While they may have had a long-term, grinding-down effect on the Axis warfighting machine, the bombing campaigns over Germany and Japan simply did not deliver on the promises of Douhet and Mitchell. The civilian populace was not shocked into demoralization, they did not flee the cities, and they did not rise up against their governments to demand peace. Indeed, the evidence suggests that the firebombing campaign over Japan may have so incensed to the Japanese high command as to have made it harder to build a consensus for surrender when it became obvious that the Japanese could no longer resist.

But along with the dropping of the atomic bombs, the Russian declaration of war brought about a seemingly swift end to WWII and convinced the pioneers of American strategic air power that any war could be won through bombing. The Strategic Air Command was therefore founded on the notion that nuclear weapons and long-range bombers made for an almighty combination. To this day, the US Air Force and the US Strategic Command insist that the principle and most efficient use of airpower is not the defeat of the enemy on the battlefield, but the demoralization of, and the psychological shock on, the enemy will to fight.

In the fifties and sixties, the value-free strategic institution became the dominant policy-influence voice when it came to nuclear weapons. The efforts of Kahn, the RAND Corporation, and the rest of the value-free operations analysts refined their strategic paradigms to such a level that it became easy to discuss megadeath without blinking an eye or shedding a tear. The absurd levels of nuclear weapons developed and deployed between 1950 and 1972—along with the creation of a strategic command and control infrastructure capable of providing the President with limitless options and combinations—can therefore be attributed in large part to divestment of nuclear strategy from all societal norms and moral considerations.

Since the end of the Cold War, despite a brief period of great progress towards disarmament, the US nuclear institution has doggedly resisted all attempts to be disbanded or even significantly reduced. When the START I treaty called for the elimination of thousands of weapons, the DOE decided to keep most of those weapons in reserve, thereby preserving a vast array of bases and laboratories built during the Cold War. When a moratorium was placed on detonation testing, the DOE insisted that a wide variety of new capabilities were needed in order to preserve the reliability of the stockpile (despite its own reports to the contrary). The DOE was thereby able to actually *increase* its funding and its ability to build and field brand new nuclear systems.

Today, as even the most obscure nuclear threats have all but withered away, a new breed of US unilateralism threatens to spark a new, one-sided arms race, with hundreds of billions of dollars spent to build weapons that have no clear enemy in

mind and no demonstrated technology promise. All this continues even though by most accounts the US rejection of arms control treaties and our insistence on building a national missile defense stand to injure US security rather than enhance it.

Where to go from here? Unfortunately, the US is the only nation in both a strategic and economic position to offer any real leadership. While Russia, China and the Western allies can express their concern, their dismay, and their outrage at the US disregard for the global interests, only the US has the muscle to forge a new path. But forge a new path it must. For so long as the US insists on behaving as if the Cold War still rages on, the world can only become more dangerous.

Some have suggested that it is naïve to imagine a world without nuclear weapons. On the contrary, it is naïve to think that world can march on, unchanging, while our immutable arsenals lock the world into a stable US hegemony. Globalization is the reality, and it is the US that most adapt if our prosperity is to survive. A world where a poor and desperate Russia feels compelled to preserve arsenals it cannot afford, where China feels threatened by a AMB system aimed at no one in particular, where nations like India and Pakistan are free to detonate nuclear weapons in hopes of achieving an impossible superiority—such a world is not sustainable. And no effort to fix it will succeed without US leadership.

Recommendations: In a perfect world, the US would embrace the existing arms control regime. The CTBT would be ratified, the NMD plans would be shelved (at least until both the technology proves itself and the Russians warm up to the idea of amending the ABM treaty), and aggressive START III negotiations

would commence. But that would amount only to a good start. The pragmatist camp—represented by Bruce Blair and Gen Lee Butler—have argued that the US should adopt a no first-use policy, remove our forces from hair-trigger alert, and reform our strategic institution so as reduce the gargantuan reserve and accept the viability of minimum deterrence. Such moves can only make the world a safer place for us all.

But these structural reforms must be coupled with comprehensive diplomatic and economic initiatives. It stands to reason that by engaging countries like China and North Korea, we can eliminate the burgeoning nuclear threat at a fraction of the cost of building a national missile defense. By engaging Russia and inviting them to join NATO we can assuage their deep-seated territorial fears and work with them to control their decaying nuclear warfighting machine.

In the final analysis, it seems quite clear that the only legitimate use of nuclear weapons is to deter the use of the nuclear weapons. The only sensible approach to reducing the nuclear threat therefore must be centered on the elimination of the nuclear weapons themselves rather than the countering of them or the defense against them. And there can be no better use of tax dollars than the elimination of the nuclear danger. All notions of nuclear superiority or the usefulness of nuclear weapons to win wars were questionable during the Cold War, and are totally bankrupt now. A stable nuclear world is in idea whose time has come and gone. Now is the time to build a world without nuclear weapons, for all our sakes.