

# Hiroshima Revisited

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By  
George W. Collins, II

## Abstract

In this essay I explore the events that led to the dropping of the atomic bombs at the end of World War II. Most of the time will be spent recounting the tenor of the times so as to understand the nature of the decision within the context of the time.

## Introduction

I am a considerable admirer of Peter Harwood. I have found his papers on the *Maya* and *Axum*, to be well researched, well written and enlightening. I agreed with his paper Titled “*Political? Science?*”. In March of 1999 he gave a paper titled *Hiroshima: Abandoning the Moral High Ground* which I have recently read in the process of preparing papers for the Club WEB site. However, on his central theme we disagree. Some members have asked me to present an alternative view and what follows is my effort in that regard.

One of my standard admonitions to students is to refrain from judging the past in the context of contemporary standards. One can learn nothing about the past and the exercise does little to benefit the present. I remember a headline in the Columbus Dispatch (page 3) claiming that “Ptolemy Cheated” in that some of the data he used to construct his model of the heavens was made up. The dominant philosophy of his day was that of Plato who believed that the entire world could be understood by the mind alone. Observation was looked down upon. That didn’t matter to the Dispatch reporter. He seemed more interested in trying poor Ptolemy for violating scientific principles that wouldn’t be developed for 1200 years.

There was a marvelous television series 20 years ago titled “*The Day the Universe Changed*” and hosted by a fellow named James Burke. I remember one episode where he spent some time pointing out that those who burned witches in the era before the age of enlightenment were not psychopaths or demented evil folks. They were, often as not, pillars of the community doing what they did to save the witch’s soul. Religious faith was their only source of answers to the world around them that they did not understand. Ignorant folk are not necessarily evil. It has been cynically, but accurately, said that morality is the luxury of the well-fed. An absolute faith that what you believe is absolutely correct can lead to Mother Teresa or Adolf Hitler. Sadly, we are not immune to this world view today.

It is so easy from our present perspective to say how misguided those witch-burning folk were and be amazed that they ever could believe such nonsense. To avoid that premises let me recount what I believe was the state of affairs leading up to the dropping of the atomic bomb. My recollection of the time was that the onset of the war scared a lot of people. The depth of that fear was manifest in our treatment of Japanese Americans. The only comfort was the size of the Atlantic and Pacific Oceans. But that had not saved Pearl Harbor. No major war had ever been

successfully waged on two fronts simultaneously. Indeed, one may argue that a war on two fronts is what led to the defeat of Germany. The fear of that time was palpable even to a six year old boy in the Midwest.

Fear of the war in the United States was not limited to the general populace. Indeed, it was the main reason the émigré scientists involved in the exodus from Europe pushed for the development of the atomic bomb before the Germans could develop it. The Germans had all the knowledge and access to the necessary resources (uranium from the Belgian Congo and heavy water from Norway). Heisenberg showed Neils Bohr actual plans for a heavy water uranium pile. Such a pile could manufacture Plutonium as was done in the United States at Hanford and at least produce a “dirty bomb” if not an explosive weapon. That was an actual concern and fostered a United States super secret counter plan which was, happily, never implemented. Richard Rhoads, in his definitive book *The Making of the Atomic Bomb*, quotes Oppenheimer in replying to Fermi’s suggestion to build such a weapon<sup>1</sup> (p 511).

“I should recommend delay if that is possible. (In this connection I think that we should not attempt a plan unless we can poison food sufficient to kill a half a million men, since there is no doubt that the actual number affected will, because of non-uniform distribution, be much smaller than this.)”

Rhoads then comments:

“There is no better evidence anywhere in the record of the increasing bloody-mindedness of the Second World War than Robert Oppenheimer, a man who professes at various times in his life to be dedicated to *Ahimsa* (“the Sanscrit word that means doing no harm or hurt,” he explains) could write with enthusiasm of preparations for the mass poisoning of as many as five hundred thousand human beings.”

I knew J. Robert Oppenheimer briefly, heard him speak a number of times and read much of his work, scientific and otherwise. I simply cannot imagine the circumstances that would cause a man of his intellect and persuasion to write such a memo. Few men have ever been so conflicted. I certainly would never presume to pass judgment on the man Freeman Dyson once called the ‘Doctor Faustus of the nuclear age’. I use this, as did Rhoads, only to illustrate what all-out war can do to the judgment of those involved. It is perhaps a bitter irony that fear of Hitler’s potential use of an atomic bomb is what spurred scientists in the U.S. to develop one while it likely drove Heisenberg to obfuscate its possible construction in Germany<sup>5</sup>.

Japan had destroyed the Russian fleet in an earlier war, had taken China with little trouble and kicked the English out of Singapore. Everything they attacked in the Pacific fell rather quickly. Then came Pearl Harbor and the fall of the Philippines. Robert McNamara in the FOG of War observes that the war with Japan was the most bestial and brutal war we have ever fought. It was not known until after the war that 100,000 people died building the Burma Thailand Railroad. Ten thousand of them were allied prisoners of war. The Bataan Death March and Rape of Nanking were well known in this country during the war. These events, and fear, led to the demonizing of the Japanese at a monumental level. The Japanese military went along way

toward making this easy. It is useful for the enemy to be demons if you are going to ask your sons to go and kill them.

To emphasize how time changes one's outlook and judgment, contrast war correspondent John Hershey, covering the Battle of Guadalcanal, who later, at length, put a human face on the horrors of the Atomic Bomb in his piece *Hiroshima* for the *New Yorker* which was later turned into a book. Richard Rhoads (p. 519) gives Hershey's description of the Japanese as a reporter on Guadalcanal.

“A legend has grown up that this young man [i.e., the U.S. marine] is a killer; he takes no prisoners, and gives no quarter. This is partly true, but the reason is not brutality, not just vindictive remembrance of Pearl Harbor. He kills because in the jungle he must, or be killed. This enemy stalks him, and he stalks the enemy as if each were a hunter stalking a bear cat. Quite frequently you hear marines say: “I wish I were fighting the Germans. They are human beings, like us. Fighting against them must be like an athletic performance – matching your skill against someone you know is good. Germans are misled, but at least they react like men. But Japs are like animals. Against them you have to learn a whole new set of physical reactions. You have to get used to their animal stubbornness and tenacity. They take to the jungle as if they had been bred there, and like some beasts you never see them until they are dead.”

Rhoads then observes:

“As an explanation for unfamiliar behavior, bestiality had the advantage that it made killing a formidable enemy easier emotionally. But it also, by dehumanizing him, made him seem yet more alien and dangerous.”

This is the sort of material that shaped our view of Japan during the Second World War. That the war with Japan was qualitatively different that the European war is painfully demonstrated by the surrender rate for the Japanese Army was less than 1 %. They literally fought to the death. Western standards usually defined complete defeat as a loss of a quarter to a third of an army and that is considered a basis for honorable surrender. This is the sort of statistic that influenced military estimates of invasion casualties of a nation with a population of 200 million. It certainly affected our view of those with who we were at war.

Consider the other front. Let's look at the state of science in the world. In the 30's Germany was the center of physics. More than half of the Nobel laureates in physics were there. The foundations of Atomic Theory and Quantum Mechanics were laid there. Then in the late 30's Otto Hahn and collaborators demonstrated that one could split the Uranium atom releasing energy in accord with Einstein's famous formula  $E=mc^2$ . By that time, even Einstein had some doubts about the possibilities that this could be done and the results of his formula realized. Even before the publication of this result Leo Szilard realized that successive atom splittings could release an enormous amount of energy leading to a chain reaction. He tried to suppress the result by patenting it and turning the patent over to the British Navy so it would be subject to the Official Secrets Act.<sup>1</sup>

In the United States Leo Szilard implored all his friends not to publish on this subject for fear that the Germans would develop a bomb based on a chain reaction in Uranium. Bohr and many scientists were adamantly opposed to secrecy. Indeed, a paper Bohr and John Wheeler published in early 1939, not only outlined the nuclear physics that would lead to a chain reaction, but also that U235 was the isotope that could make a bomb. In fairness, Bohr was quite conflicted because he was well aware of the German threat, but he believed that separating U235 from U238 was not feasible. In that he was wrong. Not all the bright German Physicists had left Germany. The brilliant Werner Heisenberg was still there and did lead the German Nuclear project. In fact the Germans had a state sponsored atomic bomb project before the U.S. did.<sup>1</sup> However, unbeknownst to the West, Heisenberg seems to have deftly kept nuclear research away from bomb development while keeping many young Germany scientists out of the army.

But Szilard had every reason to be concerned. He induced the veteran pacifist Albert Einstein to sign a letter they drafted to Roosevelt urging the U.S. to develop the bomb first. Keep in mind, no one really knew if it could be done, but should it be doable, the result could easily decide the war. Bohr felt, if not internationally controlled, it would destroy the world. As a result of the letter, Roosevelt arranged for Szilard, Eugene Wigner, and Edward Teller to meet with a group of military and industrial folks to make them aware of the possibilities. The foreigners, more-or-less fresh off the boat, from a country now controlled by the enemy, and speaking in thick accents about a bomb that could destroy cities were politely sent packing with the promise of some very modest funds for further experiments<sup>1</sup>.

Enrico Fermi had been permitted to leave Italy with his family and Jewish wife to receive the Nobel Prize in Sweden. He came from there to the United States and never returned to Italy. He initially ended up in a Manhattan apartment next to Szilard. The two arranged for further goading of the government with Einstein's help to assure funding for experiments that would demonstrate controlled nuclear fusion of uranium. This effort evolved into The Manhattan Project.

It should be noted that very little was known about the long term health effects radiation at this time and would not be known for another couple of decades. It was certainly true as illustrated by the Oppenheimer quote above that radiation was not good for ones health. Madam Curie had died of Leukemia probably induced from her exposure to radium. In the dirty bomb discussion above Edward Teller had suggested Strontium 90 as the appropriate dirty isotope for it chemically replaces calcium in the bone thereby continually radiating the exposed individual. It is ironic that it was the strontium 90, from the later pacific H-bomb tests, falling on the milk producing state of Minnesota that led this country to the test ban treaty with the Soviet Union.

Much of the information setting current levels of radiation exposure was derived from the subsequent effects of the dropping of the atomic bomb. My mother, as a registered floor nurse, treated some of the first radiation sickness patients at Columbia Presbyterian Hospital in New York in the 1920s. They were the ladies who painted radium dial watches and had the bad habit of licking their brushes to get a point. No one had any idea what was wrong with them. They died horribly. In my youth children could be kept quiet in shoe stores by putting their feet in x-ray fluoroscopes used to show the shoe fit. They could see the bones in their toes wiggle while

their parents bought shoes. The way we handled  $\text{Na}^{22}$  in my physics labs at Princeton in 1957 would result in law suits today. It was not uncommon for physicists to align electron synchrotrons by looking along the beam to center it in a glass cross hair. Of course the beam continued on through their head. Philip Morrison rode with the plutonium for the Trinity test from Los Alamos to the Trinity site by his side in the back seat of a car. He lived a rather long time. However, the number of brilliant physicists that died of cancer, probably induced by radiation, is legion. At the time, the primary appreciated danger from the bomb was the blast and the possibility that it might ignite the atmosphere destroying the earth (Edward Teller's suggestion).

At the time of the Trinity test, no one had any real feel for what the outcome would be. The "pool for the explosive yield" among the scientists ranged from zero to the end of the world. But the general feeling was pessimistic. I. I. Rabi was the last to arrive at the site so had to take the largest yield number in the betting pool (18 kilotons of TNT)<sup>3</sup> for it was the only one left. He won. After the test General Groves is said to have remarked "*That was a hell of a bang*". Robert Oppenheimer quoting the Bhagavad-gita said "*I am become Death, the Destroyer of Worlds.*" The latter was typical of many scientists. Szilard led a group who wrote a letter to Roosevelt asking that the bomb not be used. Germany had been defeated and there was little likelihood that the Japanese would develop such a weapon. The letter arrived in Washington just after Roosevelt had died. It is doubtful that Truman ever saw it. So why did we drop the bomb?

It is not generally appreciated that the impact of the atomic bomb on the future of the world had been a major point of concern in the scientific community for some time. While Szilard had worried about this since he first thought of a chain reaction in 1933, the primary exponent of concern was Neils Bohr. He felt that the very existence of such a weapon would, of necessity, require an end to war for to use it would mean an end to the human race. Therefore it should be managed by an international agreement among nations. While this may seem incredibly naïve, it may well prove in the long run to be correct. Bohr's outspoken position riled Churchill to the extent that he requested Bohr be locked up until the war was concluded. Fortunately he was overruled.

The alternate view held by many was that the only guaranteed means for the nation's survival would be to remain ahead in knowledge, production and stockpiling of such weapons so that we could never be challenged. There really are no alternatives to these two views and the latter is the course we have chosen to follow. Virtually everything else that followed the decision to develop the bomb in 1941 flows from which of these courses you choose to follow.

By May of 1945 it was quite clear that the science and essential engineering for both the uranium and plutonium bombs was complete and they were likely to work. The decision to use them was a political decision, not a scientific one, yet it seems the scientists were the most conflicted by the consequences. That is not surprising, for they knew the essential science was widely known and the bomb would eventually be built probably by the Soviet Union. The only argument was how long it would take them to catch up. Estimates ranged from 3 to 10 years with the most confident guess being seven years. It turns out that it only took the Soviet Union four years to test an atomic bomb. What was not known at the time was that the Soviet Union had a nuclear project under way throughout the war and was aware we were working on the problem.

We had been at war for four years and sustained about a million casualties. It had not been a very popular war from the outset. If the English had not set about developing radar before the war and gave us all they knew, the war might have ended before we entered it.<sup>2,3</sup> We had defeated Germany, but it had been a close call. Had the Wehrmacht been in complete charge of the defense of Normandy, it is not at all obvious that we would have prevailed on D-Day. The war with Japan was a war of anger for Pearl Harbor, but it was Germany that declared war on the United States, not the other way around. The atrocities of Nazi Germany were essential unknown to the general public during the war and it is easily forgotten that there were Nazi rallies in Madison Square Garden before the war that attracted tens of thousands. There had been considerable sacrifice on the part of the public through rationing, recycling, Victory Gardens, and the wide spread utilization of women in the labor force. With the death of Roosevelt and the defeat of Germany, there was considerable pressure on the novice president Harry Truman to bring the war to an end as soon as possible. Now Truman had been the typical Vice President presiding over official affairs that Roosevelt couldn't be bothered attending. He had no idea what the Manhattan Project was about. Indeed, charged as a senator with oversight of the project, he had been informed that he could not investigate it. To expect him to have any idea as to the power and dangers associated with the atomic bomb is totally unrealistic.

According to Richard Rhoads<sup>1</sup>, the actual decision to use the bomb was made before Trinity by a group known as "the interim committee". He points out that the committee consisted of Henry Stimson (Secretary of War), George L. Harrison, Conant, Karl Compton, Vannevar Bush, George C. Marshall, William Clayton (Assistant Secretary of State), Ralph Bard (Undersecretary of the Navy) and James Byrnes (Secretary of State Designate) Truman approved the committee with the late addition of James Byrnes on May 2<sup>nd</sup> 1945. James Byrnes was officially retired, but it was well known that Truman planned to name him Secretary of State. He had been a critical advisor to Roosevelt who often referred to him as the Assistant President. The committee created a "Scientific Panel Adjunct" consisting of Arthur Compton E.O. Lawrence, Robert Oppenheimer and Enrico Fermi.

The interim committee met on May 14<sup>th</sup> and considered an earlier memo from Bush and Conant to Secretary Stimson which largely outlined Bohr's concerns. Byrnes took it home with him to study and when the committee met again on May 18<sup>th</sup> Byrnes showed himself to be the consummate politician that he was. He helped Lawrence bring up an alternative view that we should stay ahead of the competition. The committee met again on May 31. In the interim, Byrnes had met with Szilard and was singularly unimpressed. Turned-off, might be a better way of phrasing it. At the May 31st meeting Byrnes first heard of the H-Bomb which Oppenheimer suggested could yield 100 million tons of TNT and it got Byrnes attention. Lawrence again suggested staying ahead of the rest while Bush, Compton and Conant were clear that they felt the only hope for their future lay in international control. The meeting rambled on through lunch with much philosophical wrangling. When they convened for the afternoon meeting the focus seemed to be on what the effect on the Japanese would be and whether a demonstration would be effective. The next morning the interim committee met with four industrialists, Stimson still quailed at destroying entire cities with atomic bombs. Stimson left the committee in the afternoon and in his absence Byrnes "co-opted" the committee stating that he felt it was

important that there be a final decision on the question of the use of the weapon. The minutes of the meeting show:

Mr. Byrnes recommended, and the committee agreed, that the Secretary of War should be advised that, while the choice of target was essentially a military decision, the present view of the committee was that the bomb should be used against Japan as soon as possible; that it be used on a war plant surrounded by workers' homes and that it be used without prior warning.

Byrnes took the recommendation straight to the White House and Stimson notes in his diary "... said Byrnes had reported to him already about [the interim committee's decision] and that Byrnes seemed highly pleased with what he had done." Rhoads notes: "While Truman didn't give the order to drop the bomb on June 1<sup>st</sup>, it would appear that he had made up his mind with a little help from James Byrnes."

Now as to the military estimates of the cost of invasion of the home islands of Japan. Peter Harwood has thoroughly documented the various numbers of estimated deaths from an invasion of the home islands ranging from a quarter of a million to one million American lives. I cannot match his research where the estimates span 30 years, but I did once talk to a member of McArthur's intelligence staff who said they had totally screwed up estimating the Japanese reserves. They believed that the elite troops were on the Russo-China border and they would be brought back to defend the homeland. As it turns out the Japanese had rotated those troops to the Pacific and replaced them with recruits, but as quietly as possible so as not to alert the Russians. However, the invasion of the home islands was planned and after the casualties we suffered and those of the Japanese at Iwo Jima and Okinawa, it is not hard to see how creditable estimates of heavy losses on both sides could be expected from an invasion of the home islands. While such losses do not seem to have been a major consideration of the interim committee, Truman had remarked that we wanted to minimize American losses any way possible. He had to be persuaded by George Marshall that an invasion was necessary and the initial invasion of the southern island was planned for November 1<sup>st</sup>. Six divisions were to be deployed against what was thought to be only three divisions of the Japanese Army. However, the three divisions swelled to 17 by the late summer.

My college lab partner's Father had been a LST driver during the second war. He and his LST had been transferred to the Pacific Campaign after D-day and he was on his way with his LST to rendezvous with the invasion fleet for the invasion of the southern island of Japan. His ship had been stripped of armor and the entire central region refitted with mortars and ammunition. He opened his orders at sea and they read something like:

The Battleships will cruise 25 miles off shore shelling the invasion site for 5 days. The Heavy Cruisers will shell the shore from 15 miles and the Light Cruisers from 10 miles. The destroyers will be at 3000 yards and the LST's will fire their mortars from 500 yards. When you are sunk, your crew may swim to the shore, but it is unlikely that the Japanese will be taking prisoners. You may swim out to the Destroyers who will pick you up, but it should be pointed out that these waters are heavily shark infested.

He was about to read these orders to his crew when the announcement of the Japanese surrender came over the PA system. To my mind there is little doubt that the experiences at Iwo Jima and Okinawa in March and April of 1945 led the military to believe that invasion of the home islands would involve the Japanese citizenry as well as the military and it would be a slow horrible fight.

When Truman was presented with the possibility that a super weapon that had worked once in a test, might actually work in the war theater and avoid a protracted war that would have substantially increased American casualties, his decision is obvious. Why were two cities destroyed? It was the beginning of what could have been a more protracted campaign. However, it was hoped that the shock value of two relatively quick hits by single aircraft each would have the desired effect. Two quick successive shots are far more devastating than two widely separated ones. Further more “Little Boy” was a Uranium 235 bomb which had never been tested. Its weight was such that it was not clear that a B29 could get off the runway with it. A similarly loaded B29 had crashed the day before during a test. The second bomb had been tested but its denotation mechanism was far more complicated and successful delivery by aircraft was not a forgone conclusion. “Fat Man” (named in ‘honor’ of Churchill) was a plutonium bomb like that tested at trinity. Using either one as a demonstration test had far more to loose than to gain. As it turns out Truman changed his mind after Nagasaki and gave orders to stop the atomic bombing<sup>1</sup>. It was apparently none too soon for a second plutonium bomb was ready for shipment to Tinian Air base by the end of August.

The destruction of cities had not been sufficient to end the war. In March General Curtis LeMay had destroyed Tokyo with fire bombs from 279, B29s killing more Japanese than were killed in both Hiroshima and Nagasaki. The fire bombing continued with 62 more Japanese cities being at least 40% destroyed. These episodes led to an estimated 330,000 fatalities including Hiroshima and Nagasaki<sup>4</sup>. Since the firebombing of Tokyo accounted for more than 100,000 fatalities and a similar estimate is true for the atomic bombs, one can only wonder that the fatalities from the remaining cities were so low. For example Yokahoma (population 900,000) was 47% destroyed in a single attack lasting less than an hour, yet the fatality rate is placed at less than 5000<sup>4</sup>.

A possible explanation comes from an old Korean Astronomer friend of mine who was conscripted along with his brother to serve as “cannon fodder” in the Japanese army. His brother went through “basic training” at Hiroshima and my friend was to follow two weeks later during which time Hiroshima disappeared. He told me that the general populace was very depressed toward the end of the war and would listen to the American radio when they could at the risk of their lives. Apparently after Tokyo we would announce a week in advance when a particular city would disappear to the day and hour and it did. We had that level of air superiority. The Japanese would only announce an air raid when the planes crossed the coast. That would hardly have been sufficient time to leave. I suspect our advanced warnings, which some construed as psychological warfare, led to many civilians finding somewhere else to be when the raid came. Such a warning was not given for either Hiroshima or Nagasaki.

None of this had brought peace. June 9<sup>th</sup> 1945 Japanese Premier Suzuki announces Japan will fight to the very end rather than accept unconditional surrender. That essentially requires



Truman to demand unconditional surrender. After Potsdam he softened the surrender terms, in the Potsdam Declaration, to apply unconditional surrender to just the armed forces. Even that was rejected July 28<sup>th</sup> by Suzuki with a promise to fight on. This even turned the reluctant Secretary of War Henry Stimson toward the use of the bomb and insured there would be no turning back from the use of the bomb. The use of the bomb was also a lesson for Stalin and it is clear that Truman meant it to be. He felt it would keep the Soviet Union out of the war making negotiations for Europe easier.

Perhaps Winston Churchill summarized the decision in the mood of the times when he wrote “To avert a vast, indefinite butchery, to bring the war to an end, to give peace to the world, to lay healing hands upon its tortured peoples by a manifestation of overwhelming power at the cost of a few explosions, seemed, after all our toils and perils, a miracle of deliverance.”

Many have speculated on the course of history had the bomb not been dropped. Ships were already at sea to prepare for the invasion of the home islands. There can be little doubt that had Japanese failed to surrender and the bombs not been used, the invasion would have taken place. It also seems likely that General LeMay would have continued to “soften up” the defense with continued fire bombing of the remaining Japanese cities. We should not forget that the precedent of bombing civilian targets had already been set by Coventry, London, Dresden, Hamburg, Berlin and Tokyo. However, the level of destruction in Japan considerably exceeded that in Europe. It is said that even LeMay thought he would have been tried for war crimes had we lost. The Japanese death toll from such actions would have been horrendous. Had there been organized resistance to a homeland invasion, casualties on both sides would have been greatly increased. There is no doubt in my mind that they would have exceeded many fold the deaths at Hiroshima and Nagasaki.

The resignation of the Japanese populace might have meant that there would have been less general opposition to a homeland invasion. However, one should remember that there was an attempted coup, which just failed, the night the Emperor made a recorded broadcast to the people about the surrender. The speech accepted the Potsdam Declaration and specifically mentioned the atomic bomb as a reason for his decision. But once that broadcast had been made there could be no more resistance. None of this could have been known to the decision makers in Washington.

Further speculation is even riskier, but nevertheless tempting. Stalin knew we had the weapon and also had folks building one of their own. Klaus Fuchs and the Rosenbergs saw to that. They also had an Andre Sakharov who quite independently developed the H-bomb once the A-bomb proved possible. Mankind has never had a weapon that it hasn't used. To my mind there is little doubt that some nuclear weapon would have been used and the force of the H-bomb is far greater than those used at Hiroshima and Nagasaki. Perhaps McArthur would have prevailed during the Korean War over President Truman and been allowed to use the H-Bomb on China. Truman wouldn't have seen the repercussions and force of the lesser weapon. Hiroshima and Nagasaki scared even the military and certainly the civilian population. The H-Bomb tests went even further in that regard. After it became clear that the secrecy of the Manhattan Project had been compromised, we got rather better at maintaining the secrecy of our nuclear capability. Stalin really didn't know how much we had. Although he was brutal, he wasn't stupid and hence

refrained from any serious aggression (The Berlin blockade accepted) until MAD became well established.

General LeMay was given command of SAC (Strategic Air Command) which was our only defense against Stalin until land and submarine missiles were deployed in the 60's. He produced a very credible defense which I believe even the Soviets respected. However, the outcome of such a conflict remained in doubt for several decades in some circles. Not only do I believe that the use of the atomic bomb minimized the lives that would have been lost bringing World War II to an end, I believe a good case can be made that the horrors of Hiroshima and Nagasaki that went on well after the end of the war may have forestalled an all out nuclear conflict. In my view, such a conflict would have been an extinction event.

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