

8-2009

How Nuclearization Changed Americans

Jason A. Genthner

The College at Brockport, hfd3245@frontiernet.net

Follow this and additional works at: http://digitalcommons.brockport.edu/ehd_theses

 Part of the [Education Commons](#)

To learn more about our programs visit: <http://www.brockport.edu/ehd/>

Repository Citation

Genthner, Jason A., "How Nuclearization Changed Americans" (2009). *Education and Human Development Master's Theses*. 182.
http://digitalcommons.brockport.edu/ehd_theses/182

This Thesis is brought to you for free and open access by the Education and Human Development at Digital Commons @Brockport. It has been accepted for inclusion in Education and Human Development Master's Theses by an authorized administrator of Digital Commons @Brockport. For more information, please contact kmyers@brockport.edu.

How Nuclearization Changed Americans

By

Jason A. Genthner

August 2009

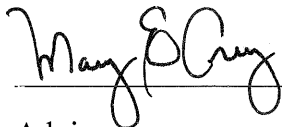
A thesis submitted to the Department of Education and Human Development of the State University of New York College at Brockport in partial fulfillment of the requirements for the degree of Master in Science in Education.

How Nuclearization Changed Americans

By

Jason A. Genthner

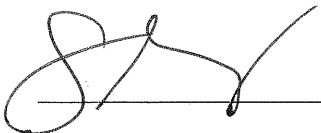
Approved by:



Advisor

8/25/09

Date



Director, Graduate Studies

8/27/09

Date

TABLE OF CONTENTS

Title Page.....	1
Signature Page.....	2
Table of Contents.....	3
Part I: How the Nuclear Age Changed Americans Historiography.....	4
Part II: From the Cold War to <i>Indiana Jones and the Kingdom of the Crystal Skull</i> ..	55
Part III: Teaching Strategy #2: Video Reflections and Student Questions.....	91
Part III: Teaching Strategy #3: Document Based Learning.....	103
Bibliography Part I:.....	142
Bibliography Part II.....	149
Appendix:	
Part III: Teaching Strategy #1: Power Point Presentation Slide Copies	On CD

How the Nuclear Age Changed Americans

I. "How Did We Get Here".

Humankind, since the dawn of our species, has devised ways to survive and conquer the food chain. Advances in technology such as the development of hunting utensils and the introduction of meat into our diets, allowed our brains to become much larger than those of our ancestors; as a result, our nomadic lifestyles have changed to become more sedentary. Weapons once used for hunting now became weapons which soldiers used to defend and protect their valuable resources, such as their lands.

Humankind has always tried to create the latest and greatest doomsday devices with the intent to not only protect itself, but to eradicate opposing forces. Early doomsday devices included poisonous darts, arrows or spears, swords or knives, guns or cannons, and toxic nerve gases. It only seemed fitting that in the late 1800's, Alfred Nobel thought that he had created a peaceful device that would end wars; he never thought his discovery would cause an arms race that would only shortly thereafter create a new way of taking lives.¹

Nobel created dynamite in order to safely remove coal from mines; instead, the smokeless powder revolutionized the battlefield. Previously the cannon smoke of old

¹ Donovan Webster, *Aftermath: The Remnants of War* (New York: Vintage Books, 1996), 4, paraphrased.

had obscured the view of the enemy, hence they could dress using bright colors and brass buttons. Now enemies could clearly see and the new artillery shells could go farther than the old black powder rounds.² After his death, Nobel's estate gave cash prizes to those who advanced peaceful measures in the fields of science, literature, and peace itself, but before his death he became increasingly interested in the atom. Fifty years after his death, New Mexico saw one last idea of the "Merchant of Death" come alive in the blast of an atomic weapon. It is estimated that Alfred Nobel's ideas or technologies have caused at least 100 million deaths.³ It is to Alfred Nobel and others such as Albert Einstein and Robert Oppenheimer that we owe credit for the advent of nuclear war. The bombs dropped on Hiroshima and Nagasaki were of our doing, and yet we fear the bomb the most. For a country that was founded by the gun, as we will see, we do not want to die by the bomb.

II. "The Spark": Cause, Need, and Attainment for Nuclear Devices.

Almost every great civilization has needed a weapon that could wield power over other nations. In some cases those weapons are meant to keep peace, while in others to dictate their will on another country. Our reasoning for acquiring the atomic bomb

²Ibid., 6-7. Paraphrased.

³ Ibid., 8-9. Paraphrased the prologue an excellent read for the dawn of a nuclear era. "The remnants of these wars exist as unexploded artillery shells and swaths of buried land mines... They even lace the soil with invisible death: dirt made poison by radioactivity from nuclear tests, blasts that render land uninhabitable for millennia. The weapons we have warred with, and their effects on the world's landscape and cultures, have become our century's most prevalent history. Only now at century's end, can we begin to sift through the past and discern a trajectory that begins with Alfred Nobel, arcs through the nuclear age, and ends in the stockpiles we have labored to create for wars still unfought."

was quite simple: if we had not created it, the German's would have. After the defeat of the European theatre, the United States was faced with a great challenge in Japan: how to end the war without risking more American lives than absolutely necessary.⁴ Many argued that Truman's use of the bomb was to prove to the world that the United States was the only Superpower, especially to communist Russia. It is well known that the bombs dropped on Japan did not initially cause surrender; in fact, a third bomb was being prepared, an H-bomb in fact, was to be dropped on Japan if surrender was not imminent. In our favor, and for the rest of the world as well, Japan did ultimately surrender and the United States showed the world our hand. The end led up to a full- scale escalation of nuclear stockpiles that to this day are clearly underestimated. The overall trend in the United States that will become apparent throughout the upcoming subchapters is that, in the beginning the United States was proud of its new device, but currently has moved to a position of détente.

When the United States dropped the atomic bombs on Japan the whole world took notice. Other nations, such as Russia, realized that they were now the ones behind in technology. The underlying cause for most countries to develop or acquire nuclear weaponry was for stability.⁵ Many nations realized that if a war were to occur, no

⁴ Alice Kimball Smith, "Scientists and the Public Interest- 1945-46," *Newsletter on Science, Technology, & Human Values*, no. 24 (June, 1978): 30, <http://www.jstor.org>. Some very prevalent reactions on the home front included, "Thank God for the bomb; my son (or husband or brother) was in the Pacific."

⁵ Ciro Elliot Zoppo, "Nuclear Technology, Multipolarity, and International Stability," *World Politics* 18, no. 4 (Jul., 1966): 579, <http://www.jstor.org>. "Maintaining the stability of mutual nuclear deterrence while restraining aggression is the primary goal of arms control." It was seen by many during this time period that nations whom possessed the bomb could use it as a threat to force other countries to comply with their demands. Or if a nation has a lowered nuclear arsenal then the aforementioned would be true as well. Yet if two nations had the same size stockpile then an uneasy détente would arise since no nation would risk an all out war just use harsh rhetoric against each other; hence the Cold War. Further paraphrased, Zoppo, "Nuclear Technology, Multipolarity, and International Stability," 583-584.

current military could invade another country due to the quickness and destructive power of such a device.⁶ Another component to a nuclear threat was the expense involved in the delivery and command and control systems. Yet, due to the nature of nuclear programs around the world, it became easier and cheaper for some nations to start up their own programs with the information out on the market.⁷ Since countries with nuclear capabilities wanted to improve their technologies, many kept testing these devices either in the atmosphere or on land. In the United States, several incidents occurred when either fallout or electromagnetic pulses affected Americans out west; there would be a huge push to limit further tests.⁸ If a conventional war were to break out, the United States, more so than the Soviet Union, had the capability of using either conventional or limited nuclear weapons on the battlefield.⁹ Due to the nature of a potential nuclear war, the United States aided Great Britain and France with technology; whereas, Russia helped China to aid their own stability.¹⁰ Finally, advance forms of weaponry would render earlier versions obsolete due to their yield and delivery mechanisms. Miscalculations, early warning systems, and even the survival of command and control systems all have to be weighed against the need for a large nuclear force.¹¹

⁶ Ibid., paraphrased, 580.

⁷ Ibid., paraphrased, 581.

⁸ Ibid., paraphrased, 582.

⁹ Ibid., paraphrased, 587.

¹⁰ Ibid., paraphrased, 581; 588.

¹¹ Ibid., paraphrased 594-595. Unfortunately at the time the United States could have won a protracted conventional war against the Soviet Union, China, and satellite nations, but at home there was not enough time to prepare Americans for a war on our soil. Fallout shelters and personal shelters were necessary in case of either a nuclear war or invasion; even an anti-ballistic missile defense system would not be ready to defend major cities.

In the 1970's, scholarship for the most part agreed with the post-Cuban Missile Crisis belief that nuclear powers, or aspiring ones, needed the bomb for détente, but it was now more for prestige. The crux of the nuclear debate was that political, military, and economic gains were the causes for nations to have weapons. On the military side, countries would want to assure superiority over another country to prevent another country from invading theirs and wielding their superiority, to achieve effective deterrence, to ensure that they will have nuclear capability before their enemy does, and to ensure that their nation has military independence and does not have to rely on another's support.¹² The Soviet Union, China, France, and Britain all had developed nuclear weapons to deter attacks from other nations; whereas India, and possibly Pakistan, due to domestic pressures, would go nuclear as well.¹³ Other nations, under either NATO or the Warsaw Pacts, would not necessarily need to go nuclear since they would be protected by their respective umbrellas.¹⁴ Politically, it seemed that nations who possessed the bomb were regarded more highly on the international stage, such as Great Britain and France, who struggled against the Germans in World War II. Even Iran or Brazil could become major nuclear players in years to come if they go nuclear.¹⁵

Most political goals included maintaining or achieving power, assuring a seat at the "head table", enhancing prestige in their region, reducing perceived inferiority, removing discriminatory aspects affecting their status, and demonstrating self-

¹² Previous two sentences were paraphrased from, William Epstein, "Why States Go—And Don't Go--Nuclear," *Annals of the American Academy of Political and Social Science* 430, Nuclear Proliferation: Prospects, Problems, and Proposals (Mar., 1977): 17-18, <http://www.jstor.org>.

¹³ Ibid., paraphrased, 18-19.

¹⁴ Ibid., paraphrased, 19-20.

¹⁵ Ibid., paraphrased, 21.

reliance politically.¹⁶ Economically, the uses of nuclear ideas would come from power plants. Nuclear power was viewed as being relatively cheap and being able to improve the standards of living, although there were some doubts over the benefits of power.¹⁷ Some countries are interested in peaceful nuclear technologies due to their potential military gain, such as heavy water reactors that could yield bomb-making material.¹⁸ Other countries, such as Iran or Brazil, could use the nuclear power base to increase their wealth by placing them at the forefront of technology at a relatively low cost.¹⁹ Interestingly enough, former colonies could use nuclear power to their advantage by throwing off the superpowers from their backs, especially in the third world countries, by giving them greater economic bartering, although the only drawback for any country not yet nuclear is where to get the necessary fuel to feed these reactors.²⁰

Later on, after the Cold War had ended in the 1990's, Winkler summarized the cause and need for a bomb. "The bomb has influenced military strategy and diplomacy, affected economic and political decisions, and conditioned the cultural climate of the United States."²¹ From the end of World War II until the time of his piece being written, scientists and governments alike tried to balance the hopes and fears of atomic weapons.²² Some saw the advent of atomic energy as ushering in a new time of peace and prosperity, despite the fact that during the 1960's and beyond,

¹⁶ Ibid., paraphrased, 21-22.

¹⁷ Ibid., paraphrased, 22.

¹⁸ Ibid., paraphrased, 22.

¹⁹ Ibid., paraphrased, 23.

²⁰ Ibid., paraphrased, 23.

²¹ Allan M. Winkler, "The "Atom" and American Life," *The History Teacher* 26, no. 3 (May, 1993): 317, <http://www.jstor.org>.

²² Ibid., paraphrased, 317.

nuclear weapons went from kilotons to megatons in their devastating power.²³ Scientists through the years have argued as to the benefits of the atom, including everything from a nuclear-powered plane and car to medical advancements.²⁴ Inner circles of our government decided that Russia should not be the first to detonate thermonuclear devices; scientists had worried about these due to their heavy radioactive fallout and yet the American public never knew about it.²⁵ Our government decided to cover up some fallout test results in order to improve nuclear technology.²⁶ Fallout shelters were deemed as entirely unsafe in a nuclear attack, furthering the debate for the need of having nuclear devices.²⁷ Even nuclear energy had some major challenges and accidents including Idaho, Michigan, Alabama, and Pennsylvania.²⁸ After information was declassified in the early 1990's and the Cold War ended, both nations began to disclose some of their secrets to not only each other, but also to their citizens. Unlike revisionist historians, the nuclear age would prove, at least for now, that with new sources come new answers, and that the answers cut through the government propaganda and lead to the truth. In the case of nuclear devices, revisionists cannot come up with an alternative reason for developing the bomb.

III. Where is Everyone?: Mutually Assured Destruction

²³ Ibid., paraphrased, 318.

²⁴ Ibid., paraphrased, 318.

²⁵ Ibid., paraphrased, 322-323.

²⁶ Ibid., 323. In mid 1953 residents of St. George, Utah were exposed to as much radiation as nuclear workers were allowed to be exposed in one year.

²⁷ Ibid., paraphrased, 327.

²⁸ Ibid., paraphrased, 328.

As early as the 1960's, attempts to curb proliferation were largely ignored, such as the Test Ban Treaty of 1963.²⁹ The major nuclear powers were able to share secrets with their allies, yet countries on the outside looking in were very upset at this. Unfortunately, for those countries, the major nuclear powers controlled international bodies such as the United Nations; in return, they would have to become friends and be protected under the nuclear umbrella from an attack.³⁰ Latin America drafted a resolution forcing countries to adhere to a strict no nuclear weapon agreement, with Cuba refusing to sign unless the United States withdrew from Guantanamo Bay.³¹ Mutual Assured Destruction began gaining momentum after the Cuban Missile Crisis, when the United States drafted a Multilateral Force with the German Federal Republic, allowing German access to nuclear weapons.³²

As a country we forced the Soviet Union to back down, yet we encircled the Soviet Union with our weapons through alliances such as NATO. While the Multilateral Force agreement posed some difficulties, the language of the draft recognized the need of individual nations to maintain their own access to weapons; whereas, other nations under an agreement, could not nationalize the weapons since they were not their own.³³ The Soviet Union, though outgunned, tripled their weaponry and sea-based platforms to show the United States that they were up to the

²⁹ Ian Brownlie, "Nuclear Proliferation: Some Problems of Control," *International Affairs* 42, no. 4 (Oct, 1966): 600, <http://www.jstor.org>.

³⁰ *Ibid.*, paraphrased, 601.

³¹ *Ibid.*, paraphrased, 602.

³² *Ibid.*, paraphrased, 603.

³³ *Ibid.*, paraphrased, 603.

challenge.³⁴ Senator Strom Thurmond mentioned that the Soviet Union might soon be in a position to commit “nuclear blackmail” against the United States.³⁵ If either the United States or the Soviet Union were to deploy a responsible Anti Ballistic Missile defense system, it could still kill millions of people, especially with the recent developments in delivery technology.³⁶ Along with advances in delivery technology, so too with the enhancements for missile silos and placement; if newer warheads were created with multiple targeting devices, the survival of most of either arsenal would be assured.³⁷ MIRVs caused the United States to add 4,200 more warheads, especially in the aerial arena where the Soviet Union would have a marginal impact at best.³⁸ The Soviet Union could also place strategic defense systems along both the eastern and western fronts to prevent nuclear wars with central Europe or Asia, and to maintain the superior advantage in weaponry, except against Europe’s largest ally, the United States.³⁹ Unlike the United States, the Soviet Union would also have to protect other non-mobile missiles by increasing the number of air and mobile units around areas such as the Black Sea.⁴⁰ No matter how the Soviets could respond in war, over three-eighths of our arsenal (approximately 4,500 original nuclear devices) could be launched and hit their targets in the Soviet Union following just the first strike.⁴¹ If, in the event of a surprise attack from the Soviet Union, the United States could destroy

³⁴ J.I. Coffey, “Soviet ABM Policy: The Implications for the West,” *International Affairs* 45, no. 2 (Apr, 1969): 205, <http://www.jstor.org>.

³⁵ *Ibid.*, paraphrased, 205.

³⁶ *Ibid.*, paraphrased, 207.

³⁷ *Ibid.*, 211. “Although they would enhance the Soviet second-strike capacity and increase the number of Americans whom the Soviets could kill, they would leave untouched the U.S. ‘assured destruction capability’”.

³⁸ *Ibid.*, paraphrased, 212.

³⁹ *Ibid.*, 212. “These area defenses could inhibit the escalation of any conflict in Central Europe, and could strengthen the Soviet hand in a crisis or confrontation with NATO forces.”

⁴⁰ *Ibid.*, paraphrased, 214.

⁴¹ *Ibid.*, paraphrased, 216.

up to twenty-five percent of the population and up to seventy-five percent of industrial capability within the first retaliatory strike.⁴²

During the 1980's and 1990's, the scholarship began to focus more of their attention on how Mutual Assured Destruction could have been escalated, as well as in what position the United States would end up in the long run. As of the late 1960's, the Soviet Union far surpassed their American counterpart in the unveiling of new nuclear weapons and the mass stockpile.⁴³ After several partisan administrations, President Ronald Reagan realized that our deteriorating military was a direct result of shifting our priority of Mutual Destruction to a state of détente.⁴⁴ Reagan increased the defense budget to enhance Triad missiles and other delivery systems.⁴⁵ Another reason he built up the military was to force the Soviet Union's hand by making them commit to reducing their nuclear force.⁴⁶ Many remained unsure why, over the course of the 1970's and early 1980's, the Soviet Union surpassed the United States, except that Russians refused to be considered a sub-par military organization.⁴⁷ Through the escalation of new devices, the United States could only offer that assured destruction

⁴² Ibid., paraphrased, 217.

⁴³ Daniel Gouré, "Strategic Offense and Defense: Enhancing the Effectiveness of U.S. Strategic Forces," *Annals of the American Academy of Political and Social Science* 457, National Security Policy for the 1980s (Sep., 1981): 29, <http://www.jstor.org>. Harold K. Jacobson, "The Crisis in Arms Control," *Michigan Law Review* 82, no. 5/6 (Apr.-May, 1984): 1601, <http://www.jstor.org>. "Rather than stopping the deployment of strategic nuclear delivery vehicles when it achieved numerical parity with the United States, as many Americans expected would happen, the Soviet Union continued to deploy more and more weapons until ceilings were set by the Interim Agreement and the SALT treaty."

⁴⁴ Jacobson, "The Crisis in Arms Control," paraphrased, 1600.

⁴⁵ Gouré, "Strategic Offense and Defense: Enhancing the Effectiveness of U.S. Strategic Forces," paraphrased, 31.

⁴⁶ Jacobson, "The Crisis in Arms Control," paraphrased, 1599-1600.

⁴⁷ Ibid., 1602. "Given the Soviet insistence on not being placed in a position that it would regard as involving military inferiority and U.S. suspicion about Soviet intentions, the technical problem of comparability will inescapably be a central issue in any negotiation aimed at achieving substantial reductions."

would become the best deterrence in the event of the threat of a general war.⁴⁸ Since the passing of several key treaties, such as the Limited Test Ban as well as others, the United States favored their superiority to air and sea-based weapons. The B-52 bomber and other forms of naval payloads, such as the Cruise missile, could inflict heavy damage to Soviet hard targets in the event of a war, despite the Soviet's anti-ballistic missile defense system.⁴⁹ "Sea-launched ballistic missiles comprise a larger portion of U.S. strategic forces than they do of the USSR's strategic forces."⁵⁰ If a nuclear holocaust were to occur, mutual assured destruction would destroy both superpowers, but if only used in local conflicts it could deter the all-out assault.⁵¹

Although Mutual Assured Destruction was the aim of the past twenty-five years, a growing concern has begun from both superpowers of trying to keep national survival a possibility.⁵² Changing trends have offered that instead of being on the offensive on a nuclear attack, the United States would remain defensive. Although even in a defensive mode, total annihilation could not be ruled out. Instead both nations would have to allow for an initial strike, but limit or not send a retaliatory strike, especially if our ability to defend ourselves has been destroyed.⁵³ Under current thought, the Soviet Union could reduce the retaliatory attack from the United

⁴⁸ Gouré, "Strategic Offense and Defense: Enhancing the Effectiveness of U.S. Strategic Forces," paraphrased, 32.

⁴⁹ Ibid., paraphrased, 33.

⁵⁰ Jacobsen, "The Crisis in Arms Control," paraphrased, 1590.

⁵¹ Gouré, "Strategic Offense and Defense: Enhancing the Effectiveness of U.S. Strategic Forces," paraphrased, 40

⁵² Ibid., 41. Kevin C. Kennedy, "Treaty Interpretations by the Executive Branch: the ABM Treaty and "Star Wars" Testing and Development," *The American Journal of International Law* 80, no. 4 (Oct., 1986): 85, <http://www.jstor.org>. "Strategic Defense Initiative program, an ostensibly defensive weapons system intended to replace the 25-year-old nuclear regime of mutual assured destruction or MAD."

⁵³ Gouré, "Strategic Offense and Defense: Enhancing the Effectiveness of U.S. Strategic Forces," paraphrased, 42.

States to only 10 million lost whereas the United States would lose up to 80 million.⁵⁴ The Soviet Union would be in a better position to recover from a nuclear attack, whereas the United States would be at a tremendous loss; yet, if both sides would see the reason for assured survivability, there may be a chance that this could be considered as the best détente.⁵⁵

Another form of weapon was considered: a space-based laser system that could shoot down enemy missiles before they could even leave their originating boundaries.⁵⁶ Since the 1963 limited test ban treaty, neither country has had a reliable anti-ballistic missile defense system in which one would put faith.⁵⁷ Yet, during the 1970's, both countries agreed that devices could be tested if their yield were under 150 kilotons, subject to inspection, and they reported to each other for further development of "peaceful nuclear explosions."⁵⁸ Catholic bishops agreed with President Reagan that no matter who fired the first shot, neither the United States nor Soviet Union would survive a massive retaliatory attack.⁵⁹ Other countries though, up to twenty of them throughout Africa and the Middle East, were trying to acquire nuclear weapons.⁶⁰ During the Gulf Wars, the American Patriot missile became the first successful anti-ballistic missile defense weapon, yet countries such as Iraq, Iran, Libya, and Syria could move missiles within their country to improve their range as

⁵⁴ Ibid., paraphrased, 42.

⁵⁵ Ibid., paraphrased, 42.

⁵⁶ Ibid., paraphrased, 43.

⁵⁷ Jacobsen, "The Crisis in Arms Control," paraphrased, 1592.

⁵⁸ Ibid., paraphrased, 1597.

⁵⁹ Ibid., paraphrased, 1602.

⁶⁰ Charles M. Perry, "Theater Missile Threats and Defensive Options in the 1990s," *Annals of the American Academy of Political and Social Science* 517, New Directions in U.S. Defense Policy (Sep., 1991): 68, <http://www.jstor.org>.

well as improving targeting systems.⁶¹ With further threats from outside of the original superpowers, other nations could now acquire nuclear technology and create chaos in their respective regions. Other nations, such as Pakistan, India, and North Korea could stalemate each other, but no more so than in North Korea, currently maintaining *détente* with American forces to the South.⁶² Former Soviet systems landed in regions such as Iraq and North Korea during the 1980's.⁶³ In the end the reason for Mutual Assured Destruction, or "Star Wars," was for either nation to be able to prevent a land invasion from their enemy. First-strike capability or massive retaliatory strikes would have assured that either nation, or their allies, would have been soundly destroyed. At first the United States had the advantage in nuclear weaponry, but after several changes in administrations and limiting test ban treaties our arsenal began to fall apart. Our strengths in air and sea were quite impressive, yet the Soviets refused to be considered as second class. The Soviets surpassed the United States in sheer numbers of weapons during the 1970's and 1980's, yet the United States maintained more warheads with multiple targeting possibilities. In the end, between the United States and the Soviet Union, it is conceivable to believe that with the weaponry both had they could have destroyed the earth many times over and there would have been no need for counter attacks. Although the next segment will discuss *détente*, if it was not for Mutual Assured Destruction, the highest form of *détente*, we may have lived in a different world today.

⁶¹ Ibid., paraphrased, 70.

⁶² Ibid., paraphrased, 71.

⁶³ Ibid., paraphrased, 73.

IV. “Mending Wall,” Policy Making of Détente.

A recurrent theme throughout nuclear history has been that of the initial gratitude of having nuclear devices, to wanting to limit their spread, to finally not caring about them at all. Early discussions regarding détente can be found as early as 1964. The Test Ban Treaty of 1963 was, according to President Kennedy, the first limits the United States has made in 18 years to limit nuclear arms race.⁶⁴ It was regarded as being the first agreement in which the two superpowers had met, to not only limit above ground testing but also opening a dialog where both nations could discuss measures of disarmament for peaceful results.⁶⁵ Many had acknowledged that there were inherent dangers in increasing nuclear stockpiles. Members of the United Nations realized that an increase in nuclear powers would ultimately aggravate a delicate balance established by the superpowers, and almost make impossible an arms agreement.⁶⁶

⁶⁴ Egon Schwelb, “The Nuclear Test Ban Treaty and International Law,” *The American Journal of International Law* 58, no. 3 (Jul., 1964): 643, <http://www.jstor.org>. Christoph Bertram, “SALT II and the Dynamics of Arms Control,” *International Affairs* 55, no. 4 (Oct., 1979): 568, <http://www.jstor.org>. “Arms control—the effort to limit and regulate military power, to channel it into less dangerous directions—are almost by definition evolutionary and not revolutionary.”

⁶⁵ Schwelb, “The Nuclear Test Ban Treaty and International Law,” paraphrased, 643.

⁶⁶ James Dougherty, “The Non-Proliferation Treaty,” *Russian Review* 25, no. 1 (Jan., 1966): 10, <http://www.jstor.org>. Beth Bloomfield, “Strategic Arms Limitation,” *Proceedings of the Academy of Political Science* 32, no. 4 (1977): 184, <http://www.jstor.org>. “Concern about the horrifying destructive potential of nuclear weapons emerged in the earliest days of the UN.” Bloomfield, “Strategic Arms Limitation,” paraphrased, 185. In 1978 a special commission on disarmament was created and realized that disarmament was a universal concern and had to have nations move closer to a consensus on disarmament. Reasons for disarmament included in less developed countries human hardships, scarce financial resources due to a result of wanting the bomb.

In August of 1965, a draft resolution would urge that nuclear powers could not transfer nuclear weapons or control of them to any non-nuclear state; furthermore, non-nuclear states could not receive, seek, or request nuclear weapons.⁶⁷ The purpose of the treaty was to prevent the spread of nuclear weapons unless a country determined it would need the devices due to extreme emergencies.⁶⁸ Unfortunately, the draft was worded as such that the United States and its NATO allies could, at any time with three months advance notice, withdraw, and develop their own devices.⁶⁹ Ultimately the draft was tabled by the United States, since neither Britain nor France would relinquish their control to the United States in order to form a European détente.⁷⁰ As far as the Soviet Union was concerned, the Soviets were more interested in spreading nuclear technology to close allies throughout the world.⁷¹ Among the nuclear secrets being passed along were the emerging nuclear power plants which the IAEA could not monitor.⁷² For the Soviets, more concern was over the status of West Germany; they were prepared to wage a campaign with an anti-German and NATO approach in order to preserve stability in the region.⁷³ The West German problem became larger when it seemed that the United States, through loopholes, could allow West German nuclear devices by creating a multilateral force, yet the West Germans would not be allowed to fire their own weapons.⁷⁴ Further tensions on the European continent came out when NATO countries would not acquiesce to Soviet demands,

⁶⁷ Dougherty, "The Non-Proliferation Treaty," paraphrased, 11.

⁶⁸ Ibid., paraphrased, 12.

⁶⁹ Ibid., paraphrased, 12.

⁷⁰ Ibid., paraphrased, 13-14.

⁷¹ Ibid., paraphrased, 14.

⁷² Ibid., paraphrased, 14.

⁷³ Ibid., paraphrased, 15.

⁷⁴ Ibid., paraphrased, 16-17.

since the Soviets themselves created short-range nuclear devices capable of hitting Europe.⁷⁵ At the end of the session it was clear that eight nations wanted to see a halt to the nuclear arms race, and reduce the stockpiles of weapons.⁷⁶ It was in 1962 that the neutral nations' memo began the process of détente, when the Soviets agreed to two to three inspections per year and that the United States accept the concept of no tests in outer space or in the sea.⁷⁷ These test bans linked both nations to the disarmament process, but only if it suited both countries' need to create avoidance tactics.⁷⁸

Nonproliferation treaties worked by setting safeguards and allowing for self-verification monitoring.⁷⁹ Russian nuclear expansion could be contained by the United States by shifts in policy that would lessen a Russian threat.⁸⁰ In order to prevent Soviet aggression versus our country or allies, it required principles like Richard Nixon to engage in a policy of negotiation rather than confrontation.⁸¹ John F. Kennedy had urged that we would support any nation who adheres to our wants of freedom.⁸² Leaders from both nations had reassured their citizens that détente was

⁷⁵ Ibid., paraphrased, 17.

⁷⁶ Ibid., paraphrased, 22. Bloomfield, "Strategic Arms Limitation," paraphrased, 189. Although it was unlikely that the UN would become directly involved in SALT negotiations, it could have provided assistance. Bloomfield, "Strategic Arms Limitation," paraphrased, 190. Other global concerns besides nuclear proliferation have the UN concerned such as weather modification, nuclear weapons in outer space, as well as new weapons of mass destruction.

⁷⁷ Llyod Jensen, "Approach-Avoidance Bargaining in the Test Ban Negotiations," *International Studies Quarterly* 12, no. 2 (Jun., 1968): 159, <http://www.jstor.org>.

⁷⁸ Ibid., paraphrased, 160.

⁷⁹ Unaccredited, "Non-Proliferation of Nuclear Weapons," *The International and Comparative Law Quarterly* 21, no. 2 (Apr., 1972): 384, <http://www.jstor.org>.

⁸⁰ Dean Acheson; W. Averell Harriman; Arthur Krock; Chalmers M. Roberts, "How Containment Worked," *Foreign Policy*, no. 7 (Sum., 1972): 41, <http://www.jstor.org>.

⁸¹ Ibid., paraphrased, 42.

⁸² Ibid., paraphrased, 47.

coming, and from alarmist beginnings has yielded a negotiated process.⁸³ Despite the conferences to keep superpowers near détente, they had yet to acknowledge the challenge before them with the rapid technological advances in the nuclear arms race.⁸⁴

The world had already seen the destructive powers of both nations' conventional forces in the south Asian theatre, but what could come next, an all-out nuclear war or tactical limited nuclear skirmish?⁸⁵ Recent treaties made the United States and Soviet Union agree that Latin America, Antarctica, outer space, and ocean floor be off limits to either nuclear testing or deployment.⁸⁶ Accidentally dumped devices have caused great concern, raising fears that other nations may want to recover those devices and use them; the need for cooperation and to notify each other of such loss has become apparent.⁸⁷ The 1968 Nonproliferation Treaty tried to end the nuclear arms race, yet the United States improved their MIRV capability and the Soviet Union hardened ICBM silos.⁸⁸ The ABM Treaty was an attempt to limit the arms race, yet although each nation was allotted one more layer of defense technology, they did not invest in any new technology.⁸⁹ As a result of the SALT I Treaty, the United States increased their number of warheads, but not the number of missiles due to MIRV technology, on land and sea-based weapons; whereas the

⁸³ G.B. Kistiakowsky; H.F. York, "Strategic Arms Race Slowdown through Test Limitations," *Science* 185, no. 4149 (Aug., 2, 1974): 403, <http://www.jstor.org>.

⁸⁴ *Ibid.*, paraphrased, 403.

⁸⁵ *Ibid.*, paraphrased, 403.

⁸⁶ *Ibid.*, paraphrased, 403.

⁸⁷ *Ibid.*, paraphrased, 404.

⁸⁸ *Ibid.*, paraphrased, 404.

⁸⁹ *Ibid.*, paraphrased, 404.

Soviet Union doubled their land-based missiles.⁹⁰ If the arms race continues as it has, five nuclear powers would reach the 100,000 warhead mark, although the improved accuracy of those weapons has greatly increased the deterrence factor.⁹¹ With economies of both nations bearing the brunt of research and development, if they were to slow down those processes there could be a letdown in nuclear forces.⁹² If a nation's weaponry begins to fail, one might consider emergency testing to determine if national security could be compromised.⁹³ Another version of détente could be to allow for one power to become larger, become complacent, and let one's nuclear arsenal atrophy.⁹⁴

Some revisionists saw that the early nuclear deterrent balance was threatened from the earlier deployment of strategic weapons.⁹⁵ It was seen that Soviet discussions about arms limitations used the Americans, rather than themselves, as a sort of code describing their ambitions.⁹⁶ Basic Soviet doctrine of the time dictated that the Soviets had no reason for continuing the arms race and had favored disarmament, yet for their own purposes when writing it, it was easier to mention the dangers of the arms race in connection with war with the United States.⁹⁷ Within the Soviet military and civilian command circles, they acknowledged that it would be

⁹⁰ Ibid., paraphrased, 404.

⁹¹ Ibid., paraphrased, 405.

⁹² Ibid., paraphrased, 405.

⁹³ Ibid., paraphrased, 406.

⁹⁴ Ibid., paraphrased, 406. "Robert Oppenheimer long ago compared the United States and the U.S.S.R. to two scorpions locked in a bottle. The scorpions have since grown much bigger but scarcely less aggressive. The aim of this article is to argue that while they stay less keen and prone to strike, is not the only way, and possibly not the best way, to avoid the final suicidal battle. Perhaps a more promising road to our survival is to let them stay big but cause them to age and get flabby, and thus become devoid of the urge to strike. Their stings then might even atrophy over time."

⁹⁵ Samuel B. Payne Jr., "The Soviet Debate on Strategic Arms Limitation: 1968-72," *Soviet Studies* 27, no. 1 (Jan., 1975): 27, <http://www.jstor.org>.

⁹⁶ Ibid., paraphrased, 28.

⁹⁷ Ibid., paraphrased, 28.

almost impossible to defend the population against an American attack, yet with recent changes in treaties such as SALT; naval officers began to have more say in Soviet strategy.⁹⁸ In the early 1970's, the Soviets decided to pursue arms limitation talks, but understood that the United States probably would not agree to it.⁹⁹ When the Soviets reached parity, it would then be willing to negotiate with the United States, but it would not have unless that was achieved since it did not want to be inferior to an American force.¹⁰⁰ If the United States had superiority it was seen by the Soviets that the United States would not want to take a step back, but rather use their arsenal as a political and military bargaining chip.¹⁰¹ On the other hand, if the Soviet Union were to gain the upper hand, talks might not come about, but many in the leadership would have to decide if being on top was valuable enough, especially since the other nation would continue to escalate until both were even.¹⁰² Either way, no Superpower whether it had the advantage or not, would wage war since the retribution would still be unacceptable in its devastation.¹⁰³ At the mid-point of the 1960's, the Soviet Union doubled their output, but also spent an equal amount of money to keep up; whereas, a slight reduction could have produced a détente where the money could have been redistributed toward economic development¹⁰⁴ Problems with the Soviet economy were never brought to light, but massive spending on the nuclear program created huge economic problems at home, much like that of the

⁹⁸ Ibid., paraphrased, 30.

⁹⁹ Ibid., paraphrased, 31.

¹⁰⁰ Ibid., paraphrased, 32.

¹⁰¹ Ibid., paraphrased, 32.

¹⁰² Ibid., paraphrased, 33.

¹⁰³ Ibid., paraphrased, 33.

¹⁰⁴ Ibid., paraphrased, 36.

United States.¹⁰⁵ With the balance of power shifting to the Soviet Union, the United States was very reluctant to accept arms limitation, but has thus created a détente.¹⁰⁶ Another version sees the United States and Soviet Union team up and become some sort of ruling nuclear bully and dictating foreign policy to other nations.¹⁰⁷ Another idea would be for the United States to endorse a plan of non-use of nuclear weapons and also diminish in nature the role of nuclear war in international policies.¹⁰⁸ The Carter administration was blamed for the downfall of American nuclear credibility when he urged certain changes to the SALT II treaty. When Reagan came into office, he followed Henry Kissinger's idea that by increasing military spending we were putting the Soviets on notice that trying to upset global equilibrium would not be tolerated.¹⁰⁹

After twenty-five years of both nations recognizing they needed some form of arms control, there needed to be a new call to prevent the spread of nuclear weapons elsewhere.¹¹⁰ While the United States had enjoyed their lead, the Soviets eventually caught up, and it seems hard to imagine that the Soviets would relinquished it,

¹⁰⁵ Ibid., 36. "They also accuse American leaders of trying to use the arms race to damage the Soviet economy by imposing on it burdens greater than it can bear." Ibid., paraphrased, 42. Bloomfield, "Strategic Arms Limitation," 185. "The United States and the USSR have jealously guarded their long nuclear lead over the rest of the world while continuing to compete with each other in a spiraling strategic arms race." Bertram, "SALT II and the Dynamics of Arms Control," 566. "On the contrary, if both sides do no more than is permitted under the Treaty, they will end up by 1985 with substantially increased number forces."

¹⁰⁶ Payne, "The Soviet Debate on Strategic Arms Limitation: 1968-72," paraphrased, 37.

¹⁰⁷ Michael Nacht, "The United States in a World of Nuclear Powers," *Annals of the American Academy of Political and Social Science* 430, Nuclear Proliferation: Prospects, Problems, and Proposals (Mar., 1977): 165-166, <http://www.jstor.org>. "At the same time, the United States would have to reduce significantly its nuclear arsenal, either unilaterally or through joint negotiations with the Soviet Union." Nacht, "The United States in a World of Nuclear Powers," paraphrased, 167.

¹⁰⁸ Ibid., paraphrased, 169.

¹⁰⁹ Bertram, "SALT II and the Dynamics of Arms Control," paraphrased, 569-570.

¹¹⁰ William Hadley Kincaid, "Arms Control in the 1980s," *Annals of the American Academy of Political and Social Science* 457, National Security Policy for the 1980s (Sep., 1981): 146, <http://www.jstor.org>.

especially when the weapons have increased in accuracy in a first strike potential.¹¹¹ If the superpowers do not establish some form of restraint both countries' economies will bear the burden with rampant inflation.¹¹² The reason why arms control theories have fallen off is due to the old guard of both countries being replaced with new ideas.¹¹³ With advancing technology first strike targets would include urban industrial complexes, and the retaliatory strike could cause massive civilian loss; this could prove to be the ultimate deterrent.¹¹⁴ In order to force either side to the negotiating table, one nation must instill fear in the other about weapons' stockpiles or future innovations.¹¹⁵ Another form of détente could come out of the rising costs of the research and development of new systems; therefore, economic pressures would force both countries to back down.¹¹⁶ Finally, the last form of effective deterrent comes from emerging officers who have served on negotiations such as SALT; their views on control would filter through to junior officers.¹¹⁷ Ronald Reagan introduced the Strategic Defense Initiative, where it was seen that it could save millions of Americans, and possibly Russians, in the process.¹¹⁸ The effective deterrent would come into play when if the United States had a defense system and the Russians did not, they would be unlikely to wage war.¹¹⁹

¹¹¹ Ibid., paraphrased, 146.

¹¹² Ibid., paraphrased, 147.

¹¹³ Ibid., paraphrased, 148.

¹¹⁴ Ibid., paraphrased, 150.

¹¹⁵ Ibid., paraphrased, 155.

¹¹⁶ Ibid., paraphrased, 156.

¹¹⁷ Ibid., paraphrased, 158.

¹¹⁸ Colin Gray, "Strategic Defense, Deterrence, and the Prospects for Peace," *Ethics* 95, no. 3 (Apr., 1985): 660, <http://www.jstor.org>.

¹¹⁹ Ibid., paraphrased, 663.

How did the Soviets view deterrent? They did not want to win nuclear war or restore deterrence; rather, they wanted to disarm, especially since the rising stockpiles would only cause the want or need to use the weapons.¹²⁰ In order to maintain parity, for the first time, the Soviet Union would not produce any more weapons unless provoked to maintain equilibrium.¹²¹ Soviets agreed to not use their weapons first, as did their allies, during the 1983 Warsaw Treaty and further made a pact that no matter the size of war it could not break out.¹²² Their borders are covered by western weapons aimed at the Soviet Union; furthermore, it was the United States who introduced these weapons to Europe.¹²³ The United States was seen as trying to meddle in Soviet policies by splitting the world into spheres of influence, and make the Soviet Union look bad since it just acquired parity.¹²⁴

V. "The Safer Alternative: Nuclear Power"

Scientists knew when they had developed the bomb that the potential energy of these explosions could give off great sums of power. Early on, through the development of the bomb, some knew it would be very possible to harness that energy. Unfortunately, deadly results of atomic warfare made it difficult at first to

¹²⁰ Yevgeniy N. Kochetkov, "The Position of the USSR on Nuclear Weapons and Arms Control," *Annals of the American Academy of Political and Social Science* 469, Nuclear Armament and Disarmament (Sep., 1983): 137, <http://www.jstor.org>.

¹²¹ *Ibid.*, paraphrased, 137.

¹²² *Ibid.*, paraphrased, 137.

¹²³ *Ibid.*, paraphrased, 137.

¹²⁴ *Ibid.*, paraphrased, 138-139.

win over critics for nuclear power, but when built properly it is far cleaner than coal fired plants, but even coal fired plants do not require armed guards to protect the fuel source. As we will see nuclear power had a heyday but after a few disasters, ranging from minor to major, many nations began to question the cost of these plants.

Nuclear energy gained notoriety when Einstein wrote the infamous letter to President Franklin Roosevelt imploring him to delve into nuclearization, from which an entire multi-billion dollar industry grew, under heavy secrecy and no financial constraint.¹²⁵ As early as the late 1960's, concerns arose from the vulnerability of nuclear fuel for not only power plants but also for weapons.¹²⁶ Israel was in the process of building these costly reactors and yet they were doing nothing to protect shipments of uranium or plutonium; in fact the shipments were unguarded any country could have picked off a shipment.¹²⁷ Unfortunately, the same could be said for the United States as well; shipments were travelling across country with no protection at all.¹²⁸ Commercial airlines carry low grade isotopes across the Atlantic and even worse, at a refining plant the only deterrent is a low chain link fence in a dense forest deep in a canyon.¹²⁹ In fact the only unarmed guard is an old man in a small guardhouse, along with that only one third of employees with even the lowest security access could touch bomb-making material.¹³⁰ Plutonium was packed in stainless steel containers and then put into steel drums; once in these drums they are

¹²⁵ James E. Connor, "Prospects for Nuclear Power," *Proceedings of the Academy of Political Science* 31, no. 2 (Dec., 1973): 64, <http://www.jstor.org>.

¹²⁶ Alan M. Adelson, "Please Don't Steal the Atomic Bomb," *Theory into Practice* 8, no. 2 (Apr., 1969): 62, <http://www.jstor.org>.

¹²⁷ *Ibid.*, paraphrased, 62.

¹²⁸ *Ibid.*, paraphrased, 62.

¹²⁹ *Ibid.*, paraphrased, 62.

¹³⁰ *Ibid.*, paraphrased, 62.

loaded onto a van which again could be easily hijacked, with enough plutonium to destroy a city or create twelve atomic bombs.¹³¹ At first it costs the United States over two trillion dollars to create the first atomic bombs, yet while building nuclear reactors for “peaceful atoms”, it has become more apparent that with bomb making materials to be found in almost any hardware store a crude device could be built.¹³² In England a worker was caught stealing some fueling rods at a power plant which were worth twenty two hundred pounds and tried to sell them for fifty pounds each; fortunately he was caught, but shows that worldwide on the black market fueling rods with nuclear material could be bought.¹³³

Among the promises of nuclear energy was that it would conserve other fuels that were uniquely meant for other purposes, such as fuel for vehicles.¹³⁴ Nuclear power would reduce our reliance upon foreign oil, reduce air pollution, and become a positive influence on our international trade.¹³⁵ Unfortunately, despite its overall inherent good, nuclear power during the late 1960’s and early 1970’s went through some rough times. The first nuclear pile was created on December 2nd, 1942 and culminated into the first electric producing reactor in Idaho at the National Reactor Testing Station in 1951.¹³⁶ With the passing of the Atomic Energy Act of 1954

¹³¹ Ibid., paraphrased, 62. In fact these unarmed guards or other drivers of these trucks could easily travel cross country since there are no tracking devices or radios on board the trucks.

¹³² Ibid., paraphrased, 62-63.

¹³³ Ibid., paraphrased, 64. It is interesting to note that on page 66, Adelson provides a crude drawing of an atomic device which could be made out of homemade materials to create a dirty bomb. As we see in the 1960’s some began to worry that we really did not understand the magnitude of nuclear power or the downfalls of failing to secure these plants.

¹³⁴ James T. Ramey, “The Promise of Nuclear Energy,” *Annals of the American Academy of Political and Social Science* 410, *The Energy Crisis: Reality or Myth* (Nov., 1973): 11, <http://www.jstor.org>. Connor, “Prospects for Nuclear Power,” paraphrased, 64. Other uses for this fuel would include what we have today that is an uneasy détente with Russia and an entire nuclear navy.

¹³⁵ Ramey, “The Promise of Nuclear Energy,” paraphrased, 11.

¹³⁶ Ibid., paraphrased, 11-12.

private ownership of reactors and of nuclear fuel under lease agreements were allowed; which led to the first substantial power plant producing 60,000 kilowatts of power in Pennsylvania in 1957.¹³⁷ From 1957 to 1963 several demonstrator reactors from the AEC Power Demonstration Reactor Program combined to create 200,000 kilowatts of energy. These reactors included the Yankee Reactor in Massachusetts, Dresden reactor in Illinois, and the Indian Point reactor in New York.¹³⁸ In 1968 the 400,000 kilowatt Yankee in Connecticut and San Onofre in California represented how fast nuclear energy began to double in output size within a few short years. Finally 500,000 kilowatt facilities were committed to being built in Oyster Creek New Jersey and Niagara Mohawk plant in New York.¹³⁹ As a result of these facilities seven plants were purchased with twenty more on order in 1965; by 1968 the amounts of plants on order dropped due to a variety of factors yet by 1972 plants online or on order were going to produce 143 million kilowatts of energy.¹⁴⁰ Although James Connor argued that the burning of wood has more output than commercial nuclear power plants.¹⁴¹

At the time it was seen that nuclear energy would have rivaled conventional power by the 1970's and that by the year 2000 it would have been conceivable that

¹³⁷ Ibid., paraphrased, 12.

¹³⁸ Ibid., paraphrased, 12.

¹³⁹ Ibid., paraphrased, 12.

¹⁴⁰ Ibid., paraphrased, 13. Connor, "Prospects for Nuclear Power," paraphrased, 66-68. Construction difficulties were badly underestimated due to initial time and cost schedules that no longer bear any semblance to reality due to the lack of experience with and the ever changing nature of technology. Utilities could expect to have a fully operational plant on line within 7 years of order. Within that 7 years the plant size and capability had grown up to 90 percent and the schedules had to be modified up to 40 percent longer to try and accommodate those overruns; other reasons for length of schedule deal with the fact that most reactors are built from the ground up due to no standardization. The AEC licenses the utility operator not the manufacturer; the manufacturer must insure the safety of the design.

¹⁴¹ Connor, "Prospects for Nuclear Power," paraphrased, 63. Connor would continue as stating that nuclear power was in its infancy; which in turn was a very healthy one.

the United States would be able to produce 1200 million kilowatts.¹⁴² Unfortunately that would not happen due to the burdens of production costs, managerial problems, and resistance from citizens, and finally unforeseen environmental impact studies.¹⁴³ Overall investments into these reactors were seen to exceed 450 billion dollars by 2000, and that would be 25 percent higher than building conventional power facilities of the same capacity, yet it was seen if nuclear power could save the cost and air pollution of fossil fuels the offset would be acceptable.¹⁴⁴ For example, one pound of uranium would generate the same amount of energy as would roughly 3 million pounds of coal; nuclear plants also only require enough fuel that can be excavated in the amount of tens of tons each year versus the strip mining of coal.¹⁴⁵ Nuclear fuel was considered as not being finite and could continue for many centuries to come. Unfortunately, the only downside to nuclear energy was radioactive waste.¹⁴⁶ A new threat to nuclear energy came from environmental groups.¹⁴⁷ Major concerns from these groups included how much heat and radioactivity were being discharged into lakes and rivers; the potential release of radioactive materials as a result of a meltdown; and the storage of used fuel.¹⁴⁸ Nuclear power plants do release more thermal heat than conventional plants by 30 to 50 percent more. Water releases are

¹⁴² Ramey, "The Promise of Nuclear Energy," paraphrased, 14.

¹⁴³ Ibid., paraphrased with my own reflection, 14.

¹⁴⁴ Ibid., paraphrased, 15.

¹⁴⁵ Ibid., paraphrased, 15.

¹⁴⁶ Ibid., 16. "Nuclear-power a domestic energy source-is a positive element in our foreign trade through sales of uranium enriching services, as well as American reactor systems and components." This could be seen as a downside as well. In fact in 2008 President Bush signed an agreement with India for help in uranium enrichment and sharing of nuclear power ideas.

¹⁴⁷ Connor, "Prospects for Nuclear Power," paraphrased, 68. Problems facing the utility companies included the need for man power trained in nuclear energy and the ever rising costs of government required environmental protection devices inherent to public safety. As a result those costs have been inevitably passed onto the consumers. As a result a renewed interest in other alternative or fossil fuels has come about due to the cost of these plants.

¹⁴⁸ Ramey, "The Promise of Nuclear Energy," paraphrased, 17.

generally lower than background radiation already present in lakes or rivers. Nuclear energy has been deemed as one of the safest of all power providers and that there have been no serious accidents to date until Three Mile Island. As far as waste was concerned, onsite disposal was the norm until a unified waste facility could be found. Underground salt deposits have been looked at for possible disposal sites, yet it is estimated that only a few hundred acres of space would be needed to house all of the waste.¹⁴⁹ Eventually the wave of future power plants would revolve around breeder reactors where uranium 238 would be converted into plutonium that is fissionable and more suited to nuclear power. These breeder reactors would extract up to 50 times more energy per unit of fuel.¹⁵⁰ Light water reactors although in the research and development stage would produce 400,000 kilowatts of energy and cost 700 million dollars; which was the proverbial drop in the bucket for the almost 3 billion plus dollars to be spent on all forms of nuclear energy.¹⁵¹ According to the 1073 article, future projects for nuclear plants include use as a desalinating plant where the heat produced by these reactors could be used for thermal heat for manufacturing and

¹⁴⁹ Ibid., paraphrased previous five sentences, 17-19. Connor, "Prospects for Nuclear Power," paraphrased, 65. The Energy Research and Development Administration along with the Nuclear Energy Commission will regulate the commercial nuclear power industry from the standpoint of public health. Connor, "Prospects for Nuclear Power," paraphrased, 69-70. Nuclear history cannot be rewritten to eliminate or dispel any fear or rumor especially when it is compared to the nuclear weapons unleashed on Japan. It is unlikely that public support of plants will be acceptable in their region due to the environmental impact but the need is there to accept nuclear power due to the fact it can be a safe alternative. Although if for some reason a catastrophic event occurred a nuclear moratorium is sure to follow. Connor, "Prospects for Nuclear Power," paraphrased, 73. Dominated by moral fervor no one wants to see the images of Armageddon one must be sensitive to the tradeoffs between cost and public safety.

¹⁵⁰ Ramey, "The Promise of Nuclear Energy," paraphrased, 19-20.

¹⁵¹ Ramey, "The Promise of Nuclear Energy," paraphrased, 20. Connor, "Prospects for Nuclear Power," 65. "Over the next ten years the utility industry will spend almost \$90 billion for nuclear power plants and related systems. That figure translates into staggering demand for engineering time and construction labor... During the next decade the nation's nuclear power system will be built and run in large measures by people trained as engineers, welders, managers, and pipefitters in the less demanding and less compelling context of nonnuclear activities."

agriculture. These nuclear centers could house industries such as fertilizer facilities, aluminum manufacturing, and chemicals.¹⁵²

During the 1980's nuclear power became a little more respected, coming from the heels of the oil crisis that plagued the 1970's.¹⁵³ Opposition to power plants began to grow; in Sweden, a plant that was to build near Aarhus was postponed after a public information campaign.¹⁵⁴ Further, in the United States, a moratorium on nuclear power plants and refueling services was in the works.¹⁵⁵ The rise of these oppositions started at the local level, and then gave rise to a national then the international entity which we see today. These movements focus on how economically viable these reactors are and what are the offsetting costs to human health and safety.¹⁵⁶ Their hope was to influence decision makers, either inside the

¹⁵² Ramey, "The Promise of Nuclear Energy," paraphrased, 21. Although it may seem odd today putting these industries in the same relative foot print could cause a significant disastrous event if anything were to happen. Ramey, "The Promise of Nuclear Energy," paraphrased, 22. Light water reactors have been proven as safe; even more competitive and efficient reactors are being developed; although nuclear energy poses some risks they can be outweighed by the benefits; the potential of nuclear energy has only been tapped and through technological advances it will rival those of conventional power generators.

¹⁵³ Julia Bickerstaffe; David Pearce, "Can There Be a Consensus on Nuclear Power," *Social Studies of Science* 10, no. 3 (Aug., 1980): 309, <http://www.jstor.org>. "As fossil fuels become scarcer and more expensive and energy demand grows, nuclear power is widely seen as the most promising way of bridging the gap between desired levels of demand and indigenous or internationally traded but scarce supplies." Gerald Berk; Roger E. Kasperson; David Pijawka; Alan B. Sharaf; James Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," *Science, Technology, & Human Values* 5, no. 31 (Spr., 1980): 11, <http://www.jstor.org>. President Jimmy Carter also demoted the role of nuclear energy because he felt that coal and synthetic fuels would yield better results in the future. Riley E. Dunlap; Eugene A. Rosa, "Poll Trends: Nuclear Power: Three Decades of Public Opinion," *The Public Opinion Quarterly* 58, no. 2 (Sum., 1994): 298, <http://www.jstor.org>. "In 1981 the Reagan administration ordered the production of the neutron bomb, previously abandoned by President Carter, and continued to deploy missiles in Western Europe." Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 14. "...until Three Mile Island, have shown consistently strong American support for nuclear power."

¹⁵⁴ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 309.

¹⁵⁵ *Ibid.*, paraphrased, 309.

¹⁵⁶ Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," paraphrased, 11. Many Nobel laureates debated the risk versus health benefits of nuclear power. Television specials, states that banned nuclear waste deposits, and other forms of

utility company or the government, to try and block these plants from being formed; using a variety of tactics they tried to offer alternatives to nuclear power.¹⁵⁷ They argued that nuclear weapon fuel was a social byproduct of these power plants and will only escalate proliferation, but other consequences include health effects, catastrophic failures, and infringement of civil liberties.¹⁵⁸ Panels of experts were created to debate the technology of nuclear plants. At first their goal was to slow down progress of these plants and then show the sacrifice it would sustain on economic development, yet to industrialized nations these power plants represented a technological shift due to the ever increasing reliance upon technology. Nations saw the benefits of nuclear power where conventional power failed to measure up to costs.¹⁵⁹ Terrorism became a hot topic, especially when many viewed the International Atomic Energy Administration or IAEA as too weak to properly detect any wrong doing.¹⁶⁰ It was feared that the terrorists could attack the weaknesses present at some power plants by stealing fuel and could create devastating devices, or nations that could be seen as rogue could build these power plants and use them for non-peaceful methods to intimidate other nations in their region to acquiesce to their demands.¹⁶¹ The health risks of these plants range from scrambling human DNA to exposing entire societies

misinformation plagued any further development of plants. 12. Media attention certainly added to the public's perception of nuclear energy prior to 1975 there was little public opposition to plants.

¹⁵⁷ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased last three sentences, 310-311.

¹⁵⁸ *Ibid.*, paraphrased last two sentences, 312.

¹⁵⁹ *Ibid.*, paraphrased last two sentences, 312-313.

¹⁶⁰ *Ibid.*, paraphrased, 314. Berk; Kaspersen; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," paraphrased, 15. Nuclear waste concerned the environmental groups since there was a real possibility that sabotage or stealing plutonium could lead to grave consequences.

¹⁶¹ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 315.

to harmful radiation that could be spread from the employees of these facilities.¹⁶²

Even more feared a catastrophic failure of the system and what ramifications it would have, not only on the environment but also the citizens of that region.¹⁶³ Other questions arose as to what would happen to the waste. There were some cases of radioactive material seeping from storage containers and they wanted to know where the waste material was to be buried.¹⁶⁴ Some proposals included solidification and burial on land or on the seabed.¹⁶⁵ Unfortunately, any answer would have many future generations having to guard the waste for thousands of years to come.¹⁶⁶

Anxiety occurred when many had seemed to lose faith and trust into the sciences.¹⁶⁷ Reasons for the anxiety included an inherent feeling that the sciences did not care about the possible radioactive exposure to those who live in the vicinity of

¹⁶² Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 15. With the advent of nuclear wastes the largely man made pollutant will destroy the earth and jeopardize the safety and welfare of future generations.

¹⁶³ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased last two sentences, 317. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 12. A number of accidents occurred including nine injured at the Sylvania Electrics in New York, control problems at Argonne National Laboratory reactor, a steam explosion at a military reactor in Idaho, and a serious event in Windscale Great Britain. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 12. The debate over public safety and the medias attention to it centered around the debate of nuclear fall out from atomic weapons which then transferred into the debate about catastrophic events at power plants. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 12-13. Environmental movement developed in 1968 and by 1970 the AEC included environmental impact studies. These groups targeted major plants in Michigan and California at first due to there closeness to coastal locales and the San Andreas fault respectively; both plants were cancelled. Ralph Nader and the Sierra Club along with up to 100 anti nuclear groups gave California the initiative to block the spread of nuclear waste at a state level despite the fact the measure was defeated.

¹⁶⁴ Christian Joppke, "Decentralization of Control in U.S. Nuclear Energy Policy," *Political Science Quarterly* 107, no. 4 (Win., 1992-1993): 710, <http://www.jstor.org>. "The three predominant issues of the U.S. nuclear power controversy in the 1980's—emergency planning, utility rate regulation, and waste disposal—are all similar in this regard."

¹⁶⁵ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 318.

¹⁶⁶ Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 15. "...many see as the need to serve as stewards over the dominion of God or the bountiful nature inherited from previous generations."

¹⁶⁷ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 321.

these plants where no citizen has any control over it.¹⁶⁸ A so called anti-technology cult grew where some blamed technology on the social ills of the day.¹⁶⁹ It is conceivable that in order to progress technologically it requires nuclear power, since it would provide growth not only to the industry but also as a nation which owns it. These plants are sustainable since the required fuel is renewable.¹⁷⁰

Although when we look to the Soviet Union, our need for nuclear energy increases dramatically; at any point the Soviet Union could begin to control the oil flow in the Middle East and choke off our supply.¹⁷¹ As a result of these issues, there is a need for greater public participation. There must be a more open communication to regain the public's trust and to alter its perception of nuclear energy after the secrecy that dominated during World War II, turning many Americans off to these programs.¹⁷² More public accountability into nuclear projects must be attainable by the public for true oversight into the industry.¹⁷³ Commercial nuclear power plants

¹⁶⁸ Ibid., paraphrased, 323. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 14. Political, business, regulators, and people living near these plants all supported the building of these plants except for environmentalists.

¹⁶⁹ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 323-324.

¹⁷⁰ Ibid., paraphrased, 324. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 14. Although some may have wanted it the environmental movement despite the oil crisis and recession has not weakened.

¹⁷¹ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 325. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 11. "...light water reactors and eventually the breeder, would compensate for the decline in national reliance upon fossil fuels."

¹⁷² Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 326. Berk; Kasperson; Pijawka; Sharaf; Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," 11. "Until very recently the place of nuclear energy as a source of electrical power in the United States seemed assured." James H. Johnson Jr., "A Model of Evacuation—Decision Making in a Nuclear Reactor Emergency," *Geographical Review* 75, no. 4 (Oct., 1985): 412, <http://www.jstor.org>. "In view of the high degree of fear and distrust of nuclear power, of the low level of public confidence in individuals and organizations that have been assigned the responsibility to issue warnings and recommendations for protective action, and of the absence of environmental cues, the postulate for the model is that persons who perceive themselves to be in the path of a passing radioactive plume will evacuate, while individuals who perceive no risk will not depart."

¹⁷³ Bickerstaffe; Pearce, "Can There Be a Consensus on Nuclear Power," paraphrased, 335.

within the United States, together with local and state governments are to have a plan in place in case of a radiological emergency.¹⁷⁴ During properly performed drills one can get a sense of how people will respond in an emergency. The industry has been plagued by design failures and other problems, but it is the location of houses and how far the evacuation will extend that need to be addressed.¹⁷⁵ Those who evacuate follow a preconceived “distance decay theory” evacuation, where the further out one goes from a reactor the less need there will probably be to evacuate.¹⁷⁶ Older generations are less likely to move versus the young, women who were pregnant, those who were married or are currently married, and those with children, all seem to evacuate. More educated persons and ones who have higher social status would also evacuate in higher numbers than the alternative.¹⁷⁷

Nuclear power was seen as global and could improve international stability through their respective decision making processes.¹⁷⁸ Unfortunately, the dilemma still remained how to spread peaceful nuclear power while not the by product of producing weapons-grade material. As a result, an international body was created to

¹⁷⁴ Johnson Jr., “A Model of Evacuation—Decision Making in a Nuclear Reactor Emergency,” paraphrased, 405-406. After the Three Mile Island accident most plans of the time were deemed as inadequate. At the time of the incident the Governor of Pennsylvania instructed the evacuation of all pregnant women and school children within five miles of the reactor and for those within 10 miles to stay indoors. Instead over 39 percent of the population spontaneously evacuated even those listed as outside the danger zone left.

¹⁷⁵ *Ibid.*, paraphrased last two sentences, 406-407. David Newbery; George Yarrow, “The Price of Nuclear Power,” *Economic Policy* 3, no. 6 (Apr., 1988): 83, <http://www.jstor.org>. The Three Mile Island incident did have a significant impact on nuclear programs for the past decade, costs also contributed to its demise.

¹⁷⁶ Johnson Jr., “A Model of Evacuation—Decision Making in a Nuclear Reactor Emergency,” paraphrased, 407.

¹⁷⁷ *Ibid.*, paraphrased last two sentences, 408-409.

¹⁷⁸ Jack Barkenbus, “Nuclear Power Safety and the Role of International Organization,” *International Organization* 41, no. 3 (Sum., 1987): 475, <http://www.jstor.org>.

try and answer that dilemma while in the same process ensuring adherence of nations to their nuclear programs.¹⁷⁹

Proliferation is not the only fear of nuclear power, but also the spread of nuclear contaminants across international borders, if an event were to occur despite having private contractors in charge of reactors.¹⁸⁰ Chernobyl changed all of that with 32 immediate fatalities; it brought home how nuclear accidents had been seen as hypothetical events and no one ever thought about the consequence of pollution travelling to another country. Therefore, nuclear safety was no longer just an individual nation's concern.¹⁸¹ Nuclear power, being comprised of 15 percent of the world's energy, means that it takes 388 active reactors with a total of 142 reactors on order to produce over 386,000 megawatts of electricity. Those with nuclear power have significant advantages over those who lack the finances or technical expertise to afford such projects, yet there is an ever present fear that nations who cannot gain nuclear power could try and leave other nations at risk.¹⁸² When the Chernobyl melt down occurred it drew harsh reaction from the West due to their inherent safety deficiencies; it would have never been allowed to operate in the West as designed.¹⁸³ Arguments could be made that international health and safety must be concerned over these foreign reactors, especially since there are people at risk; coal fired plants emit pollutants that cause acid rain unlike nuclear fall-out.¹⁸⁴ On Three Mile Island the

¹⁷⁹ Ibid., paraphrased, 475.

¹⁸⁰ Ibid., paraphrased, 476.

¹⁸¹ Ibid., paraphrased last two sentences, 476.

¹⁸² Ibid., paraphrased last two sentences, 478.

¹⁸³ Ibid., paraphrased, 480-481.

¹⁸⁴ Ibid., paraphrased, 482-483. Newbery; Yarrow, "The Price of Nuclear Power," 86. "Coal-fired capacity produces atmospheric pollution from emission of waste gasses. Since there exist control

IAEA wanted to ensure better nuclear safety, whereas Chernobyl elicited more of an international response despite Russia's slow reporting of the incident.¹⁸⁵ The IAEA will now take a larger form in the future on inspecting and recommending changes for nuclear facilities.¹⁸⁶ After the Chernobyl event, two nuclear plants were frozen in the Netherlands, but in France, Germany, and Great Britain there was little change.¹⁸⁷

By the year 2000, there could be 40,000 metric tons of nuclear waste in the United States at some 70 sites. Originally, Yucca Mountain in Nevada was selected to store the nation's waste, where it would be held well underground. Nevada's legislature, in June 1989, passed a bill to prevent any government agency from storing nuclear waste within the state, thus brought about a round of federal lawsuits, where even to the Supreme Court of Nevada had to acquiesce.¹⁸⁸ Prior to the Three Mile Island incident, skyrocketing construction cost and shrinking electricity demand halted expansion of nuclear programs so the amount of waste might be reduced.¹⁸⁹ The catastrophic potential unleashed after Three Mile Island gave rise to more support for conventional power suppliers, where the nuclear industry once again

technologies that reduce these emissions, investment appraisal requires some analysis of trade offs between costs of abatement and social damage.”

¹⁸⁵ Barkenbus, “Nuclear Power Safety and the Role of International Organization,” paraphrased, 484-485.

¹⁸⁶ *Ibid.*, paraphrased, 490.

¹⁸⁷ Newbery; Yarrow, “The Price of Nuclear Power,” paraphrased, 81. Dunlap; Rosa, “Poll Trends: Nuclear Power: Three Decades of Public Opinion,” 298. “Interestingly, contrary to a widely held view, the 1986 Chernobyl accident did not have a marked impact on public attitudes: at the time of the accident opposition already exceeded support by nearly 2:1.”

¹⁸⁸ James H. Flynn; Mark Layman; Paul Slovic, “Perceived Risk, Trust, and the Politics of Nuclear Waste,” *Science* 254, no. 5038 (Dec., 13, 1991): 1603-1604, <http://www.jstor.org>. Paraphrased last four sentences. “Perceptions of risk from radiation, nuclear power, and nuclear waste play a pivotal role in this story and need to be thoroughly understood if we are to make any progress in resolving the current impasse.”

¹⁸⁹ Joppke, “Decentralization of Control in U.S. Nuclear Energy Policy,” paraphrased, 711.

faced bitter opposition.¹⁹⁰ New safety rules were implemented to prevent disasters from earthquakes to missile strikes.¹⁹¹ Under the Reagan administration, the rearmament of the United States versus the Soviet Union grew worrisome for many Americans fearing the threat of nuclear conflict, especially when the two nations became entangled in Afghanistan.¹⁹² Despite the focus of the medias attention on the struggles of the time, the nuclear power issue subsided but never lost its controversy.¹⁹³ Yucca Mountain was to be ready for its first deposits by the year 2010.¹⁹⁴ Nuclear power has faced many challenges, but as of recently the urge for the industry to continue forward has been prevalent.

VI. "Is it Warm in Here or is it Just Me?"

A major development in nuclear relations between the United States and the Soviet Union centered on the Antiballistic Missile Treaty and the possible use of a Strategic Defense Initiative.¹⁹⁵ President Reagan believed that the United States could

¹⁹⁰ Ibid., paraphrased, 712-713.

¹⁹¹ Ibid., paraphrased, 713.

¹⁹² Ibid., paraphrased, 713. Dunlap; Rosa, "Poll Trends: Nuclear Power: Three Decades of Public Opinion," 298. "During 1981 and 1982, as the nuclear freeze gained momentum, there was an upsurge in fear of nuclear war among Americans—whether measured by public opinion polls (Smith 1988), by the volume of survey questions on nuclear weapons/ war items (Kramer, Kalick, and Milburn 1983), or by the volume of media coverage (Mazur 1990)."

¹⁹³ Joppke, "Decentralization of Control in U.S. Nuclear Energy Policy," paraphrased, 714.

¹⁹⁴ Ibid., paraphrased, 723.

¹⁹⁵ Abraham Sofaer, "The ABM Treaty and the Strategic Defense Initiative," *Harvard Law Review* 99, no. 8 (Jun., 1986): 1972, <http://www.jstor.org>. Abraham Sofaer looked at the ABM treaty from a legal perspective. When each party signed the document they agreed to not deploy any defense systems unless they were in agreed areas. No defense system should be space based, sea based, mobile land based, or air based. 1974 "ABM system" included anything that could serve to counteract the function

develop a system that would protect not only us but our allies in theatre from a Soviet attack.¹⁹⁶ He envisioned that those who created the nuclear weapons could also render a system that could defeat them; Soviet Premier A.N. Kosygin believed in 1967 that a defense system would help save lives and prevent an attack not cause an arms race.¹⁹⁷ By 1972 a missile defense system was seen as being too costly and too debilitating to pursue, although it could have been seen either way as enhancing or detracting from the uneasy détente that existed.¹⁹⁸ It would provide a deterrent for the Soviet military to launch a preemptive strike, and possibly as outlined by the Baruch Plan, an elimination of all nuclear weapons.¹⁹⁹ Defense planners and scientists were realists in the sense that they understood that there was no way in that a missile defense shield would work; in fact they realized, as others, that mutual deterrence was the better way to prevent a war.²⁰⁰ In 1971, both superpowers agreed that a “hot line” with better

of incoming nuclear devices in flight. 1985 President Reagan had concluded that a broader interpretation of the Treaty was fully justified and as a result has made sure the SDI program is forging ahead. Under his premise the Treaty would not have to be restructured since the United States developments of defense mechanisms were within Treaty boundaries.

¹⁹⁶ Sidney D. Drell; Phillip J. Farley; David Holloway, “Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative,” *International Security* 9, no. 2 (Aut., 1984): 51, <http://www.jstor.org>. Thomas W. Graham; Bernard M. Kramer, “The Polls: ABM and Star Wars: Attitudes Toward Nuclear Defense, 1945-1985,” *The Public Opinion Quarterly* 50, no. 1 (Spr., 1986): 125, <http://www.jstor.org>. “President Reagan’s Strategic Defense Initiative (SDI), popularly called Star Wars, is the most recent manifestation of a 40-year debate over developing systems to defend against nuclear attack...no more than 16 percent to 24 percent of the public is following the current Star Wars debate ‘a lot’ or ‘very closely’ (1/85, 2/85).”

¹⁹⁷ Drell; Farley; Holloway, “Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative,” paraphrased, 51.

¹⁹⁸ *Ibid.*, paraphrased, 52.

¹⁹⁹ *Ibid.*, paraphrased, 52-53.

²⁰⁰ *Ibid.*, paraphrased, 54. Graham; Kramer, “The Polls: ABM and Star Wars: Attitudes Toward Nuclear Defense, 1945-1985,” paraphrased, 126. On the contrary 75 percent of Americans believe that the United States has a decent defense against Soviet missiles. In fact during the 1960’s many believed that Russia had some sort of formable defense themselves. Seymour Feshbach; Michael J. White, “Individual differences in Attitudes Towards Nuclear Arms Policies: Some Psychological and Social Policy Considerations,” *Journal of Peace Research* 23, no. 2 (Jun., 1986): 129, <http://www.jstor.org>. “In 1949, for example, 50% of the population sampled agreed that the US would be justified in using nuclear weapons if a US ally in Western Europe was attacked by the Soviet Union. This percentage had dropped to 28% by 1982.”

communication would ensure that no nuclear attack would occur without proper warning, in case of any crisis should arise, such as misinterpretations or unauthorized access.²⁰¹ Instead the ABM treaty accepted deterrence as the common goal and each party agreed to not partake in developing, deploying, or testing any sort of defense system.²⁰² From the Soviet perspective it was felt that any sort of defense system would allow the enemy to minimize damage from first-strike capability and allow the state to still function.²⁰³ Some Russian military officials, much like the defense scientists of the United States realized that such a defense system would probably not work at all; four of eight complexes in the Soviet Union were built but no confidence upon them ever existed. It was during the 1967-1968 time frame that nuclear parity was occurring.²⁰⁴

Each side realized during the SALT treaties that each was vulnerable to massive loss of life and extreme damage; therefore, a tenuous mutual deterrence existed, but if any deployment of a missile defense system came into being, it would escalate the arms race once again since it would force the other superpower to develop more powerful and technologically advanced warheads.²⁰⁵ The Academy of Sciences argued that a space-based defense system could wipe out over 1,000 incoming ICBMS in their initial boost phases, but would require vast research and development and a tremendous budget.²⁰⁶ Unfortunately, those devices could be

²⁰¹ Drell; Farley; Holloway, "Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative," paraphrased, 54.

²⁰² Ibid., paraphrased, 55-56.

²⁰³ Ibid., paraphrased, 59.

²⁰⁴ Ibid., paraphrased, 59.

²⁰⁵ Ibid., paraphrased, 60.

²⁰⁶ Ibid., paraphrased, 62.

subject to destruction from space mines, space based lasers, shielding on warheads, or ground based lasers; in fact, it would probably have been cheaper to invest in satellite killing technology for defense.²⁰⁷ A space-based system would have been too vulnerable to attack, but based on President Reagan's ideas, it infuriated the Soviets.²⁰⁸ The Soviets focused more on defeating the United States somehow in a nuclear war. Under the Moscow system radars would discern real reentry vehicles versus the decoy, yet radars are susceptible to attack. Additionally, the Soviet Union although not confirmed, could have up to 100 missiles designed to defend against ICBM's.²⁰⁹ For the United States, the thought of Russia putting together a system to rival one of ours is remote. Russia lags in optics, technology, computers, automated control, propulsion, radar, software, telecommunications, and guidance systems; it could be noted that one reason for a hot line was that the Russian radars could be tricked of an impending attack even if one were not occurring.²¹⁰ Although the United States and Russia could have broken some provisions of the ABM treaty, neither one have withdrawn from it fearing the loss of mutual deterrence.²¹¹ With the

²⁰⁷ Ibid., paraphrased, 62.

²⁰⁸ Ibid., paraphrased, 63. Sofaer, "The ABM Treaty and the Strategic Defense Initiative," 1978. "Under international law, as under United States domestic law, when an agreement has been found to be ambiguous, an interpreter must seek guidance in the circumstances surrounding the drafting of the agreement." Although negotiations of these types of treaties are classified one could surmise that President Reagan thought there was a loophole in which the United States could develop a missile defense system and one could further argue that it was with "Star Wars" with which the President brought about the reluctant fall of communism in Eastern Europe.

²⁰⁹ Drell; Farley; Holloway, "Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative," paraphrased last two sentences, 64.

²¹⁰ Ibid., paraphrased with my own personal thoughts, 66.

²¹¹ Ibid., paraphrased, 66. Sofaer, "The ABM Treaty and the Strategic Defense Initiative," 1979. United States delegates had wanted to ban the development and testing of all systems under article III, the Soviets were unwilling to compromise with the United States in so called unknown devices and further they could not regulate previously existing devices. In essence both sides knew each other were developing some minor defense systems. White; Feshbach, "Individual differences in Attitudes towards Nuclear Arms Policies: Some Psychological and Social Policy Considerations," paraphrased, 130. 65% of Americans felt that since the Soviet Union was viewed as an evil empire there was no

technological revolution, expanding a missile defense system would still require absolute perfection in order to work; even if it stopped 99 percent of the Soviet missiles to hit the United States it still would be a disaster.²¹² A layered defense would be the only option to try and repel or contain a Soviet attack. Boost phase intercepts, space based chemical lasers, ground based x-ray lasers, hybrid systems, mid-course intercepts, and terminal defense are all proposals of defense initiatives.²¹³ In order to prevent a war, both superpowers must exercise restraint, especially since there are no guarantees that a defense system would be viable and the associated costs for those systems could be enormous.²¹⁴ Too many variables exist for these systems to work, and in order to work they must be absolutely perfect, in order to prevent war both superpowers must agree on an SDI, and that must be coupled closely with their arms control policies.²¹⁵ Although deterrence is the current norm, any war would be beyond catastrophic; therefore, an arms control agreement must be one of our top priorities and the elimination of any sort of missile defense system to promote stability between our nations.²¹⁶

Nuclear Test Bans were also sought due to their affliction of adverse health effects for unseen nuclear fallout. After the 1958 moratorium, the Soviet Union and

doubt if the United States or its allies were seen as weak they would attack. Yet it was also revealed that 68% of those polled thought the United States used the Soviet Union as scapegoats for other national problems such as poverty and hunger.

²¹² Drell; Farley; Holloway, "Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative," paraphrased, 67-68.

²¹³ Ibid., paraphrased, 68-79. For more information and more technical specs on these systems read over these pages. Some anecdotes the United States Air Force was in the process of developing an air based Boeing 747 to carry a laser to knock down enemy missiles. The movie "Spies Like Us" featured a secret defense of ground based lasers that would shoot their energy to nearby satellites that would terminate inbound ICBM's in the upper atmosphere of course that was fiction or was it?

²¹⁴ Ibid., paraphrased, 89.

²¹⁵ Ibid., paraphrased, 89.

²¹⁶ Ibid., paraphrased, 90-91.

United States resumed testing of devices, which included the 58 megaton device that holds the yield record for test weapons; that number would total over 200 detonations from 1961-1963.²¹⁷ Electro-Magnetic Pulses were found as an effective strategy in nuclear warfare; both superpowers saw that the effects of an atmospheric explosion would knock out more critical defense components.²¹⁸ These pulses would knock out all electric or other power, and unless shielding was present, would render whole societies dark and unprotected. In 1968, the Nuclear Non-Proliferation Treaty urged non nuclear states to agree to abstain from developing, receiving, or manufacture weapons.²¹⁹ In return, the superpowers and other new nuclear states agreed to reduce their own stockpiles and to transfer peaceful nuclear power information to those affected states.²²⁰ The 1974 Threshold Test Ban forced any testing to be held underground and could not exceed 150 kilotons.²²¹ Further test ban negotiations continued yet advancement on the SDI caused for some renewed rounds testing. A low threshold test ban was introduced to slow or eventually halt the further development or testing of nuclear devices.²²² Since most test bans had failed for one reason or another, it was seen as everyone's best interest to try and curtail the escalating tests and SDI to prevent a war.

²¹⁷ Allan M. Din, "Nuclear Test Bans," *Journal of Peace Research* 24, no. 2 (Jun., 1987): 106, <http://www.jstor.org>. Burrus M. Carnahan, "Treaty Review Conferences," *The American Journal of International Law* 81, no. 1 (Jan., 1987): 226, <http://www.jstor.org>. "Four agreements, negotiated between 1968 and 1978, provide for the convening of periodic conferences of states parties 'to review the operation' of the treaty, including an examination of whether the purposes of the preambles and the provisions of the treaties are being rationalized."

²¹⁸ Din, "Nuclear Test Bans," paraphrased, 107.

²¹⁹ Carnahan, "Treaty Review Conferences," paraphrased, 227.

²²⁰ *Ibid.*, paraphrased, 227.

²²¹ Din, "Nuclear Test Bans," paraphrased, 107.

²²² *Ibid.*, paraphrased last two sentences, 108-110.

In the late 1980's many began to reflect on the nuclear age, either to dispel myths or to comment on how we missed opportunities to halt the production of the hydrogen bomb, and the eventual development of the neutron bomb.²²³ Truman warned the Soviets about the dangers of a potential nuclear war, but how peaceful nuclear energy could be used for power and he blamed them for blocking international control of atomic energy.²²⁴ Under the Eisenhower administration it was seen that we must deal with the Soviets realistically; we must continue to build our H-bomb stockpiles as it was seen unlikely to compromise with the Soviets to deescalate the arms race.²²⁵ By late 1949, the General Advisory Committee and the Atomic Energy Commission headed by Robert Oppenheimer had tried to halt the development of the H-bomb since it would kill millions of non-combatants.²²⁶ Fermi and Rabi believed that unless the Soviet Union developed such devices that the United States, with a far superior A-bomb force, would be sufficient rather than going head long into developing thermonuclear devices since there were fewer targets in Russia.²²⁷ Congress began to push for the H-bomb development in 1952 when the "George" test was a success and Edward Teller warned congress of Klaus Fuch's

²²³ Barton J. Berstein, "Crossing the Rubicon: A Missed Opportunity to Stop the H-Bomb?" *International Security* 14, no. 2 (Aut., 1989): 132, <http://www.jstor.org>. "In the thermonuclear tests at Eniwetok, President Harry S. Truman announced in his January 1953 State of the Union address, 'we have entered another stage in the worldshaking development of atomic energy'. This potential new weapon, he explained, 'moves into a new era of destructive power, capable of creating explosions of a new order of magnitude, dwarfing the mushroom clouds of Hiroshima and Nagasaki.' It was the world's first test of a thermonuclear device." Waltz 731. NATO has repeatedly called for the strengthening of conventional forces and to further nuclear détente through stalemate. With a "no first use" policy in place there might be a need to fight a protracted war against the Soviets if need be but keep détente in perspective.

²²⁴ *Ibid.*, paraphrased, 133.

²²⁵ *Ibid.*, paraphrased, 133.

²²⁶ *Ibid.*, paraphrased, 135-136. Both Enrico Fermi and I.I. Rabi agreed that the further development of the H-bomb might not be militarily or morally needed and tried to push for a ban on thermonuclear weapons. The way they had envisioned it was that unless the Soviet Union had proven it had tested these weapons then the United States would have no reason to develop or test these new devices.

²²⁷ *Ibid.*, paraphrased, 136.

espionage, reporting that Russia maybe ahead of the United States, and urged that the United States should have over 100 of these devices.²²⁸ Secretary Acheson wanted a way to conduct dialogue with the Soviet Union on peaceful uses of nuclear technology, but it would be unclear how to obtain that objective since either nation could cheat with a test ban moratorium, since inspections would have to be required or the threat of losing development of the H-bomb would have be used to scare the Soviet Union.²²⁹ The panel had recommended to Truman to delay the H-bomb test since it would not injure the program and make sure the United States was prepared to pass the point of no return; the Soviets would gain valuable knowledge from a test and could possibly aid in speeding up their development.²³⁰ Korean War of 1952 virtually killed all opposition to the thermonuclear age; it would eventually be seen as being communist if one did not support development.²³¹ Truman had hoped the first test detonation would have occurred after the election since he did not want it to affect the outcome, unfortunately the test did occur as planned, yet word of the test only leaked out. After discussions with President-elect Eisenhower on November 16, the AEC issued a statement to the public that there was a test program currently underway testing thermonuclear devices.²³²

Prior to Truman leaving office, he warned that there would be the potential that these thermonuclear devices could destroy the world, and a call for international

²²⁸ Ibid., paraphrased, 138. Kenneth N. Waltz, "Nuclear Myths and Political Realities," *The American Political Science Review* 84, no. 3 (Sep., 1990): 732, <http://www.jstor.org>. "Nuclear warheads eliminate the necessity of fighting and remove the possibility of defending, because only a small number of warheads need to reach their targets."

²²⁹ Berstein, "Crossing the Rubicon: A Missed Oppurtunity to Stop the H-Bomb?" paraphrased, 141-142.

²³⁰ Ibid., paraphrased, 143.

²³¹ Ibid., paraphrased, 148.

²³² Ibid., paraphrased last two sentences, 149-150.

control of these weapons and overall atomic development should become a priority.²³³ The United States was seen to have had a great opportunity to push a test ban agreement, yet like in World War II, we detonated the first thermonuclear device which as many predicted pushed the rapid development of such devices in the Soviet Union.²³⁴ Since the government's efforts to develop these weapons were unchecked, many had urged that the public should become more involved; as a result, some proposals were made to let the public know more about these weapons since cities and industrial centers would more than likely become targets.²³⁵ In March of 1954, a test had affected sailors of a Japanese fishing vessel the "Lucky Dragon" and international outrage had followed claiming that Americans were "saber rattlers" among other things; Eisenhower had conducted several private sessions with his advisors to possibly set a moratorium on testing but had given up hope.²³⁶ During the 1960's, nuclear thought centered on the punishment should fit the crime and that there was no advantage to strike first.²³⁷ At best, the President of the United States would only have minutes up to a few hours to respond to an all out attack from the Soviet Union, at which point it could be too late.²³⁸ President Kennedy led the largest peacetime build up of conventional and nuclear weapons, and came close to war during the Cuban Missile Crisis.²³⁹ With conventional forces battlefield strategies can

²³³ Ibid., paraphrased, 151.

²³⁴ Ibid., paraphrased, 151-152.

²³⁵ Ibid., paraphrased, 154. Hence the development of the Civil Defense Agency.

²³⁶ Ibid., paraphrased, 159-160. Waltz, "Nuclear Myths and Political Realities," 731. Nuclear weapons have tremendous destructive power yet for decades no one really knew what the true meaning of détente was therefore the public has an uneasy view of a potential war. Waltz, "Nuclear Myths and Political Realities," 732. Mutual assured destruction now became the policy of the Eisenhower administration meaning that deterrence depended on how large a stockpile one country may have.

²³⁷ Waltz, "Nuclear Myths and Political Realities," paraphrased, 733.

²³⁸ Ibid., paraphrased, 736.

²³⁹ Ibid., paraphrased, 738.

vary, whereas in nuclear weapons there are no real options. Even if low level tactical nuclear weapons were used in the field it would not significantly change a battle, since the same devices could be used on our own troops.²⁴⁰ Both superpowers had made their stockpiles so large that deterrence was no longer a factor; in fact, parity would best describe the opposing forces. Despite our best efforts, even arms agreements would keep the parity alive and possibly lead to the development of different weapons all together.²⁴¹ Versions of those newer bombs include smaller mobile weapons, bombs that could be carried aboard freighters, and briefcase bombs; the aforementioned Strategic Defense Initiative would have little effect on those bombs.²⁴²

By the early 1990's, a strong emphasis towards globalization became apparent.²⁴³ That order would share common decision-making principles, norms, rules, values, and compromises towards common specific goals, whether in economic areas or other, such as the G8.²⁴⁴ International cooperatives such as the United States and Canada share NORAD together and would defend each other if there were any sort of nuclear outbreak; but it was also in the best interests of these nuclear states to prevent further spread of nuclear weapons to non nuclear states due to the destabilizing nature of those weapons.²⁴⁵ Those states that do acquire the technology should be swiftly and severely punished through arms embargos and trade

²⁴⁰ Ibid., paraphrased with my own conclusion, 738.

²⁴¹ Ibid., paraphrased, 741. .

²⁴² Ibid., paraphrased, 742.

²⁴³ Michael Brzoska, "Is the Nuclear Non—Proliferation System a Regime? A Comment on Trevor McMorris Tate," *Journal of Peace Research* 29, no. 2 (May., 1992): 215, <http://www.jstor.org>.

²⁴⁴ Ibid., paraphrased with my own interpretation, 216.

²⁴⁵ Ibid., paraphrased, 217.

embargos.²⁴⁶ Some of these regimes searching for nuclear weapons have lackadaisical security or could directly aid foreign terrorist entities. With the breakup of the Soviet Union, nuclear forces or aspirations of Iraq and North Korea have encouraged a new round of test ban agreements or the need to halt the spread of weapons.²⁴⁷ There is a need to enhance detection and inspection activities to ease international tension over these countries by using seismic stations across the world to detect low level detonations.²⁴⁸

The dawn of a new century gave us another look at the Reagan administration's SDI. The National Missile Defense System called for 100 initial interceptors in Alaska with five radars, another 100 missiles and radar with space based sensors, to be fully deployed by 2008.²⁴⁹ While the United States was still vulnerable to large scale Russian attack, rogue countries such as North Korea and Iran could become threats; elsewhere, India, Pakistan, Israel, and Iraq had medium range missiles.²⁵⁰ No matter if these nations could develop a long range missile, while most believe it would be by 2015 at the latest, whether we remain even more vulnerable by chemical, nuclear, or biological attacks based from dirty bombs to terrorist based attacks, using a variety of delivery means.²⁵¹ No matter how much we spend, the current defense systems are not reliable and have lead to many cost overruns which when in operation could cost as high as 20 billion dollars per fiscal year to

²⁴⁶ Ibid., paraphrased, 218-219.

²⁴⁷ Jeffrey Park; Gregory E. van der Vink, "Nuclear Test Ban Monitoring: New Requirements, New Resources," *Science* 263, no. 5147 (Feb., 4, 1994): 634, <http://www.jstor.org>.

²⁴⁸ Ibid., paraphrased, 634.

²⁴⁹ Harold Brown; John Deutch; John P. White, "National Missile Defense: Is There Another Way?" *Foreign Policy* 119, (Sum., 2000): 91, <http://www.jstor.org>.

²⁵⁰ Ibid., paraphrased, 92.

²⁵¹ Ibid., paraphrased, 93.

maintain.²⁵² Russia has not been receptive to the missile defense shield since it limits their second strike capability, and since they do not have a reliable system they rely heavily on their nuclear fleet.²⁵³ With the actions of the rogue states, the United States feels that they can deploy systems near those countries, and would not be able to affect any Soviet ICBM's but strategic nuclear deterrence, and limiting strategic defense at home would alleviate renewed tensions between the former superpowers.²⁵⁴ China was concerned as well, since any system in Alaska could negate their 20 ICBM's, yet the United States could negate any North Korean attack which could destabilize the region.²⁵⁵ China, France, Russia, Great Britain, and the United States possess nuclear weapons but pledged to halt nuclear production and lead to disarm at some point during a negotiated future agreement, but all agreed at an unequivocal elimination of arms.²⁵⁶

Space alternatives also began to become more of a reality in the new century especially when China had destroyed one of its own satellites in space. Any potential nuclear war, if one does occur, will elicit all forms of human suffering. Only a total disarmament can alleviate any future problems.²⁵⁷ North Korea has flaunted their nuclear devices where China has begun a rapid proliferation of such devices, yet the former superpowers realized through MAD that pure annihilation would lead to an

²⁵² Ibid., paraphrased, 95-96.

²⁵³ Ibid., paraphrased, 96.

²⁵⁴ Ibid., paraphrased with my own conclusion, 97.

²⁵⁵ Ibid., paraphrased, 98.

²⁵⁶ Unauthored, "Nuclear Weapons States Pledge to Unequivocal Elimination," *The American Journal of International Law* 94, no. 4 (Oct., 2000): 706, <http://www.jstor.org>.

²⁵⁷ David Finkleman, "The Contributions of Space Systems and Strategic Defense to Nuclear Stability," *Proceedings of the American Philosophical Society* 145, no. 3 (Sep., 2001): 261, <http://www.jstor.org>.

uneasy but stable détente.²⁵⁸ Although the United States may support Taiwan independence we would not risk 200 million people for 20 million and although India and Pakistan are proliferating, there is little we can do to stop it.²⁵⁹ With increasing technology cyber attacks, or satellite-based weapons might be the way of the future, where nuclear exchanges seem unlikely except in and around the Kashmir region between India and Pakistan.²⁶⁰ Limited war in that region would be based more on intimidation rather than annihilation; a limited defense should be considered as safe, and space weapons could be implanted on any civilian or military satellite.²⁶¹ To prevent any type of war or to make sure one does not escalate out of hand superb communications are needed as well as great surveillance and competent command and control in the field.²⁶² No form of space-based or land-based defense may be enough to deter any sort of war when ethnic differences may be involved, such as the Kashmir conflict.²⁶³ President Clinton and Yelstin, agreed in 1998 at the Helsinki Summit, to create a joint warning center in response to increasing threats faced by both countries from rogue nations, but was also seen as an alternative to a missile defense system, which there are no impenetrable systems especially, ones without bugs.²⁶⁴ Additionally, any sort of defense system would be doomed since they would have to discriminate against real or decoy style targets.²⁶⁵ USSPACECOM has the ability to either grant or deny access to space as well as to offer GPS capabilities,

²⁵⁸ Ibid., paraphrased, 261.

²⁵⁹ Ibid., paraphrased, 261.

²⁶⁰ Ibid., paraphrased, 262.

²⁶¹ Ibid., paraphrased, 262.

²⁶² Ibid., paraphrased, 263.

²⁶³ Ibid., paraphrased with my own conclusion, 263.

²⁶⁴ Ibid., paraphrased, 265.

²⁶⁵ Ibid., paraphrased, 266.

ensure military satellite communications, assist with meteorology, and makes sure civilian and military satellites are deployed properly.²⁶⁶ These satellites, which are viewed to increase dramatically over the next few years, could ensure nuclear stability with the ability to watch certain regions of the world, and would also likely prevent enemies from “cloaking” their projects to the world.²⁶⁷ If ICBM’s are a weapon of the past, then enemies of the state will find weak spots and exploit them, such as briefcase bombs or dirty bombs.²⁶⁸ It will only be with treaties such as SALT, START, and INF that we may bring to end nuclear weapons en masse.²⁶⁹ May 24th, 2002, President Bush and Putin agreed to reduce warhead numbers to the range of 1700-2200 but did not specify the warhead types.²⁷⁰

VII. “To Infinity and Beyond”.

For centuries man has always tried to find new ways to dominate not only Mother Nature but also other human societies. Doomsday devices have played a central role in our unique histories and the nuclear era was not the first, nor will it be our last. Since the events of September 11th, 2001, our country awakened to the threat from overseas; our nation was attacked once again on our own soil. Terrorism and all of its facets has made Americans aware that there is still evil afoot and will stop at

²⁶⁶ Ibid., paraphrased, 267-268.

²⁶⁷ Ibid., paraphrased, 268-269.

²⁶⁸ Ibid., paraphrased with my own conclusion, 269.

²⁶⁹ Unauthored, “Signing of Treaty on Strategic Offensive Reductions,” *The American Journal of International Law* 96, no. 3 (Jul., 2002): 734, <http://www.jstor.org>.

²⁷⁰ Ibid., paraphrased, 734-735.

nothing to try and take us down, whether they use chemical, biological, or even nuclear means. Former Soviet briefcase bombs that are unaccounted for could be anywhere in the world, or even if terrorists could somehow come across old nuclear fuel, could create a dirty bomb. Beyond terrorism, rogue nations such as North Korea, Iran, Iraq, and Syria all could possess or do possess nuclear weapons. In our war with Iraq, Saddam Hussein had argued in declassified documents recently released from the FBI that if he had weapons of mass destruction he would have used them against the United States, and their long time enemy in Iran.²⁷¹ In Iran they have been allegedly trying to develop peaceful nuclear means for power despite heavy evidence of a nuclear enrichment program aimed at developing nuclear weapons. Other nations that already have nuclear weapons programs are continually developing new delivery methods or increasing stockpiles such as India, Pakistan, China, and Israel. Former superpowers the United States and Russia along with France and Great Britain, are trying to reduce their current stockpiles. Despite President Bush successfully testing a missile defense intercept and calls from then President Putin of Russia claiming to build the worlds largest nuclear weapon; recently, President Obama and now Premier Putin agreed on renewed talks on nuclear weapons.

Although there have been some renewed calls for nuclear power, the United States is exploring other alternative fuel sources. Pop culture, as we will see in our next installment, was significantly impacted by nuclearization, it was not prevalent until the latter part of the Cold War and beyond. Children's cartoons and even movies

²⁷¹ Joyce Battle; The National Security Archive George Washington University, *Saddam Hussein Talks to the FBI: Twenty Interviews and Five Conversations with "High Value Detainee # 1" in 2004*, <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB279/index.htm>.

had veiled or outright criticism of nuclear politics. Although the threat of nuclear war may be diminished, it still hard for many Americans to trust Russia, our former nemesis; according to a poll, 53% of Americans are uneasy with Russia and their nuclear policies and fear another renewed Cold War could develop.²⁷² When the bombs were dropped on Hiroshima and Nagasaki, H-bomb test “George” occurred, and President Reagan called for the neutron bomb and SDI, we lost our innocence. War forever will no longer have a face like that of World War I trench fighting; instead it will be fought thousands of miles away in a secure Boeing 747 nicknamed the “Flying White House”. Our hope, like the hopes of our forefathers, is that the future of our nations can see beyond our corrupt ways and maybe world peace could occur; but as long as there is corruption someone will always want power in any way they can get it. Although our status as a superpower may have diminished, our resolve to defend our nation and its ideals have not. It is, in my opinion that our uneasy détente will last and we will in our lifetime see a significant reduction in nuclear weapons, but as long as there are those out there who want to destroy us we will always keep a watchful eye.

The world has already witnessed the atrocities of a nuclear war or accident in Japan and Chernobyl. It is now time for all of us to realize that the doomsday weapon, although created out of necessity according to some during World War II, will be with us forever if not in bomb form then in the half life deposits around the world. We will need to protect these wastes and make sure they do not end up in the wrong

²⁷² Jack Caffery Blog from CNN 7-7-2009, *How Important are Better Relations Between U.S. and Russia?*, <http://caffertyfile.blogs.cnn.com/2009/07/07/how-important-are-better-relations-between-u-s-and-russia/>.

hands. We need to make sure whatever political or military leaders across the world that we select are competent to where they will not make that fateful rash decision to wipe out the earth many times over. It is our responsibility to try and not perpetuate the want or need to maintain nuclear stockpiles to our future progeny. Finally, we must all realize that no matter our race, gender, or religious background that no nuclear device cares who or what we are, it is the perfect weapon; it hates all of us equally. "To be or not to be"; human civilization lies in the balance; all that needs to happen is for the command to be given and we are no longer.

World War II brought out what has been called the “Greatest Generation” of American citizens in our history. These men, women, and children suffered through the hardships of the Great Depression and fought the war that many had thought would end all wars. Many sacrificed their lives for our country, and there were others who created new mechanisms to save more lives, especially in the Eastern theatre, that could have been lost. It seems only fitting that the Atomic Age came into being during that time. After the bombs were dropped on Japan, the whole world took notice that the United States, that essentially became a Super Power overnight, had the capability to wield its power over other nations. Realizing that, and with the end to the war, Americans celebrated with babies and booze, or maybe it was the other way around. The Atomic Cocktail ushered in a new feeling of pride in our newest weapon. Popular Culture was riddled with the excitement of the bomb, yet in the late 1940’s and early 1950’s, all that would change. Russia would not acquiesce to the challenge before them; they created their own nuclear program. This would lead several other nations in the years to come to also start their own nuclear programs in an effort to create a balance of power. From jubilation to paranoia, the United States psyche changed just as fast. “Red Scares,” espionage, and Hollywood all played a part in giving the American people something more to think about. Our exploration will start with the very beginnings of the Cold War, seeing how life changed within a few short years. Cold winter nights forced many in their homes to think about what could possibly happen, and whether there would there be any warning. The end of the Cold War and beyond kept the nuclear question alive, and currently we are dealing

with a new form of nuclear threat. In addition to reviewing films that shaped our views as a society, we will also look at how others including Rochestarians viewed the Nuclear Age and the threat of all-out war.

I. Cruel Beginnings

World War II had a profound impact on not only the world, but more importantly, the United States. Fresh off the victory in Europe, the United States had no other choice but to force the Japanese' hand. Fat Man and Little Boy would change not only the course of history, but how people in general would lead their lives in the Atomic Age.²⁷³ From popular culture, movies, literature, music, and everyday life, the Atomic Bomb changed an entire generation of aptly named "baby boomers." There was a significant dynamic from the late 1940's through the 1950's, when the United States went from accepting the bomb to eventually fearing it.²⁷⁴

²⁷³ Carrie Rossenfeld, Atomic Archive, AJ Software and Multimedia, www.atomicarchive.com. Here are some key events during the 1940's and 1950's. On December 6th, 1941 Franklin Roosevelt authorized the Manhattan Engineering Project. On March 15th, 1943 Robert Oppenheimer moved the bomb development to a secret lab in Los Alamos, New Mexico. August 6th, 1945 Little Boy was dropped on Hiroshima killing 80,000 to 140,000; on August 9th, Fat Man was dropped on Nagasaki and killed about 74,000 people. During the month of July 1946, Americans protested in Times Square against testing of nuclear weapons. On January 27th, 1950 Klaus Fuchs confessed to aiding the Soviets in bomb development. In 1954 America's first nuclear powered submarine is active, and a test of an H-bomb went bad when a group of islanders in a fishing boat came in contact with radioactive fallout. Finally on August 26th, 1957 the Soviet Union successfully launched and tested an Intercontinental Ballistic Missile or ICBM.

²⁷⁴ Margot A. Henriksen, *Dr. Strangelove's America* (Berkeley and Los Angeles: University of California Press, 1997), 39. "That very exhilaration that most postwar Americans felt about America's atomic power made expressions of guilt and remorse about the atom bomb seem traitorous, a blow against the simple and innocent values that World War II had secured. For this reason most Americans accepted the bomb openly, or at the very least they accepted it in silence and apathy." With the end of World War II many Americans had to accept the bomb or be considered as non-patriotic. As we will see it will be later on once Russia fully enters the picture and some truth comes out about atomic weapons that fear is instilled into the American psyche.

Many would consider that time period as an age of innocence, where the United States could do no wrong. Despite having significant domestic problems, such as civil rights and disagreements as to women's role in the work force, at least on the international front the United States became a superpower with atomic weapons who could have wielded their foreign policy at any time. It was with that concept that the American people felt safe, even for a short time, knowing that an attack would be remote.

For generations our nation's citizens have created trends across the world with our lauded popular culture. From our exports such as blue jeans, country music, motor vehicles, fast food restaurant chains, and technology, the success of our society has hinged on the belief of freedom of expression.²⁷⁵ Through the "Roaring Twenties" and the "Great Depression," our nation went from riches to rags. World War II gave us the initiative to restart our culture, one that for years had been stalled due to the economy. Women now had joined the work force; proud displays of "Rosie the Riveter" adorned places of public gathering. Since the men went off to war it was time for the women to step up and help aid the country. An all female baseball league was formed by Phillip Wrigley to help keep the great American pastime alive while our men were overseas fighting.²⁷⁶ African-American men were enlisted into the

²⁷⁵ Paul Boyer, *By The Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (New York: Pantheon Books, 1985), 11-12. Another unique piece of clothing our country is noted for is the bikini. "Within days of Hiroshima, burlesque houses in Los Angeles were advertising "Atom Bomb Dancers." In early September, putting aside its pontifical robes for a moment, *Life* fulfilled a Hollywood press agent's dream with a full page cheesecake photograph of a well-endowed MGM starlet who had been officially "The Anatomic Bomb." In "Atom Bomb Baby," a pop song of 1947, the bomb became a metaphor for sexual arousal."

²⁷⁶ All-American Girls Professional Baseball League, All-American Girls Professional Baseball League, www.aagpbl.org. "By the fall of 1942, many minor league teams disbanded due to the war. Young men, 18 years of age and over, were being drafted into the armed services. The fear that this

Army and Army Air Corps to aid in the war efforts in Europe, notably the Tuskegee Airmen.²⁷⁷ Gender and racial roles were obliterated during the war, but the use of atomic weapons would forever impact the role of popular culture.²⁷⁸

Since alcohol has long been a large part of American society, it only seems fitting that after the atomic bombs were dropped on Japan that we would create an “Atomic Cocktail.”²⁷⁹ Businesses began to add the “Atomic Power” to their sales approach. Some stores began “Atomic Sales” drives that one could conclude to have

pattern would continue and that Major League Baseball Parks across the country were in danger of collapse is what prompted Phillip K. Wrigley, the gum-chewing mogul who had inherited the Chicago Cubs’ Major League Baseball franchise from his father, to search for a possible solution to this dilemma. Wrigley asked Ken Sells, assistant to the Chicago Cubs’ General Manger to head a committee to come up with ideas. The committee recommended a girls’ softball league be established to be prepared to go into Major League parks should attendance fall due to franchises losing too many quality players to attract crowds.” It should be noted that at the end of the war, the league drew over 450,000 fans. The league lasted until 1954.

²⁷⁷ Tuskegee Airmen Incorporated, Tuskegee Airmen Incorporated, www.tuskegeeairmen.org. “Four hundred and fifty of the pilots who were trained at TAAF served overseas in either the 99th Pursuit Squadron or the 332nd Fighter Group. The 99th Fighter Squadron trained in and flew P-40 Warhawk aircraft in combat in North Africa, Sicily and Italy from April 1943 until July 1944 when they were transferred to the 332nd Fighter Group in the 15th Air Force...Each one accepted the challenge, proudly displayed his skill and determination while suppressing internal rage from humiliation and indignation caused by frequent experiences of racism and bigotry, at home and overseas. These airmen fought two wars- one against a military force overseas and the other against racism at home and abroad.” For those who did not make it overseas, they were trained as bomber pilots. These men were officers in the Army Air Forces and were denied entry into officers clubs as well as being treated as if they were trainees.

²⁷⁸ Albert Boime, “The Postwar Redefinition of Self: Marisol’s Yearbook Illustrations for the Class of ’49,” *American Art* 7, no. 2 (spr. 1993): par. 1, <http://www.jstor.org>. “Most Americans in the postwar period were weary of war and drastic change in domestic life,” ...caused cartoonist Marisol Escobar to draw vignettes of WASP princesses, and regress the country’s view from McCarthyism, the Chinese revolution, Soviet atomic bombs, and to espionage cases in the United States dealing with nuclear secrets. Paraphrased p. 18-19.

²⁷⁹ Boyer, *By Bomb’s Early Light*, 10. “Within hours of Eben Ayres’s announcement, the bar at the Washington Press Club offered an “Atomic Cocktail”--- a greenish blend of Pernod and gin.” In my opinion, an “Irish Car Bomb”, is probably the closest drink to looking like a nuclear explosion. Once the two drinks are introduced to each other it creates enough carbonation to create a head that begins to crown and then overtake the sides of a cup. If you look close enough though the speed at which it occurs is so rapid that it almost looks like an atomic explosion off of the old Department of Defense videos of testing out in Nevada. Furthermore when we created the drink, it was seen as a celebratory drink, but could we also conclude that maybe the drink was to hide our fears of the unknown Atomic bomb? Allan M. Winkler, “By Bomb’s Early Light: a Review,” *Science* 232, no. 4748 (Apr. 18, 1986): par. 1-6, <http://www.jstor.org>. offers that Americans at all levels were affected by the bomb and also created a crisis in moral and religious values, could the bottle also be considered as an elixir?

blow-out results. Additionally, advertisers offered their clientele “Atomic Results.” There were some obviously insane jewelers who went into test sites and scooped up some of the greenish-colored glass sand and fashioned costume jewelry out of it. Then, by 1947, five companies in the Manhattan area had their names begin with the word “Atomic.”²⁸⁰ Children were also baptized into the atomic culture when General Mills cereal introduced the “Atomic Bomb Ring”, where one could conceal secrets in the ring’s crown to hide them from the enemy.²⁸¹ Some comedians could not resist offering up jokes about the Atomic Bomb, claiming that the Japanese were struggling with an “Atomic Ache”. One could surmise that the comedian tried to play it off as if the Japanese had a hang-over.²⁸² Before the advent of television, radio had a huge impact on how Americans perceived nuclear devices. Conelrad tests were conducted in 1953, where radio broadcasts were interrupted, allowing instructions to be given in the case of a nuclear war, in combination with tests of the air raid sirens, resulting in more panic than anything else.²⁸³ Even America’s favorite pastime, baseball, was compared to the Atomic Age in the descriptions of either the specific game or what field conditions were like.²⁸⁴

²⁸⁰ Boyer, *By Bomb’s Early Light*, 10-11. Paraphrased the last 5 sentences. Initially after the bombs were dropped it seemed almost insane in today’s terms that we would have capitalized on the downfall of 100,000 Japanese citizens. One has to remember though with raw power comes pride and strength. Even scanning the New York Times historical archive, the word “Atomic” and or the word “sales”, brought up at least 18 references to advertisements or classifieds for products or employment opportunities.

²⁸¹ *Ibid.*, 11. Paraphrased.

²⁸² *Ibid.*, 10. Paraphrased.

²⁸³ Kenneth D. Rose, *One Nation Underground: The Fallout Shelter in American Culture* (New York: New York University Press, 2001), paraphrased 127.

²⁸⁴ Boyer, *By Bomb’s Early Light*, 10. Here is an example of those descriptions. “A radio newscaster commented that Hiroshima ‘looked like Ebbetts Field after a game between the Giants and the Dodgers.’”

By far, the most significant impact on American citizens from the 1940's to the 1950's came, as it would today, from the media. From the very beginning, the American people had a restricted view of the devastation of the bomb itself. The magazine *Life* on August 20, 1945, published an issue about the bombings in Japan. One of the pictures showed the now infamous mushroom cloud that pervades society up through today.²⁸⁵ For the most part though, the pictures that were taken were sanitized, unlike those pictures we may see now showing body parts and everything else. It was the cartoonists who were able to display images of the atomic wasteland.²⁸⁶ The music industry rushed to create a sense of pride in the bomb as well. Country music filled a void on the airwaves for patriotic support of the bombs. Fred Kirby created a song entitled "Atomic Power," which was copied by at least seven other country groups.²⁸⁷ Finally, Hollywood would have their say in the new Atomic Age.²⁸⁸

Public opinion, for the most part, has always been molded by the media; in particular, this was true of literature and movies in the 40's and 50's. After the bombs were dropped on Hiroshima and Nagasaki, there was a huge push to somehow

²⁸⁵ *Ibid.*, 8. Paraphrased 2 sentences.

²⁸⁶ *Ibid.*, 13. "A *Philadelphia Inquirer* cartoon of August 7 portrayed a grotesque, apelike brute staring up in dumb wonder as an atomic bomb exploded overhead. The cartoon in *PM*, the liberal New York City daily, was totally blank except for the words "So sorry" in a balloon at the top. The *Chicago Tribune* pictured the dove of peace flying over Japan, an atomic bomb in its beak. An *Atlanta Constitution* cartoon showing bodies flying into the air over Hiroshima was captioned: "Land of the Rising Sons."

²⁸⁷ *Ibid.*, 25. Paraphrased previous 2 sentences.

²⁸⁸ Henriksen, *Dr. Strangelove's America*, 46-47. "When the Soviets exploded their atom bomb in 1949, the law and order forces gained greater influence in American society... Senator Joseph McCarthy screamed such a fear into Americans, exclaiming: 'One Communist with a razor blade poised over the jugular vein of this nation or in an atomic energy plant can mean the death of America.' ... The House Committee on Un-American Activities launched a highly publicized attack on the idols of America in its investigation of liberal Hollywood... HUAC's investigation of Hollywood succeeded in frightening the film establishment and as a result silenced many of the voices of open criticism and dissent in the film world."

incorporate atomic weapons into the movie scripts. Released in late September of 1945, *The House on 92nd Street*, was the first to do this. The movie had been rewritten with an ending that involved Nazis in New York City who were looking for the “secret ingredient” for the bomb.²⁸⁹ Two larger productions of the time shaped how Americans felt during the time period. Although they had two distinct messages, they were in essence both commissioned by the United States government. Paramount Pictures released *Strategic Air Command* in 1955, starring James Stewart and June Allyson.²⁹⁰ With the help of the Air Force, Paramount Pictures created a movie that had, at the time, breath-taking pictures, and a feel for movie goers.²⁹¹ Provided to the movie were B-36 and B-47 bombers that were actual Strategic Air Command birds; additionally, the Air Force provided personnel and bases for this picture.²⁹² In the story, recently promoted Lieutenant Colonel Robert “Dutch” Holland is recalled to military service from pitching for the St. Louis Cardinals, to help aid in the Cold War with the newly formed Strategic Air Command.²⁹³ In order to stave off a full-blown World War III, General Hawkes must recall all former pilots and crew in order to show the enemy our full force.²⁹⁴ Unfortunately, Dutch’s wife is expecting. Less than pleased with the situation, she fears a potential phone call from the Air Force telling her he is a casualty.²⁹⁵ Placed on a training run to Greenland to test the bomber’s ability to handle extreme cold weather flight, the “Peacemaker’s” fuel tank ruptures

²⁸⁹ Boyer, *By Bomb’s Early Light*, 11. Paraphrased.

²⁹⁰ The Internet Movie Database, *Strategic Air Command* (1955), The Internet Movie Database, <http://www.imdb.com/title/tt0048667/>.

²⁹¹ Bosley Crowther, “Screen: Into the Wide Blue Yonder,” *New York Times*, April 21, 1955, 33. <http://proquest.com>. Accessed through State University of New York College at Brockport permission.

²⁹² Crowther, “Screen: Into the Wide Blue Yonder.”

²⁹³ The Internet Movie Database, *Strategic Air Command* (1955), The Internet Movie Database, <http://www.imdb.com/title/tt0048667/>.

²⁹⁴ *Ibid.*,

²⁹⁵ *Ibid.*,

and catches fire, the aircraft then crash lands and Dutch injures his shoulder.²⁹⁶ After having a baby girl, and impressing Hawkes with his handling of the crash, he is introduced to the new B-47 and asked to take it non-stop to Japan. “Dutch’s wife is very upset and finds out that the Cardinals want him back since his military contract is up, only to find out “Dutch” wants to stay in Strategic Air Command.²⁹⁷ While on approach to Japan, Dutch’s shoulder acts up and forces him to reveal his injury to Hawkes. Reluctantly, Hawkes releases Dutch, but not before praising him for how much he has helped establish Strategic Air Command, and encouraged the men to persevere in going beyond the call of duty in honor of our country.²⁹⁸ By far, *Strategic Air Command’s* message was that of dedicated, unrelenting service to country. It was, at any rate, a military recruitment film and sponsored in part by the Air Force.

In 1952, *Duck and Cover* was released from the Federal Civil Defense Administration.²⁹⁹ Bert the Turtle appears to be more afraid of his own shell than a nuclear device. The message is quite clear though: you should always be prepared to find your own shelter at a moment’s notice. Bert was shown walking along, then a stick of dynamite was shown above his head; Bert knew enough that it meant trouble and he would hide in his shell. All of a sudden the stick of dynamite explodes and

²⁹⁶ Turner Classic Movies, TCM, Turner Sports and Entertainment Digital Network, <http://www.tcm.com/tcmdb/title.jsp?stid=4246>.

²⁹⁷ Turner Classic Movies, TCM, Turner Sports and Entertainment Digital Network, <http://www.tcm.com/tcmdb/title.jsp?stid=4246>. Paraphrase previous two sentences.

²⁹⁸ The Internet Movie Database, *Strategic Air Command* (1955), The Internet Movie Database, <http://www.imdb.com/title/tt0048667/>. Turner Classic Movies, TCM, Turner Sports and Entertainment Digital Network, <http://www.tcm.com/tcmdb/title.jsp?stid=4246>.

²⁹⁹ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, 128. *Duck and Cover* was initially released in 1951 as a booklet and was followed by a short animated film. Although the official public release was not until 1952 its message has been mocked and ridiculed over the decades ranging from politicians and scientists alike.

Bert re-emerges, thanking his self-reliance for his own safety; Bert would “duck and cover.”³⁰⁰ Since Bert is a turtle, his shelter on his back signifies to young students watching this short that it will be up to them to find their own shelter. Progressively through the video there are snapshots of students ducking in the middle of a park, under a picnic blanket or placing their bodies against a masonry wall inside of a school or outside against the building. If in the classroom, they duck underneath their desks. Scientists mocked the film since the supposed shelters offered absolutely no protection from an atomic device.³⁰¹ In my opinion, there were three reasons for a video like this from the United States government. First, the government knew full well what would happen to anyone left unprotected from a nuclear detonation from the results of Japan. In order to prevent mass hysteria, people would be collateral damage if they just stayed in place.³⁰² Secondly, we see the first push to create fallout shelters or bomb shelters in the home or schools. Bert teaches everyone through self-reliance and preparation, we could survive an attack with our own shelters. Lastly, it was a way for the government to try and fool American citizens about the raw power

³⁰⁰ *New York Times*, “New Film to Help in Bomb Training,” *New York Times*, January 25, 1952, 7, <http://www.proquest.com>. Paraphrased. The purpose of the film is to show children what to do if they are out in public on their own. For the most part repeating these drills have shown that panic has subsided. Furthermore no visions of death or destruction have been shown in the film.

³⁰¹ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, 127. “The editors of the *Bulletin of the Atomic Scientists*, for instance, observed in 1954 that ‘an untoward event tomorrow may trigger a tense world to erupt in flames of atomic or thermonuclear warfare, that there will be ‘no place to hide’ for the great masses of civilized mankind.’”

³⁰² Kristina Zarlengo, “Civilian Threat, the Suburban Citadel, and Atomic age American Women,” *Signs* 24, no. 4 (sum. 1999) University of Chicago Press: 930 par. 1, <http://www.jstor.org>. “Nevertheless, it was exclusive, extensive, and penetrating at the time. Atomic age public information provided guidelines for civilian behavior during nuclear war that indicated not just how to duck and cover but also how good Americans, and good American women, should behave in light of an enemy threat that included them among the targets.”

and threat of nuclear devices in general.³⁰³ As we will see in the 1960's, the push for personal shelters increased dramatically.

II. By Bomb's Early Light

The 1960's through the 1970's offered our country the opportunity to implode itself rather than waiting for a foreign power to blow us up. That tumultuous period saw many extreme changes and challenges for our society.³⁰⁴ From Sputnik to the moon; Martin Luther King Jr.'s assassination and the Civil Rights Era; to the assassination of John F. Kennedy; from sit-in protests and Woodstock to the massacre at Kent State; from Vietnam to Watergate; and from nuclear power to the OPEC oil

³⁰³Ken Cooper, "Zero Pays the House," *Contemporary Literature* 33, no. 3 (fall, 1992): 530 par. 1, <http://www.jstor.org>. "In a 1957 booklet distributed to anxious Nevadans, the Atomic Energy Commission calmly reassured that 'Your best action is not to be worried about fallout...Please bear in mind that it is extremely unlikely that there will be fallout on any occupied community greater than past low levels.' 'The AEC carefully managed public opinion through films, brochures, and classroom demonstrations and even helped the Boy scouts establish an atomic energy merit badge.'" Anthony Leviero, "U.S. Twice Banned Data on Fall-Out," *New York Times*, February 22, 1955, 8, <http://www.proquest.com>. "Last Tuesday it was revealed that the hydrogen bomb tested a year ago had polluted a 7,000 square mile area...They believed that the group that had been discouraging atomic discussion was concerned with the effect on this country's allies. They also believed another motive was to hold down discussion until better counter measures for the civilian population had been worked out." Jean-Christophe Agnew, ed., *A Companion to Post-1945 America* (United Kingdom: Blackwell Publishers Ltd., 2002), 512. "...this deadened cultural mood to the efforts of government officials and other opinion leaders to emphasize the future benefits of the peaceful atom, the feasibility of civil defense, and the need for supremacy in the arms race." *New York Times*, "Defense Exhibits Going on the Road," *New York Times*, October 12, 1951, 20, <http://www.proquest.com>. "There are to be three dimensional presentations of the war and peace uses of atomic power and exhibits dramatizing biological warfare, the new "nerve gases" and incendiary bombs, sabotage and psychological warfare." William L. Laurence, "'Atomic Cocktails' Easy Thyroid Ills," *New York Times*, June 14, 1952, 17, <http://www.proquest.com>. Other peaceful uses of radiation include Iodine. "'Atomic cocktails' of radioactive iodine...have successfully treated 884 patients suffering from over activity of the thyroid gland...The successful cases experienced from six months to five years without recurrence.'"

³⁰⁴ Agnew, ed., *A Companion to Post-1945 America*, 512. "...the government suppressed cultural dissent and public doubts about nuclear weapons during the 1950's, but a cultural rebirth during the 1960's forced America to come to grips with 'previously disguised Cold War reality,' ...described as 'immoral, insane, deadly-and ridiculous.'"

crisis; the United States was reeling from rapid change. The early 1960's faced the closest we ever came as a society to a nuclear war with the Cuban Missile Crisis, and yet with newly created organizations that still exist today in NATO; we were able to keep old Russia at bay.³⁰⁵ For the most part, the time period of 1960-1979 could be considered as the height of the Cold War, especially when the Cuban Missile Crisis in considered. Stereotypes and gender roles were blown away with newly developed thoughts and attitudes. Gone were the days of women being the generals of the home, and now came suburbia, and the interstate highway system. As we will see, the United States as a whole changed its outlook on life, especially when the power of the United States' arsenal was revealed due to the then Soviet Union flexing its muscle.³⁰⁶

³⁰⁵ Carrie Rossenfeld, Atomic Archive, AJ Software and Multimedia, www.atomicarchive.com. Key events during the 1960's and 1970's: November 15th, 1960 the USS George Washington and its 16 Polaris A1's begin their first patrol, along with Atlas and Titan ICBM's. Various nuclear tests occur between the United States and the Soviet Union. On July 8th, 1962 an electromagnetic pulse from a high altitude nuclear test knocked out street lights in Oahu Hawaii; of the same year, October 16-28 the Cuban Missile Crisis. October 16th, 1964 China explodes their first nuclear device. 1966 saw the United States roll out their Minutemen ICBM's which were featured in the movie *The Day After* (1983). 1971 the first Poseidon submarine based ICBM's were introduced to the United States fleet. May 26th 1972 enacted the Anti-Ballistic Missile (ABM) treaty as well as the Strategic Arms Limitation Treaty (SALT) signed by President Richard Nixon and Soviet General Secretary Brezhnev. A milestone on July 7th, 1977 the United States tested the neutron bomb where the deadliest effects came from radiation. March 28th 1979 caused panic within the United States when Three Mile Island Nuclear Power Plant suffered a partial core meltdown. Finally December 26th, 1979 the Soviet Union invades Afghanistan which eventually leads to men like Osama Bin Laden to retaliate against both former Cold War powers.

³⁰⁶ Sidney Lohman, "News and Notes From the Studios," *New York Times*, March 15, 1953, X 13, <http://www.proquest.com>. "Operation Doorstep", the atomic bomb tests at yucca Flat, Nev., will be brought into the nation's homes with three pool telecasts over the ABC, CBS, and NBC networks." Viewers will take a tour of the of the target area, then will watch the actual blast, and then will tour the buildings after the explosion with electronic cameras. Paraphrased.

Women took on different roles during the 1960's.³⁰⁷ One of the most prevalent views of women from the time period, especially glorified by the *James Bond* franchise, was that of a seductive "bombshell," capable of deceit with their inherent beauty and secrecy.³⁰⁸ An alternative and more realistic view of women was the one of those who actually lived in suburbia. Women and children were seen as the new soldiers of our nation, where deterrence was the call to arms.³⁰⁹ Combined with their domestic duties as child nurturers, women were to control the bunker and teach their children deterrence.³¹⁰ If an atomic event were to occur, it would have been the women of the nation cooking for the rescuers; namely their children, while the men would be off to war.³¹¹ Women of the suburbs were seen as sanity devices who controlled domestic technology, were attractive not gorgeous, and could mediate

³⁰⁷ Agnew, ed., *A Companion to Post-1945 America*, 512. "Elaine Tyler May (1988) suggested that concern about atomic war during the 1950's played a significant role in reasserting traditional domestic responsibilities and gender roles for American women."

³⁰⁸ Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic age American Women," 946, par. 1. "She represented raw power of a kind frequently associated with the atom bomb... In any case, the bombshell—the deeply desirable, unattainable woman with an inflated body and intense sexuality—was a steadfast atomic age feminine ideal." When observing that fact it only seems fitting that when Air Force pilots named their bombers, they usually took a feminine name and had a depiction of a scantily clad woman on the nosecone. Page, 948; "I won't kid you about the bomb, I've seen what it can do... It's deadly, it's like a woman, I mean never underestimate its power, don't lose your head, use it." Alan Nadel, *Containment Culture: American Narratives, Postmodernism, and the Atomic Age* (Durham, Duke University Press, 1995), 152. "In making this connection, the image of James Bond reconciles the implications of *Playboy* to the politics of the cold war. No longer is it the woman's role to fight communism by containing the sexual energies of men; in the world of James Bond the men continue to fight even more effectively by making their indulgence a form of containment."

³⁰⁹ Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic age American Women," 940, par. 1.

³¹⁰ *Ibid.*

³¹¹ *Ibid.* *New York Times*, "Youth Role Cited in civil Defense," *New York Times*, June 27, 1951, 11, <http://www.proquest.com>. "The civil defense program becomes of paramount importance to young people because 'you will grow up in a civil defense atmosphere'... 'The more basic training and skill you can acquire now to equip you to protect yourself and to assist your neighbor'... Junior red Cross members could assist by taking courses in first aid and home care of the sick...' the greatest danger in an atomic attack is that of fire. This means to us that an extra effort has to be put forth to promote fire prevention."

disputes within the household.³¹² In order for our nation to overcome a nuclear attack, “feminine courage, and strength of mind and heart...and motherhood qualities,” would pull us up out of the holocaust.³¹³ The Federal Civil Defense Administration catered to the needs of the suburban women by creating pamphlets asking if they had their “grandma’s pantry” ready and stocked.³¹⁴ Some books described what they potentially would see if a bomb were to explode today; women would be assisting doctors, tracking children, and holding up the general store for food rations.³¹⁵ Cause for alarm hit women of the 1960’s when *Redbook* released information that strontium-90 which was present in milk and harvest wheat in the Midwest had an adverse effect on children’s health; strontium-90 was directly related to testing of nuclear weapons.³¹⁶ *Good Housekeeping* finally urged women to understand that if an atomic bomb were dropped on the United States it probably would be within a few hundred miles of us, meaning it would be up to the women to make sure they had adequate shelter provided and stocked.³¹⁷

³¹² Ibid. Zarlengo, “Civilian Threat, the Suburban Citadel, and Atomic age American Women,” paraphrased 930; 943. “Public information encouraged atomic age suburban women in particular to imagine themselves as warriors in training.”

³¹³ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, paraphrased 141.

³¹⁴ Ibid., 142. *New York Times*, “Steps to Survive Atom Bomb Given,” *New York Times*, July 17, 1955, 15, <http://www.proquest.com>, paraphrased. The Federal Civil Defense Administration released a leaflet on 6 steps to survive the bomb. 1.) The family is the mainspring of Civil Defense... Take the Red Cross First Aid and Home Nursing courses. 2.) Now your local signals (air raid sirens) warning of imminent attack. 3.) Know your local Conelrad station. Hence the need for emergency radios in the event of a nuclear or natural disaster. 4.) Follow evacuation instructions on the radio, avoid the cities, or get out of them as fast as possible. 5.) Build a home shelter that contains supplies such as water, food, clothes, ammunition, radio, any other necessary supplies. If there is a sneak attack you are protected, or you could still be subject to fallout, or any natural disaster such as a tornado; a fallout shelter is a great item to have. 6.) know the facts about radiational fallout, if you get any on you immediately wash it off with a strong soap. Listen to the radio for other instructions on particular types of fallout.

³¹⁵ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, paraphrased 143.

³¹⁶ Ibid..

³¹⁷ Ibid., paraphrased 146.

A new trend of thought began to pervade American society that was started in the 1950's through films such as *Duck and Cover*, and that was self-reliance. In the event of a nuclear war, who knew what type of government would exist; therefore, it was up to the American people to defend themselves against a potential enemy invasion. The United States knew from experience that the first casualties of a nuclear war would be civilians.³¹⁸ As a result of the Cuban Missile Crisis many went out to purchase handguns, for fear of looting or other problems regarding the safety of their families.³¹⁹ There was further need to fortify the home and community. The concept of fallout shelters in public buildings and bomb shelters in residential basements became a reality. For the first time, we saw families storing supplies for the worst case scenario. First aid kits, batteries, fresh water, emergency radios, guns and ammunition, and other miscellaneous items were placed in these shelters. The Civil Defense Administration urged all to conduct regular defense drills to try and eliminate any panic that would cause mass hysteria and create a grave danger for the nation.³²⁰ A hierarchy was established on how Americans should prioritize their personal protection plan, "...wherein faith ascends from oneself to one's neighbors to one's cause, nation, and finally God."³²¹ Besides shelter plans, some had proposed a

³¹⁸ Ibid. 928. "From the Pentagon to the household, from the boot camp to the schoolyard, Americans were enthralled by efforts to devise strategies for preparing for and surviving weapons aimed at civilians and for coping with a horror of the bombs that was understood both as a devastating repercussion of their past use and an anticipation of their future deployment".

³¹⁹ Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic age American Women," 939.

³²⁰ Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic age American Women," 931, paraphrased previous three sentences.

³²¹ Ibid. *New York Times*, "Civil Defense Problems," *New York Times*, February 18, 1953, 30, <http://www.proquest.com>. "400 planes which could drop bombs capable of killing or injuring as many as 11,000,000 of our people...for improvement of our air and sea defenses...Protection against enemy attack at the civil defense level is both a national and a local responsibility. It is difficult to believe that our state, county and city governments are contributing their fair share of meeting this responsibility when they match each federal dollar with only twenty five cents." *New York Times*, "City Drafts Plan

new atomic city. City design would be based on an empty, less desirable or sacrificial center where it would not impact the population as much.³²² In conjunction with the Interstate Highway Act, the need for a fortified suburbia became more apparent; whereas, the city was assured destruction, the highway acted as an escape route from the city.³²³

When the American public began to receive full disclosure on the threat of nuclear weapons in the early 1960's, the call for nuclear shelters increased.³²⁴ Although scientists urged that the use of personal fallout shelters would do relatively little to keep one safe,³²⁵ *Life* magazine in 1961 began America's fallout shelter craze with a feature story that said that 97 out of every 100 Americans would be saved with a fallout shelter.³²⁶ New York State's Civil Defense Lieutenant General, Clarence R. Huebner, thought that by the mid-1960's almost every American would be living in

for Atomic Attack," *New York Times*, June 14, 1950, 12, <http://www.proquest.com>. "The planning agencies are working on the assumption that 100,00 casualties would result from one atomic bomb on the city...General planning to handle the results of atomic attack assumes that the Federal, state and city agencies will exercise the primary responsibility. Civilian agencies will reinforce the public bodies."

³²²Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic age American Women," 934.

³²³ *Ibid.*, 936.

³²⁴ Gladwin Hill, "'Town' Does Well in Atomic Blast," *New York Times*, May 7, 1955, 6, <http://www.proquest.com>, paraphrased. Yucca Flat Nevada was the site of an Atomic bomb test. Homes of varying design and construction were created for the blast. Two homes nearest the blast site made of brick and another of normal timber frame construction were destroyed. Ranch homes made of either concrete or cinder block escaped with only the windows blown out. Flying debris was determined to be the killer and potentially the initial shockwave of the blast. It was noted that concrete dome shelter structures failed miserably but the trenches covered with three foot of earthen works in that the soldiers emerged from (their distance from the blast was not released) after the blast were fine. Industrial structures also fared well with the exception of flying debris. Even mobile homes were tested and the worst case was that they were blown over with window damage. Radiational levels were deemed acceptable only a few hours after the test; additionally the military cooked up exposed food that were either canned or frozen deemed acceptable to eat. Only one dog died out of fifty tested and for the most part animals fared well in the experiments. One of the three metal homes were intact making it clear that concrete shelters were durable in the event of an nuclear attack.

³²⁵ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, paraphrased 79.

³²⁶ *Ibid.*, paraphrased 81.

these underground bunkers for fear of imminent attack.³²⁷ Others argued that it created a false sense of cowardice since it was not in Americans' culture to hide from adversity.³²⁸ Finally, others placed a deterrent factor on shelter use; if shelters were built and were effective enough the nation could rebuild, but life would become very primitive for a long while.³²⁹ What of the schools though? For the most part, minus businesses or other large buildings of public gatherings, it would be the children who were most vulnerable.³³⁰ Questions arose such as what would school fallout shelters protect against: just the nuclear blast including heat and extreme light, or the radioactive fallout, or both?³³¹ Funding of these new shelters also came under some intense scrutiny; it should be up to the federal government for the funding.³³² Schools that would transition to the shelter mode would lose windows, but gain state of the art ventilation systems and lighting, and stockpile food supplies.³³³ Unfortunately, the design of these new shelters hindered prevailing theory of school design practice; load-bearing walls would create a confined and obscure structure not coinciding with

³²⁷ Ibid., paraphrased 86. Jack Raymond, "General Defends Atomic Shelters," *New York Times*, June 30, 1957, 14, <http://www.proquest.com>, paraphrased. Huebner also urged that Americans had no idea of the true power of atomic weapons. The blast ripped hinges from the concrete walls and caused sufficient cracks in concrete walls fourteen miles away. Despite the fact that American soldiers were under trenches for protection of the blast, too much was being withheld for security reasons including some military tests. Six concrete domes of various materials and strengths were destroyed from the blasts. General Huebner noted that any defect in the structure would make survival of an atomic blast impossible from the resulting shockwave that would crush the building.

³²⁸ Rose paraphrased 87. Although one could counter argue that one would be vaporized without protection returning to the theme of controlled mass hysteria.

³²⁹ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, paraphrased 87-88.

³³⁰ *New York Times*, "Shelter Plan Urged," *New York Times*, March 24, 1952, 19, <http://www.proquest.com>, paraphrased. Minor alterations to existing buildings would allow for up to 13,000,000 more people to be safe from the effects of a nuclear attack. People will be the safest if in the event of a nuclear strike to enter office buildings, stores, schools, theaters, and industrial facilities; they should be able to shield you from the intense heat, light, and radiation from the blasts. There should be at least one such shelter every block, if possible.

³³¹ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, paraphrased 133.

³³² Ibid., paraphrased 135. The federal government would provide incentives to schools instead of direct funding for the shelters.

³³³ Ibid., paraphrased 134.

the free flow ideals.³³⁴ California public schools argued that for the cost effectiveness of such bold plans, it would be feasible to build a good quality school and a fallout shelter as two separate units rather than one.³³⁵ Even in Greece, New York, voters rejected the idea of building a new high school with a fallout shelter by a margin of two to one, yet they approved the idea to build the high school alone. They rejected the idea of a shelter since they emphasized a nuclear war culture was irrelevant.³³⁶ Abo Public Elementary in Artesia, New Mexico did build their school underground and made it a fallout shelter. The building itself contained two wells for water if the standard water system were to become contaminated, air filters, bedding, food supplies, emergency power supply, a decontamination room, and a morgue. The bunker had enough space for their students and other students from the surrounding area, but if you were not of the first 2,160 people you would be locked out by two 1,800 pound steel doors.³³⁷

In 1959, a film was created to demonstrate what could happen if the entire northern hemisphere was blown off the face of the earth and only Australia remained. The film was called *On the Beach*, featuring Gregory Peck, Fred Astaire, Ava Gardner, and Anthony Perkins. A lone nuclear submarine slips into Melbourne harbor

³³⁴ Ibid., paraphrased 135.

³³⁵ Ibid., paraphrased 136.

³³⁶ Ibid., paraphrased previous 2 sentences 138. Interesting fact according to the *New York Times*, "Civil Defense Lists 70 'Target Areas,'" *New York Times*, September 18, 1953, 10, <http://www.proquest.com>: "Civil Defense officials emphasized the list had been made public after the sites of certain military installations, including atomic energy plants, had been eliminated for security reasons. Such target areas remain a Government secret, and no hint as to their whereabouts is in the list that was made public." Albany, Schenectady, Troy, Buffalo, Rochester, Rome, Syracuse, Utica, and New York City were all on the seventy first strike target areas. A combined population of over 15,500,000 New Yorkers would have been killed within twenty minutes of the first strike.

³³⁷ Rose, *One Nation Underground: The Fallout Shelter in American Culture*, paraphrased previous two sentences p.138.

and finds that there are survivors. These survivors have yet to be affected by the nuclear fallout. Australian government leaders ask the sub's crew to find out the extent of the nuclear radiation in the northern hemisphere, in particular near San Diego, California. Lieutenant Commander Towers (Peck) knows his family has been lost since they had resided in Connecticut. As a result, and to try and keep him focused on the mission, the Australian liaison officer (Perkins) brings a mutual friend along. Although he begins to fall in love with the woman, he cannot forget his family. The crew sails off to Alaska to find that the radiation has not subsided and so sets off for San Francisco. While in San Francisco, one of the crew men leaves the ship. Towers notices the radio officer has departed the ship, so they set out to look for him, only to find out he is planning on staying since his family did not make it; he does not want to either. In San Diego, the crew sets out to find the source of a distress Morse Code signal, hoping it is a human trying to communicate for help; instead it is a shard of glass. Realizing that everyone except for them has died, they return to Australia and began to live out the rest of their lives. Attending sporting events and other things of the sort, they have fun; until one of Towers' crew then begins showing signs of radiation poisoning, signifying that the winds have shifted. Realizing their fate, the crew elects to return to die at sea. Upset with the result, Moira decides to follow Towers to the docks until he leaves. Melbourne governmental officials have given their citizens a sedative to allow them to die peacefully, since the radiation was there and nothing could prevent their deaths. The movie closes with a desolate Melbourne

with nothing alive or flowing except for a banner that states, “There is still time...brother..”³³⁸

Originally planned to be released on November 23rd 1963, *Dr. Strangelove* was postponed for release until January of 1964 due to the assassination of John F. Kennedy. The film producers thought it would have been in poor taste to roll out a dark movie such as that and for good reason. Set in the height of the Cold War, General Jack Ripper sets up the bombers to invade Russia and he is the only one who can recall them. Unfortunately, the General has exceeded his authority and no matter what efforts may be made, the bombers will still drop their payloads. A Royal Air Force Captain tries to convince Ripper to give him the code, or at least recall the bombers; instead, Ripper notifies the Captain of how the Russians intend to put fluoride into the water supply. Making no headway with Ripper, the President summons the Soviet Ambassador and together they call the Premier of Russia to disclose the location of the bombers, if necessary to shoot them down. The army, under the command of Colonel Bat Guano, finally gains access to the room where Ripper is holed up. Ripper commits suicide and it is up to the RAF officer to decipher the code as he remembers it. The RAF officer gets through to the White House to deliver the code. The Russians try to shoot down the bombers in the air; one in particular is resilient. Piloted by Major “King” Kong, his plane is hit with a SAM missile, which knocks out the secret radio and they have to improvise their target of choice. While all of that transpires, the Russians disclose that if a nuclear device were

³³⁸ The Internet Movie Database, *On the Beach* (1959), The Internet Movie Database, <http://www.imdb.com/title/tt0053137/>.

to detonate over Russia, then a Doomsday Device would destroy all life on Earth. Dr. Strangelove advises the President that the device has obvious flaws. Major Kong gets set to drop the bomb, but with the bomb doors failing to open, he cuts the wires and rides the bomb to its target riding it like a bucking bronco. Ensured of total destruction, Dr. Strangelove estimates that if some Americans were placed in fallout shelters for 100 years, then society might survive. Rather, the military advisors recommended. Russia could come out earlier and try to take over the United States and emphasized Mutual Assured Destruction. The film closes with images of countless bombs going off utterly destroying civilization.³³⁹

III. The Day After

For the most part we all have lived at least part of our lives in the death rattle of the Cold War. The 1980's and 1990's saw a tremendous shift in our internal politics, as well as that of the Soviet Union.³⁴⁰ Popular Culture helped pave the way

³³⁹ The Internet Movie Database, *Dr. Strangelove* (1964), The Internet Movie Database, <http://www.imdb.com/title/tt0057012/>.

³⁴⁰ Carrie Rossenfeld, Atomic Archive, AJ Software and Multimedia, www.atomicarchive.com. Key events of the 1980's through the 1990's: August 10th, 1981 President Reagan reauthorizes the production of the neutron bomb. March 23rd, 1983 President Reagan announces the development for a missile defense system dubbed as "Star Wars". April 1986 Chernobyl nuclear power plant in the Soviet Union melts down, heavy amounts of radioactive waste are released. 1988 both the United States and Soviet Union sign an agreement that will notify each other of Missile Launches, as to clear any confusion that may be caused. November 8th, 1989 the Berlin Wall falls thus ending the Cold War. July 31st, 1991 President Bush and President Gorbachev sign the START treaty to reduce the number of warheads on ICBM's by half. Bush also signed a measure to fully develop a missile defense system. The Commonwealth of Independent States covers the former Soviet republics. 1994 saw the United States and Russia reveal secret testing of atomic weapons on humans. 1998 India and Pakistan trade nuclear tests over a three week period that threatened stability in the region especially over the disputed region of Kashmir. July 23rd of 1999 saw President Clinton sign the National Missile Defense

to bring down that wall in Berlin. Singers such as Madonna and Michael Jackson transcended life, hitting deep into the hearts of Russian youth. Pacifism became the way of life. Movies, dress, and all other aspects of life confirmed the material world and the “me generation” in which no one could stop them. Deterrence failed but not without a tremendous leader who, if nothing else, forced the Russians’ hand as well as ours.

When Ronald Reagan came into office, the Soviet Union had already begun to show signs of internal collapse. “It is in fact, becoming increasingly evident that the principle danger to world peace is not posed by the nefarious schemes of Communist plotters set on fomenting revolutions and overwhelming the West with military might, but by the Soviet Union’s reaction to failures and frustrations that stem from incurable flaws within its own creaky system.”³⁴¹ The root cause of Soviet collapse was a decelerating of the economy combined with an increased presence of their troops on the Eastern Front with China.³⁴² Although signs had indicated that the Soviet Union was rapidly weakening, the United States had to remain on guard. There was still a very large possibility that the Soviet Union could strike the United States first, eliminating our Minuteman missiles and making our first strike weak. If we were to have a conventional war in the Persian Gulf, the Soviets could have launched up to 200 ICBM’s with multiple war heads in conjunction with their long-range bombers, and rendered the 1,000 Minuteman missiles useless. With the Minutemen

act to deploy a system, and September 30th an accident in a Japanese uranium processing plant gave 55 people radiational exposure.

³⁴¹ Harrison E. Salisbury, “The Russia Reagan Faces,” *New York Times*, February 1, 1981, SM8,

<http://www.proquest.com>.

³⁴² Ibid.

missiles eliminated, the President of the United States would have to make a difficult choice and attack key Soviet government and military targets, and invite certain destruction due to the lack of our ability to further defend ourselves. At the time, the Soviet Union had 7,000 nuclear weapons to choose from, where we had over 8,000 and both arsenals were still growing at an alarming rate.³⁴³ Under the Carter administration, many in the military had feared that the Soviets had gained a tremendous advantage over the United States, and that it would take a decade to match their gains.³⁴⁴ What the Soviets and Americans did not realize was that a new administration would take drastic measures to ensure a sound defeat of Communism in Russia, while at the same time aid Russia in transitioning into a democracy.

President Ronald Reagan, a former Governor of California, and a former actor, created a winning attitude when it came to the Cold War. His not taking “no” for an answer attitude showed the Russians that the United States was ready to escalate to a full nuclear war if we had to. Our nation flexed its muscles every day, more so than any other time in our history. Increasingly placing the pressure on Russia to respond, President Reagan expanded our nuclear fleet beyond the capability of Russia, ensuring something far beyond Mutually Assured Destruction. Depressing the Russian economy, Reagan had the Soviet Union begin the process of negotiations to end the war. It did help that President Reagan also told the Soviets that we would build a missile defense system and furthermore, expand to a space-based defense platform if needs be. Soviet Secretary General Mikhail Gorbachev offered to his

³⁴³ Leslie H. Gelb, “Vulnerability Assumes the Soviets Will Strike First,” *New York Times*, October 4, 1981, E1, <http://www.proquest.com>, previous 5 sentences was paraphrased.

³⁴⁴ Drew Middleton, “Pentagon, Despite Budget Increase, Sees Decade to Match Soviet Gains,” *New York Times*, January 7, 1980, A1; A16 column 3, <http://www.proquest.com>.

people two key concepts that were received well in the United States: glasnost, which means democratization and perestroika or new thinking.³⁴⁵ Unlike his predecessors such as Stalin, Gorbachev tried to introduce needed change in a more humane way, to make the Soviet Union a superpower that could balance political and economic strength with military might.³⁴⁶ Not all Americans were sold on Gorbachev's intentions but nonetheless there were changes occurring in Russia.³⁴⁷

In August of 1991, a coup d'état occurred in the Soviet Union. After the Berlin Wall had fallen in late 1989, an attempt was made to try and halt the rapid splintering of the Soviet Union. In order to halt that splintering process the Soviet Republics of Russia, the Ukraine, and Belorussia came together to form the Commonwealth of Independent States, to aid Russia in transitioning from the old Communists ways into a new unified country. On August 23rd, Boris Yeltsin suspended the Communist party in Russia and charged it with aiding in the coup attempt. Following the two day bloodless coup, Gorbachev, over the course of the next month, resigned from the government and urged the old hardliners to do the same. He led the temporary Congress of People's Deputies until a bi-cameral congress was in place with members from the Russian republics sitting. Yeltsin became a republican leader and quickly transferred power from old central agencies into Russian governmental control. After several votes from former Soviet bloc

³⁴⁵ William H. Luers, "A Glossary of Russia's Third Revolution," *New York Times*, July 7, 1987, A27, <http://www.proquest.com>. Additionally for more on those terms Perestroika and Glasnost go to MATRIX, the Center for Humane Arts, Letters and Soviet Sciences Online, Seventeen Moments in Soviet History, National Endowment for the Humanities and Macalester College, www.soviethistory.org.

³⁴⁶ William H. Luers, "A Glossary of Russia's Third Revolution," paraphrased.

³⁴⁷ Abraham Brumberg, "Moscow Seen Clearly," *New York Times*, September 2, 1987, A27, <http://www.proquest.com>, paraphrased.

countries to freely join the new Commonwealth, on December 25th 1991, Gorbachev officially announced the dissolution of the Soviet Union and resigned as President.³⁴⁸

In 1983, a made-for-television movie came out to scare the American citizens with a “what if” situation. Also, in my opinion, that movie, which pulled an audience of over 100 million viewers when it premiered, sealed Ronald Reagan’s victory in the 1984 election by helping him in sweeping all 50 states. *The Day After* was released in 1983 to a national television audience. Of all the movies I have ever seen regarding a nuclear war, that movie was by far the best. Set in Kansas, the film starts out with some Air Force technicians inspecting Minute Man missile silos. While at the silos and testing the ignition systems, a launch sequence began; this time it was not a test. It began when the Russians decided to invade West Germany while also attacking a United States warship in the Persian Gulf. In the process, the United States retaliates, only to have NATO headquarters attacked with a nuclear missile. Full-scale nuclear war is now imminent. While people have been going about their lives, a nuclear war is underway, and there is nothing anyone can do to prevent it. In Kansas City, the Chiefs are playing while air raid sirens begin to blare; many try to create makeshift fall-out shelters to no avail. Many are stuck on the interstates trying to either get into or away from the city.

By far the most graphic movie of its time, it caught everyone’s attention and scared the hell out of you. In the movie, Steve Guttenberg is sitting in his car when all of a sudden everything that runs on power, whether electric or otherwise stops due to

³⁴⁸ MATRIX, the Center for Humane Arts, Letters and Soviet Sciences Online, Seventeen Moments in Soviet History, National Endowment for the Humanities and Macalester College, www.soviethistory.org, paraphrased previous sentences in paragraph.

the electromagnetic pulse that hits before everyone sees the detonation. Approximately thirty miles away, a huge blast, brighter than the sun, flashes above the city, instantly vaporizing anyone close to ground zero; then another similar blast occurs, causing anyone who looks directly at it to go blind. While they shield their faces with their hands, one can see the bones of their hands like it is an x-ray. During the blast the film shows bodies being incinerated and buildings blown away, if not with the initial blast, then with the shockwave. In the suburbs, families that have fallout shelters stay under ground until the chaos has subsided, yet they have to protect their families. Looters become an issue and the movie portrays that martial law becomes the way of life. Many wait to hear radio broadcasts as to the extent of the damage, or at least who is now in charge of the Country. People gather near the hospitals for treatment but they have no power and the patients are endless, ranging from severe burns and blindness to acute radiation poisoning. Bodies that looked like they are from Pompey litter the streets near buildings in the city. In a way it almost seems that the director takes a shot at the 1951 film *Duck and Cover* by the way he portrays the bodies lining the walls of buildings and the failures of adequate protection of city fallout structures. Of course the ending of the movie portrays that life will become a constant struggle, since the food and water systems are contaminated as well as there being rampant disease. Maybe it would not be that much of a stretch from *On the Beach*, where everyone is destroyed, if not from the initial blasts then the radiation.³⁴⁹

³⁴⁹ The Internet Movie Database, *The Day After* (1983), The Internet Movie Database, <http://www.imdb.com/title/tt0085404/>.

The Hunt for Red October was the pinnacle for Cold War espionage films. Set in the ocean, the Red October was a typhoon class nuclear attack sub that had a major advantage; it could stealthily come up onto the American coast line and deploy its nuclear payload without being detected due to an advanced drive system. Marko Ramius (Sean Connery) plans to defect to the United States and hand over the latest nuclear submarine to the CIA in exchange for asylum. Captain Ramius begins the shake-down cruise of the vessel with every intention of making the Soviet Union want to kill him. Ramius sends a letter to the Russian fleet admiral notifying him of his intentions to defect. The order is given to find and destroy the submarine. Jack Ryan of the CIA is asked to find out whether Ramius' intentions are true, that he is trying to defect. In order to find this out, Jack has to reach Ramius before his own fleet or the Russian fleet does. Ramius has to evacuate the crew of his ship in order to make sure the defection goes undetected among his crew, so they fake a nuclear meltdown of one of the reactors. Trying to ensure that everyone is off the boat except for senior staff, who were in on the defection, Ramius allows the Americans to board the vessel through a game of Morse code and pinging the other vessel. Surrounded by United States' warships, the Russian seamen are picked up and are allowed to watch what is transpiring under the sea. Told that their ship is to be scuttled, they await to see the implosion.

While Jack Ryan boards the Red October, Ramius is shocked to find out someone on board remained and is set to destroy the vessel rather than let it go into enemy hands. Assisting in the defection is the USS Dallas, a Los Angeles class fast attack submarine, while a Soviet submarine is also in the area trying to destroy the

Red October. In a very unique series of events, we find that the Red October, although for her size is relatively fast, could be imploded with a nuclear device aboard. Jack Ryan is sent to kill the man who is trying to blow her up, while at the same time the other Russian submarine fires two torpedoes to bring her down. The Dallas positioned itself to take on one of the torpedoes and is chased out of the water, where the Russian crew is amazed at how Ramius has been fighting the Americans. Meanwhile, on board the Red October, they maneuver enough to destroy the Russian submarine with its own torpedo, the one that had been fired meaning to destroy the Red October. In Washington, the Russians tell the United States that they had lost another submarine, which was simply not true.³⁵⁰

Once the Iron Curtain fell, many movies involving the United States and Russia began to be produced. Americans were accepted by Russian society more so than ever before. Unfortunately, it was when the Russian's former satellite countries began to break away that problems developed. Terrorism and the threat of dirty bombs became the next nuclear fear.

IV. Sponge Bob SquarePants

In our last and most current time frame we will look at the 21st century. With alleged threats in Iran, Iraq, Syria, and North Korea; our country has faced new nuclear threats that affect our service men and women abroad, and the possibility of a

³⁵⁰ The Internet Movie Database, *The Hunt for Red October* (1990), The Internet Movie Database, <http://www.imdb.com/title/tt0099810/>.

strike on our own country. September 11th 2001, the United States was attacked by either foreign terrorists or, as some conspiracy theorists have postulated, by our own government. Either way, it was the second time ever that our country was attacked by a foreign enemy on our soil. Our fear has been either a briefcase bomb from the former Soviet Union or a dirty bomb; a conventional warhead wrapped with nuclear garbage. When the newly created department of Homeland Security was formed, it created a color code threat level system as to the probability of an attack, and also increased the defenses around some United States cities. For the most part, Americans overall have seemed to take the potential nuclear threat in stride. After having dealt with the threat for the past 60 years, we have resolve and know that unless it is a rogue nation, the chances of a protracted nuclear war are slim.

For the past eight years, many events have kept Rochestarians watching what happens around the world. Ever since the terrorist attacks of 2001, there has always been a concern over the use of dirty bombs in public places. A dirty bomb is where a conventional weapon has been slightly modified to include very low levels of nuclear garbage; the concept is that when the device is detonated and high levels of radiation are given off, it will affect people in a surrounding area who are not killed in the initial blast.³⁵¹ A few possibilities emerge as to how these bombs can be made. Some of the old briefcase bombs of the former Soviet Union still exist and were not accounted for, and on the black market there is the availability of nuclear waste for a

³⁵¹ Corydon Ireland, "Panic Is Big Part of Fallout," *Rochester Democrat and Chronicle*, June 11, 2002, 3A, <http://www.newsbank.com>. Accessed through State University of New York College at Brockport permission. University of Rochester radiation safety officer Andrew Karam offered a dirty bomb would hurt a few people but it would be more of an inconvenience factor.

price that can be used in conjunction with a conventional bomb.³⁵² For a few years after 2001, the number of potential bomber cases rose significantly. Jose Padilla from Chicago was arrested for plotting to explode a radiational bomb. Local reaction about this particular case urged that the administration and intelligence community become better trained and create new forms of technology to detect these devices and place the detectors in hospitals or other places of public gathering.³⁵³ While during the Cold War we knew who our enemy was, nowadays we do not. Our enemies could be domestic or the terrorists responsible for carrying out the September 11th attacks; either way, the question would be, are we prepared? Rochester officials believe that we are well prepared for an attack, but to prevent one would be a completely different story.³⁵⁴ The intention of a dirty bomb closely resembles that of September 11th: to tear down the financial markets and cause confusion and mass panic.³⁵⁵ What if the terrorists attacked Ginna Nuclear power plant or it had a meltdown? People who live near the plant were given Potassium Iodide pills to stave off the ill effects of acute radiation exposure.³⁵⁶ Even local schools tried to scramble and answer the need for

³⁵² Ibid., The Nuclear Regulatory Commission reported that 835 devices containing low level radioactive material disappeared over the past five years and are unaccounted for.

³⁵³ *Rochester Democrat and Chronicle*, "The Dirty Bomb Threat," *Rochester Democrat and Chronicle*, June 12, 2002, 10A, <http://www.newsbank.com>, paraphrased. Carol Ritter, "Sept. 11 Attacks Remind Us We Still Can be Vulnerable," *Rochester Democrat and Chronicle*, September 7, 2002, 1B, <http://www.newsbank.com>. "Suppose they were to set off a dirty bomb right here in Rochester to spread something like the ebola virus, causing maybe 10,000 people to become critically ill. Do we have enough hospital beds for that many people at once?"

³⁵⁴ Steve Orr and Micheal Wentzel, "Vigilance Reaches New Heights as the Threat of Terrorism Through, Nuclear, Biological and Chemical Means Forces the Rochester Area to Ask Itself:," *Rochester Democrat and Chronicle*, October 7, 2001, 1A; 16A, <http://www.newsbank.com>, paraphrased previous 2 sentences.

³⁵⁵ Ireland, "Panic Is Big Part of Fallout."

³⁵⁶ Maurice E. Shils; Norman Simon, "Potassium Iodide: Policy in New York," *Science* 221, no. 4608 (Jul. 22, 1983): 318; 320, <http://www.jstor.org>. Lauren Stanforth, "Pills Offered to Residents Near Ginna," *Rochester Democrat and Chronicle*, May 3, 2007, 1B; 4B, <http://www.newsbank.com>, paraphrased. Monroe and Wayne counties are offering free potassium iodide pills to those who live within 10 miles of Ginna nuclear power plant. Local Wegman's stores will carry the pills and they are

shelter for their students. David Connors, Supervisor of the Greece School District Security, stated that the district has contingency plans if something were to happen, including lock-down rooms, heating and cooling systems that draw air from the outside, and food supplies for those who cannot go home for an extended amount of time.³⁵⁷

Other countries in the recent past have caused Rochestarians and fellow Americans to fear the nuclear age is returning. With countries such as North Korea, Iran, Syria, Pakistan, and India, many believe that the horror of Japan will be relived and this new 2nd Nuclear Age would cause the downfall of some larger societies.³⁵⁸ Fears of Pakistan's nuclear arsenal were very real a few years back, since the country could have been in the process of another military coup.³⁵⁹ Iran allegedly had stopped their nuclear ambitions back in 2003, and there was a fear that the United States would begin to bomb Iran despite their want to create nuclear power plants for energy.³⁶⁰ In response to the Associated Press report, Andy Bolger states that Iran denied any report of having a nuclear program, and that in a country where oil is plentiful why do they need to have a nuclear power plant?³⁶¹ Kenneth Hartman wrote

only effective for the first 24 hours of a release. Greg Livadas, "Disaster Plans Covers Host of Woes," *Rochester Democrat and Chronicle*, March 12, 2007, 1A; 7A, <http://www.newsbank.com>. County Emergency Plans excerpt: In Genesee County, an atomic release from Ginna could reach as far west as Batavia. Cows could detrimentally be affected by such a release (strontium-90). Of course Wayne County's plan offered shelter opinions and options should something happen at Ginna but were not released since they were sensitive in nature.

³⁵⁷ Jeffrey Blackwell, "Schools Evaluate Emergency Plans," *Rochester Democrat and Chronicle*, February 13, 2003, 6A, <http://www.newsbank.com>, paraphrased.

³⁵⁸ Michael Dobkowski, "For 60 Years, Threat Ignited by Hiroshima has Lingered," *Rochester Democrat and Chronicle*, August 5, 2005, 9A, <http://www.newsbank.com>.

³⁵⁹ *Rochester Democrat and Chronicle*, "Pakistan's Nukes," *Rochester Democrat and Chronicle*, November 20, 2007, 14A, <http://www.newsbank.com>.

³⁶⁰ Andy Bolger, "Letters to the Editor," *Rochester Democrat and Chronicle*, December 9, 2007, 25A, <http://www.newsbank.com>.

³⁶¹ *Ibid.*, paraphrased.

a letter to his late grandmother, a Holocaust survivor, where he talked about how Iran was racing to develop nuclear weapons. He mentions that they would need only one shoulder-fired missile to destroy most of Israel or one more to kill most of our troops in Iraq, that between North Korea, Russia and China he fears for his children's future in a world where France still sells nuclear technology to Tehran and Venezuela.³⁶² Columnist Mark Hare agrees with Hartman, stating that President Mahmoud Ahmadinejad promises the end to the state of Israel and openly talks about Iran becoming a nuclear power.³⁶³ In some opinions though, we do not help our own cause. For at least three Decades, the United States has tried to put into effect an active missile defense system. Matthew Lenoe urges us that Russia will once again target our allies in Europe if we put a missile defense system in place. President Bush wanted to place some defenses in European outposts in case Iran launched a strike at our European allies; Vladimir Putin argued that the defense system's intention would be to eliminate Russia's first strike capability on the United States. Additionally, we have sent either our top military advisors or troops into the former Soviet Republics to aid in their democratic agendas.³⁶⁴ Even our often tenuous relationship with Pakistan took a hit when we re-upped with India. Our two countries agreed in principle to aiding India's peaceful nuclear program; in return, we now have an ally in the region to keep emerging superpower China in check, and have bases where we can continue to monitor the Taliban and not need Pakistan anymore, as well as having

³⁶² Kenneth Hartman, "Iranian Head is Following Hitler's Lead," *Rochester Democrat and Chronicle*, February 6, 2007, 9A, <http://www.newsbank.com>, paraphrased.

³⁶³ Mark Hare, "Iran Visits Reveals Unexpected Affection for America," *Rochester Democrat and Chronicle*, June 12, 2007, 1B, <http://www.newsbank.com>, paraphrased.

³⁶⁴ Matthew Lenoe, "U.S. Missile Plan is a Mistake," *Rochester Democrat and Chronicle*, June 7, 2007, 9A, <http://www.newsbank.com>, paraphrased previous 3 sentences.

someone close enough to keep a watchful eye on Russia.³⁶⁵ As for the North Koreans, Kim Jong-il took an economic stimulus package from the United States and dismantled their nuclear ambitions, but as of recently they have begun some minor development again.³⁶⁶

The Smithsonian Institute revised a display dedicated to those World War II veterans who risked their lives to maintain our freedoms at home. Part of the exhibit was the Enola Gay, the bomber from which “Fat Man” and “Little Boy” were dropped on Japan. Veteran groups protested the display for making the Japanese look like hopeless victims and making the United States look like they had dropped these weapons for no good cause. These men were infuriated on how the display was portrayed, that our men and women were the bad guys, and that there was no mention of the attack on Pearl Harbor.³⁶⁷ Even still today the effects of our nuclear past still haunt us. For generations we have grown up with terms such as “blown away”, blonde “bombshell”, “nuke” your food in the microwave, and finally “atomic” fireballs are so hot your head will explode. One of Nickelodeon’s hit shows is “Sponge Bob Squarepants”. Plankton, the proprietor of the “Chum Bucket,” always plots evil maniacal concepts to rule the world. Being the smallest creature in Bikini Bottom, his aspirations are quite large. Several episodes of the series vividly show an atomic type explosion. In one episode Sponge Bob’s neighbor who cannot stand him, Squidward buys an exploding pie. These flavored pies explode once ingested.

³⁶⁵ Deepak Seth, “India, U.S. are Pursuing Same Dream,” *Rochester Democrat and Chronicle*, August 20, 2007, 9A, <http://www.newsbank.com>, paraphrased.

³⁶⁶ *Rochester Democrat and Chronicle*, “The North Korea Deal,” *Rochester Democrat and Chronicle*, September 6, 2007, 8A, <http://www.newsbank.com>.

³⁶⁷ Dobkowski, “For 60 Years, Threat Ignited by Hiroshima has Lingered.”

Intending that Sponge Bob eat the pie, Squidward has a guilty conscience and plays with Sponge Bob until the end, or so we thought. While watching the sunset at the end of the day, Squidward builds up a blast wall between himself and Sponge Bob to prevent the impending blast from harming himself. Sponge Bob has Squidward count down the sunset and an explosion occurs, but they are bubble bombs that are making the noise. It is then that Sponge Bob pulls out the pie. Squidward tries to grab the pie from Sponge Bob, tips over a stone and knocks the pie over, creating an atomic blast. All one can see is the bright flash, distinctive mushroom cloud, and the aftermath: a deserted and fried Bikini Bottom. In another episode entitled "F.U.N.," Sponge Bob tries to show Plankton how to have fun. They began to sing a song where the three letters were used as acronyms, in Plankton's case F stood for fire that would burn down the town; U for uranium bombs; N for no survivors. It is amazing to see that adult-oriented cartoons that even my one year old son loves can trivialize a concept that for years plagued the citizens of the world. It seems to hark back to the 1940's and 1950's when American comedians were making fun of the Japanese with their "Atomic Aches."³⁶⁸

Finally, the last movie that I discuss comes from the minds of George Lucas and Steven Spielberg. *Indiana Jones and the Kingdom of the Crystal Skull* was the most recent installment of the franchise. Almost 19 years ago, Indy was seen fighting the Nazis and now he faces off against the Soviets. In the beginning of the movie we see a convoy of disguised Russians heading towards Area 51 in Nevada. Infiltrating

³⁶⁸ The Internet Movie Database, *SpongeBob SquarePants* (1999-current), The Internet Movie Database, <http://www.imdb.com/title/tt0206512/>. Season 1, episode 10 entitles F.U.N., <http://www.imdb.com/title/tt0769428/>.

the site, we see Indiana Jones pulled from the back of a United States Army car and asked the whereabouts of the body of an alien that was found in Roswell New Mexico. One might wonder what this has to do with this paper. In the fight scene, Indiana and another Russian officer fall onto a rocket chair that is used to test G-force on the human body. They are catapulted forward and end up near the edge of the desert. The next day Indy finds a town in the distance; he runs and finds clothes hanging on the lines and music or televisions playing. While wandering into a house he tries for water, but none was coming out of the faucet. A United States vehicle looking for him quickly enters the town but they are Russians. Trying to hide, Indy goes into the living room and realizes he is not only talking to mannequins, but he is on a test range. Air raid sirens begin to sound, Indy rushes out to find the Russians looking for him to try and escape, but they leave without him. Indy panics looking all over for some sort of shelter. Finally he looks at a refrigerator that states it is lead-lined. He quickly goes into the fridge just as the camera cut to a picture of the atomic bomb elevated on a platform. It detonates instantly, melting the plastic bodies with the searing heat. The intense light is followed by a shockwave that takes the refrigerator and throws it for who knows how far. The car the Russians were in is destroyed. A ways away from the blast the refrigerator lands; Indiana Jones emerges from it and looks behind him to see the now infamous atomic fireball. While staring at the fireball, a prairie dog comes up out of his hole and stares at Indy. Somehow Indy is picked up by United States personnel after the blast and is taken for

decontamination where we see men in radiation suits scrubbing Indy down; he survives the blast despite several historical errors but once again it is Hollywood.³⁶⁹

V. “We Didn’t Start the Fire”

Our nation introduced atomic warfare to the world. If we had not used the atomic bomb, there was a very good chance either the Germans or eventually the Russians would have. The age of innocence was lost. The “Greatest Generation” was surpassed by the deep freeze of the Cold War. For over five decades, people across the world wondered if they would ever wake up the next morning. New emerging nuclear powers joined the club. Most NATO members either had their own devices or allowed the United States to house their own. From fears of an all-out attack where the role of government and protection fell onto the citizens of her country, to fallout shelters that in reality would provide little protection from a direct strike, the foundation was laid back in the 1950’s for the Department of Homeland Security we see today. Amazingly, the items we would need for a terrorist attack and the response we need in the initial stages of an attack are exactly the same. Although gender and racial roles have changed over the years, it is still our responsibility to give our children the knowledge of what could happen if an attack were to occur. Our children have been exposed to the concepts of nuclear warfare through Hollywood glorification to their everyday cartoons. Ending the Cold War may have slightly eased

³⁶⁹ The Internet Movie Database, *Indian Jones and the Kingdom of the Crystal Skull* (2008), The Internet Movie Database, <http://www.imdb.com/title/tt0367882/>.

tensions between the two former superpowers, but we never could have anticipated what was to come in terrorist threats, or lesser nations gaining access to nuclear materials. As human beings, it has always been in our nature to protect ourselves, and in another to destroy ourselves as well. It is very true that between the United States and Russia still today we could destroy the world many times over. Other nations do not remotely possess the arsenals that we have amassed. The world's common problem right now is that fringe groups realize the power these weapons possess, and they will try and use it to their advantage. No nation is safe from either a dirty bomb or other terrorist act, but we can control who has access to nuclear secrets. There really is no end game scenario. We have the capability of nuclear weapons and we know their power; it is up to us and our future generations to keep the concept of détente alive and well. Even though we did not start the fire, we can control it to prevent it from burning any more.

Teaching Strategy #2: Video Reflections and Student Questions.

A Brief Review of Films Mentioned in the Body of the Paper

Video Review: Atomic Café (1982).

Atomic Café is a documentary about how Americans grew up in a Cold War setting. As “Baby Boomers” were now all growing up, it was a retrospective look at their lives not more than a generation ago. Various government training or documentary films of the era combined first-hand accounts from men such as Colonel Paul Tibbets who flew the Enola Gay; Congressman Lloyd Bentsen; Lyndon B. Johnson; Dwight Eisenhower; and many more. All of these films and excerpts from key people of the era prove how little we did know about the power of nuclear weapons. Additionally, one can see the outright distrust, misconception, and fear instilled in us from our government over the spread of Communism. People began to build fall-out shelters in their basements in case of an attack; food stuffs, water, batteries, and guns became the new stock. At home mom was the general of the house, keeping the children safe and alert if needs be in wartime. At schools children were taught by “Bert the Turtle” that if there was a flash, all you had to do was Duck and Cover. Beyond that are the vivid images of tests and how Americans reacted to the bomb or the potential for war. When the film was released, there was fear that began to surface once President Reagan took office. Years before his Star Wars initiative, President Reagan called for renewed efforts on the neutron bomb, while at the same time talks began for the Strategic Arms Reduction Treaty or START.

Our students will appreciate the video more because they can now see why their parents and grandparents are skeptical of our government. From the early stages of the nuclear era everyone was at square one. We sent soldiers and regular people in after an atomic test to see if canned foods were still edible. How ridiculous is it to think that if all you do is Duck and Cover outside, against a wall, under a desk, or in

any other convenient area that one will survive? There is a video of a boy who is riding his bike with a gas mask and dark goggles, showing how one can be prepared for an attack. Citizens were the new targets of the Russians, according to the government. Communism was trying to corrupt their brain. Overall, the video should be able to allow the students to see how the Cold War still affects their lives today. Anywhere you look there are signs that say "fall-out shelter". The Department of Homeland Security is practically an extension of the old Civil Defense Administration; they used the same ideas in case of attack: run and hide, but be prepared. Additionally, students will see the truth about atomic weapons; they can and will cause harm. The Japanese fishing troller and some nearby islands from Bikini Atoll were subject to radiation fall-out and residents were harmed. Atomic Café is a video that takes the era and brings forward the stereotypes, fears, misconceptions, and primary sources, and neatly packages it for the user to be able to bring the Cold War most Americans experienced back to life.

Video Review: Trinity and Beyond (1995)

American nuclear weaponry started with the Trinity bomb in the sands of the Nevada desert in 1945. Released after the end of the Cold War, Trinity and Beyond was a response more to the history of why we developed the bomb. While the Manhattan Project was commissioned to develop nuclear weapons for use in Europe, the war ended sooner than anticipated. Japan then became the target. After dropping

the bombs on Japan, the United States realized their destructive power and explored other weapons, especially when Russia detonated their own. Exploring a variety of delivery methods, the United States began testing battlefield artillery to deliver devices in the case of a ground war, yet it was the H-bomb that was the prize, and its effects on humans needed to be documented. Soldiers with capsules in their stomachs were sent in after a blast to see if it was safe. With all of the tests this video has a history of how the bombs which were dropped on Japan became the Polaris and Thor missiles of the 1960's.

Trinity and Beyond shows the true power of the weapons. Vivid imagery shows how the bombs became more powerful. Students will be able to understand how escalation, mutually assured destruction, and détente eventually came into play. Filled with tests, their yields, and any other known facts about the device, we can see how the yields increased and the payload decreased. Advancing technology shows how we went from the aerial bomb to submarine-based missiles. Students will also see how some in the United States military, and some scientists, believed that the United States was to have the bomb and no one else. This film shows the truth about the American nuclear program; it was ever expanding and trying new things. Escalation was the only way to stay ahead of the Soviet Union, and above all, maintain a superiority of force. Between both nations, the size of an arsenal and the destructive capability assured that all will be lost. Overall, like Atomic Café, these videos are key for students to understand the basis of the Cold War. Atomic Café offered the version in which many Americans lived; Trinity and Beyond shows more of the truth of nuclear weapons: they do not care who you are, they kill

indiscriminately.

Video Review: War Games (1983)

Every time period has some sort of technological boost, which could not have been more true than during the 1980's and 1990's. When the United States military created the internet to communicate from base to base, it was only a matter of time when it would be able to send missile commands to remote outposts. War Games is based on the assumption of the time, that anyone could hack into a system and take it over. In this case, a kid decides to play a game; instead of chess, the game was thermonuclear war with a computer that controlled the bombs. It is hard to believe that command and control would be given to a machine, but like The Terminator movie series later on, it was feared to be possible. The computer began to take on the challenge and to send false signals depicting a nuclear event, until they played a trick on the computer to show that it would be a no win situation no matter who strikes first. Although some scenes could be deleted, overall the movie is a good one for high school students.

One of the problems of Reagan's Star Wars was that technology was fallible then. Knowing this, the creators of this movie played on that fear and showed that computers can be wrong. The fear is very prevalent in some of the televisions that are shown behind the characters throughout the movie warning that Russia might attack. While the computer was playing the game, the United States forces went on alert, yet the direct line between the United States and Russia to notify of an impending attack was used. Students should be able to pick up that in the early 1980's it was very

possible that the wrong signal could be sent indicating a war only if the emergency line was not used. Another interesting event, much like that of the movie Crimson Tide, was in the beginning when the launch sequence was initiated; men who had the keys to launch did not because of a hint of doubt. These men were underground in a bunker somewhere trained to fire when required; hence the computer took that hesitation away. The 1980's were a troubling time; the Soviet Union was in flux with Perestroika and Glasnost; it was changing rapidly in front of our eyes, and no one knew what was going to happen. This movie depicts not only the fear of the times but also the reluctance to use the available technology.

Video Review: Spies Like Us (1985)

A covert operation requiring the utmost secrecy lands two bumbling idiots in a decoy program, its purpose to shield the true mission of firing a Soviet warhead into the United States. Using every stereotype possible, this movie is a pure comedy, but with very important historical context. Reagan wanted a Star Wars system that could shoot down incoming enemy missiles. This movie depicts just that, far-fetched but somewhat believable, especially when one considers what came out of the Skunk Works at Boeing: Stealth Bombers. The decoys are sent for military training and air dropped into the Pakistan region. Their training is comedic and their airdrop is just as unbelievable, but their landing is in a region where Americans are not welcome, especially after the war in Afghanistan. Meeting with KGB operatives, they shake them loose and escape, only to venture into the Soviet Union wearing regional clothing. While at the check-in point they are picked up by local highway patrol and the interrogation that follows is very stereotypical. For the most part the movie

centers around these two and one woman, together with whom they would launch the weapon. In some secret location the agents who started this meet with military leaders in a bunker, and the old drive-in movie theater changes in to this great laser. Although the test shot misses and the President is blacked out from the activity, the covert operation ends when the team in Russia redirects the missile.

Spies Like Us is a hilarious movie that covers a topic that was on the minds of most Americans at the time: would a strategic defense weapon work? The movie plays on the fact that despite technology, all variables must all work at the same time. When the test shot occurred no one knew why it had “bounced,” and furthermore, without the President knowing about the test, could there have been a potential nuclear war even though our people shot the missile? The idea of conspiracy theories were the norm of the Cold War as well; tests where the President was not advised were rumored to have happened all the time. Field agents stealing equipment or spying behind enemy lines, especially during the Cold War, were commonplace so it seemed. Mobile ICBM launch vehicles are something the students will definitely notice, hence the reason why a strategic defense would be tougher to use since the targets themselves could move, unlike a silo. The pseudo interrogation in the police station is the classic stereotype of how Americans perceived the Soviets, and the clothing they wore to the station is also stereotypical. The later stages of the Cold War saw more comedies or parodies of the era. Saturday Night Live parodied President Reagan as forgetting everything and then, all of a sudden, ready to kill all Soviets. No one knew what to take for granted during the material revolution of the 1980's, but one thing was quite apparent, the call for an end to escalation was near.

At the end of the movie we see all those involved by the mobile launcher in “negotiations”, playing a board game. Overall, the movie is a great source of comic relief on a topic that is disturbing. Although some parts are not suitable, for the most part it is appropriate for high school students.

Video Review: Strategic Air Command (1955)

“Dutch” is now a ballplayer with the St. Louis Cardinals, but before that he had been a bomber pilot in World War II. While at practice, a bomber flies overhead and one can see he still misses it, but now a lucrative baseball career awaits him. Then his old friend comes by to lure him back. The newly formed Strategic Air Command is in dire need of experienced pilots; they are needed because, in the event of a war, they would need to fly halfway around the world to drop nuclear weapons. At the time it was believed to be the ultimate deterrent, since long-range missiles were not yet around. An air force that could be battle ready at a moment’s notice, and the chance to fly again, are some of the things that bring him back. Although his wife is upset and pregnant, she supports his decision to re-up. The "birds" they fly were the B-36 Peacemakers. With more crew and much larger payloads than the World War II B-17’s, these planes could fly for many hours and cover longer ranges. While helping SAC become the battle ready force it needed to be, he is away for long stints of time from his family, and at any moment he might not come back. It is with an injury he sustained during a flight to Greenland that is re-aggravated during a harsh landing in Japan that his career ends.

Strategic Air Command was based off the real military branch of the Air

Force dealing with the delivery of nuclear weapons to a target across the globe. The military and the makers of this film went to great lengths to make this film, since at the time of the film the idea to serve your country against foreign enemies was still high after World War II. SAC bombers left with secrecy, in the sense that no one outside of the briefing room was to know where they were going or when they would come back. It shows how the military constantly drilled, but also became very protective of restricted airspace as a commercial airline lands at the airfield. Dutch's first flight was just a short one to Alaska, 16 hours total air time. On board there were many jobs that needed to be done, including navigation and communications. Although the bombers would become obsolete in a few short years, with the advancements of jet and missile technology, it shows how the world went to war with little technology, technology that we take for granted today. It shows how these men would have to leave their families at a moment's notice on case of a war, and the uncertainty that they would return home. Finally, it is the pride in one's nation and the feeling of responsibility for the many over the one that shows why he left his lucrative job for the military. This is an excellent movie, although there are some times where the view of the planes in the sky dominates, it is still impressive to see how the largest of specialized military branches started. Currently SAC no longer exists. After the fall of the Soviet Union, it was dismantled on June 1, 1992, although it can be reassembled at any time.

Video Review: On the Beach (1959)

A nuclear war has devastated the globe, except for Australia. An American submarine surfaces and is charged with finding out where a signal is coming from.

While in harbor the men, including the skipper, are treated to the Australians' unique hospitality. Many fear to bring up the past, realizing that all of their loved ones are gone, yet one woman tries to get the skipper's mind off his home. Alcohol was the elixir of the day; everyone can drown their sorrows. It slowly sinks in that they are the only ones alive. Radiation is slowly beginning to drift south towards the continent and debate rages whether they would get it or not. For the most part it is life and business as usual, except when it comes to the impending death. A cyanide pill is around that can eliminate the pain and horror of radiation poisoning. At sea, the crew of the American submarine arrives in San Francisco only to find it deserted. They send one man on land to find the source of the signal; it ends up being a bottle hitting a telegraph device at a power plant. Before they leave, one of the sub's crew leaves and stays home. Upon returning to Australia, the radiation is beginning to show up, but men still race and fish. While the skipper and his new lady friend are fishing, everyone around is singing "Waltzing Matilda". The men of the submarine decide that they want to return home, the skipper has to leave and it ends with the streets being bare and a banner in the square where people once gathered, stating "There is Still Time...Brother."

What would happen if we were the only ones left after a nuclear war, especially when impending death is being carried in by the wind? This movie plays off the fears humans have about death, over which they have no control. All the world is gone except your own backyard; it is hard for anyone to imagine. The world is gone due to the actions of those who have nothing to do with you. How do you cope? How do you survive for just the little time left? Although unrealistic, how only one

continent would survive an atomic war, it makes you realize how short life can be. A woman has a newborn child and her husband, an Australian naval officer, sees San Francisco and wants to commit suicide rather than die of radiation. The movie describes in detail the effects of radiation and tries to explain why committing suicide is better. Once the radiation comes, it is like the lemmings going over the cliff; they all come for the pills. Despite knowing his family might be gone, the skipper still tries to hold his own; brevetted to fleet admiral since there was no other American naval officer. "Waltzing Matilda" is a song that refers to how a hungry man working on a farm begins to eat a sheep. The sheep owner comes in with some officers because the crime is punishable by hanging. Instead, he commits suicide and haunts the farm. I believe the overall message for the entire movie is that one should live life to the fullest, and that there is still time to let cooler heads prevail and negotiate a peaceful solution in order to prevent a nuclear war.

Video Review: The Day After (1983)

Produced at the height of the Cold War this movie, which was released for television; is the most graphic movie ever made about nuclear war. Set near Kansas City, Missouri, there are some Soviet forces beginning to form around old German borders. While life is still going on as normal, we follow the lives of several families that will all be impacted. A soldier is called to active duty, as well as other military members, to check all missile silos. Reports begin coming in that Moscow is being evacuated, and that the use of weapons could soon follow. General panic begins to fill the air as families storm supermarkets for any supplies they can find. Other families prepare their bunkers: fall-out shelters or storm cellars. One family has all of the

essentials the Civil Defense Administration suggests, including a rifle. Then, while a football game is being played, and views from around the region are being shown, bright flashes light up the sky. Anything that is electronic is killed by Electro Magnetic Pulse, and then you see mushroom clouds all over the horizon near Kansas City. Instantly, you see people being vaporized, buildings being destroyed and charred bodies in the aftermath. Walking wounded begin funneling toward the hospital which is overrun. Attempts to reach other buildings over c-b radios are tough since all electrical devices are useless. Looting causes some to lose their lives as they are shot by property owners. Squatters kill property owners. Farm animals and family pets are sacrificed since they are more mouths to feed, and now all the soil is contaminated. Some suffer flash burns, radiation poisoning, and severe injuries that can only be helped, if healthy, by surgery under flashlight. FEMA recommends that once the radiation levels are safe, that farmers need to scrape of the top three inches of soil. The government still exists and damage assessments will follow but it will take a while.

The Day After is a movie that tries to make the unimaginable tangible. We follow the lives of countless families and their struggles prior to the bombs, and then what happens after. The imagery and thought given to this movie is impressive. At the height of the Cold War this movie came out, when a very strong-willed President wanted the further development of neutron bombs and Star Wars. It could be argued that the escalation that could have occurred would have pushed us that much closer to total war. As a culminating movie, this ties all of the other movies together: the preparation offered by the Civil Defense Administration, the strategy and discipline

of the military, the fear of us and them, the what ifs, and what nuclear war looks like. As fictional examples this is by far the strongest there is. There are not enough words to explain; you just have to watch yourself.

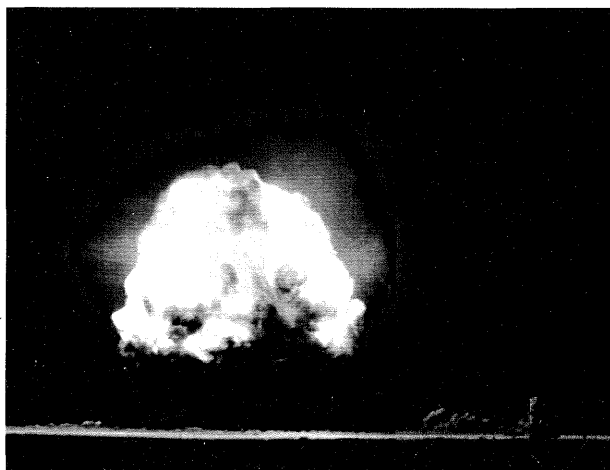
Other Recommended Videos:

- 1 Dr. Strangelove; Indiana Jones and the Kingdom of the Crystal Skull; intro to Terminator 2; Hiroshima: The Decision to Drop the Bomb (History Channel); Modern Marvels (History Channel); Manhattan Project; Weapons Races: The Race for the Nuclear Bomb (Military Channel); SpongeBob SquarePants (various episodes use nuclear images and references); Crimson Tide; Atomic Train; Star Trek: A Taste of Armageddon; Hunt for Red October; James Bond Movies: Octopussy; Golden Eye; For Your Eyes Only; The Spy Who Loved Me; The Russia House.

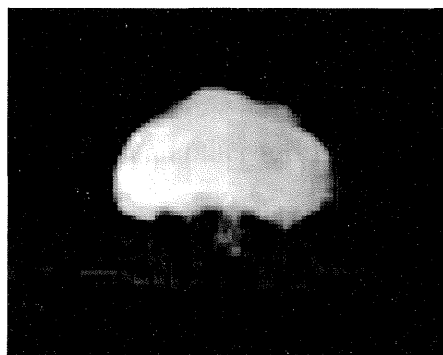
For the video questionnaires, the National Archives produced a generic format that was used for this paper. You can access the form yourself online at http://www.archives.gov/education/lessons/worksheets/motion_picture_analysis_worksheet.pdf; or use the pdf on the enclosed CD.

Teaching Strategy #3: Document Based Learning.

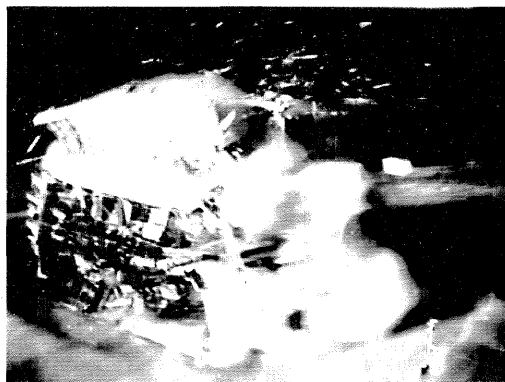
The Many Fears of Nuclearization.



370



371



372

³⁷⁰ Atomic Archive, *Trinity test photo*, <http://www.atomicarchive.com/Photos/Trinity/index.shtml>.

³⁷¹ Atomic Archive, *Operation Hardtack II Santa Fe test photo*,
<http://www.atomicarchive.com/Photos/LANL/image54.shtml>.

Introduction:

“Even in his last days, Nobel called war ‘the horror of all horrors, and the greatest of all crimes.’ Until the moment he died, he remained convinced his creations could save the world from war, not make killing more efficient.”³⁷³

For some reason, ever since man has been placed on the earth, we have had a propensity to destroy each other. Whether over land, food, shelter, or power man has always found a way to go to war or murder. From ancient times, such doomsday devices included catapults, crossbows, and other nasty forms of biological weapons. Then one fateful day the world changed when a device so horrid was detonated in the desert. With the “Trinity” explosion all other forms of conventional or toxic weapons would become obsolete. President Truman, under the direction of his advisors decided the best way to end World War II was to use two devices on “virgin” targets to determine their deadly force. It was with those devices our nation ushered in the Nuclear Age.

Although from the early stages of development nuclearization could have yielded peaceful uses, it was in Albert Einstein’s letter to President Franklin Roosevelt that a nuclear weapon became a real possibility. Einstein had argued that Germany could have the chance to create a working bomb against the United States. With an unlimited budget and ultra-secrecy our program could lead to an arms race

³⁷² Atomic Archive, *Effects on structures*, <http://www.atomicarchive.com/Photos/Blast/index.shtml>.

³⁷³ Donovan Webster, *Aftermath: The Remnants of War* (New York: Vintage Books, 1996), 7.

the world had yet to see. After the end of World War II another war was brewing between the two superpowers, the United States and the Soviet Union. From feeble beginnings to humble ends the next 60 years of life would not be the same for anyone on this planet.

Nuclear technology developed rapidly from the a-bomb to the h-bomb and now to neutron bombs. Our countries targeted not only military installations but also population centers; it could be surmised that at any one point of the Cold War the entire earth could have been obliterated. Tests proved that not only our own well-being was compromised, but also that of our neighbors. Treaties tried to check and prevent escalation, yet we also feared developing countries would try to acquire nuclear materials. In order to keep these countries at bay, the North Atlantic Treaty Organization, or NATO, was a group of allied countries that combined forces to encircle countries such as Russia and China. At home the government was very reluctant to release the truth about nuclearization, yet the Civil Defense Administration (which it could be argued was the precursor to the Department of Homeland Security) tried to give our citizens what they would need in case of a nuclear attack. Unfortunately, these agencies did more to create distrust and panic than they did to offer security if the event were to occur.

There is no doubt that the events that led to the creation of Israel and the superpowers' involvement in Afghanistan has created the bitter hatred against the west by portions of the Middle East. After the fall of the Soviet Union and several changes in our nation's administrations, rogue nations and terrorists have been able to acquire nuclear technology or materials. Former briefcase bombs of the Soviet Union

have been feared to be in the hands of terrorists who could then turn them into dirty bombs. After the events of September 11th, 2001, the United States was now very vulnerable to an enemy attack on our homeland. Several other terror attacks occurred against our allies leading to an eventual war on terrorism.

Although the promise of nuclear power has yet to be fully realized, two events changed how Americans perceive nuclear power. Three Mile Island and Chernobyl changed the thoughts as to the safety of nuclear power. Overall, nuclear power is a very safe and reliable source of energy, yet its expense and its chance to have a catastrophic failure are extreme. It was with those failures that the IAEA increased global awareness and notification procedures for potential events. Nuclear waste was and is the largest concern of power; we have to devote vast resources to keep those materials safe from enemy hands since they could be used against us.

All of these facets of nuclearization has led to a change in American and international psyche. After our bloody Civil War and the imperialist past of the United States, we took for granted that our nation was burgeoning with international success and never thought it would be attacked. With the fear of a nuclear winter, or the potential nuclear attack on civilian targets, Americans never know what will happen from one day to the next. With the advent of the nuclear era, all aspects of people's lives changed, from our popular culture to our everyday lives. Here are documented examples of those changes:

Time Frame: One 90 minute block per document-based question segment depending upon which one is used.

New York State Standards with intermediate and commencement performance indicators:

Intermediate:

Standard I: History of the United States and New York.

2. Important ideas, social and cultural values, beliefs, and traditions from New York State and United States history illustrate the connections and interaction of people and events across time and from a variety of perspectives.

- Performance: describe the reasons for periodizing history in different ways.
- Investigate key turning points in New York State and United States history and explain why these events or developments are significant.
- Understand the relationship between the relative importance of United States domestic and foreign policies over time.
- Analyze the role played by the United States in international politics, past and present.

Standard III: Geography.

2. Geography requires the development and application of the skills of asking and answering geographic questions; analyzing theories of geography; and acquiring, organizing, and analyzing geographic information.

- Performance: present geographic information in a variety of formats, including maps, tables, graphs, charts, diagrams, and computer-generated models.
- Interpret geographic information by synthesizing data and developing conclusions and generalizations about geographic issues and problems.

Standard V: Civics, Citizenship, and Government.

1. The study of civics, citizenship, and government involves learning about political systems; the purposes of government and civic life; and the differing assumptions held by people across time and place regarding power, authority, governance, and law.

- Performance: analyze how the values of a nation affect the guarantee of human rights and make provisions for human needs.
- Consider the nature and evolution of constitutional democracies.

4. The study of civics and citizenship requires the ability to probe ideas and assumptions, ask and answer analytical questions, take a skeptical attitude toward questionable arguments, evaluate evidence, formulate rational conclusions, and develop and refine participatory skills.

- Performance: respect the rights of others in discussions and classroom debates regardless of whether or not one agrees with their viewpoint.

- Participate in negotiation and compromise to resolve classroom, school, and community disagreements and problems.

Commencement:

Standard I: History of the United States and New York.

2. Important ideas, social and cultural values, beliefs, and traditions from New York State and United States history illustrate the connections and interaction of people and events across time and from a variety of perspectives.

- Performance: analyze the United States involvement in foreign affairs and a willingness to engage in international politics, examining the ideas and traditions leading to these foreign policies.
- Compare and contrast the values exhibited and foreign policies implemented by the United States and other nations over time with those expressed in the United Nations Charter and international law.

4. The skills of historical analysis include the ability to: explain the significance of historical evidence; weigh the importance, reliability, and validity of evidence; understand the concept of multiple causation; understand the importance of changing and competing interpretations of different historical developments.

- Performance: evaluate the validity and credibility of historical interpretations of important events or issues in New York State or United States history, revising these interpretations as new information is learned and other interpretations are developed.

Standard II: World History.

4. The skills of historical analysis include the ability to investigate differing and competing interpretations of the theories of history, hypothesize about why interpretations change over time, explain the importance of historical evidence, and understand the concepts of change and continuity over time.

- Performance: analyze different interpretations of important events, issues, or developments in world history by studying the social, political, and economic context in which they were developed; by testing the data source for reliability and validity, credibility, authority, authenticity, and completeness; and by detecting bias, distortion of the facts, and propaganda by omission, suppression, or invention of facts.

Standard III: Geography.

2. Geography requires the development and application of the skills of asking and answering geographic questions; analyzing theories of geography; and acquiring, organizing, and analyzing geographic information.

- Performance: analyze geographic information by developing and testing inferences and hypotheses, and formulating conclusions from maps, photographs, computer models, and other geographic representations.
- Develop and test generalizations and conclusions and pose analytical questions based on the results of geographic inquiry.

Standard V: Civics, Citizenship, and Government.

3. Central to civics and citizenship is an understanding of the roles of the citizen within American constitutional democracy and the scope of a citizen's rights and responsibilities.

- Performance: explore how citizens influence public policy in a representative democracy.

4. The study of civics and citizenship requires the ability to probe ideas and assumptions, ask and answer analytical questions, take a skeptical attitude toward questionable arguments, evaluate evidence, formulate rational conclusions, and develop and refine participatory skills.

- Performance: take, defend, and evaluate positions about attitudes that facilitate thoughtful and effective participation in public affairs.

Student Objectives: Students will be able to:

- Interpret primary documents.
- Evaluate the relationship of fear that pervaded American society during the Cold War and terrorism.
- Explain and define terms in regards to nuclear weaponry, nuclear power and potential terrorist attacks.
- Interpret American foreign policy as it changed through the decades during and following the Cold War.

Background/ Preparation:

When the first World War broke out, the United States kept a neutral stance which would provide our nation with stability within its melting pot culture by not supporting any side. With the war far from our borders, our nation did not need to become involved in a war that ravaged the European continent. At the time, trench warfare as well as chemical agents became the new doomsday devices. World War II escalated the arms race when it was suggested that the Germans could have developed the bomb, the likes of which the world had not seen. It was with our involvement in World War II that the eastern and western hemispheres would never sleep easy again.

The Nuclear Age and Cold War Era allow for our students to understand how they were brought into the current conditions we face today. Although most of our students remember September 11th, it is their parents and grandparents who remember a time of uncertainty and anger, when events such as the attacks on Pearl and Dutch Harbors occurred. War became something where the faces of the opposition were no longer a reality; instead a man could literally push a button and destroy whole cities in the blink of an eye. Students, through the use of these selected primary sources, can place themselves into those times and draw from their own experiences following the September 11th attacks in helping to answer those questions. Along with the uncertainty of American safety from enemy attack on our own soil comes the debate on the need for alternative fuel or power sources such as nuclear power plants. Our nation already has its nuclear navy, yet it was the potential disaster at Three Mile

Island that created a public stir over the risks versus benefits of nuclear power which still sparks heated debates today.

It is because of those facets of nuclear technology that we cannot hide the fact of the potential dangers of nuclearization. Nuclear power, weaponry and waste will be forever with our societies; it is only fitting that our students should know what lies ahead.

Procedures:

Background internet based assignment: As assigned the block prior to this lesson, students were to go to the three websites listed below and explore and examine the fears and events of the Cold War Era. These websites will provide students with various information on nuclear weaponry, and vivid visuals as to their destructive power. Additionally, these websites provide the students with the realization that 60 years ago this type of information was not readily available for our citizenry. With the internet and Freedom of Information Acts, these images and information are now widely accessible.

<http://www.gradebook.org/War%20Nuclear.htm>

<http://www.atomicarchive.com/index.shtml>

<http://www.eia.doe.gov/cneaf/nuclear/page/analysis/nuclearpower.html>

Classroom discussion: After having viewed the websites the students should be able to bring in their own reactions to what they saw. Although the images may seem abstract for them since they have been desensitized to violence prevalent in movies

and video games, one cannot escape from the magnitude of the devices' effects.

Listening to others' reactions, the students should be able to generate discussion about the pros and cons of nuclear war and power.

Group Work: The class will be divided into three groups that will examine, answer questions, and conclude what the documents or images are telling the reader. Each member of the group will explain one of the documents to their classmates in a round table style discussion, while at the same time the non-participating members from other groups take notes for the individual portion.

Individual work: Students will write a 500-600 word DBQ that addresses the question posed. There are three individual DBQ potential questions in this packet. A broader Thematic question could also be addressed if one wants to combine all three DBQ portions.

Documents

Directions: The following question requires you to construct a coherent essay that integrates your interpretation of the documents and your knowledge of the period referred to in the question. High scores will be earned only by essays that both cite key pieces of evidence from the documents and draw on outside knowledge of the period.

Prompt:

Towards the end of World War II, the United States made the decision to use atomic weapons against Japan to force an end to the war. Since then, another version of a world war occurred during the Cold War between the United States and the former Soviet Union. Together with the fear of terrorism, foreign or domestic, and the promise of peaceful uses of the atom in nuclear power, to what extent have American attitudes changed over time with the advent of nuclearization?

Use the documents and your knowledge of the time period, 1940-2009 to construct your answer.

DBQ A: Foreign relations and the possibility of nuclear war.

1. “Beyond the shock and heat effects of a nuclear-weapon detonation, radiation from a blast can cause immediate death in high enough dose. High-level

exposure also can cause burns, sterility, gastrointestinal problems and infections. Over the long term, exposure can cause cancer or birth defects.”³⁷⁴

2. “What relief I felt when I heard the news that Iran had shut down its nuclear program in 2003...Much to my amazement, he (President George W. Bush) is still talking about the fact that Iran could still start up a program...Congress must act now to make it clear that Bush has no authority to strike Iran and no reason. Does he want World War III?”³⁷⁵
3. “Iran denies the program ever existed. Iran claims its uranium enrichment program, is exclusively for nuclear power to generate electricity. In a country where oil literally oozes from the ground, and natural gas deposits are so plentiful they are burnt off in the atmosphere, why would you want more expensive nuclear power? As the president stated, Iran’s nuclear program was, is and will be a threat to the rest of the free world.”³⁷⁶
4. “Russian President Vladimir Putin recently told an Italian journalist that should the United States go ahead and place an anti-ballistic missile defense system in Eastern Europe, Russia might once again target Europe with nuclear

³⁷⁴ Steve Orr and Micheal Wentzel, “Vigilance Reaches New Heights as the Threat of Terrorism Through, Nuclear, Biological and Chemical Means Forces the Rochester Area to Ask Itself: ,” *Rochester Democrat and Chronicle*, October 7, 2001, 1A; 16A, <http://www.newsbank.com>.

³⁷⁵ Linda Kiesow, “At Issue: Iran’s Nuclear Ambitions,” *Rochester Democrat and Chronicle*, December 9, 2007, 25A, <http://www.newsbank.com>.

³⁷⁶ Andy Bolger, “Letters to the Editor,” *Rochester Democrat and Chronicle*, December 9, 2007, 25A, <http://www.newsbank.com>.

missiles...The U.S. government's declared reason for placing an ABM system in Europe is defense against an Iranian missile attack."³⁷⁷

5. "The United States deploys tens of thousands of nuclear warheads, carrier strike groups with thousand-mile reaches that can destroy entire cities in a single day, and a global intelligence network that includes hundreds of spy satellites. With regard to the reputed Iranian threat to Israel, it should be noted that Israel has about 200 deliverable nuclear warheads and a far more capable military than Iran."³⁷⁸

6. "The United States now values India as a strategic partner. India has liberalized its economy. The two countries are on the brink of ratifying a nuclear collaboration treaty signed a couple of years ago...America's desire to prop up India as a potential check to China's aspirations as a global superpower."³⁷⁹

7. "The denuclearization of North Korea is of vital interests to the United States and cannot be compromised. As Dennis Ross, the former Middle East peace negotiator, has said, 'The purpose is not to make the military option inevitable, but to build the pressure to produce diplomatic results.' The United States must also realize that the denuclearization of North Korea is not only an arms control issue, but also a larger issue involving the future of the North

³⁷⁷ Matthew Lenoe, "U.S. Missile Plan is a Mistake," *Rochester Democrat and Chronicle*, June 7, 2007, 9A, <http://www.newsbank.com>.

³⁷⁸ Matthew Lenoe, "U.S. Missile Plan is a Mistake," *Rochester Democrat and Chronicle*, June 7, 2007, 9A, <http://www.newsbank.com>.

³⁷⁹ Deepak Seth, "India, U.S. are Pursuing Same Dream," *Rochester Democrat and Chronicle*, August 20, 2007, 9A, <http://www.newsbank.com>.

Korean regime, East Asian regional security, the Chinese-American balance of power and the unification of North and South Korea.”³⁸⁰

8. Your letter of December 6, 1952 has just been delivered to me. When the message came to Potsdam that a successful atomic explosion had taken place in New Mexico, there was much excitement and conversation about the effect on the war then in progress with Japan...I asked General Marshall what it would cost in lives to land on the Tokyo plain and other places in Japan. It was his opinion that such an invasion would cost at a minimum one quarter of a million casualties, and might cost as much as a million, on the American side alone, with an equal number of the enemy. The other military and naval men present agreed. I asked Secretary Stimson which sites in Japan were devoted to war production. He promptly named Hiroshima and Nagasaki, among others. We sent an ultimatum to Japan. It was rejected.”³⁸¹

9. “While preserving the right of five states (China, France, Russia, the United Kingdom, and the United States) to possess nuclear weapons...’pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament...At the 2000 review conference, however, those states for the first time accepted an unequivocal commitment to eliminate nuclear weapons.”³⁸²

³⁸⁰ Hoyoung Lee, “First Use Diplomacy to Disarm North Korea of Nuclear Weapons,” *Rochester Democrat and Chronicle*, November 24, 2004, 13A, <http://www.newsbank.com>.

³⁸¹ Enola Gay, *The Event- August 6, 1945*, <http://www.theenolagay.com/event.html>.

³⁸² Unauthored, “Nuclear Weapons States Pledge to Unequivocal Elimination,” *The American Journal of International Law* 94, no. 4 (Oct., 2000): 706, <http://www.jstor.org>.

10. "Seismology has long provided one of the basic tools for monitoring test ban treaties...rather, we must develop a new strategy for monitoring the world and for increasing confidence that no nuclear test could go undetected."³⁸³
11. As Henry Kissinger retrospectively said of the Cuban Missile Crisis, the Soviet Union had only '60-70 truly strategic weapons while we had something like 2,000 in missiles and bombs.' But, he added, 'with some proportion of Soviet delivery vehicles surviving, the Soviet Union could do horrendous damage to the United States'...In other words, we could not be sure that our two thousand weapons would destroy almost all of their sixty or seventy. Even with numbers immensely disproportionate, a small force strongly inhibits the use of a large one."³⁸⁴
12. The juridical significance of such declarations is suggested by Article 31, paragraph 3 of the Vienna Convention on the Law of Treaties, which lists among the factors to be considered when interpreting treaties: '(a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions; (b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation.'"³⁸⁵

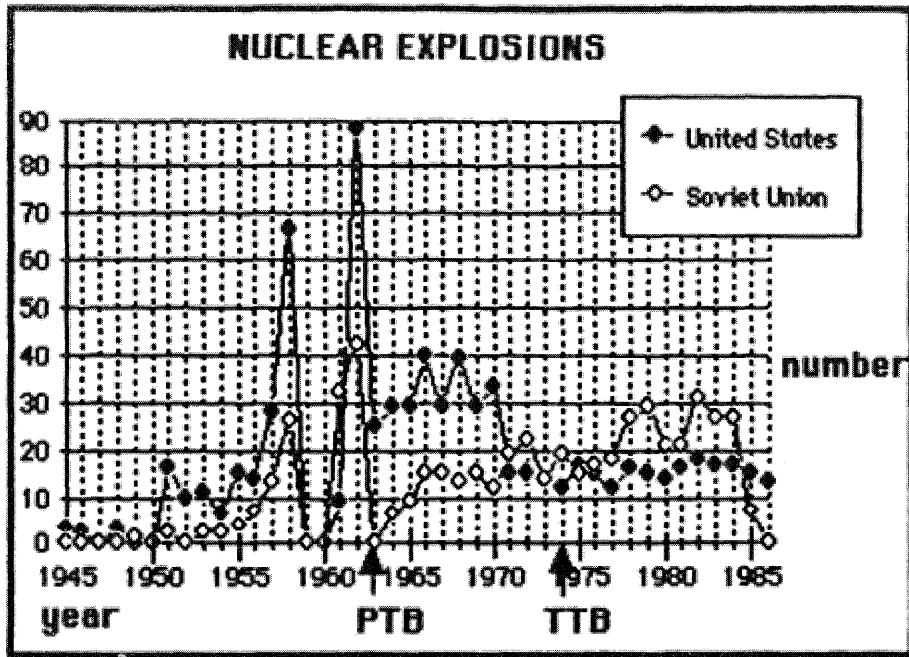
³⁸³ Jeffrey Park; Gregory E. van der Vink, "Nuclear Test Ban Monitoring: New Requirements, New Resources," *Science* 263, no. 5147 (Feb., 4, 1994): 634, <http://www.jstor.org>.

³⁸⁴ Kenneth N. Waltz, "Nuclear Myths and Political Realities," *The American Political Science Review* 84, no. 3 (Sep., 1990): 734, <http://www.jstor.org>.

³⁸⁵ Burrus M. Carnahan, "Treaty Review Conferences," *The American Journal of International Law* 81, no. 1 (Jan., 1987): 229, <http://www.jstor.org>.

13. "President Reagan's Strategic Defense Initiative (SDI), popularly called Star Wars, is the most recent manifestation of a 40-year debate over developing systems to defend against nuclear attack...Approximately 75 percent of the public holds the (inaccurate) belief that the United States has a fairly effective defense against nuclear weapons (6/64, 6/68, 4/79). In addition, most people are satisfied with our (nonexistent) defense against nuclear attack (5/82, 7/82, 4/84). In the 1960's, a majority of the population believed that Russia had an existing ABM defense (6/64, 6/68, 4/69). In the 1980's, a plurality of 34 percent thought the Soviets were ahead of the U.S. in Star Wars technology (5/85)."³⁸⁶

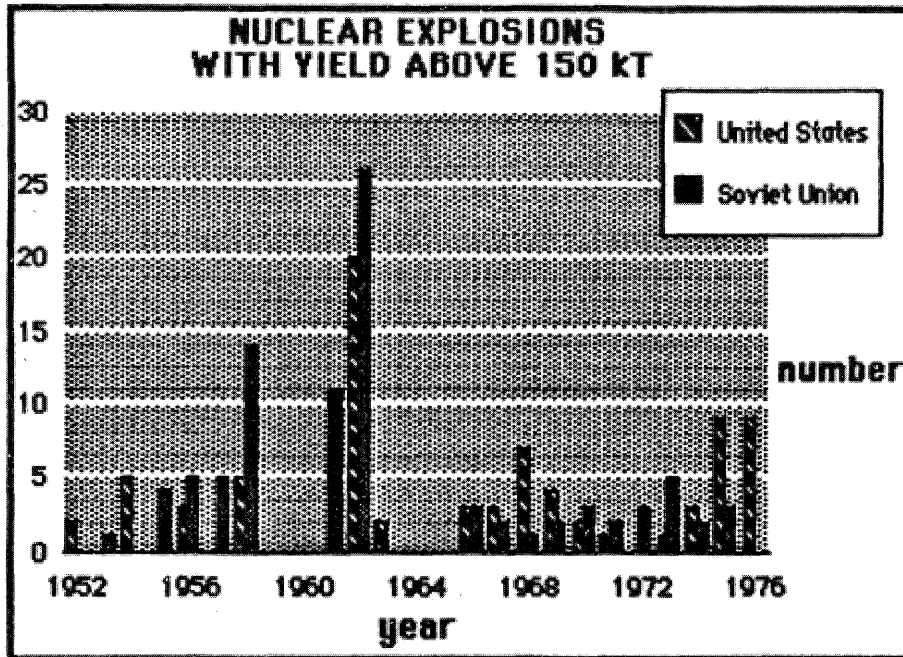
³⁸⁶ Thomas W. Graham; Bernard M. Kramer, "The Polls: ABM and Star Wars: Attitudes Toward Nuclear Defense, 1945-1985," *The Public Opinion Quarterly* 50, no. 1 (Spr., 1986): 125, <http://www.jstor.org>.



14. Source: SIPRI Yearbook 1986

387

Fig. 2. American and Soviet Nuclear Explosions. Yields above 150 kT

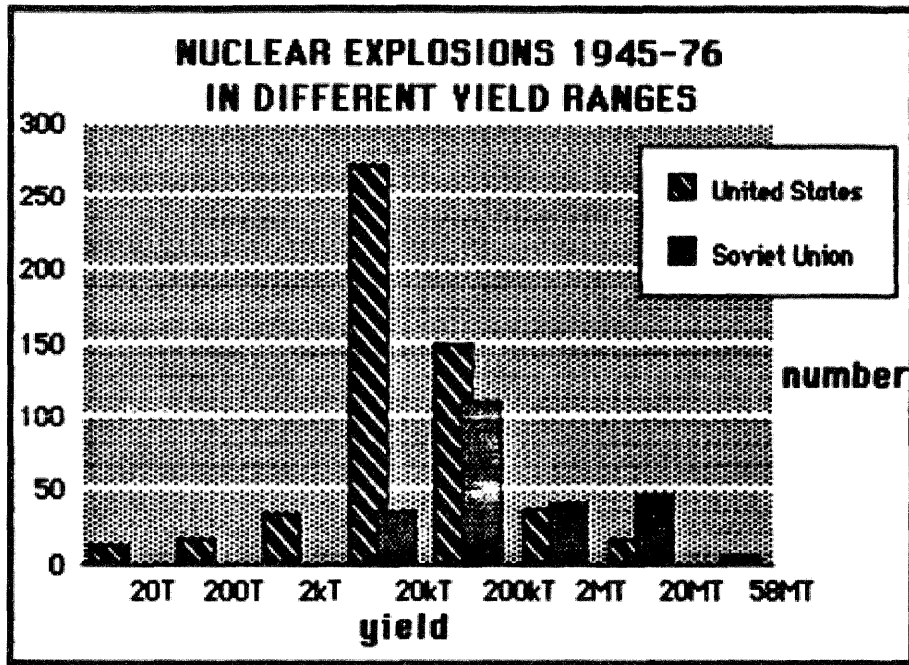


15. Source: SIPRI

388

³⁸⁷ Allan M. Din, "Nuclear Test Bans," *Journal of Peace Research* 24, no. 2 (Jun., 1987): 105, <http://www.jstor.org>.

Fig. 3. American and Soviet Nuclear Explosions, Different Yield Ranges



16. Source: SIPRI

389

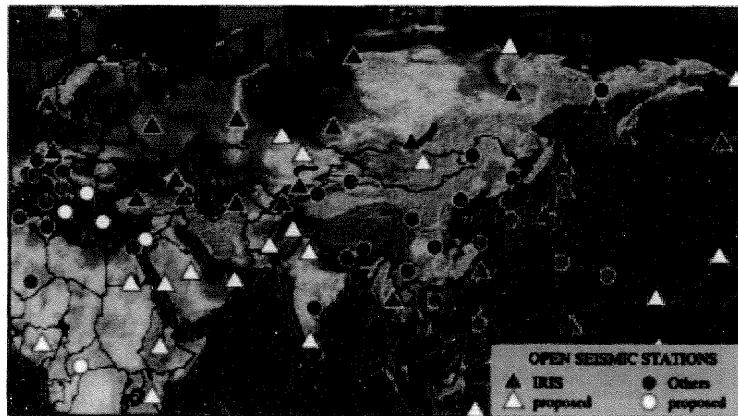


Fig. 1. Many high-quality open seismic networks are being installed around the world. Recent developments in instrumentation mean that these stations can contribute data to the full spectrum of seismic applications including earthquake activity, treaty verification, and the scientific exploration of the Earth's interior. Such multiuse stations, in conjunction with global communication networks, create opportunities for considerable cost savings and the development of a sustainable global facility for the scientific monitoring of the Earth. The current political structure of the negotiations, however, has so far prevented these networks from being incorporated into the verification effort for a proposed Comprehensive Test Ban Treaty.

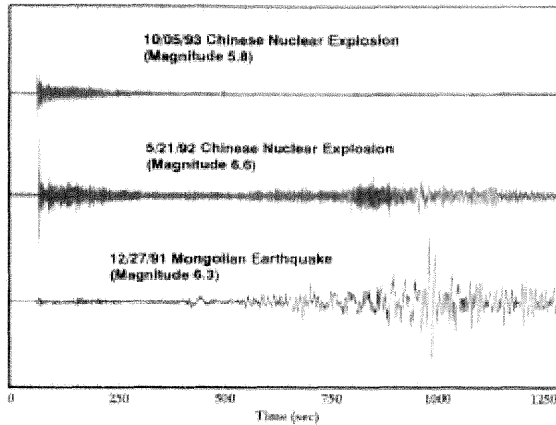
17.

390

³⁸⁸ Allan M. Din, "Nuclear Test Bans," *Journal of Peace Research* 24, no. 2 (Jun., 1987): 106, <http://www.jstor.org>.

³⁸⁹ Allan M. Din, "Nuclear Test Bans," *Journal of Peace Research* 24, no. 2 (Jun., 1987): 106, <http://www.jstor.org>.

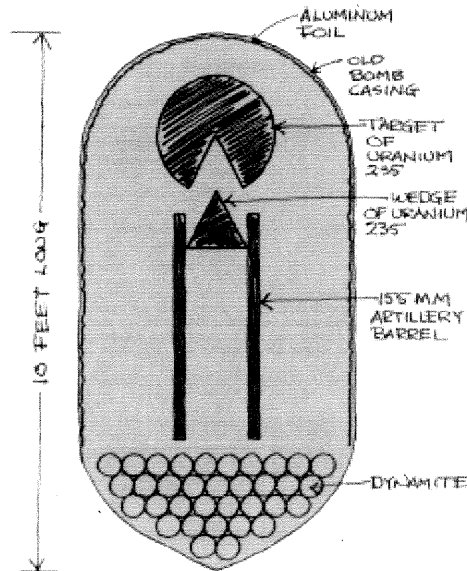
Fig. 2. Despite a multinational moratorium on the testing of nuclear weapons, China exploded a nuclear device on 5 October 1993 at their Central Asian test site at Lop Nor. The seismograms shown here, comparing the 1993 test with a larger Chinese test conducted in 1992 and a Mongolian earthquake of intermediate size, are an illustration of how technological advances and geopolitical change have assisted the global monitoring of seismicity. They were recorded at the IRIS station outside Moscow, sent over an open computer communications network in near-real time to a data collection center in California, accessed and analyzed by seismologists in Colorado and received by other researchers nationwide, all within hours of the explosion. It is now the relatively slow speed with which seismic waves travel through the Earth (a few kilometers per second) that is the limiting factor for how fast seismic data can be retrieved from around the world.



18.

391

The Anatomy of a Homemade Atomic Bomb



The nuclear bomb depicted here is a crude version of the one used at Hiroshima. There is an important difference, however. While the original bomb took a team of scientists years to complete, this one can be made in a matter of hours in the most rudimentary of basement workshops. It would produce a dirty, inefficient explosion, but it would work. All of the nonfissionable ingredients can be had cheaply on the open market. That leaves only the rare isotopes of uranium or plutonium, and of course these cost billions of dollars to make. But now that the government has begun sending regular unguarded shipments of the stuff by air and truck through a world infested with petty thieves and hijackers, one may as well consider the isotopes "available" too.

There is no technical information on this page, or in the accompanying article, that has not been public knowledge for years (even children's encyclopedias contain more detailed sketches), but Esquire's sense of public duty bids its nervous editors to warn that there are two crucial bits of information missing: the amount of dynamite required and the precise ratio between the wedge of uranium at the bottom and the target of uranium at the top. These figures are still classified. With luck, a lay bomb maker would come close enough, but one false step and his basement Manhattan Project would turn into a private Alamo: gone in a millisecond.

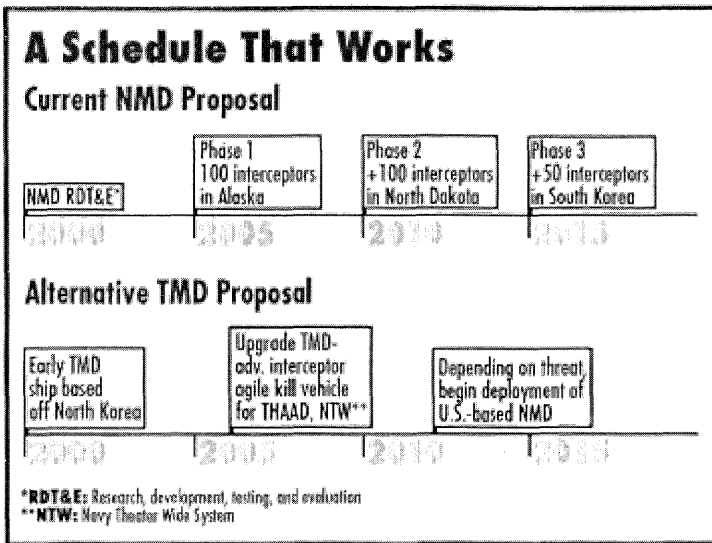
19.

392

³⁹⁰ Jeffrey Park; Gregory E. van der Vink, "Nuclear Test Ban Monitoring: New Requirements, New Resources," *Science* 263, no. 5147 (Feb., 4, 1994): 634, <http://www.jstor.org>.

³⁹¹ Jeffrey Park; Gregory E. van der Vink, "Nuclear Test Ban Monitoring: New Requirements, New Resources," *Science* 263, no. 5147 (Feb., 4, 1994): 635, <http://www.jstor.org>.

³⁹² Alan M. Adelson, "Please Don't Steal the Atomic Bomb," *Theory into Practice* 8, no. 2 (Apr., 1969): 66, <http://www.jstor.org>.



20.

393

TABLE 1
 APPROXIMATE CHRONOLOGIES OF SUCCESSFUL NUCLEAR WEAPONS DEVELOPMENT PROGRAMS

Country	Start of Nuclear Weapons Development Program	Date of First Atomic Test Explosion (*) or Weapon (†)	Date of First Thermonuclear Test Explosion (*) or Weapon (‡)	Significant Personal Contact with Previously Successful Weapons Design Team?	Began with Attempt to Copy Previous Design?
United States	1942	1945*	1952*	no	no
Soviet Union	1945	1949*	1953*	no	yes
United Kingdom	1947	1952*	1957*	yes	yes
France	1955	1960*	1968*	no	?
China	c. 1955	1964*	1967*	no	no
Israel	c. 1957 (?)	c. 1968 (?)†	?‡	?	?
India	c. 1964	1974*	?	?	?
South Africa	1971	1979†	?	?	?
Pakistan	c. 1974 (?)	?‡	?	?	yes (?)

SOURCES.—Albright and Hibbs (1992b, 1992c); Baylis (1994); Gowing (1964); Gowing and Arnold (1974); Herz (1991); Hewlett and Anderson (1962); Hewlett and Duncan (1969); Holloway (1981, 1994); International Atomic Energy Agency (1993); Institut Charles-de-Gaulle (1984); Khariton and Smirnov (1993); Lewis and Xue (1988); Mongin (1991); Scheinman (1963); Spector (1987); Szasz (1992).

NOTE.—India, South Africa, and Pakistan are not believed to have developed thermonuclear weapons; it is not clear whether Israel has done so.

21.

394

22. Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and

³⁹³ Harold Brown; John Deutch; John P. White, "National Missile Defense: Is There Another Way?" *Foreign Policy* 119, (Sum., 2000): 97, <http://www.jstor.org>.

³⁹⁴ Donald MacKenzie; Graham Spinardi, "Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons" *The American Journal of Sociology* 101, no.1 (Jul., 1995): 69, <http://www.jstor.org>.

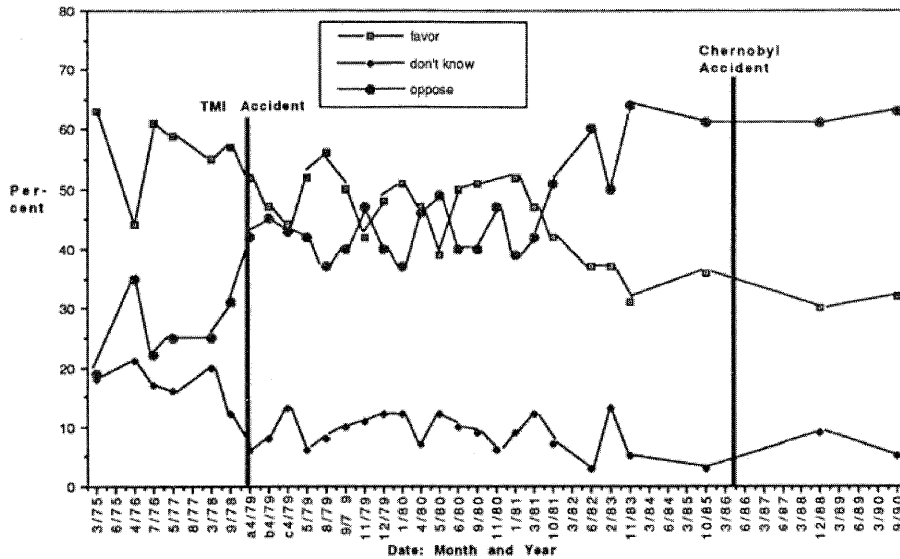
recommendations... This new phenomenon would also lead to the construction of bombs, and it is conceivable--though much less certain--that extremely powerful bombs of this type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove too heavy for transportation by air.³⁹⁵

DBQ B: Nuclear Power.

1. "The federal program, started in the wake of elevated concerns after the Sept. 11, 2001 attacks, entails giving free potassium iodide to each individual living or working in parts of Wayne County, Webster and Penfield. The over-the-counter medication doesn't protect a person from radiation overall, but it does protect the thyroid from exposure. Ginna is located on the shore of Lake Ontario in Ontario, Wayne County."³⁹⁶

³⁹⁵ Atomic Archive, *Einstein's letter to Franklin Roosevelt*, www.atomicarchive.com.

³⁹⁶ Lauren Stanforth, "Pills Offered to Residents Near Ginna," *Rochester Democrat and Chronicle*, May 3, 2007, 1B; 4B, <http://www.newsbank.com>.

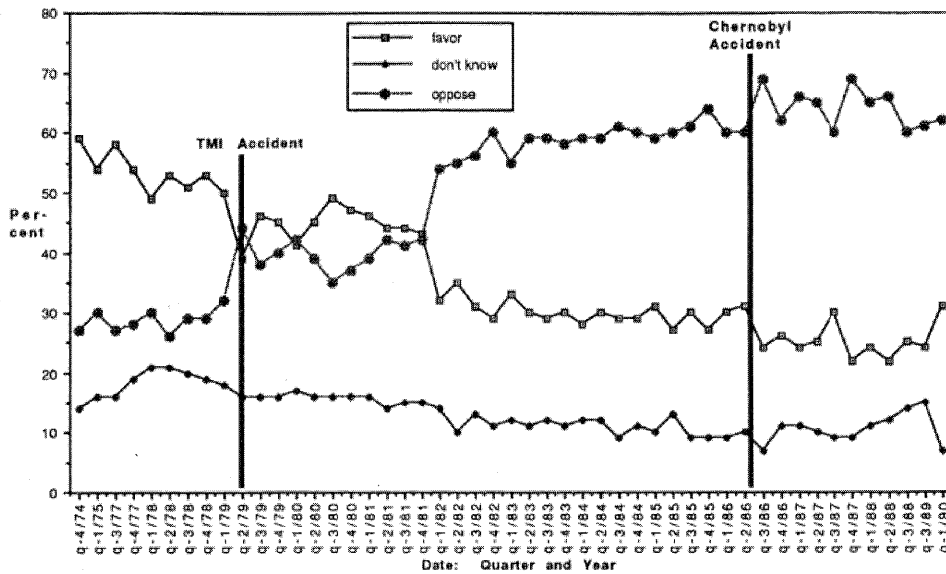


Source: Louis Harris and Associates
National Samples

2.

Figure 1. Public attitudes toward building nuclear power plants in the United States

397



Source: Cambridge
National Samples

3.

Figure 2. Public attitudes toward building nuclear power plants in the United States as a way of dealing with the energy crisis.

398

³⁹⁷ Riley E. Dunlap; Eugene A. Rosa, "Poll Trends: Nuclear Power: Three Decades of Public Opinion," *The Public Opinion Quarterly* 58, no. 2 (Sum., 1994): 299, <http://www.jstor.org>.

³⁹⁸ Riley E. Dunlap; Eugene A. Rosa, "Poll Trends: Nuclear Power: Three Decades of Public Opinion," *The Public Opinion Quarterly* 58, no. 2 (Sum., 1994): 300, <http://www.jstor.org>.

Nuclear Power as a Source of Electricity

6. Do you support or oppose using nuclear power to generate electricity?

	AP/MG	
	6/86 ^a (%)	1/89 (%)
Support	36	55
Do not support	35	34
No opinion	26	11
<i>N</i>	1,365	1,162

^a Wording was: "Do you support the use of nuclear energy to generate electricity or not, or don't you have an opinion either way?"

7. Overall, do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose the use of nuclear energy as one of the ways to provide electricity for the United States?

	B/G		
	2/92 (%)	12/92 (%)	2/93 (%)
Strongly favor	25	20	22
Somewhat favor	35	30	31
Somewhat oppose	18	21	19
Strongly oppose	15	18	18
Don't know	7	11	11

NOTE.—Sample sizes of approximately 1,000.

8. How important do you think nuclear energy plants are in meeting this nation's electricity needs today? Do you think nuclear energy plants are very important, somewhat important, not too important, or not important at all?

	Cambridge	
	8/86 (%)	8/90 (%)
Very important	32	34
Somewhat important	38	36
Not too important	16	13
Not important at all	12	12
Don't know	2	5

NOTE.—Sample size of approximately 1,500 for 1986, and 1,250 for 1990.

Local Siting of Power Plants

9. As of today, how do you feel about the construction of a nuclear power plant in this area—that is, within five miles from here? Would you be against the construction of such a plant in the area, or not?

	Gallup		
	1976 (%)	1979 (%)	6/86 (%)
Against	45	60	73
Not against	42	33	23
No opinion	13	7	4

NOTE.—Sample sizes of approximately 1,000.

4.

399

³⁹⁹ Riley E. Dunlap; Eugene A. Rosa, "Poll Trends: Nuclear Power: Three Decades of Public Opinion," *The Public Opinion Quarterly* 58, no. 2 (Sum., 1994): 311, <http://www.jstor.org>.

TABLE 1
Summary of Initiative Referenda

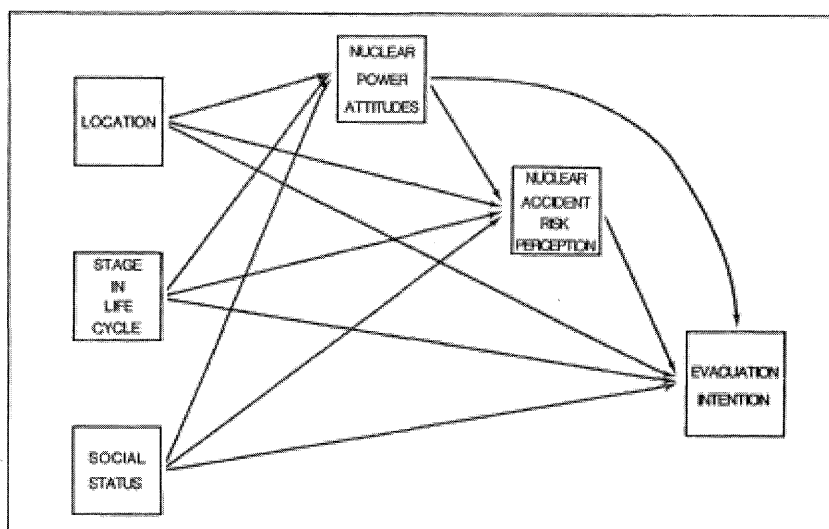
Initiative Referenda to Restrict Nuclear Power	For (%)	Against (%)
California (1976)	33	67
Arizona (1976)	30	70
Colorado (1976)	29	71
Montana (1976)	42	58
Oregon (1976)	42	58
Ohio (1976)	32	68
Washington (1976)	33	67

5.

400

408

THE GEOGRAPHICAL REVIEW



6.

FIG. 1.—Model of evacuation-decision making for a nuclear-reactor emergency.

401

⁴⁰⁰ Gerald Berk; Roger E. Kasperson; David Pijawka; Alan B. Sharaf; James Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," *Science, Technology, & Human Values* 5, no. 31 (Spr., 1980): 14, <http://www.jstor.org>.

⁴⁰¹ James H. Johnson Jr., "A Model of Evacuation—Decision Making in a Nuclear Reactor Emergency," *Geographical Review* 75, no. 4 (Oct., 1985): 408, <http://www.jstor.org>.

TABLE I. Nuclear power capacity: Operational and under construction (as of 31 October 1986)

Country	Operational		Under construction	
	Units	MWe	Units	MWe
Belgium	8	5,466	0	0
Finland	4	2,340	0	0
France	48	43,428	15	19,067
West Germany	20	17,720	5	5,276
Italy	3	1,273	5	3,899
Netherlands	2	508	0	0
Spain	8	5,528	2	1,920
Sweden	12	9,455	0	0
Switzerland	5	2,884	0	0
United Kingdom	38	99,178	4	2,530
OECD Europe	148	98,782	31	32,694
Canada	18	11,103	4	3,458
United States	95	80,117	24	26,795
OECD N. America	113	91,224	28	30,253
Japan	34	24,754	10	8,638
OECD total	285	214,740	69	71,685
Bulgaria	4	1,672	2	1,916
Cuba	0	0	2	416
Czechoslovakia	6	2,611	10	5,896
East Germany	5	1,694	6	3,472
Hungary	3	1,235	1	416
Poland	0	0	2	880
Romania	0	0	3	1,980
U.S.S.R.	50	26,806	34	31,816
COMECON total	68	33,778	66	47,436
Argentina	2	935	1	692
Brazil	1	626	1	1,245
India	6	1,168	4	890
Mexico	0	0	2	1,308
Pakistan	1	125	0	0
Philippines	0	0	1	620
PRC (China)	0	0	1	300
South Africa	2	1,840	0	0
South Korea	6	4,475	8	2,685
Taiwan	6	4,918	0	0
Yugoslavia	1	632	0	0
OTHERS total	25	14,715	15	7,720
World total	388	283,233	142	126,471

Note. Austria's completed reactor and Iran's two partially completed reactors are not included, since they have been abandoned by both governments.
 Source: International Atomic Energy Agency Power Reactor Information System, reproduced in IAEA Bulletin, Winter 1986, p. 61.

7.

402

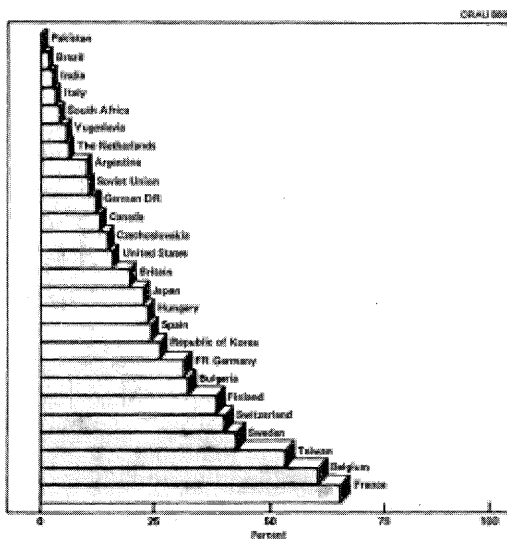


FIGURE 1. Nuclear power generation (1985), by country as a percentage of all national electricity generation

Source: Richard Masters, "Still Working Through the Backlog," *Nuclear Engineering International*, June 1986, p. 46.

8.

403

⁴⁰² Jack Barkenbus, "Nuclear Power Safety and the Role of International Organization," *International Organization* 41, no. 3 (Sum., 1987): 477, <http://www.jstor.org>.

Table 1. Percentage of electricity generated by alternative methods for selected countries, 1985

	Coal	Other solid fuel	Oil	Gas	Nuclear	Hydro & others
EEC	39.0	0.6	11.0	6.6	30.8	11.8
Belgium	26.2	0.5	6.5	4.0	60.4	2.4
Denmark	93.6	—	5.0	1.1	—	0.3
France	13.0	0.2	2.1	0.9	65.1	18.7
West Germany	55.4	1.1	2.3	6.1	30.8	4.3
Italy	16.2	0.3	41.0	13.3	3.8	25.5
Netherlands	27.2	0.7	5.2	60.7	6.2	—
UK	60.0	—	16.2	1.0	20.5	2.3
Norway	—	—	0.3	—	—	99.7
Sweden	1.5	0.5	2.9	—	42.8	52.3
Canada	17.3	0.4	1.5	1.5	13.2	66.2
US	57.2	0.1	4.1	11.9	15.5	11.3
Australia	73.8	0.4	3.9	9.5	—	12.4
Japan	14.9	—	29.0	19.1	23.7	13.3

Source: OECD (1987).

Note: UK figures are distorted by the 1984–5 coal miners' strike which temporarily led to a significant switch from coal to oil.

9.

404

10. "The decision to evacuate during a nuclear reactor emergency, for the most part, will be made on the basis of an individual's perception of risk to self and family."⁴⁰⁵

DBQ C: How nuclearization changed American psyche and how well prepared are we for a potential attack from another nation or terrorist.

1. "Indoor bomb shelters, both of concrete and wood-beam 'do-it yourself' types, emerged intact. Dalmatian dogs in shelters in the ruined houses were extricated a few hours later unharmed and happy... Tons of groceries, bulk, canned and frozen, were in the buildings. Even in the forward most ones, there seemed to be no damage from radiation or blast that would prevent their being

⁴⁰³ Jack Barkenbus, "Nuclear Power Safety and the Role of International Organization," *International Organization* 41, no. 3 (Sum., 1987): 479, <http://www.jstor.org>.

⁴⁰⁴ David Newbery; George Yarrow, "The Price of Nuclear Power," *Economic Policy* 3, no. 6 (Apr., 1988): 87, <http://www.jstor.org>.

⁴⁰⁵ James H. Johnson Jr., "A Model of Evacuation—Decision Making in a Nuclear Reactor Emergency," *Geographical Review* 75, no. 4 (Oct., 1985): 411-412, <http://www.jstor.org>.

eaten immediately... A Civil-Defense mass-feeding team as part of the exercise cooked and served a beef-stew and roast-beef sandwich lunch to about 500 people at the test town.”⁴⁰⁶

2. “In fact, local experts agree that a well-executed terrorist action with nuclear, biological or chemical (N.B.C.) weapons could quickly overwhelm the resources of this or any community.”⁴⁰⁷
3. “Some nuclear bombs and warheads in the former Soviet Union may be unaccounted for other, less-stable nations such as North Korea and Pakistan have developed or are trying to develop nuclear weapons capability. Dirty bombs are conventional explosives accompanied by radioactive material such as enriched uranium.”⁴⁰⁸
4. “The Smithsonian Institution revised an exhibit on the Enola Gay in the mid-1990’s after veterans groups complained that it would portray the Japanese as victims of American aggression without discussing Japanese atrocities or the attack on Pearl Harbor.”⁴⁰⁹
5. “It’s not exactly fun and it forces us to consider difficult matters, but survival planning should be one of our highest personal priorities. The U.S.

⁴⁰⁶ Gladwin Hill, “‘Town’ Does Well in Atomic Blast,” *New York Times*, May 7, 1955, 6, <http://www.proquest.com>.

⁴⁰⁷ Steve Orr and Micheal Wentzel, “Vigilance Reaches New Heights as the Threat of Terrorism Through, Nuclear, Biological and Chemical Means Forces the Rochester Area to Ask Itself: ,” *Rochester Democrat and Chronicle*, October 7, 2001, 1A; 16A, <http://www.newsbank.com>.

⁴⁰⁸ Steve Orr and Micheal Wentzel, “Vigilance Reaches New Heights as the Threat of Terrorism Through, Nuclear, Biological and Chemical Means Forces the Rochester Area to Ask Itself: ,” *Rochester Democrat and Chronicle*, October 7, 2001, 1A; 16A, <http://www.newsbank.com>.

⁴⁰⁹ Matthew Daneman, “Historic Links Reach All the Way to Rochester,” *Rochester Democrat and Chronicle*, August, 7, 2005, 1A; 9A, <http://www.newsbank.com>.

Department of Homeland Security recommends that every family assemble an emergency kit, make a family communications plan and learn more about readiness. Emergency preparedness is a team effort. Government must ensure that public safety systems are ready to respond rapidly. Citizens must take responsibility for their general safety and survival in the aftermath of an attack or other disaster.”⁴¹⁰

6. “Like many of you, I suspect, I don’t know how to process these warnings of al-Qaeda terrorist attacks or how to deal with the sick feeling in the pit of my stomach. It’s not like the Cold War cloud that hung over my generation for 40 years. Then the enemy had a name and a face. The threat of nuclear war was real, but there was also reason to believe that neither the United States nor the Soviet Union would actually risk the end of life on Earth—despite their political and ideological clashes. We could fold up the fear and lock it away in a corner of our brains and forget about it.”⁴¹¹

7. “At the same time, soldiers in trenches that were covered to shelter them from debris lived through the blast. The distance of the soldiers from the point of explosion was not disclosed...General Huebner noted that the slightest defect in a structure would make habitation in it impossible if it were hit by a nuclear shock.”⁴¹²

⁴¹⁰ Steve Bowman, “Citizens Must Join Monroe in Preparing for Disaster,” *Rochester Democrat and Chronicle*, July 18, 2005, 9A, <http://www.newsbank.com>.

⁴¹¹ Mark Hare, “How Do Ordinary Folks Cope with the Terror Threat,” *Rochester Democrat and Chronicle*, August 8, 2004, 1B, <http://www.newsbank.com>.

⁴¹² Jack Raymond, “General Defends Atomic Shelters,” *New York Times*, June 30, 1957, 14, <http://www.proquest.com>.

8. "Local school districts are reviewing safety and disaster plans during the latest elevated alert of possible terrorist attacks against the United States...She said plans include evacuations, lockdowns and emergency communications. Connors said district plans would be effective in many different situations. He said it has set up safe places to evacuate students. It can lock down rooms and whole buildings, including heating and cooling systems that draw air from outside. The district can also shelter and feed students in the event they cannot go home."⁴¹³
9. "What if, next time, it's one of our nuclear power plants that takes the blow? Suppose they were to set off a dirty bomb right here in Rochester to spread something like the ebola virus, causing maybe 10,000 people to become critically ill. Do we have enough hospital beds for that many people at once?"⁴¹⁴
10. "The Tuskegee Airmen were dedicated, determined young men who enlisted to become America's first black military airmen, at a time when there were many people who thought that black men lacked intelligence, skill, courage and patriotism...No standards were lowered for the pilots or any of the others who trained in operations, meteorology, intelligence, engineering, medicine or any of the other officer fields...After the war in Europe ended in 1945, black

⁴¹³ Jeffrey Blackwell, "Schools Evaluate Emergency Plans," *Rochester Democrat and Chronicle*, February 13, 2003, 6A, <http://www.newsbank.com>.

⁴¹⁴ Carol Ritter, "Sept. 11 Attacks Remind Us We Still Can be Vulnerable," *Rochester Democrat and Chronicle*, September 7, 2002, 1B, <http://www.newsbank.com>.

airmen returned to the United States and faced continued racism and bigotry despite their outstanding war record.”⁴¹⁵

11. “The committee recommended a girl’s softball league be established to be prepared to go into Major League parks should attendance fall due to franchises losing too many quality players to attract crowds... This title was retained until the end of the 1945 season when the All-American Girls Baseball League (AAGPBL) was again adopted and retained through 1950... A total of 108 games were played in the regular season, which ran from mid-May to the first of September.”⁴¹⁶

12. “Women, who were formerly homemakers, left their homes to support the war by taking jobs in factories that were converted into making munitions and other military machinery. This change in the traditional occupation of women made the environment much friendlier for accepting women as professional ball players... The All-American Girls Professional Baseball League gave over 600 women athletes the opportunity to play professional baseball and to play it at a level never before attained. The League operated from 1943 to 1954 and represents one of the most unique aspects of our nation’s baseball history.”⁴¹⁷

13. “By present standards, the bomb dropped on Hiroshima, with an explosive yield of 12,500 tons of TNT, was small, equivalent to a battlefield weapon in today’s nuclear arsenals. Yet it was powerful enough to transform a city of

⁴¹⁵ Tuskegee Airmen Incorporated, Tuskegee Airmen Incorporated, www.tuskegeearmen.org

⁴¹⁶ All-American Girls Professional Baseball League, All-American Girls Professional Baseball League, www.aagpbl.org.

⁴¹⁷ All-American Girls Professional Baseball League, All-American Girls Professional Baseball League, www.aagpbl.org.

340,000 people into a plain of devastation in seconds. A huge fireball of several million degrees centigrade vaporized people and poured radiation in all directions. Fires erupted everywhere and, fanned by the swirling winds set up by the explosion, burned for six hours and consumed 3.8 square miles of houses and offices. Up to 130,000 people were killed or doomed by wounds and radiation sickness.”⁴¹⁸

14. “The nuclear age ushered in by the attack on Hiroshima is fraught with danger and anxiety. We may not face global nuclear exchanges between the superpowers, but we are living in a ‘second nuclear age’ characterized by threats posed by proliferation and nuclear terrorism. Maybe if we allow Hiroshima to be our text, the nuclear taboo would be reinforced so that these weapons will never be used again.”⁴¹⁹

15. “The most likely dirty bomb- made with low-intensity medical isotopes- ‘would hurt a few people and inconvenience a lot,’ said University of Rochester radiation safety officer Andrew Karam...But with the radioactive bang would come panic, financial chaos and acreage that could stay contaminated for years. ‘Looking at it from the point of view of a terrorist,’ said Karam, ‘a dirty bomb is an ideal weapon.’”⁴²⁰

⁴¹⁸ Michael Dobkowski, “For 60 Years, Threat Ignited by Hiroshima has Lingered,” *Rochester Democrat and Chronicle*, August 5, 2005, 9A, <http://www.newsbank.com>.

⁴¹⁹ Michael Dobkowski, “For 60 Years, Threat Ignited by Hiroshima has Lingered,” *Rochester Democrat and Chronicle*, August 5, 2005, 9A, <http://www.newsbank.com>.

⁴²⁰ Corydon Ireland, “Panic Is Big Part of Fallout,” *Rochester Democrat and Chronicle*, June 11, 2002, 3A, <http://www.newsbank.com>.

16. "One of the most sobering reports ever prepared by a United States

Government agency has been submitted to the President and Congress by the Federal Civil Defense Administration. This document estimates that the Soviet Union is now or soon will be capable of making an all-out atomic attack on our largest cities, utilizing 400 planes which could drop bombs capable of killing or injuring as many as 11,000,000 of our people...Protection against enemy attack at the civil defense level is both a national and a local responsibility. It is difficult to believe that our state, county, and city governments are contributing their fair share of meeting this responsibility when they match federal dollar with only twenty-five cents. Dollars spent now can save lives tomorrow. There is no more vital form of insurance than civil defense in this era of tension in world affairs."⁴²¹

17. "Potential United States target cities now provide protection from only

2,000,000 persons, but alterations to present buildings could increase this to give safety to 15,000,000 more...Safest shelters from blast, heat and radiation effects are office buildings, stores, schools, theatres and factories, says the manual titled 'Methods for Determining Shelter Needs and Shelter Areas.' Virtually vetoed are large auditoriums and churches on the ground that few of them have adequate overhead protection."⁴²²

⁴²¹ *New York Times*, "Civil Defense Problems," *New York Times*, February 18, 1953, 30, <http://www.proquest.com>.

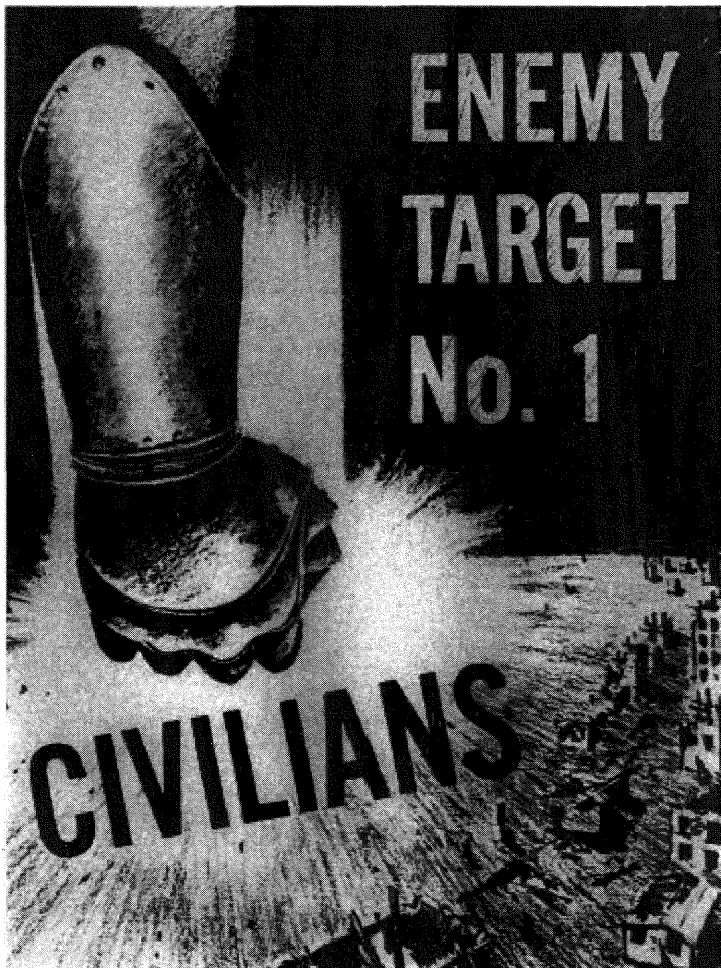
⁴²² *New York Times*, "Shelter Plan Urged," *New York Times*, March 24, 1952, 19, <http://www.proquest.com>.

18. "The civil defense program becomes of paramount importance to young people because 'you will grow up in a civil defense atmosphere,' he said...'The more basic training and skill which you can acquire now to equip you to protect yourself and to assist your neighbor,' he added, 'the better prepared you will be to assume your proper place in this civil defense atmosphere'...Junior Red Cross members could assist by taking courses in first aid and home care of the sick...' As you know,' he went on, 'one of the greatest dangers in an atomic attack is that of fire. This means to us that an extra effort has to be put forth to promote fire prevention.'"⁴²³
19. "As the administration continues to aggressively seek to shore up its image in the war against terrorism, it must do more to help local communities cope with the new threat of radioactive bombs. For starters, make more training available to better detect radioactive materials. And better secure facilities such as hospitals where the hazardous materials can be found. New weapons and new cunning demand new strategies."⁴²⁴
20. "Response to nuclear risks, in Pahner's view, involves {a} preexisting images of the horror of nuclear war, {b} conscious or unconscious fears related to the invisibility of radiation and the uncertainty of exposure, and {c} conscious

⁴²³ *New York Times*, "Youth Role Cited in Civil Defense," *New York Times*, June 27, 1951, 11, <http://www.proquest.com>.

⁴²⁴ Staff, "The Dirty Bomb Threat," *Rochester Democrat and Chronicle*, June 12, 2002, 10A, <http://www.newsbank.com>.

and unconscious fears of the immediate and long-term effects of radiation on genetic processes.”⁴²⁵



21. **Figure 1** A Defense Civil Preparedness Agency poster advertising civilian peril. From the National Archives and Records Administration collection. Record Group 397-MA: Records of the Defense Civil Preparedness Agency—prints of mission activities 1947-1977. Box 1; folder 4-A, Alert America Posters. Photo no. 4-A-2. 426

⁴²⁵ Gerald Berk; Roger E. Kasperson; David Pijawka; Alan B. Sharaf; James Wood, “Public Opposition to Nuclear Energy: Retrospect and Prospect,” *Science, Technology, & Human Values* 5, no. 31 (Spr., 1980): 18, <http://www.jstor.org>.

⁴²⁶ Kristina Zarlengo, “Civilian Threat, the Suburban Citadel, and Atomic age American Women,” *Signs* 24, no. 4 (sum. 1999) University of Chicago Press: 929, <http://www.jstor.org>.

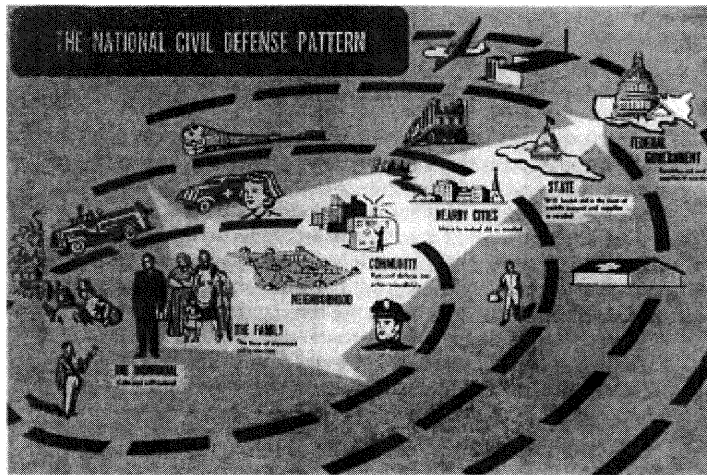


Figure 2 A National Securities Resources Board public information illustration of "The National Civil Defense Pattern." NSRB. *United States Civil Defense*. Washington, D.C.: Government Printing Office, 1950.

22.

427



TABLE 1
 TARGETS FOR ATTACK: The cities named above have been listed by the Federal Civil Defense Administration as "critical target areas" for atomic raids. It omitted some vital military installations, including atom plants, for reasons of security. 428

23.

⁴²⁷ Kristina Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic age American Women," *Signs* 24, no. 4 (sum. 1999) University of Chicago Press: 932, <http://www.jstor.org>.

⁴²⁸ *New York Times*, "Civil Defense Lists 70 'Target Areas,'" *New York Times*, September 18, 1953, 10, <http://www.proquest.com>.

HERE ARE THE TARGET AREAS

The critical target areas, their states, and the regional population follow:

Akron (Ohio)	410,812
Albany-Schenectady-Troy (N. Y.)	214,480
Allentown-Bethlehem-Easton (N. J.-Pa.)	437,524
Atlanta (Ga.)	471,797
Baltimore (Md.)	1,237,203
Birmingham (Ala.)	164,698
Birmingham (Miss.)	254,728
Boston (Mass.)	2,369,804
Bridgeport (Conn.)	293,137
Buffalo (N. Y.)	1,089,239
Canton (Ohio)	291,184
Chattanooga (Tenn.-Ga.)	246,433
Chicago (Ill.-Ind.)	5,495,594
Cincinnati (Ohio-Ky.)	594,492
Cleveland (Ohio)	1,445,511
Columbus (Ohio)	383,410
Dallas (Texas)	614,798
Dayton-Rock Island-Maine (Ill.-Iowa)	214,736
Dayton (Ohio)	457,333
Denver (Colo.)	345,532
Detroit (Mich.)	2,816,161
Elbe (Pa.)	219,188
Evansville (Ind.)	160,422
Fall River-New Bedford (Mass.-R. I.)	212,167
Ft. Worth (Tex.)	370,863
Ft. Wayne (Ind.)	183,722
Ft. Worth (Tex.)	301,333
Grand Rapids (Mich.)	288,323
Hartford (Conn.)	588,621
Houston (Tex.)	808,701
Indianapolis (Ind.)	531,777
Kansas City (Kan.-Mo.)	414,576
Knoxville (Tenn.)	337,105
Lancaster (Pa.)	324,717
Los Angeles (Calif.)	4,357,015
Louisville (Ky.-Ind.)	578,509
Memphis (Tenn.)	482,322
Milwaukee (Wis.)	871,647
Minneapolis-St. Paul (Minn.)	1,118,598
New Britain-Bristol (Conn.)	148,912
New Haven (Conn.)	284,622
New Orleans (La.)	685,695
New York-N. E. New Jersey (N. Y.-N. J.)	12,011,994
Norfolk-Portsmouth-Newport News (Va.)	549,427
Peoria (Ill.)	250,322
Philadelphia (Pa.-N. J.)	2,671,642
Pittsburgh (Pa.)	2,313,276
Portland (Ore.-Wash.)	704,622
Providence (R. I.-Mass.)	727,202
Reading (Pa.)	235,749
Rochester (N. Y.)	467,616
St. Louis (Mo.-Ill.)	1,021,261
San Diego (Calif.)	595,802
San Francisco-Oakland (Calif.)	2,340,767
Seattle (Wash.)	723,992
South Bend (Ind.)	205,018
Springfield-Holyoke (Mass.-Miss.)	487,035
Syracuse (N. Y.)	341,719
Toledo (Ohio)	380,353
Tranton (N. J.)	229,781
Utica-Rome (N. Y.)	284,362
Washington (D. C.-Md.-Va.)	1,464,089
Waterbury (Conn.)	154,636
Wesling-Staubsville (Ohio-W. Va.)	354,462
Wichita (Kan.)	237,548
Wilkes-Barre and Hazleton (Pa.)	322,261
Wilmington (Del.-N. J.)	268,387
Worcester (Mass.)	278,336
York (Pa.)	202,737
Youngstown (Ohio-Pa.)	628,492

24.

429

⁴²⁹ *New York Times*, "Civil Defense Lists 70 'Target Areas,'" *New York Times*, September 18, 1953, 10, <http://www.proquest.com>.

Bibliography Part I:

Acheson, Dean; Harriman, W. Averell; Krock, Arthur; Roberts, Charles M. "How Containment Worked." *Foreign Policy*, no. 7 (Sum., 1972): 41-52.

<http://www.jstor.org>.

Adelson, Alan M. "Please Don't Steal the Atomic Bomb." *Theory Into Practice* 8, no. 2 (Apr., 1969): 62-66. <http://www.jstor.org>.

Barkenbus, Jack. "Nuclear Power Safety and the Role of International Organization." *International Organization* 41, no. 3 (Sum., 1987): 475-490.

<http://www.jstor.org>.

Berk, Gerald; Kasperson, Roger E.; Pijawka, David; Sharaf, Alan B.; Wood, James. "Public Opposition to Nuclear Energy: Retrospect and Prospect." *Science, Technology, & Human Values* 5, no. 31 (Spr., 1980): 11-23.

<http://www.jstor.org>.

Bernstein, Barton J. "Crossing the Rubicon: A Missed Opportunity to Stop the H— Bomb?" *International Security* 14, no. 2 (Aut., 1989): 132-160.

<http://www.jstor.org>

Bertram, Christoph. "SALT II and the Dynamics of Arms Control." *International Affairs* 55, no. 4 (Oct., 1979): 565-573. <http://www.jstor.org>.

Bickerstaffe, Julia; Pearce, David. "Can There Be a Consensus on Nuclear Power?"

Social Studies of Science 10, no. 3 (Aug., 1980): 309-344.

<http://www.jstor.org>.

Bloomfield, Beth. "Strategic Arms Limitation." *Proceedings of the Academy of*

Political Science 32, no. 4 (1977): 184-194. <http://www.jstor.org>.

Brown, Harold; Deutch, John; White, John P. "National Missile Defense: Is There

Another Way?" *Foreign Policy*, no. 119 (Sum., 2000): 91-100.

<http://www.jstor.org>.

Brownlie, Ian. "Nuclear Proliferation: Some Problems of Control." *International*

Affairs 42, no. 4 (Oct., 1966): 600-608. <http://www.jstor.org>.

Brzoska, Michael. "Is the Nuclear Non-Proliferation System a Regime? A Comment

on Trevor McMorris Tate." *Journal of Peace Research* 29, no. 2 (May.,

1992): 215-220. <http://www.jstor.org>.

Carnahan, Burrus, M. "Treaty Review Conferences." *The American Journal of*

International Law 81, no. 1 (Jan., 1987): 226-230. <http://www.jstor.org>.

Coffey, J. I. "Soviet ABM Policy: The Implications for the West." *International*

Affairs 45, no. 2 (Apr., 1969): 205-222. <http://www.jstor.org>.

Connor, James E. "Prospects For Nuclear War." *Proceedings of the Academy of*

Political Science 31, no. 2 (Dec., 1973): 63-73. <http://www.jstor.org>.

- Din, Allan M. "Nuclear Test Bans." *Journal of Peace Research* 24, no. 2 (Jun., 1987): 105-110. <http://www.jstor.org>.
- Dougherty, James E. "The Non-Proliferation Treaty." *Russian Review* 25, no. 1 (Jan., 1966): 10-23. <http://www.jstor.org>.
- Drell, Sidney D.; Farley, Phillip J.; Holloway, David. "Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative." *International Security* 9, no. 2 (Aut., 1984): 51-91. <http://www.jstor.org>.
- Dunlap, Riley E.; Rosa, Eugene A. "Poll Trends: Nuclear Power: Three Decades of Public Opinion." *The Public Opinion Quarterly* 58, no. 2 (Sum., 1994): 295-324. <http://www.jstor.org>.
- Epstein, William. "Why States Go—And Don't Go—Nuclear." *Annals of the American Academy of Political and Social Science* 430, Nuclear Proliferation: Prospects, Problems, and Proposals (Mar., 1977): 16-28. <http://www.jstor.org>.
- Feshback, Seymour; White, Michael J. "Individual Differences in Attitudes towards Nuclear Arms Policies: Some Psychological and Social Policy Considerations." *Journal of Peace Research* 23, no. 2 (Jun., 1986): 129-139. <http://www.jstor.org>.
- Finkleman, David. "The Controbution of Space Systems and Strategic Defense to Nuclear Stability." *Proceedings of American Philosophical Society* 145, no. 3 (Sep., 2001): 260-269. <http://www.jstor.org>.

- Flynn, James H.; Layman, Mark; Slovic, Paul. "Perceived Risk, Trust, and the Politics of Nuclear Waste." *Science* 254, no. 5038 (Dec. 13, 1991): 1603-1607. <http://www.jstor.org>.
- Gouré, Daniel. "Strategic Offense and Defense: Enhancing the Effectiveness of U.S. Strategic Forces." *Annals of American Academy of Political and Social Science* 457, National Security Policy for the 1980s (Sep., 1981): 28-45. <http://www.jstor.org>.
- Graham, Thomas W.; Kramer, Bernard M. "The Polls: ABM and Star Wars: Attitudes Toward Nuclear Defense, 1945-1985." *The Public Opinion Quarterly* 50, no. 1 (Spr., 1986): 125-134. <http://www.jstor.org>.
- Gray, Colin. "Strategic Defense, Deterrence, and the Prospects for Peace." *Ethics* 95, no. 3 (Apr., 1985): 659-672. <http://www.jstor.org>.
- Jacobson, Harold K. "The Crisis in Arms Control." *Michigan Law Review* 82, no. 5/6 (Apr.-May, 1984): 1588-1603. <http://www.jstor.org>.
- Jensen, Llyod. "Approach—Avoidance Bargaining in the Test Ban Negotiations." *International Studies Quarterly* 12, no. 2 (Jun., 1968): 152-160. <http://www.jstor.org>.
- Johnson, James H., Jr. "A Model of Evacuation—Decision Making in a Nuclear Reactor Emergency." *Geographical Review* 75, no. 4 (Oct., 1985): 405-418. <http://www.jstor.org>.

Joppke, Christian. "Decentralization of Control in U.S. Nuclear Energy Policy."

Political Science Quarterly 107, no. 4 (Win., 1992-1993): 709-725.

<http://www.jstor.org>.

Kennedy, Kevin C. "Treaty Interpretations by the Executive Branch: the ABM Treaty and "Star Wars" Testing and Development." *The American Journal of Law*

80, no. 4 (Oct., 1986): 854-877. <http://www.jstor.org>.

Kincade, William, H. "Arms Control in the 1980s." *Annals of the American Academy of Political and Social Science* 457, National Security Policy for the 1980s

(Sep., 1981): 145-163. <http://www.jstor.org>.

Kistiakowsky, G.B.; York, H.F. "Strategic Arms Race Slowdown through Test Limitations." *Science* 185, no. 4149 (Aug. 2, 1974): 403-406.

<http://www.jstor.org>.

Kochetkov, Yevgeniy N. "The Position of the USSR on Nuclear Weapons and Arms Control." *Annals of the American Academy of Political and Social Science*

469, Nuclear Armament and Disarmament (Sep., 1983): 136-143.

<http://www.jstor.org>.

Nacht, Michael. "The United States in a World of Nuclear Powers." *Annals of the American Academy of Political and Social Science* 430, Proliferation:

Prospects, Problems, and Proposals (Mar., 1977): 162-174.

<http://www.jstor.org>.

- Newbery, David; Yarrow, George. "The Price of Nuclear War." *Economic Policy* 3, no. 6 (Apr., 1988): 81-132. <http://www.jstor.org>.
- Park, Jeffrey; van der Vink, Gregory E. "Nuclear Test Ban Monitoring: New Requirements, New Resources." *Science* 263, no. 5147 (Feb. 4, 1994): 634-635. <http://www.jstor.org>.
- Payne, Samuel B., Jr. "The Soviet Debate on Strategic Arms Limitation: 1968-72." *Soviet Studies* 27, no. 1 (Jan., 1975): 27-45. <http://www.jstor.org>.
- Perry, Charles M. "Theater Missile Threats and Defensive Options in the 1990s." *Annals of the American Academy of Political and Social Science* 517, New Directions in U.S. Defense Policy (Sep., 1991): 66-79. <http://www.jstor.org>.
- Ramey, James T. "The Promise of Nuclear Energy." *Annals of the Academy of Political and Social Science* 410, The Energy Crisis: Reality or Myth (Nov., 1973): 11-23. <http://www.jstor.org>.
- Schwelb, Egon. "The Nuclear Test Ban Treaty and International Law." *The American Journal of International Law* 58, no. 3 (Jul., 1964): 642-670. <http://www.jstor.org>.
- Sofaer, Abraham D. "The ABM Treaty and the Strategic Defense Initiative." *Harvard Law Review* 99, no. 8 (Jun., 1986): 1972-1985. <http://www.jstor.org>.

Smith, Alice K. "Scientists and the Public Interest—1945—46." *Newsletter on Science, Technology, & Human Values*, no. 24 (Jun., 1978): 24-32.

<http://www.jstor.org>.

Unauthored. "Signing of Treaty on Strategic Offensive Reductions." *The American Journal of International Law* 96, no. 3 (Jul., 2002): 734-735.

<http://www.jstor.org>.

Unauthored. "Nuclear Weapon States Pledge to Unequivocal Elimination." *The American Journal of International Law* 94, no. 4 (Oct., 2000): 706.

<http://www.jstor.org>.

Unauthored. "Non-Proliferation of Nuclear Weapons." *The International and Comparative Law Quarterly* 21, no. 2 (Apr., 1972): 383-385.

<http://www.jstor.org>.

Waltz, Kenneth N. "Nuclear Myths and Political Realities." *The American Political Science Review* 84, no. 3 (Sep., 1990): 731-745. <http://www.jstor.org>.

Webster, Donovan. *Aftermath: The Remnants of War*. New York: Vintage Books, 1996.

Winkler, Allan M. "The "Atom" and American Life." *The History Teacher* 26, no. 3 (May., 1993): 317-337. <http://www.jstor.org>.

Zoppo, Ciro E. "Nuclear Technology, Multipolarity, and International Stability." *World Politics* 18, no. 4 (Jul. 1996): 579-606. <http://www.jstor.org>.

Bibliography Part II:

Agnew, Jean-Christophe ed. *A Companion to Post-1945 America*. United Kingdom: Blackwell Publishers Ltd., 2002.

Boime, Albert. "The Postwar Redefinition of Self: Marisol's Yearbook Illustrations for the Class of '49." *American Art* 7, no. 2 (Spr. 1993): 6-21.
<http://www.jstor.org>.

Blackwell, Jeffrey. "Schools Evaluate Emergency Plans." *Rochester Democrat and Chronicle*, February 13, 2003, 6A. <http://www.newsbank.com>.

Bolger, Andy. "Letters to the Editor." *Rochester Democrat and Chronicle*, December 9, 2007, 25A. <http://www.newsbank.com>.

Boyer, Paul. *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*. New York: Pantheon Books, 1985.

Brumberg, Abraham. "Moscow Seen Clearly." *New York Times*, September 2, 1987, A27. <http://www.proquest.com>.

Cooper, Ken. "Zero Pays the House." *Contemporary Literature* 33, no. 3 (fall, 1992): 528-544. <http://www.jstor.org>.

Crowther, Bosley. "Screen: Into the Wide Blue Yonder." *New York Times*, April 21, 1955, 33. <http://www.proquest.com>.

Dobkowski, Michael. "For 60 Years, Threat Ignited by Hiroshima has Lingered."

Rochester Democrat and Chronicle, August 5, 2005, 9A.

<http://www.newsbank.com>.

Gelb, Leslie H. "Vulnerability Assumes the Soviets Will Strike First." *New York*

Times, October 4, 1981, E1. <http://www.proquest.com>.

Hare, Mark. "Iran Visits Reveals Unexpected Affection for America." *Rochester*

Democrat and Chronicle, June 12, 2007, 1B. <http://www.newsbank.com>.

Hartman, Kenneth. "Iranian Leader is Following Hitler's Lead." *Rochester Democrat*

and Chronicle, February 6, 2007, 9A. <http://www.newsbank.com>.

Henriksen, Margot A. *Dr. Strangelove's America*. Berkeley and Los Angeles:

University of California Press, 1997.

Hill, Gladwin. "'Town' Does Well in Atomic Blast." *New York Times*, May 7, 1955,

6. <http://www.proquest.com>.

Ireland, Corydon. "Panic is a Big Part of Fallout." *Rochester Democrat and*

Chronicle, June 11, 2002, 3A. <http://www.newsbank.com>.

Laurence, William L. "'Atomic Cocktails' Ease Thyroid Ills." *New York Times*, June

14, 1952, 17. <http://www.proquest.com>.

Lenoe, Matthew. "U.S. Missile Defense Plan is a Mistake." *Rochester Democrat and*

Chronicle, June 7, 2007, 9A. <http://www.newsbank.com>.

- Leviero, Anthony. "U.S. Twice Banned Data on Fall-Out." *New York Times*, February 22, 1955, 8. <http://www.proquest.com>.
- Livadas, Gregory. "Disaster Plans Cover Host of Woes." *Rochester Democrat and Chronicle*, March 12, 2007, 1A and 7A. <http://www.newsbank.com>.
- Lohman, Sidney. "News and Notes from the Studios." *New York Times*, March 15, 1953, X 13. <http://www.proquest.com>.
- Luers, William H. "A Glossary of Russia's Third Revolution." *New York Times*, July 7, 1987, A27. <http://www.proquest.com>.
- Middleton, Drew. "Pentagon, Despite Budget Increase, Sees Decade to Match Soviet Gains." *New York Times*, January 7, 1980, A1 and A16. <http://www.proquest.com>.
- Nadel, Alan. *Containment Culture: American Narratives, Postmodernism, and the Atomic Age*. Durham: Duke University Press, 1995.
- New York Times*. "New Film to Help in Bomb Training." *New York Times*, January 25, 1952, 7. <http://www.proquest.com>.
- New York Times*. "Youth Role Cited in Civil Defense." *New York Times*, June 27, 1951, 11. <http://www.proquest.com>.
- New York Times*. "Steps to Survive Atom Bomb Given." *New York Times*, July 17, 1955, 15. <http://www.proquest.com>.

New York Times. "Civil Defense Problems." *New York Times*, February 18, 1953, 30.

<http://www.proquest.com>.

New York Times. "City Drafts Plan for Atomic Attack." *New York Times*, June 14,

1950, 12. <http://www.proquest.com>.

New York Times. "Shelter Plan Urged." *New York Times*, March 24, 1952, 19.

<http://www.proquest.com>.

New York Times. "Civil Defense Lists 70 'Target Areas.'" *New York Times*,

September 18, 1953, 10. <http://www.proquest.com>.

New York Times. "Defense Exhibits Going on the Road." *New York Times*, October

12, 1951, 20. <http://www.proquest.com>.

Orr, Steve; Wentzel, Michael. "Vigilance Reaches New Heights as the Threat of

Terrorism Through Nuclear, Biological and Chemical Means Forces the

Rochester Area to Ask Itself:" *Rochester Democrat and Chronicle*, October 7,

2001, 1A and 16A. <http://www.newsbank.com>.

Raymond, Jack. "General Defends Atomic Shelters." *New York Times*, June 30, 1957,

14. <http://www.proquest.com>.

Rochester Democrat and Chronicle. "The Dirty Bomb Threat." *Rochester Democrat*

and Chronicle, June 12, 2002, 10A. <http://www.newsbank.com>.

Rochester Democrat and Chronicle. "Pakistan's Nukes." *Rochester Democrat and*

Chronicle, November 20, 2007, 14A. <http://www.newsbank.com>.

Rochester Democrat and Chronicle. "The North Korea Deal." *Rochester Democrat and Chronicle*, September 6, 2007, 8A. <http://www.newsbank.com>.

Rose, Kenneth D. *One Nation Underground: The Fallout Shelter in American Culture*. New York: New York University Press, 2001.

Salisbury, Harrison E. "The Russia Reagan Faces." *New York Times*, February 1, 1981, SM8. <http://www.proquest.com>.

Seth, Deepak. "India, U.S. are Pursuing Same Dream." *Rochester Democrat and Chronicle*, August 20, 2007, 9A. <http://www.newsbank.com>.

Shils, Maurice E.; Simon, Norman. "Potassium Iodide Policy in New York." *Science* 221, no. 4608 (Jul. 22, 1983): 318-320. <http://www.jstor.org>.

Stanforth, Lauren. "Pills Offered to Residents Near Ginna." *Rochester Democrat and Chronicle*, May 3, 2007, 1B and 4B. <http://www.newsbank.com>.

Winkler, Alan M. "By the Bomb's Early Light." *Science* 232, no. 4748 (Apr. 18, 1986): 407. <http://www.jstor.org>.

Zarlengo, Kristina. "Civilian Threat, the Suburban Citadel, and Atomic Age American Women." *Signs* 24, no. 4 (Sum., 1999): 925-958.
<http://www.jstor.org>.