EINSTEIN'S NUCLEAR FORMULA AND ITS RAMIFICATIONS IN SHAPING GEO-POLITICAL SECURITY ASPECTS: A CASE STUDY OF THE UNITED STATES OF AMERICA, 1905-2011.

BY

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RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ARTS DEGREE IN INTERNATIONAL CONFLICT MANAGEMENT TO THE INSTITUTE OF DIPLOMACY AND INTERNATIONAL STUDIES (IDIS), UNIVERSITY OF NAIROBI.

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ABSTRACT

This project involves showing the relationship between Einstein's formula, $E=MC^2$ and nuclear weapons and how it has affected the international security with threats. The United States of America has been used as a case study. It highlights the perception of the new types of threats to the international and human security by the growing scientific ideas in the area of nuclear weapons. It also tries to find out whether a state having nuclear weapons makes it safer. This chapter will theoretically define weak states concept, where the differentiation between strong and weak states will be given, and thus the difference in threat perception and level of vulnerabilities. This study adopted a comparative study approach, which is a careful analytical approach process of variable interaction and the links between the dependent and independent variables. This research was conducted based on the quantitative empirical research including analysis of the statistical data. All they have built, all they have worked for, would be destroyed in the first 24 hours. And even in the cold war, which brings burdens and dangers to so many countries, including Americas closest allies bear the heaviest burdens.

TABLE OF CONTENTS

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To my lecturers and especially Dr. Farah, I offer my thanks and deepest gratitude for your efforts in imparting me with conflict and international studies. To my fellow students that have come to know a better way, I acknowledge appreciation for your journey.

To the late Albert Einstein, founder of $E=MC^2$ and author of hundreds of articles, without which there would be nothing to support my words. To IDIS and KU Physics department staff, that aided me with all relevant resources and to anyone else who we worked together.

DECLARATION

I, Stanley Kaberu, hereby declare that this research project is my original work and that it has not been presented in any other University.

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16/11/2012
DATE

This project has been submitted for examination with my approval as a University supervisor.

DR. IBRAHIM FARAH

16/11/2012
DATE

DEDICATION

To the creator of all things, the source of all knowledge, giver of life and all of the gifts that set us apart from the rest of His creation. I make no claims about the all contents of this project work originating from me. I am only the observer of the processes of life and recording what I have learnt and confirmed by other great men.

ABBREVIATIONS

AEC - Atomic Energy Commission

C-Speed of Light

E-Energy

ft.-feet,

IAEC- International Atomic Energy Agency

km-kilometres

KU – Kenyatta University

M- metre

MAD - Mutually Assured Destruction

Mi-miles

M-Mass

NPT- Non-Proliferation of Nuclear Weapons

SI-Standard International

TNT – Trinitrotoluene

UN – United Nations

USA- United States of America

USSR – Union of Soviet Socialist Republics

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 INTRODUCTION

New types of threats include conflicts, wars, armaments race, radical movements, terrorism and etc. However, this work will look specifically at the ramifications of nuclear weapons discovery in the U.S, since it is closely intertwined with the new threats, and how this relatively new challenge (for them) affects or poses a threat to the international security of the states. The analysis of the threats posed by nuclear weapons to the international security is of growing importance, because they are only in the process of forming their international security agendas. Weak states are too vulnerable to many types of security threats. The analysis of this vulnerability of weak states to the threats will be given in theoretical part at later chapters.

This research is relevant as a contribution to security studies. Political leaderships are pre-occupied with the state building, with a great emphasis on the economic development, and thus leaving out the nuclear weapons problem, and not seeing it as a growing threat to their fledging national security. Meanwhile, the problem is seriously challenging, and will challenge the world stability but also lead to the economic and social disruption, unless it will be addressed and the necessary countermeasures will be included in the decision-making.

The development of $E=MC^2$ has caused a change in military, political and public functionality of the world today. The bombs effects created a temporary resolution that lead to another conflict. $E=MC^2$ is a mathematical formula that relates energy, mass and speed of light which is final. The SI unit of light and energy is m/s and joules respectively. In 1905 Albert Einstein published his special theory of relativity. According to this theory, the relation between mass and energy is

expressed by the equation $E = mc^2$, which states that a given mass (m) is associated with an amount of energy (E) equal to this mass multiplied by the square of the speed of light (c). A very small amount of matter is equivalent to a vast amount of energy. For example, 1 kg of matter converted completely into energy would be equivalent to the energy released by exploding 22 megatons of TNT. The ability to turn matter into energy led to the development of the nuclear weapons. [1]

Since Einstein's times, some major wars and conflict have been undertaken with the introduction of nuclear bomb. Einstein's formula is responsible for the immense power of nuclear weapons. This proposal seeks to analyze how the $E=MC^2$ brought unending conflicts over the world. We have heard that these devices have incredible destructive power, but how do they work? In this research, you will learn about how nuclear bombs are designed and what happens after nuclear explosion. Again, it will seek how it brings competition in the armament of states and instilling fear.[2] The project also examine whether the state having more nuclear energy make it safer. One final conclusion drawn from the World War II regards the ramifications of $E=MC^2$. There is a positive correlation of rise of conflicts and threats after the invention of $E=MC^2$ resulting the data collected.[3]

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[1] A narrative description of physicists' present understanding of physical reality in Penrose, Roger (2005) *The Road to Reality: A Complete Guide to the Laws of the Universe.* London: Knopf, pp13

[2] A concise and readable discussion of Einstein's life and contributions in Kaku, Michio (2004) *Einstein's Cosmos: How Albert Einstein's Vision Transformed Our Understanding of Space and Time.* New York: Norton, pp 1-10

[3] Political and strategic history of World War II in Weinberg, Gerhard L. (1994) *A World at Arms: A Global History of World War II.* Cambridge:Cambridge University Press, pp 1-24

1.1 BACKGROUND

Einstein's appointment at Princeton's Institute for Advanced Study could have afforded him the total solitude he always said he needed to think clearly through the great problems of physics. But Einstein refused to retreat entirely from the great problems of the moment for mankind. He continued to speak out against Nazi aggression and anti-Semitism in Europe and offered his support to the Zionist project of building a Jewish state in Israel (though he called for a policy of moderation and reconciliation when it came to the growing Jewish conflict with the Palestinian Arabs who also inhabited the ancient Holy Land). Most of all, Einstein advocated a pacifistic vision of a world dominated by peaceful internationalist institutions rather than warlike nationalistic states.[4]

By the late 1930s, however, it had become clear that peaceful international institutions had no hope of stopping the growing evil of Adolf Hitler's Nazi Germany. Scientists had made great progress in exploring the research path laid out by $E=MC^2$. They had achieved nuclear fission, the chain-reaction splitting of atoms in laboratory tests and recognized the real-world potential for tiny masses of radioactive material to release massive amounts of energy. The wartime application of fission was the nuclear bomb, a fearsome weapon that German scientists, by the late 1930s, understood was not only theoretically possible but perhaps technologically feasible to construct. [5]

Dozens of scientists, like Einstein, Jewish refugees from Hitler arrived in America in the 1930s and '40s fearing that Nazi researchers could help to conquer the globe by developing the world's first nuclear super-weapon. In 1939, one of those refugee scientists, Hungarian physicist Leo

[4] Folsing, Albrecht (1997) *Albert Einstein: A Biography.* New York: Trans. Ewald Osers. Viking, pp 17
[5] Rosenbaum, Ron (1995) *Explaining Hitler: The Search for the Origins of His Evil.* New York:Random House, pp 2-7

Szilard, tried to convince President Franklin Roosevelt to address the threat of German nuclear weapons by launching the Americans' own nuclear bomb program. But Szilard, who at the time didn't have much stature outside the scientific community, couldn't get Roosevelt to take him seriously. So he turned to his friend Albert Einstein, the world's most famous scientist. Einstein, the pacifist, signed his name to a letter urging the president to support American research into "extremely powerful bombs of a nuclear type" that might be built using fissionable uranium. [6]

Roosevelt, awakened by Einstein's letter to the coming reality of nuclear warfare, secretly authorized the Manhattan Project, a huge (and hugely expensive) crash program of nuclear research that produced, in 1945, the world's first nuclear bombs. Ironically, we now know that the Germans abandoned their own nuclear program at just about the same time , fearing German superiority in the field, launched the Manhattan Project. And the first working nuclear bombs only became available for use in the summer of 1945, after the Germans had surrendered and World War II in Europe was over; a weapon built to stop Hitler thus ended up being dropped on the Japanese instead.[7]

Einstein was judged as a poor security risk for top-secret research in nuclear weapons and his letter to Roosevelt proved to be the crucial turning point in the weaponization of *E=mc2*. Thus Albert Einstein, lifelong pacifist, can be described as the father of the nuclear weapons. Einstein himself recognized the irony, viewing his own role in ushering in the nuclear age with a mixture of regret and resignation.[8] In 1954, the last year of his life, he admitted to an old friend, "I made one great mistake in my life—when I signed the letter to President Roosevelt recommending that

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[6] Comprehensive and well-researched biography of Einstein in Brian, Denis. *Einstein: A Life.* New York: Wiley, pp 68

[7] Bodanis, David (2001) *E=Mc2: A Biography of the World's Most Famous Equation.* London: ISIS, pp 46

[8] Clark, Ronald W. (1971) *Einstein: The Life and Times.* New York: Crowell, pp 23

nuclear bombs be made; but there was some justification the danger that the Germans would made.[9]

1.2 STATEMENT OF THE PROBLEM

This project will try to answer the following research question and stemming from it sub-questions that will facilitate the intended research. These questions are necessary in shaping the direction of the research. The research question is: Does having nuclear weapon make the state safer? Sub-questions are: Who has the nuclear weapons? In order to answer this question, the project will look at existing hierarchy in social, political and economic status among states. These states create crucial links between the demand and supply sides.

What are the possible effects lead to making of nuclear weapons? And what are the implications for the international security? This question will investigate the link of nuclear weapons with: military and political threats leading to the economic threats and societal threats.

Do the political leaderships in international arena see nuclear weapons as a threat to their national security? Depending on the results obtained from the analysis of the aforementioned questions the attitude and perception of political leaderships towards the nuclear problem will be analyzed. Do they perceive it as a threat to their national security? If they do not, why? Is it the perception problem?

Can international community as a global region jointly oppose or abolish the problem of nuclear weapons? What are the common problems of international community? What hinders the

[9]A detailed biography with strong emphasis on Einstein's contributions to science at Goldstein, Joyce (2001) *Albert Einstein: Physicist and Genius.* USA: Enslow, 2001. Pp 72

development of a robust international security cooperation? Is it due to the competition among them and/or historical prejudices against each other? If there is security cooperation how does it tackle nuclear problem? How nuclear weapons are made? Why should we abolish nuclear weapons and prevent their spread? All these questions will be asked and the results will give larger and clearer picture on the global setting and international community capability (present and future) in facing and tackling nuclear weapons problem jointly. The research project conclusively seek to examine ramifications of $E=MC^2$ to the geo-political security aspects. It has conducted a close analysis of whether a state having a large amount of nuclear weapons makes it safer. The project recommends on the control of nuclear weapons that can lead to a reduction in conflicts and threats. It also seek to impart knowledge how nuclear bomb dropped in one area has a negative impacts on other areas. It also highlights methods to curtail the sources of conflicts resulting from nuclear weapons.

1.3 OBJECTIVES OF THE STUDY

The main objective of this study is to highlight the ramifications of nuclear weapons in international security. However, there are other specific objectives below:

(i) To find out whether a state having nuclear weapons make it safer.

(ii) To examine the destructive role of nuclear weapons in international security.

(iii) To seek the possibilities of abolishing nuclear weapons.

1.4 LITERATURE REVIEW

A nuclear weapon gets its name and its explosive power from the *nucleus* (core) of an atom. Atoms are tiny building blocks of matter much too small to see. An atomic bomb works by

fissioning (splitting) the nuclei of atoms of the metals uranium or plutonium. It is sometimes called a fission weapon. A hydrogen bomb works by *fusing* (joining together) the nuclei of atoms of the gas hydrogen.

Atomic bombs and hydrogen bombs are the two main kinds of nuclear weapons. The hydrogen bomb is far more powerful and destructive than the atomic bomb. The hydrogen bomb is like a tiny star. It works by the same process—the fusion of hydrogen atoms—that makes the Sun and other stars shine.[10]

The rapid expansion of physics in the last few decades was made possible by the fundamental developments during the first third of the century, coupled with recent technological advances, particularly in computer technology, electronics, nuclear-energy applications, and high-energy particle accelerators. Nuclear weapons, explosive devices designed to release nuclear energy on a large scale. The first atomic bomb (or A-bomb), which was tested on July 16, 1945, at Alamogordo, New Mexico, represented a completely new type of explosive. All explosives prior to that time derived their power from the rapid burning or decomposition of some chemical compound. Such chemical processes release only the energy of the outermost electrons in the atom.[11]

The A-bomb was developed, constructed, and tested by the Manhattan Project, a massive United States enterprise that was established in August 1942, during World War II (1939-1945). Many prominent American scientists, including the physicists Enrico Fermi and J. Robert Oppenheimer

[10] MacKenzie, Donald A. (1993). *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance.* Cambridge, Massachusetts: MIT Press. pp. 343–344.
[11] Rhodes, Richard (1995) *The Making of the Atomic Bomb.* Simon & Schuster,New York: Touchstone, 1995, pp 11

and the chemist Harold Urey, were associated with the project, which was engineered by Albert Einstein.[12]

After the war, the U.S. AEC became responsible for the oversight of all nuclear matters, including research on nuclear bombs. In these bombs the source of energy is the fusion process, in which nuclei of the isotopes of hydrogen combine to form a heavier helium nucleus. This weapons research resulted in the production of bombs that range in power from a fraction of a kiloton (1,000 tons of TNT equivalent) to many megatons (1 megaton equals 1 million tons of TNT equivalent). Furthermore, the physical size of a nuclear bomb was drastically reduced, permitting the development of nuclear artillery shells and small missiles that can be fired from portable launchers in the field. Although nuclear bombs were originally developed as strategic weapons to be carried by large bombers, nuclear weapons are now available for a variety of both strategic and tactical applications. Not only can they be delivered by different types of aircraft, but rockets and guided missiles of many sizes can now carry nuclear warheads and can be launched from the ground, the air, or underwater. Large rockets can carry multiple warheads for delivery to separate targets.[13]

The effects of nuclear weapons were carefully observed, both after the bombings of Hiroshima and Nagasaki and after many test explosions in the 1950s and early 1960s. As is the case with explosions caused by conventional weapons, most of the damage to buildings and other structures from a nuclear explosion results, directly or indirectly, from the effects of blast.[14] The

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[12]History of nuclear physics, tests, experiments, accidents, and missiles. LeBaron, Wayne (1998) *America's Nuclear Legacy.* Commack, NY: Nova Science, pp 1-4

[13]Discusses design, construction, and strategic and tactical uses. Lee, R.G., ed. (1998) *Guided Weapons.* 3rd ed. London:Brasseys, pp 20-47

[14] Hein, Laura, and Mark Selden, eds (1997. *Living with the Bomb: American and Japanese Cultural Conflicts in the Nuclear Age* .Armonk, NY:Sharpe, pp 5-13

very rapid expansion of the bomb materials produces a high-pressure pulse, or shock wave, that moves rapidly outward from the exploding bomb. In air, this shock wave is called a blast wave because it is equivalent to and is accompanied by powerful winds of much greater than hurricane force.[15] Damage is caused both by the high excess (or overpressure) of air at the front of the blast wave and by the extremely strong winds that persist after the wave front has passed. The degree of blast damage suffered on the ground depends on the TNT equivalent of the explosion; the altitude at which the bomb is exploded, referred to as the height of burst; and the distance of the structure from ground zero, that is, the point directly under the bomb. For the 20-kiloton A-bombs detonated over Japan, the height of burst was about 580 m (about 1,900 ft), because it was estimated that this height would produce a maximum area of damage. If the TNT equivalent had been larger, a greater height of burst would have been chosen.[16]

Assuming a height of burst that will maximize the damage area, a 10-kiloton bomb will cause severe damage to wood-frame houses, such as are common in the United States, to a distance of more than 1.6 km (more than 1 mi) from ground zero and moderate damage as far as 2.4 km (1.5 mi). (A severely damaged house probably would be beyond repair.) The damage radius increases with the power of the bomb, approximately in proportion to its cube root. If exploded at the optimum height, therefore, a 10-megaton weapon, which is 1,000 times as powerful as a 10-kiloton weapon, will increase the distance tenfold, that is, out to 17.7 km (11 mi) for severe damage and 24 km (15 mi) for moderate damage of a frame house.

Besides heat and blast, an exploding nuclear bomb has a unique effect, it releases penetrating nuclear radiation, which is quite different from thermal (or heat) radiation. When absorbed by the

[15] Assesses the current realities of nuclear capabilities in the world arena. Landau, Elaine (2000) *The New Nuclear Reality*. Brookfield, CT: Twenty-First Century, pp 31

[16] Ibid 36-38

body, nuclear radiation can cause serious injury. For an explosion high in the air, the injury range for these radiations is less than for blast and fire damage or flash burns. In Japan, however, many individuals who were protected from blast and burns succumbed later to radiation injury.

The residual nuclear radiation, generally known as fallout, can be a hazard over very large areas that are completely free from other effects of a nuclear explosion. In bombs that gain their energy from fission of uranium-235 or plutonium-239, two radioactive nuclei are produced for every fissile nucleus split. These fission products account for the persistent radioactivity in bomb debris, because many of the atoms have half-lives measured in days, months, or years.

Two distinct categories of fallout, namely, early and delayed, are known. If a nuclear explosion occurs near the surface, earth or water is taken up into a mushroom-shaped cloud and becomes contaminated with the radioactive weapon residues. The contaminated material begins to descend within a few minutes and may continue to fall for about 24 hours, covering an area of thousands of square miles downwind from the explosion. This constitutes the early fallout, which is an immediate hazard to human beings. No early fallout is associated with high-altitude explosions. If a nuclear bomb is exploded well above the ground, the radioactive residues rise to a great height in the mushroom cloud and descend gradually over a large area.[17]

Human experience with radioactive fallout has been minimal. The principal known case histories have been derived from the accidental exposure of fishermen and local residents to the fallout from the 15-megaton explosion that occurred on 1954. The nature of radioactivity, however, and

[17] Bailey, Kathleen C.(1991) *Doomsday Weapons in the Hands of Many: The Arms Control Challenge of the '90s.* America: University of Illinois Press, pp 25

the immense areas contaminable by a single bomb undoubtedly make radioactive fallout potentially one of the most lethal effects of nuclear weapons.[18]

Besides the blast and radiation damage from individual bombs, a large-scale nuclear exchange between nations could conceivably have a catastrophic global effect on climate. This possibility, proposed in a paper published by an international group of scientists in December 1983, has come to be known as the "nuclear winter" theory. According to these scientists, the explosion of not even one-half of the combined number of warheads in the United States and Russia would throw enormous quantities of dust and smoke into the atmosphere. The amount could be sufficient to block off sunlight for several months, particularly in the northern hemisphere, destroying plant life and creating a subfreezing climate until the dust dispersed. The ozone layer might also be affected, permitting further damage as a result of the sun's ultraviolet radiation. Were the results sufficiently prolonged, they could spell the virtual end of human civilization. The nuclear winter theory has since become the subject of enormous controversy. [19]

1.5. SIGNIFICANCE OF THE STUDY

The study of the $E=MC^2$ can be a learning paradigm to conflict managers, leaders and etc to enhance their knowledge in nuclear weapons. The project goal is designed to help scholars improve academic competence in nuclear weapons and its ramifications. The output of the study is a source material that the conflict stakeholders can assimilate and disseminate by furthering their research on this topic.

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[18] Taylor, Eric R. (1999) *Lethal Mists: An Introduction to the Natural and Military Sciences of Chemical, Biological Warfare and Terrorism.* Commack, NY: Nova Science,pp56

[19] McMahon, K. Scott (1997) *Pursuit of the Shield: The U.S. Quest for Limited Ballistic Missile Defense.* Lanham MD: University Press of America, pp 63

The spread of nuclear weapons to countries or terrorist organizations that formerly did not possess them has remained world most security threat. No terrorist organizations possess nuclear weapons. Al-Qaeda is known to desire them, however, and a Japanese cult, the Aum Shinrikyo, began an effort to develop them in the late 1980s, but was unsuccessful. Many observers believe that the problem of nuclear weapons proliferation is likely to be one of the most important issues facing the world for many years to come. The 1968 Treaty on the NPT attempted to address the problem, but the number of countries possessing nuclear weapons has grown since the treaty went into effect.[20]

Nuclear war would have devastating consequences. Even a conflict that involved only the use of one or two fission weapons could cause many hundreds of thousands of deaths and destroy the centers of major cities.[21] Large-scale nuclear war, involving the use of hundreds of thermonuclear weapons, could cause many millions of casualties, destroy nations, and permanently affect the global environment. Although some scholars argue otherwise, virtually all governments believe that the spread of nuclear weapons to additional states will increase the likelihood of nuclear war. [22]

Many of the nations that possess nuclear weapons or have sought to develop them have long had regional conflicts with each other. For example, India and Pakistan have had a serious border dispute over Kashmīr, China and India had a brief border conflict, Israel has fought several wars with neighboring nations in the Middle East, and Iran and Iraq fought an eight-year-long war. North and South Korea, now separated by a demilitarized zone, fought against each other in the Korean War (1950-1953). These regional conflicts and other potential conflicts provide the

[20] Cheney, Glenn Alan (1999) *Nuclear Proliferation: The Problems and Possibilities* .New York: Watts, pp 62
[21] Burns, Richard Dean, ed. (1993) *Encyclopedia of Arms Control and Disarmament.* New York:Scribner, pp 163
[22] Ibid .. pp 169-171

fundamental reason to study and research on nuclear weapons as we seek to halt the spread. The spread of nuclear weapons can also permit aggressor nations to intimidate neighbors and dominate their regions.

Nearly all experts agree that nuclear weapons are so powerful that they are capable of totally annihilating entire countries, even continents. In this point scholar argues that because of their awesome destructive force nuclear weapons should be studied. Even more widely destructive than the explosive power of the weapons is their radioactive fallout, which causes radiation sickness. There is, simply, no meaningful limit on the destructive power of nuclear bombs. They put at mortal risk all that we human beings are, all that we have ever been, and all that we ever will be. These perils the destruction of cities, nations, continents, humanity, and Earth's ecosystem will be with us as long as nuclear weapons are with us. However, our particular historical moment the end of the Cold War and the beginning of the new century has provided new reasons for taking up the challenge of nuclear arms with special urgency.

1.6 HYPOTHESES

(i) Having nuclear weapons does not make a state or region safer.

(ii) Nuclear weapons are so destructive and can eliminate human and plant life on earth.

(iii) Nuclear weapons abolishment will lead to guaranteed future human security.

1.7 THEORITICAL FRAMEWORK

This section will establish the theoretical framework for the analysis of the selected case study on the nuclear weapons. This chapter will theoretically define weak states concept, where the differentiation between strong and weak states will be given, and thus the difference in threat

perception and level of vulnerabilities. In addition this chapter will attempt to see how the strong states manipulate the threats for the protection of their power.[23] In chapter 2, it will advance and look how/what the states view as a threat to their national security of the state that includes military, political, economic, environmental and societal sectors.

The selected theoretical framework was based on works of Barry Buzan. Buzan (1998) and others were able to classify the five sectors comprising national security, and not just classify but also give sufficient definitions as: who the referent objects and actors are in each security sector, and to which threats they are vulnerable. In this project, in order to analyze the threats posed by the nuclear weapons to the international security, it is necessary to go through all five sectors for grasping the scale of the threat. It could be done best based on the works of Buzan, since his arguments related to the national security are sufficient in explaining the perception of threats by states, and thus formation of national security agendas.

This project will focus at two levels of analysis namely unit (state), international subsystem (U.S as the main actor in control of nuclear weapons), international system, subunits, and individuals will be the main focus, as it could be seen in the analysis of the present case study they do play a significant role in the formation of perceptions of the nuclear weapons as a serious threat to the international security.

According to Buzan units are "actors composed of various subgroups, organizations, communities, and many individuals and sufficiently cohesive and independent to be differentiated from others and to have standing at higher levels," here it will be states. International subsystems are "groups of units within international system by the particular nature

[23] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 6

or intensity of their interactions with or interdependence on each other. Subsystems may be territorially coherent, in which case they are regional." The project will focus on the U.S compared with other states as a case study.

This case study in this research can be better explained at the unit and international subsystem levels of analysis, since state in strong states (often authoritarian) is a unitary, and main body of decision making where the power is concentrated, and international subsystem is important since the new threats (nuclear weapons) can not be contained within one country and it transcends several borders, and in this particular case, initiatives at the global level might help to tackle the problem jointly.

In order to analyze what is a state, it is necessary firstly to give a definition to the concept of state and national security, the classification what is considered to be a weak state vs. strong state, and thus how the states perceive various threats to their national security. It is necessary to give a definition of the state, in order to see what constitutes threats to it. Buzan's defines:

> "...states as territorially defined socio-political entities. They represent human collectivities in which governing institutions and societies are interwoven within a bounded territory. ...the major purposes of interaction within the system this nexus of territory, government and society is what constitutes the state."[24]

The state is viewed as a political organization of society, or the body politic, or, more narrowly, the institutions of government.[25] As John Locke said "the great and chief end ... of men's ... putting themselves under government is the preservation of their property' (meaning here their

[24] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pp 60
[25] State" definition from "Encyclopedia Britannica," Online. Available.
<http://www.britannica.com/eb/article?eu=1297> (27 April, 2012)

lives, liberties and estates) which in the state of nature is 'very unsafe, very unsecure."[26] The state consists of three components: the idea of the state (nationalism); the physical base of the state (population, resources, technology); and the institutional expression of the state (administrative and political systems). [27]Classically, state is viewed as a sovereign entity that has its distinct territory, population within that territory, and legitimacy to exercise power over its population. Buzan analyses that as a form of political organization, the state has transcended, and often crushed, all other political units to the extent that it has become the universal standard of political legitimacy. The state is a form of human association distinguished from other social groups by its purpose, the establishment of order and security. State seeks to strengthen the internal and external security against threats emanating within or outside of its borders in order to ensure the survival of the state as an aggregate and unitary, political, geographical and physical entity with the inhabitants within its occupied and recognized territory.

States attempt to shape their national security in order to meet the posed internal (usually weak states) and external (often strong states) challenges and threats.

What is then security, more specifically national security? Security is, in historical terms, the field where states threaten each other, challenge each other's sovereignty, try to impose their will on each other, defend their independence, and so on. [28] Arnold Wolfers stated that "security, in any objective sense, measures the absence of threat to acquired values, in a subjective sense, the

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[26] John Locke. Second Treaties on Government, pp. 406-7. Quoted from Buzan, Barry (1991) *People, States & Fear.* Great Britain: TJ International Ltd, pp 38

[27] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 65

[28] Waever, Ole, "*Securitization and Desecuritization*" in Lipschutz, "On Security." Online book. 1998. Online. Available. <http://www.ciaonet.org/book/lipschutz/lipschutz13.html> (22 Mar, 2012)

absence of fear that such values will be attacked."[29] Walter Lippmann's definition is similar to Wolfers, he views security in its traditional military context "a nation is secure to the extent to which it is not in danger of having to sacrifice core values, if it wishes to avoid war, and is able, if challenged, to maintain them by victory in such a war." Buzan (1998) offers the closest and more operational definition, where security issue is presented as posing an existential threat (which is anything that questions recognition, legitimacy, or governing authority) to a designated referent object (e.g. state).

The traditional concept of national security used to focus mainly on military and political sectors. Since the security is a dynamic field, and given the newly emerged challenges and threats, where the traditional military-political sectors were not sufficient to explain and develop solutions, it was revised and broadened to include economic, environmental and societal sectors. Traditional national security, namely military, was defined as "the ability to withstand aggression from abroad" that practically underlined the fixation on the military power, and military capabilities of the state. In late 1970s other than classical interpretation of traditional security concept (offense-defense) appeared that was based on interdependence theory. The pioneers of the new definition were Keohane and Nye that saw security not only as state-centric military policies, but also in a broader framework that encompassed interdependence between regions, and states in economic, military, and societal sectors. The emergence of international regimes, breakthroughs in telecommunication technologies greatly strengthened the interdependent argument. The main argument was that "conflicts of interest are reduced by interdependence, and the cooperation alone holds the answer to world problems."[30] Interdependence theorists state that "international

[29] Lippman, Walter. *U.S. Foreign Policy: Shield of the Republic*, p. 53
[30] Keohane, O. Robert and Joseph S. Nye. (1977) Power and Interdependence: World Politics in Transition. Boston: Little, Brown and Company, Inc. pp 7

economic system on which everyone is depended or our basic life-supporting ecological system were in danger; all countries were significantly vulnerable to such catastrophe; and there were only one solution to the problem."[31]

Security is defined and valorized by the threats which challenge it.[32] In legal terms threat is defined as a declaration of intent to injure another by doing an unlawful act, with a view to restraining his freedom of action. The definition was developed for the human being, however, state also has similar vulnerabilities to the threats, since eventually individuals comprise the state per se. Buzan argues that the institutions of the state (so human beings) are much more vulnerable to the physical threats than the idea of the state as an object of security. Thus meaning that institutions can be easily destroyed physically than can ideas."[33] A threat seen as potentially undercutting sovereignty, thereby preventing the political "we" from dealing with any other questions. The special nature of security threats justifies the use of extraordinary measures to handle them. With this approach, it is possible that any sector, at any particular time, might be the most important focus for concerns about threats, vulnerabilities, and defense. But even here one can argue about the way of defining these standard cases as military or political."[34] The intensity of threats[35] depends on the following conditions:

- Range in space. How close is the threat in the geographical terms? Is the threat emanating of an immediate proximity, e.g. neighbors? Examples could be Iraq's

[31] Ibid .. pp 7
[32] See, p. 133, Ullman (1983). "Redefining Security." International Security, Vol. 8, No. 1, Summer 1983, pp. 129-153.
[33] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 86
[34] Definition offered by Giacomo Luciani, quoted from Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pp 17
[35] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 134-138

invasion of Kuwait, China vs. Vietnam, or more recent case and caused human insecurity within the country and its immediate neighbors.

- Distance in time. It is more of a time range, it depends is the threat of an immediate character? Or is it a latent and hidden but still present threat? How long will it take for that threat to take shape, and challenge the target? The example of the latent and hidden (not always) but still present threat could be the effects nuclear radiations on environment.

- Probability vs. consequences. Sides involved in the implementation of the threat, should calculate the consequences, in case the threat will be carried out. For example, at present North Korea is threatening and blackmailing U.S. since they know that the latter will not deal with them as with Iraq, because North Korea has nuclear weapons, and they demonstrated their commitment and seriousness of threats by launching several missiles over Japan. U.S. knows that North Korean leader is capable of implementing the threats by nuking U.S. territories, and its allies South Korea and Japan.

- Historical dimension. This aspect usually defines how the states perceive the threats based on their existing pre-beliefs. Based on the past history the states will try to shape their foreign policies, considering state interests, in order to dimmish the historically experienced vulnerabilities. Examples of this could be China's fear of Japan's re-militarization and the Baltic countries suspicion of Russian influence over their security.

1.8 RESEARCH METHODOLOGY

This research adopted a comparative study approach, which is a careful analytical approach process of variable interaction and the links between the dependent and independent variables.[36] This study was conducted based on the quantitative empirical research including analysis of the statistical data. A quantitative method was chosen for this particular research, because it focused on a number of cases, to use depth analysis of historical materials. Quantitative method is appropriate here, since this research also focused on the perceptions and prioritization of threats to the international security. The threats can be best analyzed based on the quantitative methods for its possibilities.

This research acknowledges existence of several limitations of applicability. It is important to notice that the findings and observations presented and found in this research do not necessarily apply or fit similar cases in other parts of the world. It can be due to many factors, differences in size of the problem, timing, internal and external factors, proximity to the epicenter of the problem, cost, historical pattern, interest (or lack of it) of regional or major powers and threats perception. [37]

Namely, it does not necessarily mean that other states around the world have problems with the perceptions of new security threats, as a threat to their national security. On the contrary, some states may view nuclear weapons as a threat to their national security, but they might have different priorities, and perception of what is threat to their security.

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[36] Quoted from pp. 65-66. Swanstrom, Niklas (2002) *Regional Cooperation and Conflict Management: Lessons from the Pacific Rim.* Uppsala: Universitetstryckeriet.

[37] King, Gary, Keohane Robert, Verba Sidney. 1994. *Designing Social Inquiry.* Princeton, New Jersey: Princeton University Press, pp 4

This research have the time scope, meaning that the analysis have be done based on events that took place from 1900s and up to the present time that is September 2012. Although some remarks has been made to the earlier periods and events, for the sake of the factual prove and clarification of some moments, and resulting from them outcomes.

It is important to notice that this research was conducted based on respected secondary hand information, such as books, government reports, U.S. agencies and other international organization reports, commentaries and newspapers. The researcher did not conduct direct interviewing of the political leadership of the researched cases or other officials related to the issues of interest in this research. However, the researcher established a close link through email correspondence with the specialists and experts that are involved in dealing with issues related to the combating and controlling of nuclear weapons.

The researcher collected and analyzed data in English. The data from U.S agencies have been relied upon and one should carry in mind that the data presented by the official government agencies have not disclose some intricacies of the nuclear weapons, due to the particular interests of the report submitting states, and there may be manipulation or omission of data for the sake of state interests. This research was done based on a multiple case studies method. Case studies are preferred when the researcher is supposed to answer "how" and "why" questions, when the researcher has little control over the events (in contrast to experimental methods), and when the focus is on contemporary events within a real-life context. The research is about the nuclear weapons in America as a super power, and it will be conducted on a comparative study with other regions in the world.

1.9 CHAPTER OUTLINE

This project consists of five chapters. First chapter is an organizational part. This chapter outline the purpose of the conducted research. Which methodology was used; what are the limitations of the study, and how the data for this research was collected. Most importantly, it will outline research question, and sub questions that will be answered by analyzing the selected case, and applying the chosen theory.

Chapter II sought to advance the theoretical framework that could fit the selected case, and thus give an academic analysis of the threats posed by nuclear weapons to the international security. In addition, it shows the difference in threats perception and prioritization, thus difference in formation of national security by weak and strong states. National security here will comprise of military, political, economic, environment and societal .Chapter III deals with the case study on nuclear weapons in America with other regions as comparative. This chapter gives various definitions and the results from the analysis of the case study is of factual basis to be used along with theory in order to give academically based answers to the posed research question and sub questions.

Chapter IV applies the theoretical framework from Chapter II to the case study in Chapter III, and shows how the selected theory can explain the results obtained from case study. Within this chapter the posed research question and sub questions will be answered. Chapter V summarized the main results of the research received from applying theoretical framework to the selected case.

In conclusion, at later chapters, I have applied the theory in analyzing the nuclear weapons in academic way that threats posed it and can destabilize the world unless it is dealt timely, and appropriately.

CHAPTER TWO

EINSTEIN'S NUCLEAR FORMULA AND ITS RAMIFICATIONS IN SHAPING GEO-POLITICAL SECURITY ASPECTS: A THEORITICAL DISCUSSION

2.0 INTRODUCTION

This chapter is an advancement of the same theoretical discussion briefly mentioned in chapter one. This means that it tries to show the relevance of theory and its application to in the study area. Different states have different types of vulnerabilities that shape their susceptibility to the posed to particular threats. In order to analyze how different states prioritize the aforementioned vulnerabilities one should differentiate between strong and weak states. For that reason the section below will enlighten us on the concepts of weak and strong states.

2.1 STRONG STATE VS WEAK STATE

All states are vulnerable to military and environmental threats. Nearly all are open to economic threats, and many also suffer from basic political and societal insecurities.[38] In order to analyze the difference why countries perceive and react to various threats differently it is important to distinguish between weak and strong states. As Buzan defines "strength as a state neither depends on, nor correlates with, power." For that reason, here we are talking about strong and weak states,[39] rather than strong and weak powers that are defined in terms of military and economic power in relation to other states.

[38] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 97
[39] Ibid., p. 98

Strong state is considered to be strong, where the "national security can be viewed primarily in terms of protecting the components of the state from outside threat and interference, and where the idea of state, its institutions and its territory will be clearly defined and stable in their own right."[40] It could assumed based on the definition of a strong state that the perception of threats, and thus shaping of national security would focus on the external threats rather than on internal, since threats arising within the domestic domain do not pose a threat to the stable and strong administrative and political institutions. Thus, the threats in strong states perceived coming from outside that challenge "its independence, political identity and way of life."[41] The features assigned to the strong states mainly can be found in the developed world, where the state building is complete and the state institutions are consolidated. Countries and peoples with a strong sense of identity and social cohesion know who they are and who they are not (this being the essence of successful nationalism). Consequently, they presume to know what threatens them and they can take appropriate steps in response.[42] To name a few U.S and Britain could be examples of strong states.

The existence of societies not well suited to the demands of complex economic and political relations, defines much of the problem of weak states in the Third World.[43] Usually the state administrative and political institutions are rather weak and unable to meet the posed threats to the national security, thus the state has many vulnerabilities. Opposite to the strong states, the weak states have "high level of concern with domestically generated threats to the security of the

[40] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 100
[41] Ibid., p. 103
[42] Lipschutz, "On Security." Online book. 1998. Online. Available.
<http://www.ciaonet.org/book/lipschutz/lipschutz11.html#txt14> (22 May,2012)
[43] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 98

government."[44]Kal Holsti notes that "the security between states in the third world, among some of other former republics of Soviet Union, and elsewhere has become increasingly dependent upon security within those states." [45] Based on the aforementioned definitions, it could be stated that in weak states, the social-political cohesion is loose they are internally challenged and suffer from political instability. Thus, weak states are often vulnerable to the internally generated threats, rather than focusing on the external threats.

In weak states the national security formulation is rather vague, since "the security of governments becomes confused with the security of states."[46] Ayoob states that the Third World state elites' major concern – indeed, obsession – is with security at the level of both state structures and governing regimes.[47] The following table by Buzan in brief demonstrates what is considered to be strong and weak states. Vulnerabilities and types of state by Buzan [48].

	Socio-political cohesion		
Power	**Weak**	**Weak**	**Strong**
		Highly vulnerable to most types of threat	Particularly vulnerable to military threats
	Strong	Particularly vulnerable to political threats	Relatively invulnerable to most types of threat

[44] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 99

[45] Holsti, Kalevi (1996) *The State, the War, and the State of War.* Cambridge: Cambridge University Press, pp 15

[46] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 102
[47] Ayoob, Mohammed. The Third World Predicament...p. 4
[48] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 114

The majority of weak states may find themselves trapped by historical patterns of economic development and political power which leave them underdeveloped and politically penetrated, and therefore unable to muster the economic and political resources necessary to build stronger state.[49]Meaning that weak states might suffer from the authoritarian rulers, dictators, where the state control in the hands of a small group of corrupted ruling elites, that have a tight grip over the political and economic development of the country, that control is usually reached through manipulations, frauds, smuggling and secured by regular suppressions of the ruled "subjects". The common feature among weak states, is that overwhelming majority of states had a colonial experience, where their natural resources were drained to feed the colonizing power. After the decolonization process, many of those countries faced the formed pattern "object-for-exploitation", where the whole economic infrastructure was shaped in a one-way relation to supply the exploiting country, and no system was built in the exploited countries for their economic development, and more importantly, sustainable development.

2.2 MANIPULATION AND PERCEPTION OF THREATS BY STATES

In legal terms a threat is distinguishable from an assault, for an assault requires some physical act that appears likely to eventuate in violence, whereas a threat may consist of words only or an act that is not violent.[50] However, when it comes to states, threat sometimes is enough to lead to the violence, or provoke other defensive actions based on the perceptions, and existing pre-beliefs about the source posing a possible threat. A threat becomes a national security issue depending on the intensity with which the threat operates in relation to the particular vulnerabilities of a

[49] Ibid, p. 99
[50] "Threat" definition from "Encyclopedia." Online. Available. <http://www.encyclopedia.com/html/t1/threat.asp> (12 June, 2012)

given state and also (not always) according to the beliefs of the policy makers of a state over a given time period.[51] As Ayoob notes:

> ... issues such as economic deprivation and environmental degradation do not automatically become part of the security calculus of Third World states; they do so only when they gain enough prominence to be able to produce political outcomes that can threaten the survival or effectiveness of states and regimes. In other words, non-political issues that have the potential to endanger the well being of Third World states and regimes become security problems only when they are able to intrude into political arena[52]

Quite where on this spectrum issues begin to get legitimately classified as national security problems is a matter of political choice rather than objective fact.[53] In weak states, the ruling elite often tries to politicize, even the issues that relate to the day-to-day life, in order to ensure its survival. In weak states, the political elites are ultimately responsible for meeting challenges to state and regime security, their perceptions are important in defining the security problems faced by Third World states.[54]For that reason the range of threats perceived and manipulated by the ruling elites is an array and myriad of combinations. If to follow the definition offered by Ayoob, anything can be considered and securitized as a threat to the state, if the threats might affect existence or even undermining of the ruling regime. In weak states the referent object for securitization gets harder to define, and thus gives a way to the increasingly domestic agenda of

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[51] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 134
[52] Ayoob, Mohammed (1995) *The Third World Security Predicament: State Making, Regional Conflict, and the International System.* London: Lynne Rienner Publishers, Inc. pp 190
[53] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 115
[54] Ayoob, Mohammed (1995) *The Third World Security Predicament: State Making, Regional Conflict, and the International System.* London: Lynne Rienner Publishers, Inc. pg. 191

threats.[55] Often, in weak states "the security of the government becomes confused with the security of states, and factional interests are provided with a legitimacy which they do not merit."[56] It seemed, in this scheme of things, a relatively easy proposition to shift the allocation of resources from one threat to another, so long as the new threat was conceptualized in terms of the state and couched in the language of "national security."[57]

The security agenda is developed by the government that includes different government agencies, and whole bureaucratic state machinery, in weak states, often pursues own interests, and the power is concentrated around ruling elites. Given the total size of government machinery, what might be characterized as self-interested elite rule can encompass a rather large group.[58] In weak states, it is often a case, when the ruling elite defines or manipulates for its own good what poses a threat, and how to tag that threat, if it is military, political, economic, etc. types of threat. In weak states, "trying to press the kind of unwanted fundamental political change on a ruling elite is similar to playing a game in which one's opponent can change the rules at any time s/he likes. Power holders can always try to use the instrument of securitization of an issue to gain control over it. [59]

As Lipschutz states "a threat would be defined as existential and a challenge to sovereignty, the state would not be limited in what it could or might do. Under these circumstances, a problem would become a security issue whenever so defined by the power holders."[60] Thus it can be

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[55] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 104

[56] Ibid, p. 102

[57] Lipschutz, "On Security." Online book. 1998. Online. Available. <http://www.ciaonet.org/book/lipschutz/lipschutz11.html#txt6> (22 May, 2012)

[58] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 84

[59] Waever, Ole, "Securitization and Desecuritization" in Lipschutz, "On Security." Online book. 1998. Online. Available. <http://www.ciaonet.org/book/lipschutz/lipschutz13.html#txt14> (22 May, 2012)

[60] Ibid.

concluded, in weak states whatever poses a danger to the position of the ruling elite can be perceived as a threat, and based on the interests of those elites those threats can be manipulated and thus become a security issue.

2.3 NATIONAL SECURITY

Broadened concept of national security includes traditional military and political sectors, relatively new, economic, environmental and societal sectors. This brief discussion on the types of the old and new security sectors is an integral part for the case analysis and understanding what the states see as threats to their national security, and which sectors are of priority character.

2.3.1 MILITARY SECURITY

Military security is the core for the whole formation of security studies. Where the state, mainly governments, and in weak states, ruling elites, are the central object for the defense against external and internal military threats. At present time, strong states are less vulnerable to the direct military attack from other sovereign state (exception the terrorist groups, e.g. Al-Qaeda) due to its developed military capabilities, growing interdependence, and in general, obsolesce of interstate wars. However, it does not necessarily mean that strong states do not use their military forces against other "non-democratic" sovereign states, they use them for the persuasion of their own national (usually economic) interests,[61] often veiled under humanitarian intervention, and as recently, U.S. war on terrorism in Afghanistan and ruling regime in Iraq. For a leader trying to instill the political will necessary for a national society to respond effectively to a threat to its

[61] Or as Buzan states "in general the major powers are not driven to use force abroad either by rivalry with each other or by internal pressures. Security: Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc, pp 63

security, a military threat is especially convenient.[62] Military security also can lead to the paranoia and be a comfortable justification, in the former the non-existent threats fall into the securitization due to the misperception and in the latter, the state shapes what will fall into the military security, based on its own interests and vulnerabilities. Military security plays a role in defending the state attributes such as idea, territory, and its population. Military security is developed in order to protect and mainly avoid any situation that would lead to the attack on states social-political institutions, mainly from external challenges.

"Because the use of force can wreak major undesired changes very swiftly, military threats are traditionally accorded the highest priority in national security concerns. Military action can wreck the work of centuries in all other sectors. Difficult accomplishments in politics, art, industry, culture and all human activities can be undone by the use of force. Human achievements, in other words, can be threatened in terms other than those in which they were created, and the need to prevent such threats from being realized is a major underpinning of the state's military protection function. The threat of force thus stimulates not only a powerful concern to protect the socio-political heritage of the state, but also a sense of outrage at the use of unfair forms of competition."[63]

However, in weak states, the military security is often targeted against its own population, and other internal opposition groups. Thus the governments in those states, lavishly use the suppression of the riots, and any sign of discontent with their rule, by deploying its police forces,

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[62] See, p. 135, Ullman,(1983). "Redefining Security." International Security, Vol. 8, No. 1, Summer 1983, pp. 129-153

[63] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pg 117

and very often military forces (curfews, army in Yugoslavia), initially designed to fight against armies of foreign states. Reiterating the fact, that in weak states, military security is often focused on its internal threats rather than looking outward, unless it is seriously challenged by other states. Since the security is a dynamic field, and military security in its old Cold War terms is obsolete. Given the nature of new threats (terrorism, nuclear weapons and etc.) the military sector is getting redefined and some states are developing new strategies how to face those new challenges.

2.3.2 POLITICAL SECURITY

The idea of the state, particularly its national identity and organizing ideology, and the institutions organizing the ideology are the normal target of political threats.[64] Often states are vulnerable to the threats to the political security. Since most of them suffer from the external challenges to their sovereignty, and internal questioning of the state ideology. Political sector is mainly about the nonmilitary threats to sovereignty.[65] Sovereignty is important, which if simply put means self-government.[66] Sovereignty is what defines state as a state. Where state, as it was defined in previous sections, consists of three components, idea, physical base and institutions.[67] Sovereignty matters in relation to the external states, meaning that sovereignty cannot be threatened domestically, for that reason "sovereignty divided among states, but not within them."[68] Sovereignty is especially emphasized in the newly emerging states, and weak states.

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[64] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 142
[65] Ibid, p. 141
[66] Buzan, Barry (1991) *People, States, & Fear*. Great Britain: TJ International Ltd, pg 67
[67] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 150
[68] Buzan, Barry (1991) *People, States, & Fear*. Great Britain: TJ International Ltd, pg 67

As we said, political security is about protecting idea of state and the institutions that develop that ideology. Other types of vulnerability, whether economic or ecological, become integral components of our definition of security only if they become acute enough to acquire political dimensions and threaten state boundaries, state institutions, or regime survival.[69] In political security, mostly threats to the idea and institutions of states matter. Examples of threats to the political security can range from smuggling, breaking laws (weakening the system), propaganda and etc.

2.3.3 ECONOMIC SECURITY

Buzan mainly defined economic security in terms of state capability to mobilize accumulated profits for the military mobilization; mercantilism, market protectionism. 'Economic security'[70] may mean (at least) two rather different things. Either, it may be understood narrowly as the economic foundations of military power; or, it may be seen as an aspect or dimension of security in its own right. The former interpretation would mean that the state is trying to secure its military security through strengthening its economic security, especially the buying capacity, which is to have enough means to buy weapons for the defense of the state. In addition, it could be contemplated that the economic power, in case the need arises, may be transformed and diverted into almost anything and any security sector.

As for the second interpretation of economic security that is a dimension of security in its own right, it would in practice mean economic warfare. Namely, many states have striven for

[69] Ayoob, Mohammed (1995) *The Third World Security Predicament: State Making, Regional Conflict and the International System*. London: Lynne Rienner Publishers, Inc. 9

[70] Rienen, Henry, "Power, Economics, and Security. The United States and Japan in Focus" and Buzan. People, States & Fear," pp. 230-269

economic self-sufficiency[71] as a means of security: by stockpiling 'strategic materials' as well as ordinary goods they may make themselves less vulnerable to economic warfare, hence more secure.[72] If to follow this interpretation of the economic security, then one could say that most of the developed countries reached the level of economy that (hypothetically) could be used to ensure their military security, while developing countries are trying to develop economic sufficiency in order to decrease the physical vulnerability to the military threats from its adversaries. Thus it could be assumed that both strong, and weak states base on the economic security as a foundation for its national security. Threats to the economic security (apart from economic warfare interpretation) include black market of weapons that weaken the economic institutions and systems (e.g. bankruptcy of banks) of, especially, weak states. Economic security is closely linked with the political and societal security, all these types of security closely intertwined.

2.3.4 ENVIRONMENTAL SECURITY

Buzan states that environmental threats are generally unintentional.[73]Environmental threats are the result of the destructive human activities. People, who run big industrial companies often take what they want from the nature, without thinking about the possible harms, e.g. massive tree logging, that might lead to the desertification, and soil erosion; excessive catch of one type of fish, the disappearance of which leads to the starvation of other fish that feed upon it, and thus e.g. unbalanced growth of harmful water plants and etc. The over drainage of the sea in order to

[71] Kyrgyzstan for example is trying to transform its gas systems used for heating houses into the electricity based, since Uzbekistan often closes the gas delivery to Kyrgyzstan.
[72] Fischer, Dietrich. "Invulnerability Without Threat: The Swiss Concept of General Defense." Journal of Peace Research, Vol. 19, No. 3, 1982, pp. 205-225
[73] Quoted from Waever, Ole, "Securitization and Desecuritization" in Lipschutz, "On Security." Online book. 1998. Online. Available. <http://www.ciaonet.org/book/lipschutz/lipschutz13.html#note43> (22 May, 2012)

irrigate the vast fields of cotton (at which Uzbekistan's economy is oriented) that requires large quantities of water led to the catastrophic shallowness of water level, and thus the emergence of the large patches of dry areas full of salt, that is in its turn carried by wind to the fields around that become useless for the crop planting.

Environmental threats are of a global character, they can rarely be contained within a region, not mentioning a country. The best example can be the global warming, that leads to the negative changes in the climate (weather) all around the world. However, even realizing that environmental threats carry global feature, some states politicize this matter, and use all their leverages to ensure that some conventions for the protection of the nature will not pass through, since it would harm the interests of the concerned states. Scrapping of the Kyoto Protocol by U.S. could be an example. In order to stop the depletion of the ozone layer countries should cut the CO2 emissions that are usually produced after burning oil based products (gasoline) and coal. And U.S. is number one producer of CO2 emissions. Thus the ratification of Kyoto protocol is not in interests of the American industrial (oil) companies. The latter example shows the direct link to the economic sector (interests), where the latter prevails in importance over the environmental threats. Environmental security, as other sectors, cannot be viewed in isolation, and as Buzan, who have analyzed the concept "environmental security," and its use, recommend that environmental problems be treated as part of the economic field. "The security label is one solution," according to Buzan, but he tends to prefer the other path: to "identify environmental issues as part of the economic agenda."[74] As other sectors of the national security, environmental sector is closely intertwined with the political (what gets politicized, e.g. Chernobyl catastrophe), economic (Kyoto protocol), and societal sectors (starvation leads to the migration of the

[74] Waever, Ole, "Securitization and Desecuritization" in Lipschutz, "On Security." Online book. 1998. Online. Available. <http://www.ciaonet.org/book/lipschutz/lipschutz13.html#note55> (22 May,2012)

population thus leading to the overuse and depletion of the natural resources at one place, that might lead to the conflict, which then falls into the military, and political sectors).

2.3.5 SOCIETAL SECURITY

Society is about identity, the self-conception of communities and of individuals identifying themselves as members of a community.[75] A society that loses its identity fears that it will no longer be able to live as itself.[76] When we talk about the identity, it is often implies culture. Thus challenges to the culture, such Americanization (Coca Cola), introduction of foreign words, assimilation by other bigger ethnic groups (Kazakhs fear of Russian large population) and etc. might be viewed as threats. Under objects of societal security can be clans, tribes, religions, nations, and race. [77]

As with unemployment and crime, these are the threats primarily to the individuals; only if they threaten the breakdown of society do they become societal security issues.[78] The unemployment might be caused by migration of other communities and economic problems (e.g. economic crisis that led to the cut in job places), thus proving that societal sector is closely linked with other sectors of the national security.

With the fall of communism and the reunification of Germany, a new debate has begun about what constitutes security in the new world order. While military power and nuclear weapons dominated security studies during the Cold War era, the security agenda since then has been widened to

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[75] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 119

[76] Waever, Ole, "Securitization and Desecuritization" in Lipschutz, "On Security." Online book. 1998. Online. Available. < <http://www.ciaonet.org/book/lipschutz/lipschutz13.html#txt58> (22 May, 2012)

[77] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. 123

[78] Ibid, p. 121

include such issues as the environment and economics. Even some social concerns have reached security status.

In terms of economics, efforts towards building a stable state and the crisis of the welfare state have many of the members struggling through economic recessions. In politics, we see citizens increasingly faced with choosing between the status quo and radical change. But, perhaps most importantly, citizens are challenged by questions that cut to the core of their existence. From a social viewpoint, some nation-states are concurrently coping with identity issues, due to both subnational movements and efforts to create a supranational identity. Developments such as the integration of the states, rising regionalism, and increased technology flows pose a challenge to social identities. On all levels either at national or local, citizens themselves ponder, "Who are we?"

I argue that the nuclear weapons issue plays a significant role in security politics today because it ultimately presents a challenge to identity. As a result of the extreme politicization of this issue, society is inclined to prioritize nuclear weapons as a security concern. A particular society may perceive threats to its identity from others because of the fear of losing what makes it unique and distinct from other societies. We see this evidenced in the discourse on nuclear weapons, which evokes security language. Therefore, the challenge is to recognize the problem of nuclear weapons without legitimizing extreme reactions.

I will outline Ole Waever's theory of societal security, with a brief explanation of terms and contending theories. It is based on a political discourse that has awakened latent identity insecurities within American society, resulting in the securitization.

While other researchers have focused on environment issues, the Copenhagen school, with Ole Waever at its helm, looks at the role society plays in relation to security. Waever and co-author Barry Buzan note, "Most ordinary people if asked about security will start talking about nationalism, ethnic conflict in East-Central Europe and possibly migration".[79] These responses seem to confirm the dominance of a new form of security, not taken into account by classical security theory. Waever's goal is not to subvert traditional realist thought, but rather to "define a new kind of unit in order to grasp the way other things than states had become referent objects for security discourse". Before delving into the theory itself, I will first discuss important terms used in societal security theory.

Society is constantly in a state of change. Thus, it is debatable what constitutes society at any given moment. However, it is still possible to study the processes by which identities of societies are formed as well as their current constitution. Waever and the Copenhagen school argue that researchers can study society, just like states, as a relatively constant entity. Waever uses Anthony Giddens to guide the definition of society: "a clustering of institutions combined with a feeling of common identity. Other main tenets of this definition are:

Societal security theory is not concerned with the security of certain groups within society, but rather with the security of the society as a whole. It is important here to differentiate between societal security and social security. Social security has to do with individual groups within society whereas societal security centers on society as a whole. This theory focuses on large-scale

[79] Buzan, Barry and Ole Waever. "Slippery? contradictory? sociologically untenable? The Copenhagen school replies." *Review of International Studies* 23 (1997): 241-250.

collective identities that can function independently from the state.[80] The two major components of society deal with religious and ethno-national identities.

According to societal security theory, society is the referent object that takes the place of the state in certain security situations.[81] As people sense a decline of the state due to globalization, they may feel that they can no longer rely on the state for protection. While state police still respond to acts of violence, issues of social concern may go unaddressed. This leaves society with a feeling of insecurity signified by perceived threats to identity. Thus, society becomes an increasingly important sector with regards to security.

Because of its everyday usage, security itself is difficult to define. Generally, in terms of international relations, using the term security means that any means necessary can be used to combat a threat. The Persian Gulf War illustrates the lengths to which a state would go to ensure not only political freedom, but also economic security. When Iraq invaded Kuwait in 1990, Iraq clearly violated internationally recognized sovereignty norms. In addition, there was terrific concern in the West about what this would mean for oil supply and prices. Damage to the West's oil supply would create problems for its industrialized economies. In order to resolve the situation, President George Bush gathered international support for military intervention; Bush managed to convince twenty-six states to contribute their military forces to the cause. Bush's argument was persuasive: "As was the case in the 1930s, we see in Saddam Hussein an aggressive dictator threatening his neighbors. Half a century ago the world had a chance to stop a ruthless

[80] Waever, Ole, et al.1998. *Security: A New Framework for Analysis.* Boulder: Lynne Rienner Publishers. Pp 22
[81] Waever,Ole et al.1993. *Identity, Migration and the New Security Agenda in Europe.*New York: St. Martin's Press. Pp 23

aggressor and missed it" .[82] By recalling the lessons of Munich, Bush was able to frame the issue in such a way that no one could deny that an immediate, full-scale response was the only option.

The above example illustrates the key to societal security. In Waever's view, security is a speech act. What is being said, how it is being said, and what goes unspoken holds immense value in security analysis. The very act of uttering the term security in relation to an issue immediately reveals crucial information. An issue becomes securitized when the term security is mentioned in conjunction with that issue. In societal security theory, whatever threatens the "we" in society is considered a security issue. Waever defines societal security as "the ability of a society to persist in its essential character under changing conditions and possible or actual threats" (Waever et al, 1993, 23). Just as a state seeks to guard its sovereignty, so a society seeks to secure its identity.

David Rowe seconds another important point made by Waever. He shares Waever's notion that military security is less relevant today than before. More and more, we see growing interest in other facets of security, such as economic security interests. Rowe writes in his article, "World Economic Expansion and National Security in Pre-World War I Europe," about the relationship between trade and peace. While not pretending to explain all aspects of a state's security behavior, Rowe challenges the assumption that increased trade leads to peace. In his analysis, he looks at five countries prior to World War I: Russia, Germany, France, Austria-Hungary and Great Britain. As a result of the intertwining economies, these countries faced tightening economic constraints on state security.

[82] Rourke, John T.1993.*Presidential Wars and American Democracy: Rally 'Round the Chief.*New York: Paragon.pp30

The interdependent economies left the states with less control over their own security options. Rowe writes that "the more Europe prospered from the deepening integration of world markets, the more fragile became the security foundations on which that prosperity ultimately rested". [83] Thus, Rowe concludes that increased trade does not necessarily contribute to peace: "The more that resources earn in nonsecurity sectors of the national economy, the more difficult it becomes for the state to use them for security". These resources are better spent on creating or maintaining trade competitiveness. Both Waever and Rowe conclude that states today have less control over their citizens and over how or by what they are affected.

The obvious competing theory within international relations since the 1970s is realism. Kenneth Waltz focuses on the state-centric level of analysis. Realism emerged from the Cold War to explain the balance of power between states. Regarding the state as a black box, Waltz assumes that states' behavior can be explained by their perceptions of other states' military power.

Traditionally, security studies have focused on military concerns. Security studies have been characterized as research pertaining to the "threat, use, and control of military force".[84] Realists (Morgenthau) and neo-realists (Waltz) tend to disregard questions of identity formation. States are considered unitary actors that behave rationally.

Stephen Walt further argues about develops realism. Similar, yet very distinct from Waltz's balance of power theory, Walt explains the power of threat perception in security matters with his balance of threat theory. The threat perception may or may not reflect reality. However, a state

[83] Rowe, David. 1999. "World Economic Expansion and National Security in Pre-World War I Europe." *International Organization* 53 (Spring): pp 195-231.

[84] Walt, Stephen.1987. *Origin of Alliances.* Ithaca: Cornell UP. Pp 212.

will act according to the perceived threat in order to balance against it. Walt believes that threat comes from the combination of another state's capabilities and intentions. Not only is it their military capabilities, but also how they intend (or are perceived to intend) to use them. States will then organize themselves to balance against a threat. For example, during the Cold War, both France and the USSR had nuclear weapons. However, the US perceived Russia as a threat and not France because of the perception that the USSR had aggressive intentions while France was seen as having peaceful intentions. Military might alone does not determine which states will be defined as threatening. Integrating perception into realist thought is a critical modification for realism.

Walt looks to the state as the referent object. Waever does not deny this aspect, but believes that other referent objects exist in relation to security, such as society. Military capabilities matter, but there are other important sectors of security.

Identity is the essence of a society, critical to its survival. Each society has a different set of criteria to determine what it perceives as a threat (Waever et al, 1998, 124). America's identity construction reveals its vulnerability to nuclear attacks. As a consequence of its geographic evolution, America is composed of many strong regional identities.

As with any country, war has played a role in the development of the current America identity. After World War II, America elites reinvented America identity by emphasizing the anti-German aspect. The Einstein's affair in the 1940s revisited the role America had played after World War II. Einstein had been an active and his legitimacy as a scientist was questioned both nationally and internationally. Do Americas feel threatened? What or whom do they feel threatened by?

How do they react to these threats? These are important questions to ask when discussing societal security in America.

According to societal security theory, when identity is threatened, it poses a security threat to the survival of society. This may or may not coincide with state security, since the state is more concerned with the integrity of its territory. During pre-world war 1, America experienced few territorial threats. She was at peace with other states and plays a neutral role in world military affairs but after the cold war era its military spending has increased.

For reasons outlined in the case study above, we can conclude that the heightened sensitivity to nuclear weapons is clearly related to the security threats of the world. In this case, we clearly see the effect of nuclear weapons and the importance studying of its contribution to evolving international relations. Within Waever's theory are two important concepts. First, security is a speech act. The way in which we discuss an issue determines the structure of discourse. This discourse then leads to practice, whether or not it meets with reality. Second, society can be a referent object for security just as the state is. While state security is a well- studied topic, there is little research on societal security.

2.4 CONCLUSION

Living in the era of globalization, when communication, and movement of people in general become easier, the threats also became easy to deliver. Nearly all countries are open to economic threats, and many also suffer from basic political and societal insecurities.[85] This chapter aimed to create the theoretical framework for the analysis of the case study on nuclear weapons in

[85] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pp 97

America and compare with some states. The important concept of states was introduced, and it was outlined how the states see and perceive the threats, and it was defined what does pose a threat to the national security, to the state per se, namely to its territory, idea of state, and state institutions.

This chapter analyzed that security comprises five sectors, as it is above. This is important since it facilitated the application of the theory to the case, thus linking threats posed by nuclear weapons to the international security of the world.

Next chapter focused on the case study of nuclear weapons in America, its routes, and other statistical data have been given, and analyzed. It defined what is considered to be nuclear weapons. What are the effects of nuclear threats on the society, economy, environment, political and administrative institutions. It is important to analyze the effects of nuclear weapons on all five sectors on the national security, in order to get clear and complete picture of the real scale that facilitated in developing early warning and prevention policies against threats posed by it.

CHAPTER THREE

EINSTEIN'S NUCLEAR FORMULA AND ITS RAMIFICATIONS IN SHAPING GEO-POLITICAL SECURITY ASPECTS: A CASE STUDY OF THE UNITED STATES OF AMERICA, 1905-2011

3.0 INTRODUCTION

This chapter has introduced the case on nuclear weapons in America compared to other regions. The research focused on the region rather than on the specific state, since nuclear weapons cannot take place within borders of one state, rather it transcends the borders of several states. Present research drew attention to the new technology on manufacture of nuclear weapons. It will also give some analysis on nuclear weapons. This chapter is important as a basis for the analysis of the case and application of theory to it in Chapter IV. In addition, it is important to keep in mind that it is rather difficult to obtain data on exact quantity of nuclear manufacture due to its isolationist policies, and tight state control over any going out information that criticizes or casts a shadow over the ruling regime.

Despite efforts to control nuclear weapons, continuous developments in nuclear technology and sophisticated delivery systems have made the task of restricting their future use more difficult. The rapid spread of nuclear weapons for commercial use throughout the world has given many smaller nations the technological capability and the raw materials needed to construct nuclear bombs. Another major development in nuclear weapons technology has been the construction of ever more powerful nuclear explosives with much greater areas of radioactive contamination.

3.1 MANHATTAN PROJECT

Manhattan Project, the name given to the United States effort strongly aided by the United Kingdom to build the atomic bombs that helped end World War II (1939-1945). The Manhattan Project ranks as the largest industrial and scientific effort in the history of the world, costing more than $2 billion in 1945 dollars and involving more than 175,000 workers. All research and experiments were conducted in almost total secrecy. Only a relatively small number of people knew the exact purpose of the project, which created the most powerful weapon ever used.The Manhattan Project ushered in a new era in human history known as the Atomic Age. It demonstrated the feasibility of atomic energy for both peaceful and military uses. It also led to an arms race that, according to many scientists, produced enough nuclear weapons to destroy human civilization and end most forms of life on Earth.[86]

The Manhattan Project began in 1942. It officially ended in 1946 when it became part of the AEC. Originally based in Manhattan, a borough of New York City, the project eventually spread across the nation and was concentrated at three main sites located in Oak Ridge, Tennessee; Hanford, Washington; and Los Alamos, New Mexico. Its director was Brigadier General Leslie R. Groves. American physicist J. Robert Oppenheimer was the scientific director at Los Alamos, which attracted some of the most brilliant scientists and mathematicians of the 20th century. [87]
The Manhattan Project produced four atomic bombs. One was tested July 16, 1945, at a bombing range site known as Trinity near Alamogordo, New Mexico. Two others were dropped on the

[86] Cantelon, Philip L. and Robert C. Williams (1984).*The American Atom: A Documentary History of Nuclear Policies from the Discovery of Fission to the Present, 1939-1984* .Philadelphia: University of Pennsylvania Press.pp 23 - 61

[87] Peter Bacon Hales (1997) *Atomic Spaces: Living on the Manhattan Project.* Urbana: University of Illinois Press. Pp VIII

Japanese cities of Hiroshima and Nagasaki on August 6 and 9, 1945. A fourth was ready for use in late August, but by then Japan had surrendered and World War II had ended.

3.2 ORIGIN AND EVOLUTION OF MANHATTAN PROJECT

The origins of the Manhattan Project can be traced to the scientific laboratories of Britain and Europe in the early 1900s. At that time, the basic unit of matter, the atom, was viewed as solid and impossible to divide. The startling discoveries of radium, the X ray, the electron, proton, and neutron, and alpha, beta, and gamma rays, however, alerted scientists to the existence of a "subatomic" world. As British physicist Ernest Rutherford and Danish physicist Niels Bohr suggested, instead of being solid, the atom resembled a "miniature solar system." Within the atom negatively charged electrons orbited positively charged protons and electrically neutral neutrons in the atom's nucleus. [88]

Scientists knew well that the atoms of each chemical element differed from one another. Hydrogen, which consists of one electron orbiting one proton, is the simplest. Scientists classify hydrogen with the atomic number one. Uranium, with 92 electrons orbiting a nucleus with 92 protons, is the most complex of the natural elements. It has the atomic number 92. In addition, these elements often contain variations called isotopes that occur because they have different numbers of neutrons bound to the protons in the nucleus. For example, the element uranium has three isotopes, known by their atomic numbers, U^{238}, U^{235}, and U^{234}. The numbers are derived by adding the number of protons in the uranium nucleus, 92, with the number of neutrons in the nucleus. U^{238} is the most common form of uranium; the rare U^{235} isotope forms only about 0.7

[88] Rhodes, Richard (1986) *The Making of the Atomic Bomb*. New York: Simon & Schuster, pp 6

percent of naturally occurring uranium. Because uranium appeared to be an unstable element, scientists began to bombard it with streams of neutrons, hoping to discover a new form of energy. [89]

The 1930s saw major breakthroughs in understanding the atom. In 1933 Hungarian-born physicist Leo Szilard, who had fled Nazi Germany for England, was standing on a London street comer waiting for the light to change. Suddenly he realized that if the right material were found, splitting the nucleus of an atom could release neutrons and cause a nuclear "chain reaction" in which the released neutrons would cause more atoms to split, or fission. The result would be a self-sustaining series of fissions, causing a continuous release of nuclear energy. Such a chain reaction could be used to produce either electricity or a bomb. The next year Szilard filed a British patent on this subject, but kept it secret out of fear that German scientists might learn it was possible to make an atomic bomb.

Meitner and Frisch provided a theoretical explanation for Hahn and Strassmann's results and argued that the experiments confirmed Bohr's model of the atom. When the uranium atom split or fissioned, it released an enormous amount of energy. How much energy could be calculated by using the famous formula of physicist Albert Einstein, $E=mc^2$. In this formula E is energy, m is mass, and c is the speed of light squared. Since the speed of light 300,000 km/sec (186,000 mi/sec) is such a large number, very little mass is required to produce a great deal of energy. Moreover, if each fission released additional neutrons in the process, a nuclear chain reaction would be possible. [90]

[89] Ibid pp 12
[90] Ibid pp 19

Meitner and Frisch raced to Copenhagen, Denmark, to inform Bohr, who was preparing to leave for a physicists' conference in Washington, D.C., in January 1939. As soon as the scientists in Washington learned that uranium could be fissioned, several rushed to their laboratories to repeat the experiment. Within a year, more than 100 scientific papers had appeared on nuclear fission. When Szilard first heard the news of uranium fission, he predicted to the world through his words "we turned the switch, saw the flashes, watched for ten minutes, then switched everything off and went home. That night I knew the world was headed for sorrow."By 1939 a small group of scientists were well aware that a weapon of terrible power was possible at least in theory.

3.3 AMERICA'S NUCLEAR WEAPONS PROGRESS

The U.S. nuclear weapons program moved at a somewhat slower pace. Early in 1939 various émigré scientists living in the United States steadily campaigned for increased U.S. nuclear research. They met so many obstacles, however, that they felt they were "swimming in syrup," as the refugee Hungarian physicists Eugene Wigner and Leo Szilard put it. In July 1939 Szilard, Wigner, and another refugee Hungarian physicist, Edward Teller, conferred on the best way to gain the attention of the U.S. government. They decided on a plan to have the world's most famous scientist, fellow refugee Albert Einstein, write a letter to President Franklin D. Roosevelt. The three men met with Einstein at his summer home on Long Island. Einstein later signed his name to a letter, dated August 2, 1939, that officially warned Roosevelt of a new type of bomb. Hidden in the hold of a ship, such a bomb could easily destroy a harbor city. At the time no one dreamed that a nuclear bomb could ever be dropped from an airplane. Einstein was one of several concerned physicists who collaborated on this letter to President Roosevelt, informing him of the possibility of an unimaginably powerful and dangerous new weapon: the

nuclear bomb. In the first dark days of World War II, these physicists believed that the Germans were already at work on a nuclear bomb, using the results of French and American research. Einstein's letter undoubtedly helped to convince President Roosevelt that the United States had to develop its own nuclear weapons program.[91]

Einstein letter to President Roosevelt, "this new phenomenon would lead to the construction of nuclear bombs, and it is extremely powerful bombs of a new 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. The United States has only very poor ores of uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia, while the most important source of uranium is Belgian Congo.

In view of this situation you may think it desirable to have some permanent contact maintained between the Administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who could perhaps serve in an in official capacity. His task might comprise the following:

- To approach Government Departments, keep them informed of the further development, and put forward recommendations for Government action, giving particular attention to the problem of securing a supply of uranium ore for the United States;

[91] How nuclear weapons decisions were made. Rhodes, Richard (1986) *The Making of the Atomic Bomb*. New York: Simon & Schuster,

- to speed up the experimental work, which is at present being carried on within the limits of the budgets of University laboratories, by providing funds, if such funds be required, through his contacts with private persons who are willing to make contributions for this cause, and perhaps also by obtaining the co-operation of industrial laboratories which have the necessary equipment."

Einstein further argued, "I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under-Secretary of State, von Weizsacker, is attached to the Kaiser-Wilhelm-Institut in Berlin where some of the American work on uranium is now being repeated."

Alexander Sachs, an acquaintance of the scientists who was on familiar terms with Roosevelt, delivered the letter on October 11, 1939, a month after the Nazi invasion of Poland. Although Roosevelt knew little about science, he immediately established an Advisory Committee on Uranium to look into the matter. In June 1940 an even more important National Defense Research Committee came into being, followed by the Office of Scientific Research and Development on June 28, 1941. Still, the Americans never displayed the same fear or sense of urgency as the British until Japan attacked Pearl Harbor on December 7, 1941. Suddenly the United States was at war with Japan and Germany. In this famous speech, President Franklin Roosevelt lists the unprovoked attacks by Japan and details America's reasons for declaring war. After the devastation at Pearl Harbor, the United States could no longer remain detached from

the events in Europe and Asia. After this speech and the ensuing congressional vote, the United States entered the fray of the Second World War.[92]

With this, all discussion regarding an atomic bomb shifted from abstract theory to practical application: There was a mentality among the decision makers that the nation that built the nuclear bomb first would surely win the war.[93]

In the months following Pearl Harbor, the U.S. government completely reorganized its nuclear bomb effort by enlisting the aid of the United States Army Corps of Engineers. The project shifted from a program dominated by scientists in university laboratories to a gigantic, nationwide construction project under the Corps of Engineers' Manhattan Engineer District (hence the name "Manhattan Project"). Brigadier General Groves, an able engineer who had helped build the Pentagon, assumed overall charge of the project. Groves insisted on a complete refocus for all nuclear research. All discussion of postwar power plants or individual power sources for airplanes, ships, or submarines had to cease. From then on, the project had only one goal: to create a nuclear weapon to end the war in the shortest possible time.[94]

Groves began by enlisting the aid of several large American corporations, including numerous universities. The race to beat the Nazis to the secret of the nuclear bomb had begun in earnest. Groves did not assume control of the project until the fall of 1942. He forbade any publicity about its research and insisted on the "compartmentalization" of knowledge for all project workers. This meant that a person knew only enough to do his or her task, but no more. This

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[92] U.S National archives and records administration
[93] Ibid pp 33
[94] Peter Bacon Hales (1997) *Atomic Spaces: Living on the Manhattan Project.* Urbana: University of Illinois Press. Pp 23

proved frustrating, for ordinary workers as well as for the top-level scientists. Still, a strict "culture of secrecy" blanketed the entire project.

3.4 AMERICA'S FIRST NUCLEAR WEAPON TEST

It is hard to imagine a more dramatic scene than the predawn hours at Trinity Site on July 16. If the gadget exploded in the relatively low range of 3,000 tons of TNT, it would be only slightly more powerful than a standard "blockbuster" weapon, hardly worth the enormous expense and effort. If the bomb were a "dud," the Manhattan Project would rank as the most costly industrial failure of all time. On the other hand, some scientists speculated that if the blast exceeded expectations, it could conceivably ignite Earth's atmosphere and end all life as we know it. [95]

The blast vaporized the steel tower, tore huge chunks out of the earth, and shattered windows 200 km (125 mi) away. A gigantic multicolored mushroom cloud rose to an altitude of 12,000 m (40,000 ft) within minutes and began to drift slowly to the northeast. Where the ball of fire touched the earth, it fused the sand into a radioactive greenish-gray glass later named Trinitite that resembled "a sea of green." All living things within the radius of a kilometer birds, plants, snakes, lizards, rodents were instantly incinerated. Wild antelope ran terrified in all directions. The yield was estimated at around 20,000 tons of TNT.[96]

Since the blast was visible in three states indeed, it could have been seen from the Moon one might expect that news about it would dominate the headlines. But U.S. Army security had

[95] Ferenc Morton Szasz (1995) *The Day the Sun Rose Twice: The Story of the Trinity Site Nuclear Explosion, July 16,1945* . Albuquerque: The University of New Mexico Press, pp 2

[96] Ibid pp 5

instructed all regional newspapers to print only the "official" version of the events, which was that an ammunition dump had exploded accidentally.

At first the scientists who observed the blast were overjoyed. They had cracked the secret of atomic weapons. Germany had surrendered on May 7, 1945, and the war against Japan would soon be over. No nation could withstand the power of such a weapon. But within moments, several scientists began to have second thoughts. Fermi became temporarily ill from the stress and worry. Oppenheimer at first remarked that his confidence in the human mind had been restored, but later, quoting from the epic Hindu poem, the *Bhagavad-Gita*, he solemnly observed, "Now I am become Death, the destroyer of worlds." James Tuck of the British Mission summed up the thoughts of many who watched the cloud roil the summer sky: "What have we done?"

The news of the success at Trinity was immediately cabled to officials in Washington, D.C., who sent it on to President Harry Truman. Truman was in Germany meeting with Soviet and British leaders at the Potsdam Conference to discuss the best way to end the war with Japan. This meeting of the heads of government of the United States, the USSR, and the United Kingdom, following the unconditional surrender of Germany in World War II. It was held in Potsdam, near Berlin and the purpose of the conference was the implementation of decisions reached previously at the Yalta Conference. Rigid measures of control were decided on in the Potsdam Conference to prevent Germany from ever again becoming a threat to world peace. The conferees determined to disarm the country and prevent remilitarization; to outlaw the National Socialist (Nazi) Party that had been led by Adolf Hitler; to decentralize the economy and reorganize it with emphasis on agriculture; and to encourage democratic practices.

On July 26, the U.S., British, and Chinese governments issued an ultimatum, called the Potsdam Declaration, to the Japanese government, confronting Japan with a choice between unconditional surrender and total annihilation; the USSR was not then at war with Japan and was not a party to the ultimatum. Although the Potsdam Conference was considered successful, many of the agreements reached were dishonored within a year as a result of the growing rift between the USSR and Western Europe.[97]

Truman read the report with delight, but he did not immediately inform the Soviets, who had been excluded from the Manhattan Project. Instead, he later casually mentioned to Soviet premier Joseph Stalin that the United States had developed a powerful new weapon. Stalin, just as casually, according to Truman's memoirs, said he hoped it would be put to good use against the Japanese. Although Soviet spies had gathered some information on the Manhattan Project, scholars are still debating how much Stalin actually knew when Truman first told him about the Trinity Site explosion.

3.5 THE FIRST USE OF NUCLEAR BOMB

In early June 1945, a blue-ribbon committee had gathered in Washington, D.C., to decide how the bomb should be used. The committee debated dropping it on an unoccupied island in Tokyo Bay as a way of demonstrating to Japan how powerful the weapon was, but that view was rejected. Officials feared that Japan might put American prisoners of war on the island. In a worst-case scenario, some officials suggested that the bomb might not explode at all and

[97] The leaders of the three great powers—the Soviet Union, the United States of America and Great Britain—had agreed that in two or three months after Germany has surrendered and the war in Europe is terminated, the Soviet Union shall enter into war against Japan on the side of the Allies on some conditions. Critics in the United States argued that too many concessions had been made to the USSR during the conference, making the agreements a focus of domestic disputes

somehow the enemy would redrop it on America. Placing an emphasis on the "shock value" of the bomb, the committee decided on an unannounced drop on one or more of four Japanese targets: Kokura, Hiroshima, Niigata, and Kyōto. Secretary of War Henry Stimson vetoed Kyōto because of its role as a revered Japanese cultural center, and Nagasaki replaced it on the list. In the meantime, another committee headed by Met Lab physicist James Franck strongly urged an announced drop on an uninhabited Japanese island. This committee argued that a surprise nuclear bomb would almost certainly create a postwar nuclear arms race with the Soviet Union. But this view received little hearing. From Germany, the Allies issued the Potsdam Declaration, which did not mention the nuclear bomb but threatened Japan with "complete and utter destruction" if it did not immediately surrender without any conditions. The Allies delivered the Potsdam Declaration through official channels and also dropped millions of leaflets over Japan's four main islands. The official Japanese response was interpreted as "ambiguous."[98]

On August 6, 1945, a specially prepared B-29 bomber, the *Enola Gay*, piloted by Colonel Paul Tibbets, left the island of Tinian for the primary target of Hiroshima and the plane dropped the 4,400 kg (9,700 lb) Little Boy uranium bomb that detonated 580 m (1,900 ft) above the city. The blast, which equaled approximately 15,000 tons of TNT, destroyed virtually everything within a 13-sq-km (5-sq-mi) area. It killed about 70,000 people instantly, severely injuring another 70,000 more. By 1950 the death toll had climbed to around 200,000 because of widespread radiation illness. A new era in world history had begun.

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[98] Jones, Vincent C. (1985). *Manhattan: The Army and the Atomic Bomb* .Washington, D.C.: U. S. Government Printing Office. Pp 16 - 49

Shortly afterwards, President Truman announced to the world that a new atomic weapon had been dropped on Hiroshima. He warned that unless Japan surrendered, more would follow. [99]The Japanese cabinet fiercely debated the issue but could come to no agreement. On August 7 and 8, U.S. aircraft continued to drop thousands of conventional bombs on Japan. On August 9, a second specially prepared B-29 named *Bock's Car* left the island of Tinian carrying the Fat Man plutonium bomb. The primary target was a weapons arsenal at Kokura, but pilot Charles Sweeney found the city covered with clouds. (Groves had insisted that the skies be clear before any drop.) After making three passes over Kokura, Sweeney headed to Nagasaki, where the cloud cover suddenly broke, and he released the bomb, which detonated about 520 m (about 1,700 ft) over the city. About 40,000 Japanese were killed instantly and another 40,000 severely injured. Eventually, the death toll climbed to about 140,000.[100]

This proved to be the last nuclear bomb used in combat. President Truman halted the shipping of a third nuclear weapon, a plutonium bomb that was the only remaining nuclear bomb in the U.S. arsenal. After negotiating a compromise that allowed Japan to retain its emperor, Japan surrendered on August 14, 1945. The final documents were signed aboard the battleship USS *Missouri* on September 2. Although the nuclear bombs did not exactly win the war with Japan, they clearly brought it to an abrupt end. At later chapters, this brought discussions whether bombing of Japan was necessary.[101]

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[99] Truman's role in the emergence of a national security state. Hogan, Michael J. 1998. *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945-1954.* Cambridge: Cambridge University Press, p12

[100] History that covers the science behind the bomb as well as the story of its development by Hales.

[101] J. Samuel Walker. 1997. *Prompt and Utter Destruction: Truman and the Use of. Atomic Bombs Against Japan.* Chapel Hill: University of North Carolina Press, pp 53

Almost immediately, people began to debate the necessity and morality of dropping the atomic weapons. The anniversaries of the bombings raise the question anew every year. There is no agreement. Some, such as Truman, have argued that, horrible as they were, the atomic bombs actually saved lives both Japanese and Allied because they allowed Japan to surrender with honor. Allied troops did not have to invade the home islands of Japan, with a projected loss of life estimated in the millions. Others, such as Otto Frisch, reluctantly agreed with the decision to bomb Hiroshima but termed the Nagasaki bombing as "unnecessary." Still others have said that the atomic bombs were not needed at all. Japan was ready to surrender, and a test drop on an uninhabited island would have given them the ideal opportunity to do so.

3.6 THE EFFECTS OF NUCLEAR BOMBS

Upon witnessing the first test explosion of a nuclear bomb, American physicist Robert Oppenheimer recalled a line from the Hindu poem, the *Bhagavad-Gita,* "Now I am become death, the destroyer of worlds." United States dropped atomic bombs on Hiroshima and Nagasaki, Japan, and the metaphor of destruction became reality. The United States Strategic Bombing Survey was a joint Army-Navy commission formed to study the impact of Japan's bombing. Therefore, a single nuclear bomb, the first weapon of its type ever used against a target, exploded over the city of Hiroshima at 0815 on the morning of 6 August 1945. Because of the lack of warning and the populace's indifference to small groups of planes, the explosion came as an almost complete surprise, and the people had not taken shelter. Many were caught in the open, and most of the rest in flimsily constructed homes or commercial establishments. Because of this accuracy and the flat terrain and circular shape of the city, Hiroshima was uniformly and extensively devastated. Practically the entire densely or moderately built-up portion of the city

was leveled by blast and swept by fire and which were almost completely burned out. The surprise, the collapse of many buildings, and the conflagration contributed to an unprecedented casualty rate. Seventy to eighty thousand people were killed, or missing and presumed dead, and an equal number were injured. [102]

At Nagasaki, 3 days later, the city was scarcely more prepared; the city remained on the warning alert. When the atomic bomb exploded, an intense flash and fire grew hazy with white smoke. At the same time at the center of the explosion, a tremendous roaring sound was heard and a crushing blast wave and intense heat were felt. The whole city suffered damage such as would have resulted from direct hits everywhere by ordinary bombs. If such a great amount of damage could be wreaked by a near miss, then the power of the nuclear bomb is unbelievably great.

The difference in the totals of destruction to lives and property at the two cities suggests the importance of the special circumstances of layout and construction of the cities, which affect the results of the bombings and must be considered in evaluating the effectiveness of the nuclear bombs.

Hiroshima before the war was one of the most important military command stations in Japan, the site of one of the largest military supply depots, and the foremost military shipping point for both troops and supplies. The impact of the nuclear bomb shattered the normal fabric of community life and disrupted the organizations for handling the disaster. In the 30 percent of the population killed and the additional 30 percent seriously injured were included corresponding proportions of the civic authorities and rescue groups. The experience of other bombed cities in Germany and Japan shows that this is not an isolated case. A possible explanation may lie in the disinfecting

[102] Ibid 73-79

action of the extensive fires. In later weeks, disease rates rose, but not sharply. Trees of all sizes lost their branches or were uprooted or broken off at the trunk.[103]

The most striking result of the nuclear bombs was the great number of casualties. The exact number of dead and injured will never be known because of the confusion after the explosions. Persons unaccounted for might have been burned beyond recognition in the falling buildings, disposed of in one of the mass cremations of the first week of recovery, or driven out of the city to die or recover without any record remaining. In this uncertain situation, estimates of casualties have generally ranged between 100,000 and 180,000 for Hiroshima, and between 50,000 and 100,000 for Nagasaki. The Survey believes the dead at Hiroshima to have been between 70,000 and 80,000, with an equal number injured; at Nagasaki over 35,000 dead and somewhat more than that injured seems the most plausible estimate.[104]

Most of the immediate casualties did not differ from those caused by incendiary or high-explosive raids. The outstanding difference was the presence of radiation effects, which became unmistakable about a week after the bombing. At the time of impact, however, the causes of death and injury were flash burns, secondary effects of blast and falling debris, and burns from blazing building.

The seriousness of these radiation effects may be measured by the fact that 95 percent of the traced survivors of the immediate explosion who were within 3,000 feet suffered from radiation disease. The flash of the explosion, which was extremely brief, emitted radiant heat travelling at the speed of light. Flash burns thus followed the explosion instantaneously.

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[103] Ibid 82
[104] Ibid 83

Injuries produced by falling and flying debris were much more numerous, and naturally increased in number and seriousness nearer the center of the affected area. The collapse of the buildings was sudden, so that thousands of people were pinned beneath the debris. There are no references, however, to people in the streets succumbing either to heat or to carbon monoxide as they did in Tokyo or in Hamburg, Germany.[105]

The radiation effects upon survivors resulted from the gamma rays liberated by the fission process rather than from induced radio-activity or the lingering radio-activity of deposits of primary fission products. Both at Nagasaki and at Hiroshima, pockets of radio-activity have been detected where fission products were directly deposited, but the degree of activity in these areas was insufficient to produce casualties. Similarly, induced radio-activity from the interaction of neutrons with matter caused no authenticated fatalities. But the effects of gamma rays—here used in a general sense to include all penetrating high-frequency radiations and neutrons that caused injury—are well established, even though the Allies had no observers in the affected areas for several weeks after the explosions.[106]

Our understanding of radiation casualties is not complete. In part the deficiency is in our basic knowledge of how radiation affects animal tissue. In the words of Dr. Robert Stone of the Manhattan Project, 'The fundamental mechanism of the action of radiation on living tissues has not been understood."[107]

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[105] Hersey, John. 1946. *Hiroshima* . New York: Knopf, pp 9 -52

[106] Peter Bacon Hales. 1997. *Atomic Spaces: Living on the Manhattan Project.* Urbana: University of Illinois Press, pp 64

[107] J. Samuel Walker. 1997. *Prompt and Utter Destruction: Truman and the Use of. Atomic Bombs Against Japan.* Chapel Hill: University of North Carolina Press, pp 24

According to the Japanese, those individuals very near the center of the explosion but not affected by flash burns or secondary injuries became ill within 2 or 3 days. Bloody diarrhea followed, and the victims expired, some within 2 to 3 days after the onset and the majority within a week. Autopsies showed remarkable changes in the blood picture almost complete absence of white blood cells, and deterioration of bone marrow. Mucous membranes of the throat, lungs, stomach, and the intestines showed acute inflammation.

The majority of the radiation cases, who were at greater distances, did not show severe symptoms until 1 to 4 weeks after the explosion, though many felt weak and listless on the following day. After a day or two of mild nausea and vomiting, the appetite improved and the person felt quite well until symptoms reappeared at a later date. Within 12 to 48 hours, fever became evident. The other symptoms commonly seen were shortage of white cells, loss of hair, inflammation and gangrene of the gums, inflammation of the mouth and pharynx, ulceration of the lower gastro-intestinal tract, small livid spots resulting from escape of blood into the tissues of the skin or mucous membrane, and larger hemorrhages of gums, nose and skin.

A decrease in the number of white blood corpuscles in the circulating blood appears to have been a constant accompaniment of radiation disease, even existing in some milder cases without other radiation effects. The degree of leukopenia was probably the most accurate index of the amount of radiation a person received. Radiation clearly affected reproduction, though the extent has not been determined. Sterility has been a common finding throughout Japan, especially under the conditions of the last 2 years, but there are signs of an increase in the Hiroshima and Nagasaki areas to be attributed to the. radiation. Sperm counts done in Hiroshima under American supervision revealed low sperm counts. The effects of the bomb on pregnant women are marked, however. Of women in various stages of pregnancy who were within 3,000 feet of ground zero,

all known cases have had miscarriages. Even up to 6,500 feet they have had miscarriages or premature infants who died shortly after birth. Two months after the explosion, the city's total incidence of miscarriages, abortions, and premature births was 27 percent as compared with a normal rate of 6 percent.

Unfortunately, no exact definition of the killing power of radiation can yet be given, nor a satisfactory account of the sort and thickness of concrete or earth that will shield people. In the meanwhile the awesome lethal effects of the atomic bomb and the insidious additional peril of the gamma rays speak for themselves.

As might be expected, the primary reaction to the bomb was fear, threat, uncontrolled terror, strengthened by the sheer horror of the destruction and suffering witnessed and experienced by the survivors.

The behavior of the living immediately after the bombings, as described earlier, clearly shows the state of shock that hindered rescue efforts. A Nagasaki survivor illustrates succinctly the mood of survivors: "I was working at the office. I was talking to a friend at the window. I saw the whole city in a red flame, then I ducked. The pieces of the glass hit my back and face. My dress was torn off by the glass. Then I got up and ran to the mountain where the good shelter was."[108]

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[108] Groves, Leslie R.,1962. *Now It Can Be Told* .New York: Harper & Row, pp 72

3.7 THE LEGACY OF MANHATTAN PROJECT

The Manhattan Project shaped the future of the world in ways that no one could have imagined. It led to an arms race between the United States and the Soviet Union, helped create a culture of secrecy and fear especially in the United States and the Soviet Union and resulted in the spread of nuclear weapons, the development of nuclear energy for peaceful purposes, and the ongoing problem of how to store radioactive nuclear waste. The world will undoubtedly be dealing with these legacies for a long time to come.

3.8 NUCLEAR ARMS RACE

In 1946 an American committee proposed the creation of an international authority to control "all phases of the development and use of atomic energy." Many scientists who worked on the Manhattan Project helped formulate this plan, which was presented to the newly created UN by American financier and economist Bernard Baruch. Baruch warned of the dangers of nations competing to produce weapons of mass destruction. But the Soviet Union deeply involved in building its own nuclear bomb refused to cooperate. In 1949 the Soviets detonated their first nuclear weapon virtually identical to the Trinity Site bomb and the arms race was on. [109]

In the early 1950s as relations between the West and the Soviet Union deteriorated into what was called the Cold War, Britain, the Soviet Union, and the United States also developed thermonuclear or hydrogen bombs, whose explosive power was more than 50 times greater than a standard nuclear bomb. Neither the Soviet Union nor the United States dared attack one

[109] The arms race and the efforts to control it by CHENEY, Glenn Alan. 1999. *Nuclear proliferation: the problems and possibilities.* New York: Franklin Watts, pp 78

another for fear of instant retaliation, a situation that was known as MAD. People once thought the Cold War would never end. Sometimes they feared nuclear bombs would blow up the world. The Cold War was a conflict primarily between the United States and the Soviet Union. Each power brought other countries into the conflict on its side. The Cold War lasted more than 40 years.

This tense atmosphere evaporated with the dissolution of the Soviet Union in 1991. United States-Russian relations became much more friendly, and the Cold War was declared officially at an end. Nevertheless, the arms race produced so many nuclear weapons that many scientists still fear that any use of the stockpiles could end human civilization as we know it.

3.9 NUCLEAR PROLIFERATION

Once the Manhattan Project demonstrated that a nuclear bomb could be built, it was only a matter of time before other nations acquired nuclear weapons. The secrets of the physical world lie open to all trained observers, and any country with the scientific knowledge and a sufficient industrial base can manufacture its own nuclear bombs. The United States and the Soviet Union were the first to develop nuclear weapons, followed by Britain, France, and China. In 1968 the five nuclear powers signed the Nuclear Nonproliferation Treaty, under which they agreed to pursue disarmament and to deny nuclear weapons technology or assistance to any nonnuclear state.

By 1995, 165 nonnuclear states had ratified the treaty. India, Israel, and Pakistan did not adopt the treaty, and today those three countries have nuclear weapons. South Africa began to develop nuclear weapons, but scrapped its program and agreed to the treaty in 1991. Following the

Persian Gulf War, UN weapons inspectors discovered that Iraq had a nuclear weapons program but had not yet developed a bomb. In 2003 North Korea withdrew from the treaty and announced that it had secretly developed nuclear bombs. As a result, by 2003 nine countries—Britain, China, France, India, Israel, North Korea, Pakistan, Russia, and the United States were known or were believed to possess nuclear weapons. Today the governments of many nations are also concerned about the possibility that nuclear bombs or the fissile material needed to make a Hiroshima-type nuclear bomb could fall into the hands of terrorists. [110]

The Cold War standoff between the United States and the Soviet Union shaped the global balance of power after World War II. Although an actual war between these two superpowers never occurred, the balance of power process instead took the form of a massive arms race, in which each superpower responded by adding to their military buildup. The possession of large arsenals of nuclear weapons by both the United States and the Soviet Union ensured that any potential war would prove disastrous for both. Because of the threat to human survival posed by nuclear weapons, military strategists often referred to the balance of power as a "balance of terror."[111]

During the Cold War, the U.S. policy of containment encircled the Soviet Union with military and political alliances in Western Europe, the Middle East, and Southeast Asia. The major U.S. and Soviet military interventions of the Cold War in Korea, Vietnam, and Afghanistan took place in politically contested regions of the world where both superpowers jockeyed for influence.

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[110] Stephen I. Schwartz, ed.,1998. *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons Since 1940.* Washington, D.C.: Brookings Institution Press, pp112

[111] Arms control issues surrounding nuclear in Bailey, Kathleen C. *Doomsday Weapons in the Hands of Many; The Arms Control Challenge of the '90s.* University of Illinois Press, 1991

Small states sometimes benefited from the superpower competition. In the 1960s, for example, relations soured between Cuba and the United States. At that time, Cuba allied itself with the Soviet Union and received large economic and military subsidies.

The collapse of the Soviet Union in 1991 left the United States as the world's sole superpower. Balance of power theory suggests that without the Soviet threat the United States, as the dominant world power, will face difficulties in its relations with such states as China and the European powers. For example, key countries such as China, Russia, France, and Germany all opposed the United States invasion of Iraq in 2003 in diplomatic arenas such as the United Nations. Yet this opposition did not stop the United States from acting, exposing the significant gap in military capability that now exists between the United States and the rest of the world. Small states that fear the United States are no longer able to join a counterbalancing coalition to protect their security. Instead, many are developing nuclear weapons in an attempt to dramatically expand their military capability. For example, North Korea claimed in 2003 that it was developing nuclear weapons to balance against U.S. power.

The changing nature of power in the contemporary international system further complicates the operation of the global balance of power. Globalization, the Internet, weapons of mass destruction, and other technological developments have made it possible for small states and even nonstate groups to acquire significant power. These factors also dilute the relative importance of military power. For example, after the terrorist attacks of September 11, 2001, the United States assembled a broad coalition to invade Afghanistan, using military force to topple the Taliban government and end the Taliban's support for al-Qaeda terrorists. This application of

military power did not provoke a balancing coalition of other states, but it also did not end the terrorist threat to the United States. In the future, the balance of power may continue to operate among states engaged in prolonged disputes, but it is less applicable to conflicts involving terrorists and other nonstate groups.[112]

3.10 CONCLUSION

This section analyzed the growing trend and routes of nuclear weapons. With the end of the Cold War between the former Soviet Union and the United States, the threat of an all-out nuclear attack has still remained. Under the terms of an arms reduction treaty signed in 2002 between the United States and Russia, both nations agreed to reduce their strategic nuclear arsenals to about 2,200 nuclear warheads by the year 2012. Still, the threat of nuclear war remains because of the spread of nuclear weapons. In 1998 India and Pakistan conducted nuclear bomb tests. In 2003 North Korea told U.S. officials that it possessed nuclear weapons. Only five nations have openly revealed the number of nuclear weapons they possess. They are China, France, Russia, the United Kingdom, and the United States. As of 2002, the number of nuclear weapons each nation possessed was China (434), France (482), Russia (about 6,000), the United Kingdom (200), and the United States (about 6,000). Israel is known to have the capability to deploy some 100 nuclear weapons.

Therefore given the above consequences that were caused/exacerbated by nuclear weapons they seriously undermine the global peaceful coexistence to meet the numerous challenges.

[112] On the effectiveness of U.S. propaganda in molding public opinion against Communism. Hixson, Walter L. *Parting the Curtain: Propaganda, Culture and the Cold War, 1945-1961.* St. Martin's, 1997.

CHAPTER FOUR

EINSTEIN'S NUCLEAR FORMULA AND ITS RAMIFICATIONS IN SHAPING GEO-POLITICAL SECURITY ASPECTS: A CRITICAL ANALYSIS

4.0 INTRODUCTION

This chapter will aim to synthesize the results of the case study, with the chosen theory (Chapter two), and try to answer the research question Does nuclear weapons pose a threat to the international security of the states? In order to answer the question, I will analyze the impact of nuclear weapons in the world with America as a major actor on the sectors comprising national security: military, political, economic, environmental, and societal. Further it will be analyzed if the political leaderships in America perceive nuclear weapons as a threat? And what are the difficulties with the global and regional security complex?

In order to proceed to the analysis if nuclear weapons poses a threat to the international security, we should define in short to which specific areas of security, and what is the intensity and level of threat, range over the time and space.

4.1 EMERGING ISSUES

- Range in space. How close is the threat in the geographical terms? Is the threat emanating of an immediate proximity?
- Distance in time. It is more of a range in time, it depends is the threat of an immediate character? Or it is a latent and hidden but still present a threat? How long will it take for that threat to take shape, and challenge the target?

- ➢ Probability vs. consequences. Sides involved in the implementation of the threat, should calculate the consequences, in case the threat will be carried out.
- ✓ Historical dimension. This aspect usually defines how the states perceive the threats based on their existing pre-beliefs. Sometimes, the states shape their foreign policies based on the past history, in order to diminish the historically experienced vulnerabilities.

Based on the theory and the case study it could be stated that there are several threats to the military security posed by nuclear weapons.

(i) NUCLEAR WEAPONS AND MILITARY SECURITY

The weakness of the economic sector is characteristic for both weak and strong state, thus the state budget cannot allocate sufficient financial means for the purchase of the technical detecting equipment, and pay reasonable salaries to the armed forces in order to give them incentives to protect the state against attack. After 1945 Japan military had to be reduced since Mr. Hirohito did not find their services any more needed. The justification was that presence of nuclear bombs in America infringed their country's sovereignty. Hirohito officially pursues the politics of neutrality, in this way trying to build relationships with other states. Hirohito occasionally made known his displeasure about the growing power of Japan's military. For example, he demanded the suppression of radical military officers who were staging an insurrection against the civilian government in Tokyo. Indeed, Hirohito's public appearances in military uniform, observing military maneuvers, served to strengthen support from people.

The Japanese government was deeply divided between military and naval leaders who wanted to continue fighting and civilian officials who wanted to negotiate for peace. Hirohito appears to

have favored peace, but he did not break the deadlock between the two groups later, after the United States dropped atomic bombs on the Japanese cities of Hiroshima and Nagasaki and the USSR declared war on Japan. Breaking the precedent of imperial silence, Hirohito announced Japan's surrender.

The Arms and Security Project engages in media outreach and public education aimed at promoting reforms in U.S. policies on nuclear weapons, military spending and the arms trade. It seeks to advance the notion that diplomacy and international cooperation are the most effective tools for protecting the United States. The use of military force is largely irrelevant in addressing the greatest dangers we face, from terrorism, to nuclear proliferation, to epidemics of disease, to climate change, to inequities of wealth and income. The allocation of budgetary resources needs to be changed to reflect this reality. Program goals include:

- Promoting substantial cuts in military spending as an integral part of any plan to reduce the federal deficit.
- Playing a central role in efforts to accelerate reductions in nuclear arsenals and increase spending on programs designed to prevent nuclear weapons and bomb-making materials from getting into the hands of terrorists.
- Sparking a dialogue on the implications of the U.S. role as the world's number one arms exporting nation, poised to sell $40 billion in weaponry in 2011 alone.[113]

Since the direct military threats from other sovereign states became more or less obsolete, another forms of threats could be included into the military threats, e.g. transboundary criminal groups, terrorist groups, and as Buzan notes "both militias and mafias can serve their members as

[19] See chapter 3

referent objects for military security."[114] In modern broadened terms of military security, the world including America is threatened by nuclear weapons: in terms of range of space, and recurrent historical incidents.

Given the realities of the time, and history, it could be said that strong states are less vulnerable to the military threats, due to its military supremacy, and strong economic performance. Where weak states are rather vulnerable, but lack of that military supremacy, and strong economic performance, usually keeps them pre-occupied with internal threats to their security, such as ethnic clashes and secessionist movements. Military security also can lead to the paranoia and be a comfortable justification, in the former the non-existent threats fall into the securitization due to the misperception and in the latter, the state shapes what will fall into the military security, based on its own interests and vulnerabilities.

Deterrence theory gained increased prominence as a military strategy during the Cold War with regard to the use of nuclear weapons. And, it took on a unique connotation during this time as an inferior nuclear force, by virtue of its extreme destructive power, could deter a more powerful adversary provided that this force could be protected against destruction by a surprise attack. A credible nuclear deterrent, Brodie wrote, must be always at the ready, yet never used.[115]
In the development of military strategy however, Schelling (1966) argues the capacity to hurt another state is now used as a motivating factor for other states to avoid it and influence another state's behaviour. In order to be coercive or deter another state, violence has to be anticipated and

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Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 54

[115] Brodie, Bernard (1959) *The Anatomy of Deterrence" as found in Strategy in the Missile Age*, New Jersey: Princeton, pp. 264–304

avoidable by accommodation. [116]The veteran cold-war policy makers Henry Kissinger reversed his previous position and asserted that far from making the world safer, nuclear weapons had become a source of extreme risk. The use of military threats as a means to deter international crises and war has been a central topic of international security. In international security, a policy of deterrence generally refers to threats of military retaliation directed by the leaders of one state to the leaders of another in an attempt to prevent the other state from resorting to the threat of use of military force in pursuit of its foreign policy goals.

Deterrence theory holds that nuclear weapons are intended to deter other states from attacking with their nuclear weapons, through the promise of retaliation and possibly MAD. Nuclear deterrence can also be applied to an attack by conventional forces; for example, the doctrine of massive retaliation threatened to launch U.S nuclear weapons in response to Soviet attacks updates and revises its beliefs when the unanticipated behaviour of a defending state cannot be explained by case-specific variables.

Schelling is prescriptive in outlining the impact of the development of nuclear power in the analysis of military power and deterrence. Nuclear weapons give nations the potential to not only destroy their enemies but humanity itself without drawing immediate reprisal because of the lack of a conceivable defense system and the speed with which nuclear weapons can be deployed. A nation's credible threat of such severe damage empowers their deterrence policies and fuels political coercion and military deadlock, which in turn can produce proxy warfare.

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[116] Schelling, T. C. (1966) *The Diplomacy of Violence*, New Haven: Yale University Press, pp. 1–34

Tagma argues that states may voluntarily give up their nuclear weapons under the logic of nuclear deterrence. Accordingly a state may voluntarily give up its nuclear weapons in the lack of a credible deterrent such as a secure second strike capability.

United States policy of deterrence during the Cold War underwent significant variations with the most important factor was probably the rough parity achieved in stockpiling nuclear weapons with the clear capability of MAD. The doctrine of mutual nuclear deterrence characterized relations between the United States and the Soviet Union during this period, and present relations with Russia .While the army was dealing with the breakup of the Soviet Union and the spread of nuclear technology to other nations beyond the United States and Russia, the concept of deterrence took on a broader multinational dimension. The current tensions with Iran and North Korea over their nuclear programs are due in part to the continuation of this policy of deterrence. [117]This has resulted diplomatic misunderstandings and opposing political ideologies may lead to escalating mutual perceptions of threat, and a subsequent arms race which elevates the risk of actual war and high military expenditures resulting in higher taxes and increasing budget deficits. It could be concluded that nuclear weapons does pose a military threat to the world, if to follow the previous broadened vision of new security threats to the military sector. The nuclear weapons threats, in spite of its severe international security implications, is a military threat. Thus, the straightforward application of military firepower to this problem is not likely to be effective.

[117] Towle, Philip (2000). "Cold War". In Charles Townshend. *The Oxford History of Modern War*. New York, USA: Oxford University Press. p. 164

(ii) NUCLEAR WEAPONS AND OTHER SECURITY ISSUES

Political Security

As we said, political security is about protecting idea of state and the institutions that develop that ideology. Other types of vulnerability, whether economic or ecological, become integral components of our definition of security only if they become acute enough to acquire political dimensions and threaten state boundaries, state institutions or regimes survival.[118] Thus it could be said that weak states are rather vulnerable to the political threats, where the administrative, financial, legal and political institutions are rather weak, thus posing a threat and hampers the transition to the democracy. The tendency of governments to limit the degree of openness in politics and society is likely to be intensified by the desire of individual members of the government apparatus who are benefiting from links with manufacture of nuclear weapons and ensures that their activities do not become the focus of public and media thus limiting the emergence of democratic forms of governance.

The social, along with the economic decline in the level of life, leads to the dissatisfaction with the government that cannot provide, ensure, and protect the rights of its citizens and welfare system, thus leading to the questioning of the idea of state by its own nation. And when state and nation do not correspond – as is generally the case – there is a potential for destabilization.[119] Political sectors seems to be under the serious threat from nuclear weapons, threats namely to the institutions, and the idea of states. They are vulnerable to the political threats, since most of them are rather going through state building process, and their institutions are rather weak. Asians

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[118] Ayoob, Mohammed (1995) *The Third World Security Predicament: State Making, Regional Conflict, and the International System*. London: Lynne Rienner Publishers, Inc. pp 9.

[119] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 153

states which have tried nuclear weapons are considered to be weak states, where the idea of state is often challenged by external strong states like U.S.

In conclusion, similar to military security, states were showing their preoccupation with internal threats that were politicized as threats to the political security, and often manipulated for the suppression of the opposition groups, and diverting attention of the population from the economic hardships.

Economic Security

Buzan mainly defined economic security in terms of state capability to mobilize accumulated profits for the military mobilization and mercantilism, in the form of market protectionism. Namely, many states have striven for economic self-sufficiency as a means of security: by stockpiling 'strategic materials' as well as ordinary goods they may make themselves less vulnerable to economic warfare, hence more secure. [120]

America falls into the category of strong states, and they fit the definition of being pre-occupied by the external rather than internal threats, the same situation is with the economic security. America is strong to compete with the international economies, and do really have the stable market to protect, and they do have surplus monetary funds that could be easily diverted for the defense of the state, once the threat arises. For that reason, here we will talk about the external vulnerabilities to the economic threats resulting from its competitors like USSR. Threats to the economic security like threats weaken the economic institutions and systems even in strong state that can lead to global economic recession. Nuclear weapons pose a great threat to the both

[120] Fischer, Dietrich (1982)*"Invulnerability Without Threat: The Swiss Concept of General Defense."* Journal of Peace Research, Vol. 19, No. 3 pp. 205-225.

strong and weak economic institutions of the America. Nuclear weapons manufacture and storage halts the economic reforms due high expenditure.

The economic decline created unemployment, thus encouraging corruption. Economic security is closely linked with the political and societal security, all these types of security closely intertwined. Money acquired through nuclear sales are sometimes referred as "dirty money" since cannot be accounted to public budgets. This further causes money laundering, that is legalization of the illegally obtained proceeds through intricate bank operations, and investments. Thus it could be concluded that nuclear weapons poses a threat to the economic security of the America. Threats to the economic security cannot be measured in terms of range in space. But rather in terms of distance in time (already felt by America) probability/consequences and historical dimension (proved money laundering is already there, and consequences to be measured). It could be argued that threats posed to the economic sector by nuclear weapons is among the most serious threats compared with other four sectors comprising the international security, since they are seriously damaging the fledging economic sector of the world.

Environmental Security

Environmental security is a new phenomenon for the America, and also the most overlooked one. It is due to the transitional character of its sector and lack of expertise rather than their ignorance. Buzan states that environmental threats are generally unintentional.[121]

[121] Quoted from Waever, Ole, "Securitization and Desecuritization" in Lipschutz, "On Security." Online book. 1998. Online. Available. <http://www.ciaonet.org/book/lipschutz/lipschutz13.html (22 May, 2012)

Conversely, nuclear weapons poses a threat to the environmental security, in terms of radiations and explosion. It seems that environmental security, as other sectors, cannot be viewed in isolation, and Buzan, who have analyzed the concept "environmental security," and its use, recommend that environmental problems be treated as part of the economic field. "The security label is one solution," according to Buzan, but he tends to prefer the other path: to "identify environmental issues as part of the economic agenda."[122]

In terms of space, environmental threats are of an immediate proximity in terms of time, they might be dormant, but the effects might cause irreversible and severely harmful consequences. In terms of probability/consequences, both are present. As for historical dimension, it should be learned from lessons of America and Japan.

Societal Security

As Buzan states the organizing idea in the societal sector is identity. Societal insecurity exists when communities of whatever kind define a development or potentiality as a threat to their survival as a community. [123]Under objects of societal security can be clans, tribes, religions, nations, and race.

In terms of historical dimension, America should learn from the history of Japan, psychologically the nuclear weapons seriously threatens the stability of the society. America through Obama administration has able to perceive the scale of the threat from nuclear weapons, and took measures on scaling down the quantity of this weapons, and pursuing other strategies

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[122] ibid

[123] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 119

aimed at decreasing and addressing the sources of problems caused/exacerbated by it. Thus, it could be assumed that nuclear weapon poses a serious threat to the societal security.

4.2 THE THREAT OF NUCLEAR WEAPONS TO INTERNATIONAL SECURITY

After analyzing the threats posed by nuclear weapons to the different sectors that comprise international security, it could be concluded that the posed research question was answered. Nuclear security does pose a serious threat to the international security of the both weak and strong states. As it was defined in chapter II state consists of: the idea of the state (nationalism, sovereignty); the physical base of the state (population, resources, technology); and the institutional expression of the state (administrative and political systems) and nuclear weapons challenges all those three components. Security is defined and valorized by the threats which challenge it. [124]The amount of nuclear weapons trafficked through the territory of America is on a steady growth, thus posing a serious threat to the international security of the countries in transition, with weak economic basis and socio-political cohesion. Economic instability and poverty in other states make it more vulnerable to this problem.[125]

It was said that actual threats, as well as being impossible to measure, may not be perceived. That would not be the case with nuclear weapons, since given the statistics on production, and most importantly show that threat is measurable, and it is the question of making it priority by the government in order to gain status of actual threat. In weak states such as Iraq, Korea etc inherited a rather solid historical setting from the America Manhattan legacy, and still perceiving threats in its traditional terms, as military and political, thus not considering nuclear weapons as

[124] Buzan, Barry (1991) *People, States, & Fear.* Great Britain: TJ International Ltd, pp 65
[125] Ullman, Richard. "*Redefining Security.*" *International Security*, Vol. 8, No. 1, Summer 1983, pp 133

a serious threat to the whole international security of the state, that also includes economic, societal, and environmental sectors. Thus, maneuvering within the bureaucracy may be more important when the top decision-makers are inexperienced or pre-occupied with other matters.[126]

America Perception of Nuclear Weapons Threat

Definitely, it is always easier to develop the responses to the direct and clear threats, e.g. military attack to other sovereign state, it does happen but given the existing treaties, conventions, and possible punishment, direct military assault is more or less obsolete. However, the new forms of threats are even more dangerous appeared. It portrays as threats to international security, or to organize effective action against, the myriads of other phenomenona, some originating within society, many coming from outside it, which also kill, injure, or impoverish persons, or substantially reduce opportunities for autonomous action, but do so on a smaller scale and come from sources less generally perceived as evil incarnate.[127]

As it was defined in the previous sections, weak state perceives and is vulnerable to threats emanating within rather than outside of its borders. America has acknowledged the fact that nuclear weapons are posing a serious threat. Obama administration perceives nuclear weapons as serious threat to its international security, but due to its weak structures, it cannot contain the problem on its own. For that reason the robust global security complex might be the solution. [128]

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[126] Jervis, Robert (1976) *Perception and Misperception in International Politics.* Princeton, New Jersey: Princeton University Press, pp 17

[127] Ullman, Richard. "*Redefining Security.*" *International Security*, Vol. 8, No. 1, Summer 1983, pp 134

[128] Michael D. Shear (8 April 2010). *"Obama, Medvedev sign treaty to reduce nuclear weapons"*. The Washington Post.

In 1946, in an effort to prevent a nuclear arms race with the Soviet Union and avoid the spread of nuclear weapons to other countries, the United States proposed that all materials usable for nuclear weapons be placed under international control. The Soviet Union, which was not yet a nuclear weapons state, rejected the proposal, known as the Baruch Plan. Fearing that growing interest in nuclear energy would lead nuclear technology to spread uncontrollably, the United States in 1953 launched the Atoms for Peace program. Under the program, the United States offered to share nuclear technology for peaceful purposes with friendly states. U.S. inspections would ensure that transferred items were not diverted for nuclear weapon programs. A new organization, the IAEA, was established in 1957 to take over the inspections. By this time, the Soviet Union had initiated a similar program for its allies, also relying on IAEA inspections.[129]

But the perception of the nuclear weapons threats, should not lead to the "war on nuclear" as in Cuba Crisis, which caused severe social problems and also led to the political legitimacy crisis, where the state is unable any more to use its powers to settle the problem in a peaceful way. As Ullman puts it correctly "state authorities frequently assume – sometimes with justification – that their foreign enemies receive aid and sustenance from their domestic opponents, and vice versa. They often find it convenient, in any case, to justify the suppression of rivals at home by citing their links to enemies abroad."[130] Since nuclear weapons cannot be contained within the borders of the state, the global initiatives are important in meeting the challenge.

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[129] Hewlett, Richard G. and Oscar Anderson, Jr.,1962. *The New World, 1939-1946 Volume I of A History of the United States Atomic Energy Commission* .University Park: Pennsylvania State University Press pp 47 - 103

[130] Ullman, Richard. "*Redefining Security.*" *International Security*, Vol. 8, No. 1, Summer 1983, pp. 131

Difficulties of Global Security Complex

America seems to be pre-occupied with propagating their foreign policy. Despite many existing treaties, agreements, and cooperation initiatives among states, there is no real global security complex in its true meaning: A set of states whose major security perceptions and concerns are so interlinked that their national security problems cannot reasonably be analyzed or resolved apart from one another.[131] America sees other states developing nuclear weapons as rivals (have the complementary economic products, and different political ideologies that prevent them from creation of a security complex. The area also other external factors that prevent the emergence of the solid security complex. Buzan defines two reasons on why security complex may not be present: First, in some areas local states have so few capabilities that their power projects little, if at all, beyond their boundaries. These states have domestically directed security perspectives, and there is insufficient security among them to generate a local complex.

Because the respective countries are preoccupied with their domestic politics, and meaning that unless America as the major actor in nuclear weapons settle the challenges they cannot overstretch and focus on the external, and in this case global politics, mainly related to the security issues. In addition, most weak states have emerged as independent states at the same time, and struggle with their state building and consolidation of all branches for the state formation. Moreover, even America is currenting facing serious economic problems, and for that reason do not have surplus means to be diverted for the provision of their regional security.

[131] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp. 12

The second occurs when the direct presence of outside powers in a region is strong enough to suppress the normal operation of security dynamics among the local states. This condition is called overlay, which normally involves extensive stationing of armed forces in the area overlain by the intervening great power(s)[132]

Domestic political fragmentation also makes the state exceptionally vulnerable to penetration by external political interests. It could be seen with U.S. deployed their military troops and established "temporary" military bases in some other states. Those bases are supposed to be used coalition forces in fight against the terrorism in Afghanistan. Many observers question the waning influence of Russia, that how it allowed U.S. to enter its backyard. Russia also deployed its military forces in in Kyrgyzstan, thus reiterating its position that Central Asia is in the national interests of Russia. It is obvious that Russia in the mid and long term needs secure all its borders, since Central Asia is bordering Russia, and the stability is of national interest for Russia. Therefore, there is need for tighter security since should any nuclear weapons be trafficked, it might end in wrong hands.

If to follow Buzan's definition we could say that Americans are facing the overlay effect meaning that local security cannot be viewed in the view of the major powers presence that provide the security umbrella, and thus affect their balance. As one scholar notes "in fact, America security in the coming years will be determined by international attention, as well as competition for exploiting and routing the global enormous energy resources."

[132] Buzan, Barry, Ole Waever, Jaap de Wilde (1998) *Security: a New Framework for Analysis*. UK: Lynne Rienner Publishers, Inc. pp 13

In this view, it could be said that existing mutual distrust, and weaknesses of America to prevent them from developing robust global security complex to control nuclear weapons. However, many initiatives were started, mainly with the involvement strong powers. But it seems that they are in most of the time duplicating each other, instead of supplementing. Thus it leads to the disproportionate distribution and allocation of time, staff, and funds. The lack of clear terms of references for the spheres of activities for different agencies let to the overlapping, and in that way complicating the implementation of initiatives in practice at the global level.

4.3 CONCLUSION

This chapter answered the posed research question, and it was concluded that nuclear weapons does pose a threat to the international security. It seems that America do perceive the nuclear weapons as a threat. It might be due to the old type of thinking about security primarily in military and political terms. It was also analyzed that at present there is no a solid global security complex, and the reasons why it is not there were mentioned, such as economic weaknesses of the states, competition among themselves, and superpower overlay.

CHAPTER FIVE

CONCLUSION

5.0 SUMMARY

In conclusion, it could be said that the study tried to apply the theory in analyzing the nuclear weapons , thus explaining in academic way that threats posed by nuclear weapons can destabilize the world unless it is dealt timely, and appropriately, without lurching towards military means, but rather societal, environmental, social and economic development programs.

Scientists have proved through observations that Einstein's theories were right. Einstein revolutionized the science of the world and brought nuclear weaponization. The ability to turn matter into energy led to the development of the nuclear bombs.

Nuclear weapons are the most dangerous weapons on earth. One can destroy a whole city, potentially killing millions, and jeopardizing the natural environment and lives of future generations through its long-term catastrophic effects. The dangers from such weapons arise from their very existence. Although nuclear weapons have only been used twice in warfare—in the bombings of Hiroshima and Nagasaki. Because of the immense military power they can confer, the political control of nuclear weapons has been a key issue for as long as they have existed; in most countries the use of nuclear force can only be authorized by the head of government or head of state.[133]

Even before the first nuclear weapons had been developed, scientists involved with the Manhattan Project were divided over the use of the weapon. The role of the two atomic

[133] J. Samuel Walker. 1997. *Prompt and Utter Destruction: Truman and the Use of. Atomic Bombs Against Japan.* Chapel Hill: University of North Carolina Press, pp 44- 62

bombings of the country in Japan's surrender and the U.S.'s ethical justification for them has been the subject of scholarly and popular debate for decades. The question of whether nations should have nuclear weapons, or test them, has been continually and nearly universally controversial.

5.1 KEY FINDINGS

In Chapter I, the main research question, and sub questions were posed. *Does having nuclear weapon make the state safer?* The 1962 Cuban missile crisis brought the world to the edge of nuclear war and led to popular support for safeguards on nuclear weapons. This can lead to a clear support that nuclear weapons do not guarantee safety to any state. Each side believed that having a large supply of nuclear weapons would frighten the other side and stop it from starting a nuclear war. If one side attacked, the other side would strike back with even more nuclear bombs. And so began a race to have more nuclear weapons than the other side. Luckily, no nuclear attacks happened after World War II. Today, should nuclear war ever break out again no matter how powerful the state is, would become a target. It is an ironic but accurate fact that the two strongest powers are the two in the most danger of devastation. All they have built, all they have worked for, would be destroyed in the first 24 hours. And even in the cold war, which brings burdens and dangers to so many countries, including Americas closest allies bear the heaviest burdens.[134] For they had devoted massive sums of money to nuclear weapons that could have been better devoted to combating ignorance, poverty, and disease. Those who had nuclear weapons were caught in vicious and dangerous cycle in which suspicion on one side breeds suspicion on the other, and new weapons beget counter weapons.

[134] The National Security Agency site offers information about Cuba Crisis

Who has the nuclear weapons? The Cold War left the United States and Soviet Union with huge numbers of nuclear weapons. Other countries also have built nuclear weapons. The large number of nuclear weapons has produced new fears. What if a terrorist or an unstable government gets hold of a nuclear weapon? This possibility continues to frighten people. Many observers believe that the problem of nuclear weapons proliferation is likely to be one of the most important issues facing the United States and the world for many years to come. In the past, governments in Argentina, Australia, Brazil, Iraq, Libya, Romania, South Korea, Sweden, Switzerland, Taiwan, and Yugoslavia had active programs to develop nuclear weapons but abandoned those programs. Only one country, South Africa, ever developed nuclear weapons and then eliminated them. [135]

Why should we abolish nuclear weapons and prevent their spread? A nuclear weapon releases harmful radiation. People near the blast can die of radiation sickness even if the bomb doesn't kill them. People farther from the blast may develop cancer and other illnesses from radiation months and years after the bomb explodes. These regional conflicts and other potential conflicts provide the fundamental reason for the international community to seek to halt the spread of nuclear weapons. The spread of nuclear weapons can also permit aggressor nations to intimidate neighbors and dominate their regions

After case study, and analysis, it was concluded that nuclear weapons does not make a state safer. It poses a considerable threat to the national security of state, namely, to the sovereignty, political, economical and administrative institutions, population, instability in America (major actor) and weak and young controlling institutions; limited experience; and other features that pertain to the weak states, and states with the transitional economies. This conclusion was also done based on the results received from answering the sub questions.

[135] See chapter 1