An Augustinian analysis of the Comprehensive Test Ban Treaty

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AN AUGUSTINIAN ANALYSIS OF THE
COMPREHENSIVE TEST BAN TREATY

by

Jon McClendon White

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Ethics and Policy Studies

Ethics and Policy Studies
University of Nevada, Las Vegas
May 1996

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ABSTRACT

Applying the Christian principles of depraved human nature, expectation of detrimental behavior from irrational actors, and rational attempts to limit the destructiveness of war, Augustine would conclude that the declared nuclear weapons states have a moral obligation to prevent proliferation of nuclear weapons. Laws suitable to the needs of the times are the appropriate method for accomplishing this. The pending Comprehensive Test Ban Treaty (CTBT) is one such law. Because the CTBT bans all nuclear explosions and establishes an intrusive inspection scheme, it will have an impact on the U. S. Department of Energy (DoE). DoE should respond by participating in the new inspection organization, by interpreting findings resulting from inspections, and by continuing management of the Nevada Test Site. The CTBT may be efficacious in preventing nuclear weapons proliferation in the short term. Considering a longer-term perspective, a frightening prospect emerges as a result of an Augustinian assessment of human nature.
TABLE OF CONTENTS

ABSTRACT..................................................................................................iii

ACKNOWLEDGMENTS..................................................................................v

CHAPTER 1  INTRODUCTION....................................................................1
  Historical Background........................................................................1
  Political Realism.................................................................................4

CHAPTER 2 AUGUSTINIAN MORAL BASIS......................................22
  Introduction......................................................................................22
  Nuclear Weapons..............................................................................25
  Philosophical and Moral Considerations....................................28
  The Judean Solution.........................................................................45

CHAPTER 3 THE COMPREHENSIVE TEST BAN TREATY................60
  Ethical and Humanitarian Considerations.................................61
  International Interest in Nonproliferation.................................63
  United States Commitment To a CTBT By 1996 ....................77
  International Negotiations For a CTBT......................................83
  U.S. Organizations Concerned with the CTBT..........................96
  New Functions.................................................................................102
  Recommendations..........................................................................108

CHAPTER 4 CONCLUSIONS..................................................................120

LIST OF ACRONYMS..............................................................................127

BIBLIOGRAPHY......................................................................................129
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Saint Augustine was a realist. Born in 354 to a pagan Roman father and a Christian mother, he lived a normal childhood. Questioning the usefulness of learning, he resisted education and participated in childish pranks, petty thefts and prideful display. That changed in late adolescence, however, when he began a patently dissolute lifestyle and read Cicero’s *Hortensius* in 375.

Reading Cicero imbued in Augustine a lifelong interest in philosophy. As a result, four rather distinct periods are apparent in Augustine’s life and writings. First, as a young man, Augustine was interested in Manicheeism. Mani, a Persian, in practical terms had claimed to be divine and had set forth philosophical propositions which held that good and evil were co-equal moral entities. Most of Manicheeism’s content was irrational, in Augustine’s view, and this eventually led to his abandoning it in favor of Platonism.
As a Platonist, Augustine in his second period was heavily influenced by the writings of Plotinus. For example, according to Karl Jaspers (197), the Platonic view of God is one of the unity of the good, the true and the beautiful. God in this view represents or is equivalent to the eternal world of ideas, the "cosmos of becoming," in Jaspers' terminology. Plotinus, according to Jaspers, tended to the Platonic view of ideas as an independent realm. In *Confessions* 7:9, Augustine himself describes the Platonic view that God is powerful and desirable, as advanced by Plotinus.

Augustine converted to Christianity in 387. In *St. Augustine's Early Theory of Man*, Robert J. O'Connell describes Augustine's early post-conversion writings. These writings include *Against the Academics*, *Soliloquies*, *On Order*, *On the Immortality of the Soul*, and are examples of his third period of intellectual activity. In the writings of this period, Augustine attempts to meld the Platonic and Plotinistic philosophies with the Christianity which was fresh and vibrant in his mind.

Augustine was ordained a priest in 391, and later Bishop of Hippo. This began the fourth period of his intellectual life, that of the mature writings. In this final and most productive period, Augustine produced the *Confessions*, the *City of God*, and *On Free Choice of the Will* as well as a vast body of other writings and sermons. In this period, which lasted to his death
in 430, Augustine is concerned not with philosophy, but with a form of philosophical theology. His emphasis is not to reconcile secular philosophy and Christianity, but rather with questions of right and wrong, with salvation, and with the impact of Christianity upon politics, ethics and practical affairs. Augustine's conception of God is quite different from that of his Platonic period. In this fourth period he conceives of God in a Judean rather than Greek sense as a triune being, the source of all ideas. Augustine comes to understand that the Platonic position cannot see a need for sacrifice and humility on the part of the religious believer (Rist 3). It is significant that early in this fourth period Augustine produced the Confessions, which, in large measure, quotes Scripture rather than secular philosophers to advance his arguments (Rist 15). Describing his break with the Platonists in Confessions 7:21, Augustine writes, "Their pages have not the mien of the true love of God." This study concentrates on Augustine's mature writings because of their applicability to modern political and ethical conditions.

The world-historical setting of Augustine's lifetime was distressing. The Roman Empire was clearly in decline. Continuous warfare along the Rhine took an ever-increasing toll of Roman strength in manpower and finance. In 410, Germanic bands under Alaric entered and sacked Rome. This was the occasion of Augustine's writing City of God, which attempted to show that the enfeeblement of Roman power was not a result of an abandonment of the classical pagan deities, as some
claimed, but of a glaring lack of regard for simple moral values. Christianity could restore Roman virtue, Augustine claimed.

Disintegration of the Roman system continued apace. This caused Augustine much distress. The loss of social order imposed as part of the Roman system would lead in Augustine’s view to much unhappiness and to many philosophical problems. Thus Augustine was led to consider political, ethical and military topics from his Christian perspective. These are set forth in City of God, Enchiridion, Against Faustus, and in other writings. Given Augustine’s fine and logical intellect and the circumstances of his world, it is not surprising that he sought to explain the human condition and human behavior as it actually is, rather than as one might wish it to be. "Whatever else Augustine may be," John H. Randall writes in Hellenistic Ways of Deliverance and the Making of the Christian Synthesis, "he is surely what we like today to call a realist, with just that salutary freedom from sentimentality that suits the temper of the times" (193). This is the essence of the realist position.

POLITICAL REALISM

The Augustinian view of intrinsic human depravity leads directly to modern Realistic political theories. All Realist theories depend upon the observational method (Morgenthau
4). That which is observed concerning human behavior and concerning the behavior of states in the international arena is the basis of Realism. Thus Realism holds that international political affairs are governed by principles which have their origin in human nature displayed as observed actual behaviors rather than as behaviors which one might otherwise desire. Thus, in all Realist theories, the world of human endeavor, and the practice of international politics in that world, is necessarily imperfect from a purely rational perspective. Realism holds that moral principles can never be realized, but can only be approached and approximated. Realism attempts to gain the lesser evil in its approach, rather than an absolute good.

There are three fundamental principles common to all varieties of Realist theory. These principles provide an intellectual framework by which the student of international affairs may interpret events and evaluate situations. The first principle is the state-centric principle. This holds that the most important actors in international relations are national entities organized throughout a particular region or territory. In ancient times, such political entities were city-states; in more recent years, they are nation-states.

The second fundamental principle is that, on the international level, state behavior can be explained in rational terms. John W. Kingdon has developed a model of internal national decision-making wherein domestic policy is not
invariably made in a rational fashion. By contrast, concerning the international arena, John C. Harsanyi points out that there are "few areas of social behavior where rational calculation plays a more important part than it does in international politics." A mistake has serious consequences. Therefore, most foreign policy decisions are the result of careful analysis of the advantages and disadvantages expected to result from alternative policies. In many situations, the assumption of rational behavior or significant elements of rational behavior is a valid simplifying assumption which permits analysis.

The third fundamental principle is that states seek power and determine their interests in terms of power. Power in this context means the ability of one nation to influence or to some extent determine the actions or behavior of other nations. Nations seek power for its own sake or for the purpose of achieving other goals.

Hans J. Morgenthau, for many years a faculty member and dean at the University of Chicago, set forth the tenets of classical Realism in his 1948 book, republished in 1966, Politics Among Nations. More recently, Kenneth N. Waltz describes Morgenthau's Realism as "reductionistic" because it holds that individual nation-states are the primary actors in international affairs, rather than some supra-national actor.
Concerning classical Realistic theory, Morgenthau describes six specific tenets which extend the basic principles set forth above. First, Realism holds that human nature has not changed in millennia and in fact cannot be changed. This unflattering, Augustinian claim is the central tenet of classical Realism and indeed of all Realistic theories. “In order to improve society,” Morgenthau asserts, “it is first necessary to understand the laws by which society lives. The operation of these laws being impervious to our preferences, men will challenge them only at the risk of failure” (4). Realism holds that its view of human nature is based on objective observation and that a credible rational theory must be based on these observations. Only then can a rational theory be developed which reflects the facts and provides

the possibility in politics of distinguishing between . . . what is true objectively and rationally, supported by evidence and illuminated by reason, and what is only a subjective judgment, divorced from the facts as they are and informed by prejudice and wishful thinking. (4)

Morgenthau asserts that the facts of human nature and concomitant behavior were known thousands of years ago. Because the basic facts remain unchanged, to reject them is not rational. Such a rejection is an assumption that in political affairs there are “opinions but no truths” (5).
Morgenthau's Realistic theory contains the unstated assumptions that an aspect of human nature is to act according to one's interest, and that this nature ultimately drives national behavior. According to Morgenthau, therefore, the second tenet in Realism is interest, defined in terms of power. Nations tend to behave according to their interest, rather than according to any other factor. This concept enables the scholar of international politics to understand the actions of nations and of statesmen by understanding the basic motivations of their respective practices. The disinterested scholar may thus understand the thoughts and actions of each political actor and make predictions based on assumptions of rational behavior within the limitations imposed by the nature of political science.

This concept of interest defined by power "imposes intellectual discipline upon the observer." It "infuses rational order" into what is otherwise a rather disorganized and chaotic subject, in Morgenthau's view. Given this intellectual discipline, Morgenthau discovers in most nations an "astounding continuity in foreign policy" which responds only in small degree to successive leaders possessing diverse moral qualities, motives and intellects (6).

Third, interest can be described in a political and cultural context. Morgenthau asserts that there is no fixed, universal definition of interest. Archie Bahm was for many years full
professor of philosophy at the University of New Mexico. In his book *What Makes Acts Right?*, Bahm points out that "all words are more or less ambiguous" (56). This is particularly true for the word "interest." However, in the present context national interest consists largely of internal security and security against armed attack from external sources, access to raw materials, minerals and petroleum, and access to international markets. Most nations regard an attempt to compromise any of these interests as an act of war.

The basic idea of interest, according to Morgenthau, is indeed rather fixed. The details vary with time and place. It is the essence of all politics for nations, subnational groups and individuals to pursue their respective interests. Indeed, nations and subnational groups are aggregations of those of similar interest. In *Politics Among Nations*, Morgenthau quotes Thucydides' *History of the Peloponnesian War*: "identity of interest is the surest of bonds whether between states or individuals" (8). Morgenthau also goes on to quote George Washington's remarks regarding interest as a principle of government.

A small knowledge of human nature will convince us that, with far the greatest part of mankind, interest is the governing principle; and that almost every man is more or less, under its influence. Motives of public virtue may for a time, or in particular instances, actuate men to the observance of a conduct purely disinterested, but they are not of themselves sufficient to produce a persevering
conformity to the refined dictates and obligations of social duty. Few men are capable of making a continual sacrifice of all views of private interest, or advantage, to the common good. It is vain to exclaim against the depravity of human nature on this account; the fact is so, the experience of every age and nation has proved it and we must in a great measure, change the constitution of man, before we can make it otherwise. No institution not built on the presumptive truth of these maxims can succeed. (8)

The kind of interest which determines political action in concrete circumstances depends on the "political and cultural context" (9) in which foreign policy is created. For example, Japanese naval behavior on 07 December 1941 was based on conceptions alien to those typical of the Occidental mind. Interests based on notions of honor and of obligation, steadily dwindling oil stocks, a deteriorating wartime situation in China, as well as a nearly desperate international situation, were the factors uppermost in the minds of Japanese leaders. Thus the Japanese were behaving according to their own concept of interest, defined by power.

The concept of power, according to Morgenthau, varies according to time and circumstance. Power is anything that "establishes and maintains the control of man over man" (9). It consists of a spectrum of means ranging from immediate physical violence to psychological manipulation and appeal to moral obligations. The nature of power and the manner in which it is used is a reflection of the political and cultural

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environment. The nature of power being exercised in the international environment, say, on 15 December 1941, was rather different from the nuclear standoff during the Cold War. Both are different yet from the largely economic power being exercised in the present world system.

Fourth, international realism acknowledges the moral and ethical significance of political action. As Rosemarie Tong has pointed out, there is a tension between moral obligation and the imperatives of successful political action (62). Realism recognizes this and is not willing either to ignore the often brutal facts of international relations or to make moral tenets of no effect.

Morgenthau's Realism maintains that moral principles cannot be applied in the international arena as abstract principles of universal applicability. Such high values must be interpreted in actual circumstances. A natural person may claim as a principle, "Let justice be done, even if the world perish." Such a person may choose to give up life itself rather than to compromise his cherished beliefs. Such an attitude cannot apply to governments. In Romans 13:4, Paul proclaims that a magistrate is a "minister . . . to thee for good," that is, to the individual. A minister or an administration cannot be a principal, but must be an agent. A national state, being an agent rather than a principal, has no right to claim that moral principle in the name of those in its care. The state has no
right to permit moral scruples to interfere with successful political action intended to result in national survival, which is itself a high moral principle. Alfred Thayer Mahan was President of the Naval War College when he wrote *The Problem of Asia and the Effect upon International Politics*. Therein he asserted

> It is vain to expect governments to act continuously on any other ground than national interest. They have no right to do so, being agents and not principals. (187)

More recently George F. Kennan has expressed himself regarding the same thought.

> The principles of a government are not entirely the same as those of an individual. The individual, in choosing his principles, engages only himself. He is at liberty to sacrifice his own practical interests in the service of some higher and more unselfish ideal. But this sort of sacrifice is one that a responsible government, and a democratic government in particular, is unable to take upon itself. It is an agent, not a principal. It is only a representative of others. (120)

Thus the behavior of governments everywhere reflects the nature of the persons therein, but the governments themselves do not follow exactly the same moral principles which one might choose to apply to oneself. Augustine expressly gives assent to this principle when he denies to individuals the right of self-defense, but confirms to the Roman government the
obligation to make war and to carry out capital punishments (Langan 177). In Just War, Political Realism and Faith, Bernard Adeney quotes Epistle 475, in which Augustine proclaims

As to killing others to defend one's life, I do not approve of this, unless one happens to be a soldier or a public functionary acting not for himself but in defense of others or of the city in which he resides. (33)

This is an Augustinian example of just war theory and of political realism. It also reflects the tension between Christian morality and effective political action. It is the somber distinction between the Earthly City and the Heavenly City in Augustine's famous book, The City of God.

Morgenthau asserts that there can be no effective political morality without a complete consideration of the consequences of a proposed action which itself appears to be in accord with moral principles. This reflects Augustine's consequentialist views that, in judging any act, one must consider the intent of the actor. Morgenthau provides an illustrative example. In 1939, the Soviet Union invaded Finland. France and Great Britain were thereby obliged to consider two separate, but related, questions. The first question was whether the Soviet action was contrary to the Covenant of the League of Nations. If the invasion did violate the Covenant, the second question was what practical action would France and Great Britain take in their own interests.
There was no question but that the Soviet Union had performed an act which the Covenant forbade. In response, France and Great Britain saw to it that the Soviet Union was expelled from the League. The question then became one of understanding how the Soviet invasion affected the interests of France and Great Britain and how the invasion affected the distribution of power between France and Great Britain on one hand and the Soviet Union and other potentially or actually hostile nations on the other hand. The major nation at that time hostile to France and Great Britain was Nazi Germany. Acting on high moral and legal principles alone, France and Great Britain prepared to join Finland in its war against the Soviet Union. They were prevented from this action only because Sweden refused permission for their troops to cross Swedish territory on their way to Finland. Had the Swedish refusal not prevented them, France and Great Britain would shortly have been at war with Nazi Germany and with the Soviet Union, to the considerable detriment of their national survival and of the well-being of their respective populations (12).

This policy on the part of France and Great Britain Morgenthau calls a "classic example" of legalism and maudlin morality intruding into a political decision. Rather than considering both morality and interests, France and Great Britain considered only a narrow morality of international law.
The resulting decision had no relation to the higher issue of national survival (13).

Fifth, Realism is not willing to equate nationalism with the will or favor of deity or to equate the aspirations of a particular nation with "the moral laws which govern the universe" (11). Morgenthau provides a particularly illuminating passage.

To know that nations are subject to the moral law is one thing, while to pretend to know with certainty what is good and evil in the relations among nations is quite another. There is a world of difference between the belief that all nations stand under the judgment of God, inscrutable to the human mind, and the blasphemous conviction that God is always on one's side and that what one wills oneself cannot fail to be willed by God also.

The lighthearted equation between a particular nationalism and the counsels of Providence is morally indefensible, for it is the very sin against which the Greek tragedians and the Biblical prophets have warned rulers and ruled. That equation is also politically pernicious, for it is liable to engender the distortion in judgment which, in the blindness of crusading frenzy, destroys nations and civilizations -- in the name of moral principle, ideal, or God himself. (11)

Morgenthau maintains that it is exactly the considerations of interest defined by power that prevents most nations, including our own, from "moral excess and . . . political folly." The United States is perhaps characterized by an excess of
millenarian zeal but can respect the interests of foreign nations and promote its own interests. Moderation of moral judgment, Morgenthau tells us, results in moderation of policy, to the benefit of all (11). Aristotle and Augustine would agree.

Sixth, the differences between Realism and other theories of politics are real and profound. Realism has a "distinctive intellectual and moral attitude" (11). This attitude concerns itself with thought in the international political realm. The Realist is quite aware of modes of thought other than political modes based on a knowledge of human behavior and an understanding of interest. Realism differs from the "legalistic-moralistic approach" in that it refuses to "impose standards of thought appropriate to other spheres upon the political sphere" (12) Realism thereby subserves moral ends by means of a penetrating understanding of the realities of human nature and of the admittedly brutal, anarchic international environment. One does not better oneself by ignoring unpleasant realities or by failing to act upon them.

Robert E. Osgood performed his doctoral work at Harvard University under the direction of McGeorge Bundy. As a young faculty member at the University of Chicago, he served under Morgenthau's direction. The first edition of Osgood's book *Ideals and Self-Interest in America's Foreign Relations* was published in 1953, and a revised version published in 1964. Osgood presents a history of international political relations
from the Spanish-American War to the Cold War. He also presents a compelling argument for the inclusion of moral and ethical principles in the practice of international relations.

Osgood respects ideals and moral values. "I accept the Christian-liberal-humanistic ideals..." (20) he writes. Osgood expresses appreciation and admiration for "principles of right conduct" and "honesty, truthfulness, fidelity to obligations, kindness, fair play, lawfulness, nonintervention in other people's affairs" (7).

Osgood also accepts the Realist view, and he claims that

Unrealistic expectations concerning human conduct encourage extravagant aspirations; and among nations, as among individuals, the result is apt to be disillusionment and an erratic fluctuation from one extreme in conduct to another. (3)

Combining these two streams of thought, Osgood's central thesis is that one must judge a political act on a moral basis by the motive and also on a political basis by the outcome. The two judgments together are necessary for a right and proper appreciation of any political act. This is because a "rational assessment of self-interest" demands that the statesman respect the fact that "human nature demands that ideals supplement reason" (446). Calculations of pure self-interest are likely to lead to unfortunate results.
Osgood's modification of Morgenthau's Realistic position is that transcendent ideals have played a significant role in determining American foreign policy. Osgood asserts that "a steady and effective foreign policy devoid of moral appeal is scarcely conceivable" (447). This sentiment is merely a reflection of Francis Schaeffer's contention that humankind cannot function without an adequate conception of morality and that this morality must have its basis in absolutes (14).

In his 1979 book *Theory of International Politics*, Kenneth N. Waltz presents an extension of Morgenthau's classical Realist international political theory. Terming his theory Structural Realism, or Neorealism, Waltz distinguishes between reductionist and systemic international political theories. Reductionist theory in general concerns itself with the behavior of parts or of small units. Reductionist international political theory therefore concerns itself with the behavior of individual nations. Thus reductionist theories explain international outcomes by means of elements and combinations of elements at the national or even sub-national level.

In "Reductionist and Systemic Theories," Waltz builds upon Morgenthau's belief that international outcomes are the result of national characteristics. He claims that international outcomes are the result certainly in part of national characteristics but also of the influence and effects of a
supranational system. In "Political Structures," Waltz describes "the structures of the system and its interacting units" (94)

Such a political system is an ordering or an arrangement of the parts of the system. Political structures vary in three ways. First, they vary by ordering principles (81). The present international political system consists of about 150 sovereign or semisovereign actors which recognize for the most part no authority higher than their own. Therefore the international environment is one of anarchic self-help. This arrangement is in considerable contrast to that which prevails inside most national entities. There, the various governmental entities, bureaus, legislative bodies, and courts function in recognized hierarchies of authority and power.

Second, the political structures vary by specification of functions of the different parts (87). In "Theory of World Politics," Keohane describes Waltz as claiming that the nations perform similar functions and that this second variable is of lesser importance. However, because of geography, historical heritage, or national character, many nations have quite distinct functions in the international community. For example, Switzerland has for many centuries functioned as a diplomatic neutral, relaying messages between nations at war. Switzerland arranged for the exchange of diplomats between Japan and the United States in 1942, and delivered peace
feelers from Japan to the Soviet Union in 1945. Sweden has functioned similarly in recent centuries.

Third, structures vary by the relative capabilities or power of the units (92). In the present international system, Saudi Arabia, Austria, Iceland and Denmark all have military capabilities and powers of various sorts, including economic powers. These attributes are of a different nature and degree than those possessed by the former Soviet Union or the United States. Relative capabilities change over time. For example, modern Great Britain would not dare attempt any action in North America such as those accomplished in the period 1812-1815. Nor would Germany now attempt military operations in North Africa.

By means of these considerations, Waltz expands classical international political Realism into a deductive theory with claims to predictive power. This theory, called Structural Realism or Neorealism, considers system-wide processes to explain international events. It assumes that no supranational authority exists (Spanier 53). Thus study of interactions between nations is a reductionistic approach, whereas study of the behavior of the international system as a whole is a systemic approach.

Neorealistic theory identifies regularities of behavior within the international political system. These regularities are
recurring cycles of war and persistent systems wherein a balance of power obtains. The explanatory and predictive power of Neorealism lies in the fact that it predicts that these two phenomena necessarily follow from the nature of the system. They are intrinsically part of the international political system.

Waltz's Neorealism is a secular theory of international relations based, as we have seen, on strict observation of human nature and of the facts of the international regime. Other thinkers have reached the same conclusions based on somewhat different premises. Daniel 9:26 concludes that "unto the end, war and desolations are determined." This statement must be predicated on Daniel's observation that the secular system is not easily changed. Matthew 24:6-8 quotes Jesus' conclusion, based on very abundant evidence available to Him, that "ye shall hear of wars and rumours of wars . . . for nation shall rise against nation, and kingdom against kingdom . . . all these are the beginning of sorrows." Jesus may have projected his views from personal experience. In His childhood and adolescence, His home region of Galilee was repeatedly convulsed by sedition and guerrilla warfare against the Romans. He reasonably expected this to continue.
CHAPTER 2

AUGUSTINIAN MORAL BASIS

INTRODUCTION

Several arguments might be adduced to support the proposition that the United States, with or without the cooperation of other nuclear-armed nations, has a moral imperative to prevent the proliferation of nuclear weapons to parties deemed likely to use them in a detrimental manner. The argument selected for consideration in this study is based on the Christian ethics of Augustine of Hippo. It is the argument which he would most likely use in the present situation.

The international arena is one of the most amoral in human experience. For centuries, the principal factor in determining international relations has been expediency of policy. The morals of those policies have been a secondary consideration. Of all areas of human endeavor, it is possibly the most complex and most frustrating (Thompson 1). In Man, the State and War, Kenneth Waltz provides an overview:
Each state pursues its own interests, however defined, in ways it judges best. Force is a means of achieving the external ends of states because there exists no consistent, reliable process of reconciling the conflicts of interests that inevitably arise among similar units. (238)

In this arena, various nations and sub-national groups seek to develop or to otherwise obtain nuclear weapons. The potential uses to which these destructive devices may be put has caused concern in the governments of the present nuclear powers and among thoughtful persons (Mandelbaum 22).

In response to this concern, John Deutch, formerly a faculty member and provost at Massachusetts Institute of Technology, formerly Undersecretary of Defense, and now Director of the Central Intelligence Agency, has analyzed the present international scene relating to proliferation of nuclear weapons. He concludes in a Foreign Affairs article that the United States should “... move nonproliferation to a higher priority” (132) Deutch recommends that the United States should:

- “publicly state that any use of a nuclear weapon would be considered a casus belli “

- “publicly state that violation of the [Nonproliferation Treaty] would trigger sanctions, including multilateral or unilateral military action”
• "maintain military forces appropriate to make these threats credible"

• upgrade and emphasize intelligence activities against proliferant nations and groups

• extend security guarantees to nations willing to forgo development of nuclear weapons

• establish bilateral arrangements, possibly through the U.N. Security Council

• reemphasize inspection efforts of the International Atomic Energy Agency (133)

These are comprehensive recommendations of serious import, set forth by a recognized expert. Kenneth N. Luongo, writing in Nuclear on behalf of the Union of Concerned Scientists, advocates a broadly similar set of policies which fall short of a formal declaration of war against any power which would use a nuclear weapon (1). Other authors have advocated that various measures be taken. The essential element of all these suggestions is that the United States, other nuclear powers or the United Nations should take active measures to dissuade or actively to prevent presently non-nuclear powers from acquiring nuclear weapons.
Many commentators have raised issues of the morality of war and the morality of nuclear war (Thompson). Fewer have addressed the issue of the moral basis on which the presently nuclear-armed nations impose their will in a manner similar to that suggested by Deutch upon nations deemed likely to proliferate or to use a nuclear weapon after proliferation. The purpose, then, of this study is to examine, from the Augustinian position, the moral basis by which the United States and other nuclear powers impose such nonproliferation measures on other nations.

NUCLEAR WEAPONS

A nuclear weapon functions rapidly to release copious quantities of energy. The result is an explosion and release of radiation. When a nuclear weapon detonates a few hundred feet above a target at the earth's surface, a fireball and blast wave rapidly form and extend to the surface. At the ground, the fireball reaches temperatures of thousands of degrees and incinerates virtually everything for several miles in all directions. The blast wave shatters any man-made object and, depending on the weapon's design and other factors, can also excavate several hundred feet into the earth. The blast wave overturns locomotives, damages and distorts structures, and translates other objects. Electromagnetic radiation ignites
flammable objects. Ionizing radiation accompanies the explosion and causes damage to objects and trauma and death to living organisms. The fireball and residue from the target coalesce into a column of dust and smoke which rises for miles into the atmosphere. Soon after, radioactive particles settle out downwind from the site, producing "fallout" that is dangerous to humans for decades if not centuries. Despite a considerable number of experiments, nuclear explosive devices have not yet been put to practical peaceful use.

A bomb using chemical explosives is relatively limited in the amount of damage which it can cause, and the damage is limited in areal extent. During the 1940 air attacks on London, residents could take shelter from conventional bombs in the subway system or in ordinary fortifications and redoubts of various configurations. For the general population, there is no similar defense against a nuclear weapon, which is incomparably more destructive. In America, for example, perhaps the only completely effective shelter from nuclear attack is the deep underground facilities for a few military personnel at Cheyenne Mountain, near Colorado Springs, Colorado. The ultimate survivability of even that redoubt is an open question. Any nuclear weapon is much less precise than is a conventional weapon; collateral damage to objects and persons not under attack is inevitable. For the general population, there are only two effective defenses against a nuclear weapon. One is to not be in the vicinity when a nuclear
weapon functions. Much the better choice is to prevent, possibly by political means, the construction of the device in the first place.

The interests of America, and the interests of mankind, are that no surface detonation of a nuclear weapon ever take place again. One way to prevent a surface detonation is to credibly threaten those persons, organizations and states which would be inclined to use an existing nuclear weapon with a comparable response. Thus forms a balance of terror; a common phrase has been "mutually assured destruction." The idea is that no party would use a nuclear weapon on another because of fear of a similar response by the party attacked. Until recently, this was the situation regarding the United States and the former Soviet Union. A more recent concern has been the proliferation of nuclear weapons material and technology to Third World nations, to subnational groups and to entirely informal groups. It is not clear that a nuclear standoff would be effective in these new circumstances.

A second method of control is to prevent presently non-nuclear parties deemed likely to use nuclear weapons from acquiring or constructing them. This idea forms the basis of the nonproliferation efforts by the Western nations presently maintaining nuclear arsenals. This method depends on diplomatic efforts, control and denial of nuclear materials and
necessary tooling, and control and denial of access to the information required to construct a nuclear weapon.

PHILOSOPHICAL AND MORAL CONSIDERATIONS

Augustine's Philosophy

Human Rationality

In the Confessions 5:3, Augustine describes the efforts of mathematicians and astronomers to predict natural phenomena. These men used observations and mathematics to predict partial and total eclipses of the sun and moon. "They calculated the day and the hour of the eclipse," Augustine writes, "and whether it would be total or partial, and their reckonings were found correct because it all happened as they predicted." Augustine points out that the scientists "wrote down the principles which they had discovered" and that other persons could read these documents and put the theories to the test by seeing if the predictions reflected observed reality, which they in fact did.

Augustine notes further that this "reason and understanding," that is, this rationality, has its source in God. In Letter 120, Augustine proclaims that rationality is "that faculty by which He [God] made us superior to all other living
Augustine is careful to define God. In *Confessions* 10:24 he writes, “I found my God, who is Truth itself.” In *Confessions* 4:15, Augustine refers to God as “the supreme good that does not vary.” Pine-Coffin’s translation of *Confessions* quotes the English-language *Knox Bible* where Augustine quotes Scripture. In *Confessions* 4:15, Augustine quotes *James* 1:17: “with you there can be no change, no swerving from your course.” The more literally-translated *King James Bible* puts it somewhat more clearly, “. . . with whom is no variableness, neither shadow of turning.” The central Greek word is παραλλαγή which George Berry’s interlinear Greek-English Bible translates as “variation.”

In *Confessions* 4:15, Augustine continues, “It seemed to me that this unity was the seat of the rational mind and was the natural state of truth and perfect goodness.” Augustine thus conceives of God as invariable. This invariableness is the source of truth, goodness and human rationality. As he describes in *Confessions* 6, Augustine came to understand that the God of the Bible speaks and acts with sense and precision. Augustine’s deity is thus a God of reason and order, as he describes in *The Trinity* 6. Mankind, created by this God, has not only the gift of reason and order, but also the obligation to use these gifts in a wise and rational manner. Socrates, it may be noted, took a similar position, that his rational inquiries regarding truth were a result of his obedience to deity as he understood the term (61).
To emphasize the source of reason, Augustine in *Confessions* 5:3 chides the very scientists who have rationally discovered methods to calculate eclipses. Although their reason comes from the invariable God, in pride they nevertheless ascribe it to their quite variable selves. It is an example of the variable, the derivative, and the partial claiming that which properly belongs to the invariable, the integral, the whole. This, Augustine believes, is inappropriate, because it is a form of self-aggrandizement which he finds in himself and describes in *Confessions* 10:36. Therein, alluding to Isaiah 14:13-14, Augustine objects to self-aggrandizement because it leads to one's being "proud of his wicked end achieved." However, he does succeed in this discussion in establishing the basic position, that humans have a rational element in their nature and that this element derives from a God Who is rational specifically because He does not change.

Irrationality

Augustine presents two arguments concerning human irrationality. In the first argument, in *City of God* 11:21, Augustine describes "God's . . . unchangeable will." In *Confessions* 4:15 he "concluded that in goodness there was unity." Augustine finds also that "the disunion consisted of irrational life . . . . and was the natural state of the ultimate
evil." He continues by describing himself as "changeable" or variable. He addresses God as "your unchangeable substance, my God." Thus Augustine sees changeableness or variableness as the ultimate source of evil. This evil often manifests itself to Augustine as "irrational life" or "discord." This disunion or variableness "leads to crimes of violence and [to] the lust that leads to sins of passion."

Augustine's second argument concerning human irrationality is based on his experiences with the Manicheans, as described in Confessions 5:3. The fundamental doctrine of the Manicheans was that the principles of Good and Evil have continuously existed. The principles are also known as Light and Darkness. According to this doctrine, the Evil invaded the Good and captured part of it. Therefore, the material universe is composed of a mixture of these principles, which are in continuous conflict.

In contrast to the astronomers and mathematicians, the Manicheans could not make rational predictions, and could not give a convincing explanation for the philosophical positions which they took (Confessions 5:5). Augustine could find "no reasonable explanation" for the Manichean position, and what was explained he found "extremely incoherent." "Presumption," he also calls these ideas, and says that Manichean doctrines are "repugnant and should be entirely rejected." Augustine thus concludes that their doctrines are
irrational and not applicable to human needs. In this, Augustine demonstrates that human nature has a significant element of irrationality.

**Human Nature**

In *Confessions* 4:15, Augustine states that “man’s mind is not the supreme good that does not vary.” As set forth there, Augustine’s position is that the supreme good is invariable. The ultimate good therefore is invariable, unchanging, unitary, and rational. By contrast, the ultimate evil is variable, changing, multiple, and irrational. This establishes a principle of capital importance: the variable things could not be variable were there not a great invariable against which to measure them. Thus variables of human existence can be evaluated or measured against a fixed, invariable coordinate. Augustine continues with this theme, and relates it to human happiness in *On Free Choice of the Will* 2:19 wherein he states that “the happy life, that is, the disposition of a soul that cleaves to the unchangeable good, is the proper and principal good for a human being.”

In *Confessions* 4:15, Augustine is careful to establish the ultimate source of evil. He says that “I loved the peace that virtue brings and hated the discord that comes of vice. From this I concluded that in goodness there was unity, but in evil
disunion of some kind. It seemed to me that this unity was the seat of the rational mind and was the natural state of truth and perfect goodness; whereas the disunion consisted of irrational life . . . and was the natural state of the ultimate evil.” The same view has been developed from a non-Christian perspective. In The Nicomachean Ethics 6:2, Aristotle (138 [1138b35-1139a22]) presents a broadly similar argument: “There are two parts [of human nature] which grasp a rational principle -- one by which we contemplate the kind of things whose originative causes are invariable, and one by which we contemplate variable things.” Thus the idea of variable and invariable principles is an old one, and of the greatest importance in human affairs.

Augustine, continuing in Confessions 7:16, defines evil, or wickedness, as a “perversion of the will,” a natural inclination for “things of the lowest order,” that is, for vice and corruption of every sort. In mentioning “the lowest order” he also clearly includes that which is harmful or injurious to persons and to society, and that which leads to suffering. Augustine thus conceives of evil as more than morally wrong behavior or wrong attitudes which produce wrong behavior.

In Confessions 10:36, Augustine identifies the result of evil. It is the “enemy of our true happiness.” This principle or personage wants Augustine “to divorce my joy from the truth. . . . to enjoy being loved and feared, not for [God’s] sake, but in
[His] place.” That is, he wants to usurp the place of God. Thus when Satan revolted against God, as described in Isaiah 14, it was the revolt of the variable against the invariable, of the changing against the constant, or of the particular against the universal. An attempt on the part of the variable to alter the invariable, or to actually displace or become the invariable, is the ultimate insult to God.

This enemy wants to place Augustine in “the bonds of common punishment” (Confessions 10:36) which would destroy Augustine’s happiness. Augustine calls this principle evil because it leads to a departure from the invariable God, the Truth, toward the variable, the false. For Augustine, and for mankind, a departure from invariables and from truth is necessarily a departure from true happiness and toward misery and degradation.

Augustine believed that human nature therefore necessarily contains a significant element of evil. In On Free Choice of the Will 3:17, he states that “a perverse will is the cause of all evils.” This perverse will originates in the first humans. Augustine summarizes in City of God 14:13, “Our first parents fell into open disobedience because already they were secretly corrupted; for the evil act had never been done had not an evil will preceded it.” In Confessions 1:7, Augustine describes the results of an intrinsic evil will, giving as examples the attempts of infants to strike and hurt others, and jealousy.
in a baby. Augustine writes, "[i]f babies are innocent, it is not for lack of will to do harm, but for lack of strength." This is another way of saying that babies are not innocent at all, but naturally selfish and given to degradation and evil. They automatically incline toward jealousy and violence. Any parent can make the same observations. To train children to be bad is not necessary; that comes naturally. Rather, children must be trained to be good, a not insignificant task in this day. Augustine concludes his discussion of sinful infants in *Confessions* 1:19 by mentioning that "these same passions remain with us while one stage of life follows upon another." Human evil as a continuing inward condition, Augustine would teach us, is a lifetime problem, as indeed it was for him. It is a problem for the saintliest persons. The Apostle Paul, writing in *Romans* 7:15, finds, "That which I do I allow not: for what I would, that do I not; but what I hate, that do I." Paul relates in *Romans* 7:21, "when I would do good, evil is present with me."

Augustine provides a second illustration of human evil in his personal experience with theft. As a youth, he stole pears from a nearby vineyard. He did so, not because he was in want of food, but for the pleasure of "doing something that was forbidden" (*Confessions* 2:4). He strongly condemns himself for this desire to perform a forbidden act purely because it is forbidden. Augustine concludes that there are persons, including himself, who would commit evil acts simply for the
pleasure of it. It is human nature, part of the natural order of things resulting from a departure from the invariable.

Augustine sets forth a third example of the degraded human condition in Confessions 2:5. This regards murder, regarded in every culture and at every time as evil. One may commit murder for many reasons, claims Augustine, for example for the desire for a victim's property or wife. Robbery or revenge are two additional motives. Observation of contemporary news media confirm that human nature has not changed since Augustine's time. However, Augustine asks if one might commit murder for nothing but the pure delight of killing. In effect, he answers the question in the affirmative in Confessions 6:8 when he describes his friend Alypius' visit to a gladiatorial contest. There is no question that the Roman authorities had arranged for men to kill each other -- to commit evil acts -- for no other reason but the pleasure which it might afford to those who cared to watch. There is no difference in the human condition today, as is shown by boxing matches, which often lead to serious injuries and death. Several years ago, I read a sociological survey which concluded that upwards of 80% of people who attend the Indianapolis 500 motor races do so in hopes of seeing a fatal accident. Numerous recent cinematic works offered for public entertainment feature almost continuous violence and bloodshed. As the gladiatorial combats of old and the modern entertainments appallingly demonstrate, people will pay for the opportunity to
take pleasure in killing. This predilection toward killing for pleasure leads to unpleasant results in the international arena, because human nature necessarily drives national behavior (Keohane 201).

Original Sin

Augustine ascribes these evil activities to a universal state of evil known as original sin. Augustine's conception is shown in Confessions 7:21, where he quotes Romans 7:23. Therein the Apostle Paul complains that he is a "captive to that disposition toward sin." Paul clearly understands that this innate disposition results from a departure from the invariable because he mentions in Romans 1:23 that mankind has "changed the glory of the uncorruptible God into an image made like to corruptible man, and to birds, and fourfooted beasts, and creeping things." Paul, like Augustine, gives the result in Galatians 5:19-20, which reads in the King James Bible, "Now the works of the flesh are manifest, which are these; adultery, fornication, uncleanness, lasciviousness, idolatry, witchcraft, hatred, variance, emulations, wrath, strife, seditions, heresies."

Augustine further acknowledges this moral state in Confessions 1:7 by asking, "where or when was I . . . ever innocent?" He would reply to his own question that he was
never innocent. He asks in *Confessions* 9:1, "what evil is there that I have not willed to do?" There is no such evil as to lie outside of Augustine's will, nor, he would say with the Apostle Paul, anyone else's.

**The Human Condition**

**Evil Is Normal**

Augustine has clearly established from personal experience and from observation of others that humankind is given to an intrinsic moral depravity. Humans, for example, easily commit murder for sport or pleasure. The inescapable conclusion is that war is a normal state of human affairs. Augustine might quote *Matthew* 24:6-8 in which Jesus Christ says, in pertinent part, "... ye shall hear of wars and rumors of wars ... nation shall rise against nation, and kingdom against kingdom." This is exactly the view of Keohane and other modern political Realists. Keohane (p. 201) writes that "the evil inherent in man is at the root of war and conflict."

Other recent authors reach the same conclusion. In his book *The Profession of Arms*, General John Hackett mentions, "From the beginning of man's recorded history physical force, or the threat of it, has always been freely applied to the resolution of social problems" (9). In *The Decline of the West*,

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Oswald Spengler comments on the universality and brutality of war, as does John Farrenkopf in a more recent work.

William C. Westmoreland commanded for several years the American military forces in Vietnam. He found, as did I, that war brings out the worst in human behavior. In his book *A Soldier Reports*, he writes with anguish that

> When I learned of irregularities, I directed a relentless investigation. That dishonesty, immorality, and other irregularities have occurred in all wars was no excuse. Although I had hoped that Vietnam would be an exception and had worked hard to that end, it followed the pattern. What is the answer? Is human nature so fallible that even the best efforts inevitably fall short? (285)

The General's observations, my personal experiences, as well as the testimony of Augustine and Paul show that human nature is indeed that fallible, and even more so. I was a young lieutenant in the Corps of Engineers stationed at Ft. Benning, Georgia, during the time that Lieutenant William "Skip" Calley was on trial there for his alleged actions regarding the alleged massacres at My Lai, Vietnam. My living quarters and occasional duty station were only a few blocks from the building in which the trial took place. It was a sobering experience, the memory of which will remain with me for a lifetime. Incomparably more memorable were the shocking experiences concerning human depravity which awaited me a
year later in Vietnam, where I commanded a platoon of soldiers and directed small-unit military engineering operations under combat conditions. General Westmoreland's comments are telling; he would have human beings observe and practice morality, but, as he and I found, they "inevitably fall short."

In Just War, Political Realism and Faith, Bernard Adeney comments on Augustine's views concerning human nature and war. Augustine, Adeney summarizes, saw war as a fact of life. He attempted to unite the very rigorous demands of Christian love with a penetrating understanding of political realities and with a very pessimistic view of human nature. A basic principle of the Augustinian view, according to Adeney, is that the soldier must be authorized to commit acts of war; he must not act on his own (28). To use the phrase of John Rist in Augustine, Ancient Thought Baptized, the soldier or politician must never act with "absolute freedom of choice" (292). This is the Augustinian basis of separation of powers and of checks and balances in modern political theory and of the Augustinian Christian just war theory.

Irrational Exercise of Evil

In Confessions 10:36, Augustine mentions a difficulty which he had not overcome even after years of effort as a
Christian. Following the evil principle or personage, "it is the desire to be feared or loved by other men, simply for the pleasure that it gives. ..." Augustine finds that, "when men hold certain offices in human society, it is necessary that they should be loved or feared by other men." This is a direct result of the previously mentioned desire on the part of the variable to displace the invariable. Augustine acknowledges his variableness in Confessions 10:17 when he asks, "What is my nature? A life that is ever varying, full of change." This variableness is the essence of the human experience.

From that fact, because of their inclination toward evil, and because of the irrational aspect of humanity, it is clear that some humans are likely to exercise evil in an irrational manner, perhaps to further their own variable needs for self-aggrandizement. Over history, many have done so. Ghengiz Khan, Adolph Hitler, and a dreary list of other irrational personages in world affairs provide examples of what irrational persons tend to do when they need not answer to a higher authority. These persons are irrational because they do not "rejoice in the truth," as Augustine says in Confessions 10:23. Rather, they rejoice in their own variableness. They "wish to deceive, but [not] to be deceived." Such unstable men will stop at nothing; hideous suffering and millions of deaths are of no importance to them. By Augustine's analysis, for example, Saddam Hussein would clearly be regarded as an irrational actor in that he has used chemical weapons on his own
countrymen and kinfolk, simply for the pleasure of killing or of being feared. Other, unimaginable, motivations are also possible. One shudders to think what actions the natural inclinations of Adolph Hitler or Saddam Hussein would lead to with a nuclear weapon and the means to deliver it. Augustine knows. In On Free Choice of the Will 1:8, he describes "human attributes . . . such as the love of praise and fame, and the will to power. When that drive [for such things] is not subject to reason, it makes us wretched."

In City of God 1:30, Augustine relates the experience of the Romans after they defeated Carthage and thus could aspire without restraint to Rist's "absolute freedom of choice."

Certainly your desire for peace, and prosperity, and plenty is not prompted by any purpose of using these blessings honestly, that is to say, with moderation, sobriety, temperance, and piety; for your purpose rather is to run riot in an endless variety of sottish pleasures, and thus to generate from your prosperity a moral pestilence which will prove a thousandfold more disastrous than the fiercest enemies. It was such a calamity as this that Scipio, your chief pontiff, your best man in the judgment of the whole senate, feared when he refused to agree to the destruction of Carthage, Rome's rival; and opposed Cato, who advised its destruction. He feared security, that enemy of weak minds, and he perceived that a wholesome fear would be a fit guardian for the citizens. And he was not mistaken: the event proved how wisely he had spoken. For when Carthage was destroyed, and the Roman republic delivered from its great cause of anxiety, a crowd of disastrous evils forthwith resulted from the prosperous condition of
things. First concord was weakened, and destroyed by fierce and bloody seditions; then followed, by a concatenation of baleful causes, civil wars, which brought in their train such massacres, such bloodshed, such lawless and cruel proscription and plunder, that those Romans who, in the days of their virtue, had expected injury only at the hands of their enemies, now that their virtue was lost, suffered greater cruelties at the hands of their fellow-citizens. The lust of rule, which with other vices existed among the Romans in more unmitigated intensity than among any other people, after it had taken possession of the more powerful few, subdued under its yoke the rest, worn and wearied.

In short, the Romans, directly they had freed themselves from the restraint imposed by an international balance-of-power system, made themselves wretched. Augustine's is a strong argument in favor of a balance-of-power international political regime and against schemes of one world government. In Augustine, Ancient Thought Baptized, Rist comments on this dolorous condition to the effect that

A just consensus has been reached that one of Augustine's great strengths is his power to observe and document the disastrous and terrifying results which come about when men, singly or in groups, are able to grasp at absolute freedom of choice. Intellectuals once dreamed -- and persuaded others to dream -- that with the development of improved social and educational conditions, the moral behavior of individuals would likewise improve. On such a view the history of twentieth century Europe should have been one of moral progress and enlightenment. The SS, the concentration camps and gulags, not to speak of the millions of the
aborted and the callousness towards the starving ‘Third World’ have demonstrated the shallowness of that kind of optimism. Augustine’s sombre account of the workings of the ‘earthly city’ looks far more challenging than it did to the eighteenth- and nineteenth-century liberal, who thought he had outgrown Hobbes’ similarly ‘Augustinian’ account of the state of ‘nature.’ In particular, in this century, we have seen star instances of an Augustinian libido dominandi of a sheer lust for power at its crudest: “power,” said Goering, “is my fist at your throat.” (292)

Use of Nuclear Weapons

In Confessions 10:23, Augustine expresses his conviction that, “[w]e cannot therefore be certain that all men desire true happiness, because there are some who do not look for joy in [God].” Of course, there are those who do not look for joy at all. These persons are unhappy “because they attend far more closely to other things whose power to make them unhappy is greater than the power of their dim memory of truth to make them happy” (Confessions 10:23). These “other things” typically are fame, desire for approval of others, desire to be feared as Augustine mentions, all rooted in variableness and evil. It is human nature.

Augustine would warn us that there are certainly a few such individuals who would use the very great power of nuclear weapons to make mankind unhappy. This, as
Augustine wrote in *Confessions* 4:15, would be the result of "evil disunion" and "irrational life." It is an expression of the fact that mankind is "changeable." Thus these persons are inconstant, variable, and evil (Evans, 1991). Augustine could well quote *James* 1:8: "a double minded man is unstable in all his ways." Therefore, proliferation of nuclear weapons to those nations, groups, or individuals deemed likely to use them irrationally, or as a result of their own unhappiness, is destabilizing in international relations and is contrary to the interests of all nations and persons.

THE JUDEAN SOLUTION

**Augustinian Philosophy of Salvation**

Augustine's solution to the basic problem of human depravity and evil is that offered by the Judean philosophers and theologians from Job and Abraham to the Apostles Paul and John.

In *Confessions* 7:9, Augustine describes his encounters with the writings of the Platonists. These philosophers described God as powerful, desirable, worthy of respect. These philosophic ideals include the concept that God created the visible universe; that humankind has a relation to God, but is not divine; and that humankind is estranged from God. This
philosophy, standing alone, Augustine finds to be inadequate although it identifies the basic human condition. It provides an inadequate concept of God and represents an inadequate moral base to guide human behavior because it does not propose a solution to the problem of sin. It provides no method by which variable, evil humankind may approach God, the Truth, the source of union and invariableness.

In the Christian philosophy, on the other hand, Augustine finds a satisfying solution to the problem of sin and of estrangement from God; he finds a guide to ethical and proper human behavior. In Confessions 7:9 he pointedly mentions that in the Platonic writings he does not find that God came to live with humankind, thereby identifying Himself with mankind’s difficulties, as set forth in John 1:1-14. He finds absent from Platonic philosophy the profound idea in Romans 5:6 that God, in the person of Jesus Christ, “underwent death for us sinners.” Thus did Augustine come to understand that mankind has a deadly malady, a terminal disease resulting from having offended and disobeyed God, and that this difficulty is the source, the root cause, of all mankind’s problems. God had resolved the difficulty by Himself enduring the prescribed penalty, death, on behalf of any who would personally appropriate it. This idea is very old and was described about 2000 BC in Job 19:25 and in Job 33:22-30, which suggest that God would provide a redeemer to pay a price for the sinner’s faults.
The solution therefore, as Augustine saw it, was to appropriate to himself, or personally give assent to, the sacrifice already made. Addressing God in *Confessions* 8:12, Augustine proclaims, “You converted me to yourself, so that I no longer . . . placed any hope in this world but stood firmly upon the rule of faith.” This simple word “faith” -- carrying the ideas of trust and personal appropriation of an invariable gift from the invariable God -- is the essence of the Christian’s personal assent. It is what makes one a Christian.

Augustine's assent to God's solution permanently changed his life. Having been redeemed by the price that God had paid, Augustine wrote “[I] had no intention of offering myself for sale” (*Confessions* 9:2). He began to live life on a higher plane, understanding that all things, all benefits, indeed his very existence, derive from a deity that Augustine could respect because He had voluntarily addressed the human need. This is one aspect of “contemplating truth” or of rejoicing in truth. It is a somewhat similar ideal to that of Aristotle’s that one “can contemplate truth” as described in *The Nicomachean Ethics* 10:7-8 (264[1177a22]).

This was a new world view. God died on behalf of humankind, an act which has not been emulated before or since. Therefore by individual imputation of that righteous act, humans have the potential to regain their original standing of
worth and dignity. In theology, imputation is the act whereby God ascribes, reckons, or attributes the goodness of the Savior to the believer, that is, to the person who gives his assent or trust. The continuing Christian position is that a perfect Person stands in the stead of the self-admitted imperfect ones, thereby affirming to each individual an intrinsic worth, a dignity, and a standing of respect before others. They have that ultimate dignity and worth because God has reckoned to them His Own dignity and worth. God ascribed His own invariableness to individual men and women. Human beings, now creatures of value, are not to be harmed, or abused in body or mind -- certainly not atom bombed -- for light reasons or at the whim of any variable irrational person or group. To do so to them is to do so to God, the ultimate invariable, Who stood and continues to stand in their moral stead.

The effect of this view has been historically unique and the consequences are profound. The world has been a different -- and better -- place since the crucifixion and resurrection. The late Georgetown University professor of history Carroll Quigley, in his landmark modern history Tragedy and Hope, points out that no philosophy, creed or doctrine, at any time in human history, respects individual people and regards them as having dignity, intrinsic worth, and rights as does Christianity. He points out that the continuing results of Christianity have been love, humility, social concern, humanitarianism, brotherly care, future preference, personal cleanliness, compassion.
obligation, and particularly, attempts to limit the destructiveness and misery of war (1120). In The God Who Is There, theologian Francis Schaeffer continues this theme, pointing out that "the source of a real care for people as individuals comes from biblical Christianity" (45, emphasis in original).

A Non-Christian Perspective

Leading philosophers and political scientists of different eras who represent philosophical outlooks very different from Augustine's have nevertheless followed a sequence of thought similar to Augustine's and have reached a similar conclusion. Their foundational conclusion is that human beings have a worth and that that worth is to be respected. Sun Tzu reasoned from a non-Christian perspective; Marcus Aurelius was clearly hostile to Christianity. Both men addressed the problem of human worth and societal worth as it relates to humankind's basic evil inclination. Reasoning from a secular rationalistic viewpoint, Immanuel Kant has also addressed the issue. These philosophers may disagree with Augustine as to the source of human worth, but the basic conclusion is that human beings are not to be harmed for nothing. This uniformity of basic approach within a diversity of philosophical presuppositions suggests that the Realistic view is neither new nor outmoded but, rather, that it is a constant and a truth.
Sun Tzu

Sun Tzu is thought to have lived between about 500 B.C. and 300 B.C. He was a military commander of great renown and skill. During his lifetime, the region now known as China consisted of a number of contending states. Oswald Spengler has likened the situation then existing in China to that in the Classical world between the times of Alexander and Caesar, when several states were contending for supremacy. For twenty years, Sun Tzu commanded the military forces of the Kingdom of Wu in a successful combination of brilliant diplomacy and parsimonious military action.

Sun Tzu united a vigorous realistic view of international politics with a firm sense of moral values. "The true object of war is peace," he wrote in *The Art of War* (7), in complete agreement with Augustine's views on just war. Therefore Sun Tzu maintained effective military forces ready for instant use, but preferred to further the interests of the Kingdom of Wu by means of diplomatic initiatives and devious stratagems. "True excellence," Sun Tzu writes, "is to plan secretly, to foil the enemy's intentions . . . so that at last the day may be won without shedding a drop of blood" (20). This rational approach Sun Tzu devised for two reasons: first, to avoid imposing upon the people of Wu the ruinous costs of war in blood and treasure and, second, to preserve civil tranquillity. These are both
qualities of great moral value and reflect Sun Tzu's underlying concept that the people of Wu have worth and that that worth is to be respected. This respect is to be extended to the enemy, in Sun Tzu's view. Sun Tzu describes the results of extended military campaigns: taxation, untended crops, disruption of family values, and excessive loss of life. These things, he believes, are best avoided when possible and otherwise minimized, agreeing exactly with Augustine's views of the evils of war.

Sun Tzu advocated a highly developed espionage system. It is the "height of inhumanity," he writes, to minimize intelligence functions to save money. This is because the expenditure of a relatively small amount of money and effort for espionage typically yields great savings in military costs, and in lives (77).

When war cannot be avoided, the correct action in Sun Tzu's moral view is to wage it as rapidly and effectively as possible. "Cleverness has never been associated with long delays. There is no instance of a country having benefited from prolonged warfare," he writes (13). This wise approach minimizes the necessity for long conscriptions and high taxes; it also minimizes casualties. These are high moral values, and Sun Tzu appears as a humanitarian leader concerned with and solicitous of the soldiers under his command and with the population at large, including the soldiers and population of the
enemy. As Osgood describes in *Ideals and Self-Interest in America's Foreign Relations*, this is the epitome of the Realistic moral position, respecting the realities of international affairs and also respecting the moral values which characterize the best of human life (442). For Sun Tzu, the hard imperatives deriving from considerations of national survival subserve the higher moralities of a peaceful, productive and livable civil society. He takes this position entirely from his respect of the worth of the people of Wu, as would Augustine.

Marcus Aurelius

Reasoning from non-Christian presuppositions, Marcus Aurelius (A.D. 121-180) reaches the same conclusion as does Augustine in the fifth century. As emperor of Rome, Aurelius directed the affairs of the empire, including a war in Parthia, and he personally commanded several major military efforts against the Germanic tribes then endangering the Roman system. An adherent of the Stoic philosophy, he can in no manner be considered a personal Christian or an adherent of a Christian world-view. Indeed, he was somewhat hostile to Christianity. As time allowed, he wrote "The Matters Addressed to Himself," a record of personal thoughts and insights now known as *Meditations*. As a result of Aurelius' many duties and civic obligations, *Meditations* has a certain disjointed character. It does, however, provide a sufficient
basis from the Stoic philosophy to reach the same conclusion regarding nonproliferation which Augustine would reach.

In *Meditations*, Aurelius appeals repeatedly to reason in much the same way as does Augustine. "Intelligence and Reason make their way through every impediment," Aurelius writes in *Meditations* 10:33. In Aurelius’ Stoic philosophy, this reason exists to guide one through life: "From living according to the reason of thy nature no one can prevent thee," he writes in *Meditations* 6:58.

Aurelius also perceives an evil and irrational aspect of humankind. In *Meditations* 7:70, he describes "worthless men who are what they are and so many." In *Meditations* 9:42, he reflects

> When thou art offended by shamelessness in any one, put this question at once to thyself: Can it be then that shameless men should not exist in the world? It can not be. Then ask not for what can not be. For this man in question also is one of the shameless ones that must needs exist in the world.

Thus for Aurelius it is inconceivable that humans should not behave in a shameless or wicked manner. He describes "unbridled arrogance" in *Meditations* 11:6 and "pomposity and pride" in *Meditations* 9:29. These comments agree with Augustine’s treatment of human behavior in *City of God* 14 and in *On Free Choice of the Will* 2:18 where he writes that "we fell
voluntarily.” Aurelius and Augustine significantly never exclude themselves from their own caustic remarks.

Applying the principles of rationality leads in Aurelius’ Stoic thought to three general principles for guidance to action. These are, first, an “uncompromising resistance to bodily inclinations” (Meditations 7:55). This is the essence of Stoic self-control. Second, Aurelius finds civic duty. “The rational is indisputably also the civic,” he writes in Meditations 10:2. He concludes that he should behave so that his “present work is that of a living creature, intelligent, social, and under one law” (Meditations 8:2). The third principle is human worth, the same conclusion that Augustine reaches. Human beings have worth, Aurelius writes in Meditations 9:1, because

the Nature of the Universe has fashioned rational creatures for the sake of one another with a view to mutual benefit based upon worth, but by no means for harm. The transgressor . . . acts with obvious impiety.

Aurelius summarizes his position in Meditations 11:18. First, human beings “came into the world for the sake of one another.” That is, humans have rationality and worth. Second, some humans will behave irrationally and evilly. “If not rightly, then it is obviously . . . through ignorance.” Third, such persons must be corrected, for their own good and for the good of the civic weal. “When a chance is given, exhort him mildly and, at the very time when he is trying to do thee harm,
quietly teach him a better way," with the least violence and harm possible. A national leader has a moral obligation to do this because, as Aurelius writes in Meditations 11:18,

To expect the bad not to do wrong is worthy of a madman; for that is to wish for impossibilities. But to acquiesce in their wronging others, while expecting them to refrain from wronging thee, is unfeeling and despotic.

This is the essence of the nonproliferation argument.

Immanuel Kant

Taking a rationalistic approach rather than a Christian one, Immanuel Kant developed in Groundwork of the Metaphysic of Morals an argument which supports a conclusion similar to that of Augustine and Aurelius. Kant finds a shortcoming on the part of the human race. "If we look more closely at our scheming and striving, we everywhere come across the dear self, which is always turning up," he writes (75). This is the natural state of humankind, as Augustine claims. Kant also notes that the results are "extremely bad and hurtful when the will is not good" (61), which agrees with Augustine's treatment of the will in On Free Choice of the Will. Kant proposes to remedy this defect by an appeal to duty, as defined by law. "Duty is the necessity to act out of reverence to the law," Kant states (68). He then establishes that one
should "never act except in such a way that [one's] maxim should become a universal law" (70). That is, one should act in such a manner as one would desire everyone to act. Kant uses the term "maxim" to mean "principle." "Every rational being," Kant writes, should be about "making universal law" (100).

Kant's precept is exactly applicable to the problem of nonproliferation. He repeatedly uses the term "worth" (65, 69) as applied to human beings and describes "our very worthiness to be happy" (61). He would contend that human beings have worth and should not be atom bombed for irrational reasons. Informed, rational persons are devising a treaty -- literally a universal law in the Kantian sense -- to achieve that end.

Commentary

Knowing that some would likely use nuclear weapons irrationally if they had them, Augustine would expect us to use our rationality to limit the destruction and misery of war. An inappropriate and irrational response would be to do nothing or to take action which would be less than fully effective. He would conclude that the rational thing to do is to keep nuclear weapons out of the control of irrational parties or those deemed likely wantonly to use them. Augustine views laws as the means by which this should be accomplished. In Confessions 3:7, he writes, "This is the law by which each age
and place forms rules of conduct best suited to itself." Thus Augustine encourages the modern world rationally to establish laws relating to the acquisition, use and testing of nuclear weapons, and by logical extension, to enforce those laws.

From these considerations, the Pope in medieval times forbade the use of crossbows in Europe. From the Thirty Years' War to Bonaparte, European warfare was constrained by mutual consent. From the Concert of Europe in 1815 to 1914, European society, acting on Augustinian presuppositions, averted most potential wars. Latterly, efforts have been made by means of the Geneva Convention to forbid poison gas and soft-point bullets in warfare. The Kellogg-Briand pact is an attempt, naive as it may have been, to outlaw war itself. Whatever the pact's efficaciousness, the attempt results from the pervasive moral principle, based on Christian presuppositions, that war should be curtailed or eliminated to the extent possible, as Adeney describes (30). These overarching moral principles are active even in most of those who view themselves as outside the Christian faith. It is from precisely that moral position that the West now attempts to control nuclear weapons and to forbid their use, as is shown by numerous appeals for a global moratorium on nuclear weapons testing.

The nuclear powers are thus seen to be protecting the interests -- the happiness -- of their own citizens as well as
those of humanity in directly opposing proliferation of nuclear weapons to certain parties. Morgan and Wallerstein write that “constraining such developments is morally defensible” (298). As Augustine writes in *Confessions* 12:25, quoting *I Timothy* 1:8, the nuclear powers are “‘apply[ing] the law legitimately,’ that is, to the end of charity.” The charity which Augustine describes is love, concern, a desire for well-being, rightfully exercised toward all mankind.

International peace-keeping treaties are an appropriate expression of this concern. Any treaty is a law between sovereign parties, and Augustine clearly establishes that such laws are needful and appropriate. In *Confessions* 3:7, he writes of “the law by which each age and place forms rules of conduct best suited to itself.” He continues by establishing that “justice [is not] erratic or variable, but . . . the times over which it presides are not always the same, for it is the nature of time to change.” In *Confessions* 3:8, Augustine continues to develop the principle, that “no one, whether he is a native or a foreigner, may, to suit his own pleasure, violate the conventions established by the customary usage or the law of the community or the state.” To do such a thing, Augustine continues, is “out of keeping with the whole.”

One such treaty to be discussed in this report is the Comprehensive Test Ban Treaty (CTBT), which has the basic purpose of preventing or hindering the spread of nuclear
weapons technology and capability. Augustine would thoroughly approve of such a treaty. Implicit in the Treaty is a recognition of the human need for right and orderly living. Throughout The God Who Is There, theologian Francis Schaeffer contends that humankind cannot function without an adequate conception of morality and that this morality must have its basis in absolutes. Bibles, Augustine's Confessions and Aristotle's Ethics, for example, sell well because of the human need for ideals and for right principles for living. Human nature demands nothing less and the CTBT rightly addresses the need.

The Comprehensive Test Ban Treaty recognizes human nature as Augustine envisioned it. It recognizes that the unrestricted proliferation of nuclear weapons is likely to lead to tragic results, given humankind's irrational, self-agrandizing nature. Therefore, the Treaty attempts to limit the spread of information and testing capability which would lead to nuclear weapons proliferation. This is entirely appropriate because Augustine establishes in Against Faustus 22:75 that the "natural order which seeks the peace of mankind ordains that the [national leaders] should have the power of undertaking war . . . in behalf of the peace and safety of the community." Thus Deutch's notion (133) that use of a nuclear weapon would constitute a valid casus belli has the strongest support in Augustinian moral philosophy.
CHAPTER 3

THE COMPREHENSIVE TEST BAN TREATY

The Emergency Management and Nonproliferation Division (EMND), acting under standing directives, provides generic treaty support to the U.S. Department of Energy's (DoE) Nevada Operations Office (NV) and to Department of Energy headquarters. This section of the study examines the background and provisions of the Comprehensive Test Ban Treaty (CTBT). It compares the present functions of the EMND under the existing Threshold Test Ban Treaty with its anticipated required functions under the new Comprehensive Test Ban Treaty. There are many similarities which can support the new effort, as well as some differences which require attention. This section concludes with recommendations concerning a redefinition of roles for EMND involvement with and support for DoE's Office of Nonproliferation and National Security, and for changes to provide the desired support.
ETHICAL AND HUMANITARIAN CONSIDERATIONS

Attempts along Augustinian lines, and other attempts, to preserve the peace and to ameliorate the negative effects of war have a long history. Humankind has attempted to develop religious or ethical constraints against war, to outlaw it, and to create codes and councils for peaceful arbitration of disputes. Common also have been attempts to restrict the development or use of various weapons.

An early attempt at unilateral arms control occurred about 1100 B.C. The Philistines imposed on the Israelites a policy restricting access to iron for weapons and tools. This policy put the Israelites at a significant disadvantage. (I Samuel 13:19). In a somewhat later age around 750 B.C., the author of Isaiah 2:2-4 presents a universal peaceful polity as the ideal of a future age. “They shall beat their swords into plowshares,” he writes, “Neither shall they learn war anymore.” The ancients also attempted to mitigate the more brutal aspects of war. In The Republic, Plato quotes Socrates in about 450 B.C. as decrying the use of poisoned weapons and poisoned water in warfare. Thus at an early time arms control proponents held peace as a desirable state, attempted to preserve the peace, and attempted to reduce the suffering and brutality of war when it did occur (Taylor).
Medieval attempts at arms control for humanitarian purposes were also common. In the 900's the Peace of God attempted to impose rules of war. In the 1000's the Truce of God attempted to control or eliminate war in Europe. In 1139, Pope Innocent II prohibited the use of crossbows in Europe, an early attempt at arms control and nonproliferation (Taylor).

Arms control agreements were also common in more modern times. In 1609, Hugo Grotius' treatise On the Law of War and Peace proposed a ban on the use of poison. In 1817, the Rush-Bagot Agreement between the United States and the United Kingdom successfully demilitarized the Great Lakes. From 1899 to 1907, the Hague Peace Conference banned excessively destructive small-arms ammunition and poison gas from warfare. In 1928, the United States and France initiated the Kellogg-Briand Pact to outlaw war as an instrument of national policy. Eventually 63 nations acceded to the treaty.

Many of these attempts were of limited effect, but that does not detract from the valid ethical and humanitarian principle that controlling arms and eliminating war insofar as possible are proper efforts for mankind. With modern capabilities in monitoring and inspection, the potential benefits conferred to humankind by arms control and nonproliferation efforts seem to be well worth the considerable effort involved (van der Vink and Park).
INTERNATIONAL INTEREST IN NONPROLIFERATION

The Nonproliferation Treaty of 1971

From the beginning of the nuclear era, the need to prevent the spread of nuclear weapons was evident. If a growing number of nations were to obtain nuclear weapons, or if terrorist or subnational groups were to obtain them, the risks of nuclear war would greatly increase. Such a war could occur as a result of accident, or by unauthorized use by a renegade official in an otherwise responsible nuclear power, or by escalation of a regional conflict. The possession of nuclear weapons by many nations would add a serious new threat to peace (Mazari, 1992). Rapid development of nuclear weapons by the Soviet Union (Cochran, 1989), United Kingdom, France and China made it apparent that many nations were capable of mastering nuclear technology.

Other developments emphasized the danger. By the 1960's, advances in technology enabled the operational use of nuclear power plants. The nuclear reactors of these plants produce plutonium as a by-product. This plutonium can be chemically separated and used in the manufacture of nuclear weapons (Perkovich, 1993; Panofsky, 1994).
Acting on an unstated Augustinian moral basis, worldwide initiatives sought to control proliferation of nuclear weapons. The Limited Test Ban Treaty of 1963 had as one of its main purposes inhibiting the spread of nuclear weapons. The international effort continued, culminating in 1970 in the ratification of the Nonproliferation Treaty (NPT).

The Nonproliferation Treaty (NPT) provides, in pertinent part:

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

The 1970 NPT contains a provision that it will be reviewed and renegotiated after having been in force for 25 years. The renegotiation convention thus authorized met in
April 1995, considered necessary revisions, and renewed the NPT.

Kenneth N. Luongo points out that many non-nuclear weapons states have considered continued weapons testing by the nuclear weapons states to be a serious impediment to improving nonproliferation efforts. The NPT extension has been deemed of critical importance to U.S. security policy; and a U.S. commitment to the CTBT is thought necessary to gain international acceptance of the NPT extension.

United States Interest in Nonproliferation

The national interest of the United States is to prevent the proliferation of nuclear weapons to nations which presently do not have them. This policy is thought to contribute to international stability by reducing the risk of nuclear war (Bundy, Crowe and Drell). According to Anthony Lake, certain “backlash” states behave in a non-cooperative manner and are deemed to be candidates for nonproliferation measures. For example, Iran and Iraq exercise policy-driving ideologies which are hostile to U.S. interests. A nuclear Iraq or Iran, bordering the Persian Gulf petroleum supplies, would be particularly dangerous to U.S. interests and goals in the region (Lake; Pipes and Clawson). Michael T. Klare has described an accelerating conventional arms race in East Asia and Southeast Asia.
Ideological differences, potential border disputes and trade disputes have the potential to develop into armed conflict. Edward Luttwak has described particularly vicious conventional border warfare in South America. If nuclear weapons exist in East and Southeast Asia and in South America, the potential exists for their use. The United States' trade and political interests are therefore likewise served by an ongoing worldwide policy of nonproliferation.

In a speech to the United Nations General Assembly, September 27, 1993, President Bill Clinton said,

I have made nonproliferation one of our nation's highest priorities. We intend to weave it more deeply into the fabric of all of our relationships with the world's nations and institutions. We seek to build a world of increasing pressure for nonproliferation, but increasingly open trade and technology for those states that live by accepted international rules... We will pursue new steps to control the materials for nuclear weapons... The United States has also begun negotiations toward a comprehensive ban on nuclear testing.

President Clinton thus acknowledges an Augustinian Realistic view of human nature and national behavior. Without "increasing pressure," proliferant parties would clearly continue to pursue their goals, to the detriment of all persons.
John D. Holum, Director, Arms Control and Disarmament Agency, emphasized this national commitment in an August 4, 1994, speech to the Conference on Disarmament.

The United States seeks a CTBT that will bring an end to all nuclear explosions -- period. No thresholds. No exceptions. And by that I mean not just all explosions, but all states. Success demands in particular the full support and participation of all five nuclear weapons states. And we seek universal adherence.

Of course the United States and the other nuclear weapons states bear a special responsibility in this negotiation, and of course we also have special experience and knowledge that can aid it considerably. So we will continue to work closely with the other nuclear weapons states to propel this effort toward fruition.

Holum's remarks also contain a strong Augustinian element. By the Augustinian argument set forth herein, the United States and other nuclear weapons states do indeed "bear a special responsibility" in an ethical sense, to attend to the issue of nonproliferation, and to do so in an effective manner.

**Congressional Mandate**

Nonproliferation has long been a matter of intense Congressional interest. After extensive debate, Congress passed the Prevention and Control of the Proliferation of Weapons of Mass Destruction Act of 1993. That Act expresses Congress'
belief and concern that proliferation of nuclear weapons is a serious threat to international peace and also to U.S. national security. The Act identifies the Department of Defense, the Department of Energy, and various intelligence organizations as possessing unique capability with regard to the detection and monitoring of proliferation of weapons of mass destruction . . . and carrying out international monitoring and inspection regimes that relate to proliferation of such weapons.

The Act directs the relevant agencies to maintain and improve their capabilities to identify, monitor, and respond to the proliferation of weapons of mass destruction and delivery systems for such weapons.

Congressional and Presidential authority thus exist for the On-Site Inspection Agency of the Department of Defense and for the Department of Energy to conduct operations in various ways relating to nonproliferation. These operations consist primarily of monitoring, on-site inspections, research relating to improving capabilities, and the implementation of research results for improvement of the agencies' nonproliferation practice. The Department of Energy's Nevada Operations Office (NV) has a major authority and responsibility in relation to these functions.
International Legal Concerns

The basis of the modern international system of sovereign nation-states is the Peace of Westphalia of 1648. That Peace ended a cycle of wars, including the Thirty Years' War, and definitively superseded a prior system which in theory included a group of nations whose legitimacy and existence depended on ecclesiastical unity and authority. The new system recognized no secular authority higher than that of the sovereign nation. The present basis of international law lies in the system of treaties which those nations concluded to address mutual concerns.

The United States Constitution, Article I, Section 8, authorizes Congress to "define and punish . . . Offenses against the Law of Nations." This has been taken as an obligation to interpret and apply international law, in accordance with the Augustinian view of law set forth in Confessions 3:7-8. In addition, according to Article VI, treaties are to become the "supreme Law of the Land, and the judges in every state shall be bound thereby," indicating a foundational commitment to international credibility and to international law.

Any treaty may conceivably conflict with federal statute. Because treaties are part of the "supreme Law of the Land," conflicts are resolved in the same manner as between two federal statutes. Courts attempt to interpret the words of
conflicting federal statutes in such a manner that they are consistent. However, if a contradiction is so profound that it cannot be resolved, the courts will generally conclude that the more recent of the two laws was intended implicitly to amend the earlier.

Thus, the Comprehensive Test Ban Treaty could conflict with federal laws on, for example, health, safety or environmental compliance (Tanzman and Haffenden III-29), which have extensive requirements for permits and the following of specific procedures. Because any inspection on U.S. territory must be in compliance with all applicable laws, this could become a fertile field for judicial action were the inspecting entity zealous in proceeding with an inspection without the necessary permits and legally required procedures. The United States’ interests are best served by EMND’s identifying the safety and other regulatory limitations which apply and developing plans for dealing with them in the event of a challenge inspection in U.S. territory.

National Rights

A sovereign nation may be defined as a political entity which maintains order and protection against lawlessness within its own borders. At present, most nations do not recognize any political entity higher than or of greater
authority than themselves, or if such a recognition exists, it is very limited. Nations maintain relations among themselves by means of diplomacy and treaties. Sovereignty encompasses the principle that a sovereign nation need not, and in most cases will not, permit foreign entities to conduct operations within its borders.

However, there arise in the international arena situations wherein nations have surrendered a portion of their sovereignty to achieve some perceived desirable goal or for the common good. Such a situation prevailed in 1961 when the Antarctic Treaty was negotiated. There then existed a perception that a system of multilateral inspections would effectively demilitarize the Antarctic continent and that such a demilitarization would be beneficial to all parties. A number of inspections have been executed, and no violations of the Antarctic Treaty have ever been discovered (U.S. Arms Control and Disarmament Agency).

The Threshold Test Ban Treaty (TTBT) is another example wherein two nations, the U.S. and the then-U.S.S.R., perceived that a regime of bilateral inspections would serve the mutual interests. Each nation agreed to permit the other to perform limited inspections of its own nuclear weapons test program. Thus, each nation gave up a measure of its sovereignty for the common good. This attitude of mutual cooperation for the common interest reflects the Augustinian position regarding
laws. "Human codes of conduct vary according to . . . custom," he writes in Confessions 3:8, otherwise, "the common interest would suffer."

In the case of the Comprehensive Test Ban Treaty, the inspection scheme is significantly more intrusive, thereby imposing more immediately upon the sovereignty of the signatory States Parties. This may be perceived by some parties as excessive. However, Edward Lacey (1992) has pointed out that

Verification of compliance with the obligations imposed by an arms limitation and disarmament agreement is an activity conducted by the parties to an arms limitation and disarmament agreement or by an organization at the request and with the explicit consent of the parties, and is an expression of the sovereign right of States to enter into such agreements.

Thus participation in the regime created by the CTBT is entirely voluntary, to be entered into only by States Parties which perceive that some benefit thereby accrues to them and to the international system as a whole. Because there is a seemingly universal desire to ban nuclear weapons testing and an equally strong perception that the CTBT would be effective to that end, the new regime is viewed positively by the officials of many nations.
Individual Rights

Within the U.S. Department of Energy, concern has been expressed regarding the Constitutional rights of U.S. workers who might be interviewed during an inspection under the CTBT. This concern centers on the Fifth Amendment rights of U.S. citizens against self-incrimination. Potentially an "interview" by a supranational Organization would contravene the workers' Constitutional rights.

This is a very serious concern. However, the draft Treaty and Protocol dated 10 April 1995 partially addressed this concern. The draft Protocol, Part 5, Paragraph 39.3 states that

The inspected State Party shall be under the obligation to allow the greatest degree of access, taking into account any constitutional obligations it may have with regard to proprietary rights or searches and seizures.

It is not clear that this provision adequately addresses the immediate concern. In the United States, detailed resolution of this critical and sensitive issue will likely be completed in the courts.

The Comprehensive Test Ban Treaty must comply with the Constitution in every respect. After a treaty is ratified, it becomes the "Law of the Land." However, to the extent that a treaty violates Constitutional rights, the treaty cannot be
enforced on U.S. territory. A challenge inspection on U.S. territory could be proposed for federal property, state lands or private property.

In the case of a challenge inspection proposed for private property, the Fourth Amendment rights of the property owner would become a major issue. If the owner is a natural person, such as a farmer, the U.S. government could exercise eminent domain. That, however, requires time-consuming due process whereas the CTBT envisions a rapid on-site inspection.

If the owner is a corporation, such as a mining company whose underground workings are suspected by the inspecting entity of having hosted a weapons test, the situation becomes more complicated. A warrant would of course be necessary. However, to perform a seismic investigation or a drillback operation at a working mine, it might become necessary to shut down operations of the mine. This would cause most of the mine workforce to be laid off for a lengthy time, resulting in hardship to workers and families, adverse impacts to the local community, and cessation of tax revenue to the state in which the mine is located. These issues of Constitutional rights should be addressed and planned for before ratification of the treaty.
Intrusions Affecting National Security

Within the U.S. Department of Energy, concern has also been expressed regarding national security under an inspection. At the Nevada Test Site, for example, an excessively zealous inspection team may seek to observe facilities and equipment which do not relate to the CTBT but which are a sensitive national security concern.

The draft Treaty and Protocol dated 10 April 1995 seems somewhat weaker in this regard than U.S. officials might prefer. The Protocol, Part 5, Paragraph 39.3, provides that

The inspected State Party has the right under managed access to take such measures as are necessary to protect the national security.

This provision seems to contain a potential difficulty regarding security interests. One naturally wonders if "managed access" is the only measure deemed to be "necessary" to protect U.S. security interests, or if other measures would be acceptable under the CTBT.

Of specific concern is the issue of overflights. An overflight of the Nevada Test Site as part of a challenge inspection could reveal classified information from areas not under immediate suspicion of nuclear weapons testing. A second issue of concern is that of excessively intrusive general
inspections conducted under authority of combined treaties. The Nevada Test Site, and probably other sensitive U.S. facilities, could experience a symbiotic vulnerability resulting from such multiple-treaty inspections. Information gained in this manner could compromise national security.

Safety

Safety of U.S. workers affected by the CTBT is an important legal issue. In the United States, worker safety, particularly as regards radiation safety, has been a critical issue for decades. Some other nations do not have nearly as great a regard for workers' well-being. The issue then arises concerning what safety standards the Organization should use. The International Atomic Energy Agency, for example, doubtless has safety standards, but they do not pertain to safety of inspectors investigating a potential nuclear weapons test site. It is not clear, as of this date, what safety standards would prevail in the Organization, how they would be applied in a deployment, and how the standards might affect inspection effectiveness. An additional area of uncertainty is that of legal liability for injuries experienced by a U.S. citizen while on an inspection, or by a foreign inspector injured at a U.S. site.
The United States has a long history of commitment to and support for international control of nuclear weapons and for a concomitant ban on testing. In March 1946, only eight months after the first nuclear weapons were used in combat, the Acheson-Lilienthal Report was released (Rhodes 765). That report envisioned the creation of an international authority to control nuclear weapons and to control the materials used to make them. In a consultancy report, Timothy J. Pounds shows that the hypothetical authority then envisioned would conduct extensive and highly intrusive on-site inspections to enforce a control regime. The Acheson-Lilienthal Report thus reflects the United States' concern for arms control early in the nuclear era.

Based on the Acheson-Lilienthal Report, the U.S. proposed in June 1946 the Baruch Plan which intended to establish international control over all nuclear activity (Moynihan 113). The Plan would have obligated all nations to surrender all nuclear activities to an international agency and to accept unlimited inspections. This international agency would have reported violations to the U.N. Security Council for prescribed responses. The Soviet Union rejected this ambitious plan, thereby initiating an international competition to acquire ever
more effective nuclear weapons in increasing numbers as Richard Smoke and Kosta Tsipis describe.

Timothy J. Pounds describes how development and surface testing of fission and fusion weapons proceeded. Public awareness and fallout levels increased, and the outlines of the nuclear weapons debate became apparent. In December 1954, a U.S. test in the Pacific exposed personnel to radiation. In another incident, rain containing radioactive material from a Soviet test fell on Japan. The public and experts began an open debate on whether to stop testing. Advocates of a test ban claimed that health risks and security risks resulting from a continuing arms race could not justify ongoing testing. Testing supporters argued that a test ban without credible verification provisions would be unfeasible and that continued testing was necessary to deter Soviet aggression.

Concern for a credible and dependable way to ban testing was apparent, and international concerns about testing continued. The governments of Japan and India called for inquiries concerning testing or temporary bans. The United Kingdom called for a U.S. -- U.S.S.R. summit to suspend testing. Pope Pius XII expressed concern for the dangers of a continuing nuclear arms race and advocated disarmament. In 1955, Secretary of State John F. Dulles responded to these sentiments when he stated that the U.S. could not then find a
solution which would be “both dependable and in the interests of the United States.”

After numerous atmospheric tests and much public and internal debate, the United States, the Soviet Union and the United Kingdom began comprehensive test ban talks (CTB) in 1958. A moratorium on testing was in effect from 1958 to 1961, when the Soviet Union resumed atmospheric testing. In 1961, while the talks were in progress, then-President John F. Kennedy visited the Nevada Test Site. He recognized the need for continued testing to establish weapons reliability and favored conducting the tests underground rather than in the atmosphere. He also favored retaining the skills of the nuclear scientists and established a nuclear rocket research program partially for that purpose. After extensive negotiation, including a Soviet refusal to consider on-site inspections, the Limited Test Ban Treaty (LTBT) went into effect in 1963. The LTBT banned nuclear weapons tests in the atmosphere, in outer space and under water. At President Kennedy’s insistence, underground tests were permitted, but the parties could not agree on a verification scheme. Verification remained the most important and complex issue concerning a test ban. The parties could not agree to a system of controls and inspections, and considered simple pledges to be dangerous to security and therefore inadequate. The U.S. position continued to be that on-site inspections would be required to make a test ban credible (Eimer and Drell; Lacey). As a closed society in the Cold War
context, the Soviet Union resisted all such inspections except voluntary ones.

In 1970, the Nonproliferation Treaty entered into force. In early 1974, the Soviet Union proposed a threshold test ban wherein nuclear weapons tests would have been limited in yield. Later that year, the U.S. and the Soviet Union signed a bilateral Threshold Test Ban Treaty (TTBT). The new scheme departed from previous proposals by setting a yield ceiling of 150 kilotons rather than a threshold measured in seismic magnitude. The TTBT also envisioned an end to all weapons testing as an ultimate international goal. A Protocol delineates geographic boundaries of test areas. The Protocol also provides for the exchange of technical data, for the exchange of geologic information on the test sites, and for the exchange of data from two calibration test shots at each site.

Negotiations for a complete test ban continued. Throughout the 1980's, Congressional support for a test ban continued. In 1987, the U.S. and the Soviet Union began talks in Geneva on TTBT verification issues. The U.S. position was that further limits on nuclear testing would not be in the national interest, but a precedent-setting on-site inspection regime under the TTBT was eventually developed. A comprehensive test ban was viewed as a long-term objective.
However, the collapse of the Soviet Union and the end of the Cold War have created a perception that, to some degree, this very condition now obtains, and that a comprehensive test ban is now attainable. By 1991, more than 60 nations had made statements supporting a near-term comprehensive test ban. Most statements cited the end of the Cold War and the test ban’s link to stopping the arms race and to promoting nonproliferation. During the 1992 presidential election, both major political parties made a CTB part of their respective platforms (Leach, 1992; Hamilton, 1992).

**Present Policy**

The present U.S. policy is one of complete support for a comprehensive test ban (CTB) that includes extensive monitoring and verification provisions. During the 1992 presidential campaign, Bill Clinton’s position was that a CTB would subserve American efforts to prevent proliferation of nuclear weapons to other countries. In 1993, during the Vancouver Summit, President Clinton reaffirmed his campaign pledge to obtain a CTB and announced the beginning of a consultative process with Russia, China and the United States’ allies aimed at starting CTB negotiations. In January 1994, negotiation for a Comprehensive Test Ban Treaty (CTBT) began in Geneva.
In his speech to the U.N. General Assembly of September 27, 1993, quoted above, President Clinton articulated three guiding principles regarding U.S. nonproliferation policy. They are, first, nonproliferation is accorded highest priority and is integral in relations with all nations. Second, the U.S. will seek expanded trade and technology transfers to build international security. Third, the U.S. expects to build an international consensus to integrate nonproliferation and economic goals.

Several specific and relevant nonproliferation policies derive from these guiding principles. Primary among them is an activist approach which seeks to achieve compliance with nonproliferation goals by monitoring. In addition, the U.S. seeks an indefinite extension of the Nonproliferation Treaty (NPT), and seeks to ensure that the International Atomic Energy Agency (IAEA) has resources for safeguards. The U.S. also seeks to strengthen and improve IAEA's ability to detect undeclared nuclear facilities. The U.S. promotes regional nonproliferation initiatives, with special efforts in Korea, the Middle East, and the South Asian Pakistan-India area. (U.S. Department of Energy, undated).

Policy Impact on the U.S. Department of Energy

These national policies have implications for the Department of Energy. As a nonproliferation norm, the DoE is
to support IAEA's ability to detect clandestine weapons development activities. Information exchange to combat nuclear terrorism and smuggling of fissionable nuclear weapons materials is also a high priority.

Present political considerations recognize a shift from a U.S.-Soviet bipolar emphasis to a nonproliferation policy more oriented toward regional considerations (U.S. Department of Energy). This emphasis includes use of DoE nuclear experts and DoE country-specific nonproliferation experts. DoE expects to apply expertise developed in the DoE weapons complex during the Cold War to regional problems. These efforts include treaty verification and implementation, provision of technology expertise during treaty negotiations, systems analysis capability, and environmental monitoring and remediation technology as applied to weapons test sites.

INTERNATIONAL NEGOTIATIONS FOR A CTBT

Many nations have sought a complete ban on the testing of nuclear weapons. Concerns about proliferation, the breakup of the Soviet Union, the recent experience with Iraqi nuclear weapons development, and Russian and U.S. moratoriums on testing have led to an international climate wherein an effective ban is perceived to be both politically possible and technically feasible. Times have fundamentally changed in this
regard. Augustine writes in *Confessions* 3:7 that "it is the nature of time to change," and that it is the place of humankind to "prescribe and apportion [laws and measures] according to the needs of the times."

Although testing is not a strict technical necessity to develop nuclear weapons, the conference held in 1995 on the extension of the Nonproliferation Treaty (NPT) has heightened the perception of the need and appropriateness of a Comprehensive Test Ban Treaty (CTBT). In the NPT conference, central issues included continued nuclear testing by the declared nuclear weapons states, asymmetries between the nuclear and non-nuclear states, and multinational involvement in the monitoring and compliance evaluation process. Of particular interest has been the inability of the current Threshold Test Ban Treaty (TTBT) inspection provisions to ensure detection and identification of clandestine efforts to develop or acquire nuclear weapons. Recent events in Iraq and in North Korea have demonstrated that concerns about proliferation and about effective counterproliferation measures are well founded. Thus the international community views the CTBT as an important and indispensable element in the extension of the NPT.
Background to the CTBT

Negotiations for a Comprehensive Test Ban Treaty (CTBT) began in Geneva in January 1994 under the auspices of the United Nations Conference on Disarmament. Sweden and Australia each submitted their own versions of draft treaties. After discussion and negotiation, the participants produced a draft treaty on 10 April 1995. In Part 2, "Scope," the draft CTBT provides that

Each [State Party] [of the Parties to this Treaty] undertakes [to prohibit, and to prevent, and] not to carry out, [at any place and] [in any environment,] any nuclear weapon test [explosion] [which releases nuclear energy] [in any form or any type], or any [other] nuclear [test] [explosion], [and undertakes to prohibit and prevent any such nuclear explosion] at any place [under [or beyond] its jurisdiction or control] .]

[(a) in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas; or (b) underground.]

The peculiar style of this draft Treaty is known as a Rolling Text and is intended to convey all of the alternate wordings under consideration. This Draft is considerably stronger than that of a previous Draft dated 05 September 1994, which contained the significant provision

[, with the exception of any explosions which may be authorized in exceptional circumstances] .]
Thus the Comprehensive Test Ban Treaty, as envisioned in the
draft of 10 April 1995, is a “convention [intended to] establish
. . . the customary usage or the law of the community or the
state,” regarding use of nuclear explosive devices, as Augustine
writes in Confessions 3:8. Generally, each signatory to the
Treaty would be prohibited from executing any nuclear
weapon test explosion. This complete prohibition of all nuclear
explosions, including peaceful explosions and research test
explosions is to be the “customary usage.” By this Treaty, the
signatory States Parties, acting for the human race, intend to
ban nuclear weapons explosions. A major element of
Augustinian just war theory is that human activities should
have peace as a goal (Langan 174). This Treaty attempts to
approach that goal.

New International Organization

To achieve the stated goal, the draft CTBT establishes an
entity which it names as the Organization. The draft also
establishes a Conference of States Parties and an Executive
Secretariat, each with specific functions. It further establishes
a Global Monitoring System whose purpose is to detect
evidence of any nuclear explosion.

The Organization exists to conduct international
monitoring and inspections. The Organization is also to provide
a forum for consultation and cooperation among the signatory States Parties. The Organization is to consist of the Conference of the States Parties, the Executive Council and the Technical Secretariat which is to include an International Data Center.

The Conference of the States Parties, composed of one representative of each signatory State Party, is the governing body of the Organization and makes recommendations and decisions on questions which any State Party or the Executive Council may raise. The Conference exists to review and to ensure compliance with the provisions of the Treaty. It also addresses measures to “redress and remedy any situation that contravenes the provisions of the Treaty.”

The Executive Council consists of representatives of those States Parties which were nuclear-weapons States Parties to the Nonproliferation Treaty, and other members which serve in rotation for two-year terms. Responsible to the Conference, the Executive Council resolves ambiguous events by means of information exchanges and by challenge on-site inspections. The Executive Council also receives and implements requests from States Parties for on-site inspections.

The Technical Secretariat assists the Conference and the Executive Council as the agency empowered to conduct inspections. It is that element of the CTBT regime which creates maximum credibility and which provides the
immediate deterrent to a nation or group which would otherwise desire clandestinely to test a nuclear weapon. The Technical Secretariat also negotiates agreements and arrangements relating to monitoring and inspection activities. A major function of the Technical Secretariat is to operate the International Data Center as part of the Global Monitoring System.

The Global Monitoring System will conduct in a mutually complimentary and supportive manner seismological monitoring, monitoring of radionuclides in the atmosphere, hydroacoustic monitoring at sea and infrasound monitoring in the atmosphere (Conference on Disarmament, Evaluation). Data gathered is transmitted to the International Data Center. Under the CTBT, each States Party is to establish monitoring stations and to provide the data obtained to the International Data Center. Each State Party has the right to receive all data collected.

Seismological recordings have long been recognized as a primary means of detecting nuclear explosions. The capability to detect such an explosion depends on the number of recording stations and on their distribution. The seismic monitoring network must recognize a nuclear explosion from among thousands of seismic events annually, which include natural earthquakes and chemical explosions conducted during mining and excavation operations. To be most effective, the
recordings from the global network must be transmitted rapidly to the International Data Center (IDC) and analyzed in a timely manner to be made available to the States Parties to the CTBT. The seismological recording scheme will need to reflect these facts. There are presently three different arrays of seismic recording devices under consideration. A maximum of 150 recording stations would be deployed on land, at substantial cost. These would detect, locate, and identify seismic events, and would transmit the data, possibly by satellite links to the IDC (Conference on Disarmament, Seismic). For the most part, the seismic data would be made available for scientific purposes (Monastersky 391).

A nuclear explosion in the atmosphere, or venting from an underground nuclear explosion, releases radioactive particles and gases which are dispersed over a very wide area. Depending on the location of the test, the location of a monitoring station, and on meteorological factors, the time from detonation to detection of radionuclides can be a few hours to a few days. The scale of these time-dependent detections differentiates radionuclide monitoring from monitoring for shock or sound waves for which evidence of a test would accumulate within minutes or hours. However, radionuclide analysis is of fundamental importance because it is the only technique for the detection of radionuclides which result from nuclear fission. Detection of such radionuclides is very strong evidence that a nuclear detonation has occurred. Three options
for a worldwide network of radionuclide monitoring stations are under consideration, with a maximum of about 100 stations envisioned (Conference on Disarmament, Options . . . Radioactivity; Relevance).

A nuclear explosion in the oceanic environment creates marine sonic waves which can be detected and located by a suitably arranged network of detectors. In the case of a nuclear explosion which occurs near the surface of the sea, hydrophones can detect the event although land-based seismic detectors cannot do so. If the explosion is fully contained, the hydroacoustic method serves well in conjunction with seismic means. For shallow explosions, the hydroacoustic method is the only method which can locate the event. Three potential deployment scenarios are currently under consideration, which envision varying numbers of hydrophones mounted in fixed bottom arrays or on moored buoys (Conference on Disarmament, Options . . . Hydroacoustic). None of the techniques envisioned are capable of detecting submerged submarines at sea, an important issue to States Parties that prefer that their submarines remain undetected.

Infrasound monitoring is an established method of detecting and locating nuclear explosions. By means of microbarographs, the method detects sound waves in the atmosphere resulting from a nuclear explosion. Modern instrumentation can detect a nuclear explosion at distances
greater than 1500 miles. Microbarographic stations can be co-
located with seismic stations in most instances. About 100
microbarographic stations are envisioned (Conference on
Disarmament, Infrasound).

Operations of the Organization

The CTBT authorizes the Organization to collect data, to
deposit that data in the International Data Center, and to
conduct on-site inspections in response to a challenge by one or
more of the States Parties. Each State Party would have the
right to analyze all data which the International Data Center
may collect. If any State Party believes that a nuclear weapons
test has occurred, that State Party has the right and the moral
obligation to request an on-site inspection of the suspect site.
The inspection would be conducted by persons designated as
inspectors by the Technical Secretariat. The challenged State
Party is obligated to permit the inspection and to assist in its
execution. Nationals of the requesting State Party may
participate in the inspection only as observers, according to the
current draft version.

The Antarctic Treaty of 1961 is an example of an early
arms limitation effort and a precedent in nonproliferation
inspections. By the Antarctic Treaty, all military activity,
including nuclear tests, is banned in Antarctica. Each signatory
has the right to inspect the Antarctic facilities of every other signatory nation. Argentina, Australia, New Zealand, the Soviet Union and the United States have all exercised the right to inspect. The U.S. has conducted eight inspections, all of which involved Soviet facilities. No military activities, armaments or nuclear weapons activities have been observed, and all scientific programs were in accord with published plans (U.S. Arms Control and Disarmament Agency, 1990). According to all reports, the activities observed complied with the provisions and the spirit of the Antarctic Treaty. This experience provides a model of cooperation for the CTBT.

Staffing and Activities of Inspection Teams

The States Parties to the CTBT provide qualified inspectors to the Technical Secretariat which continuously maintains a cadre of inspectors. The inspectors would have diplomatic immunity when they are executing their duties within the territory or airspace of a challenged nation. The Technical Secretariat would likely be required to maintain equipment suitable to execute an inspection for all the sites at which an inspection is likely to be required. The equipment would therefore be required to function under extremes of temperature, humidity and altitude. The inspectors would likely maintain, calibrate and service the equipment.
The inspectors are required to begin their inspection within seven days of the time that a States Party requests it. By the provisions of the CTBT draft of 10 April 1995, Protocol, Paragraph 39.5, the inspection is to include, as appropriate:

- Topographic work and surveying
- Visual observations
- Photography and video imagery
- Sampling of gas, soil, and liquids
- Measurement of radionuclide activity
- Seismological surveys
- Magnetic, gravitational and thermal measurements
- Drilling into the area of a suspected weapons test

These activities are deemed to be those most likely to determine if a nuclear weapons test has or has not taken place at a particular site. The envisioned inspections are significantly more involved than those which U.S. and Soviet inspectors have executed under the Threshold Test Ban Treaty. They may also in principle take place at any location rather than only at established Soviet testing sites or the United States’ testing site.

The inspectors report their findings to the Technical Secretariat. If the Organization believes that an unauthorized nuclear weapons test has occurred, it reports that fact to the United Nations Security Council for appropriate action, including possible sanctions of various sorts, including military
action. This provision reflects the Augustinian position set forth in *Confessions* 3:8 that "no one . . . may, to suit his own pleasure, violate the conventions established by customary usage or the law of the community or the state." Otherwise, "the common interest would suffer."

**Deterrence and Credibility**

Parties inclined to test nuclear weapons must believe that their tests will likely be detected and that their activities will face international publicity, with significant negative consequences. Such consequences would include international opprobrium, United Nations sanctions, and diplomatic responses by nearby and affected states. Military responses are also envisioned (Deutch 122). These are the consequences deemed most likely to deter clandestine testing of nuclear weapons.

Many scenarios are of course possible, but the most likely one regarding a challenge inspection involves first a challenge from one or more of the States Parties which suspect that a nuclear weapons test has taken place. The challenging States Parties would specify a suspect area, which would be reduced in size as additional information became available. According to the draft Treaty dated 10 April 1995 Protocol, Sec. 39.7 and Sec. 39.8, at a suitably delineated suspect site, the Organization would conduct visual observation, along with ground, airborne
and submarine photography as appropriate. This initial observation could include spectral monitoring. The next activity would be taking samples of gas, soil and liquids from the site and measuring of radionuclide activity in the atmosphere and in the ground. Additional investigation intended to establish the presence of a cavity or chimney resulting from a nuclear weapon test would likely follow. Such investigation could include seismological methods, ground penetrating radar, or other methods.

A drillback operation at the suspected test site is the activity which potential testers would view as most credible. The recovery of radioactive samples would provide conclusive evidence that a test had been conducted. Such a drillback operation would have the greatest deterrent effect against clandestine testing. The Organization would require such a capability on a continuous basis.

Such a drillback is not without difficulties. Heretofore, U.S. authorities have conducted drillbacks as part of their own testing scheme. However, a drillback conducted by the Organization within the territory of a sovereign nation raises novel issues.

Novel operational and logistical issues of interest to the Department of Energy include protection of inspecting personnel from radiation resulting from a poorly executed test.
disposal of potentially or actually radioactive cuttings, and liability for environmental cleanup after the drillback is completed. In addition, issues arise concerning transportation and disposal of contaminated drill parts; and ownership, transportation, and disposal of a contaminated drill rig. Such issues would have to be addressed in the event of a drillback.

U.S. ORGANIZATIONS CONCERNED WITH THE CTBT

On-Site Inspection Agency

On January 15, 1988, President Ronald Reagan signed a Directive establishing the On-Site Inspection Agency (OSIA) and authorizing it to implement the on-site inspection provisions of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Elimination of Intermediate Range Nuclear Forces (INF Treaty). OSIA was then chartered as a Department of Defense agency on January 26, 1988.

Personnel from all military services, as well as civilian experts and support personnel, permanently staff OSIA. The agency maintains close liaison with Executive Branch agencies that are involved with the arms control and nonproliferation processes. Within OSIA, the Science Advisor is by Presidential Directive a senior Department of Energy official with expertise
in nuclear weapons testing. The Department of Energy provides other experts to OSIA in the conduct of its monitoring and inspection operations in the Soviet Union. The Inspection Operations Command performs the on-site inspections. The Monitoring Operations Command provides continuous monitoring presence at former fissile materials production and assembly plants in Russia and the U.S.

On July 18, 1990, President George Bush signed a Directive which authorized OSIA to conduct inspections in the Soviet Union and to host Soviet inspections in the United States under the provisions of the Threshold Test Ban Treaty (TTBT). OSIA was thereby authorized to arrange for and to use DoE nuclear testing experts and other scientific experts in seismic yield monitoring and hydrodynamic yield measurements of announced Soviet tests at Novaya Zemlya and at Semipalatinsk (Wright, 1992). These functions are different from and significantly less extensive than those envisioned under the Comprehensive Test Ban Treaty.
Emergency Management and Nonproliferation Division, Nevada Operations Office, DOE

Description

The Emergency Management and Nonproliferation Division (EMND) is an element of DoE's Nevada Operations Office (NV). Its primary mission is to provide generic treaty support to the Department of Energy, to the On-Site Inspection Agency, and to other interested elements of the U.S. Government. EMND functions under applicable laws and policies to implement some provisions of the Threshold Test Ban Treaty (TTBT). Applicable National Security Directives assign overall management of TTBT monitoring activities to the On-Site Inspection Agency (OSIA), an element of the Department of Defense. EMND supports OSIA by providing technical leadership and team members to conduct hydrodynamic yield measurements and other on-site inspection activities in Russia. EMND also serves to host Russian inspectors and visitors at the Nevada Test Site.

DoE established EMND in 1989 and provides guidance to EMND from the Office of Nonproliferation and National Security in Washington, D. C. This guidance is provided by means of funding allocations, written program guidance, and annual planning exercises. The EMND presently consists of about 30 federal employees as well as contractor employees and
scientists and other professional personnel in DoE's National Laboratory complex. EMND functions under the supervision of a Director who reports to the Assistant Manager for Operations in DoE's Nevada Operations Office. The Director's staff consists of a Deputy Director, engineers, scientists and analysts, and secretarial support. These personnel are further divided into two teams, the Emergency Response and Remote Sensing Team and the Proliferation Response Team, each of which consist of about a dozen professionals who function under the direction of a team leader.

EMND integrates scientific, logistical and operational aspects of the DoE's arms control and nonproliferation effort. It provides expertise in project management, Protocol interpretation, electronic engineering, radiological health physics, mining engineering, data integration, photovideo interpretation and Russian language services. The Department of State has continuously relied on EMND for technical suggestions and assistance for a variety of missions involving Russian visits to U.S. nuclear weapons facilities. EMND's technical and linguistic personnel provide training in Russian nuclear terminology and usage to members of the U.S. intelligence community. EMND also participates in security aspects of verification work. The Joint Chiefs of Staff rely on the expertise in EMND, its contractors and the National Laboratories on questions of policy relating to international nuclear weapons testing.
The Defense Nuclear Agency (DNA) and EMND coordinate closely in developing verification methodologies and technical applications supporting treaty compliance measures to be adopted by the U.S. EMND provides all of the required support for standard TTBT monitoring missions and cooperates with DNA to develop nonstandard TTBT verification techniques. EMND also cooperates with the Federal Bureau of Investigation to coordinate security measures for Russian nationals visiting the Nevada Test Site.

EMND coordinates with the Advanced Research Projects Agency to develop a deployable seismic verification system, and participates with the Center for Seismic Studies to consider developments in seismic technology.

Because the verification mission is technically complex, it requires close coordination between scientists, engineers, personages in the policy community, and political leaders. The three National Laboratories, Los Alamos, Livermore and Sandia; the U.S. Geological Survey; EG&G/Energy Measurement; Reynolds Electrical & Engineering Co., Inc.; and Raytheon Services Nevada have provided the necessary mix of technical professionals. EMND manages and coordinates these assets into integrated teams which perform the function of deployment missions. More than one hundred scientific professionals
depend on EMND to gather information, plan, arrange training, and provide technical leadership and logistical support.

Present Capabilities

The present capabilities of the EMND relating to weapons testing treaties lie in the areas of support for Russian visits to U.S. nuclear weapons facilities and in the areas of technical support for the On-Site Inspection Agency regarding on-site inspection of Soviet nuclear weapons tests at Novaya Zemlya and at Semipalatinsk.

EMND supports discussions and negotiations of the coordinating group of the Bilateral Consultative Commission. The Division conducts planning for Russian visits to U.S. nuclear weapons test facilities. In this capacity, the Division coordinates logistical and operational activities and arranges for housing of foreign inspectors and visitors and also prepares for the security and escort requirements.

The EMND has Russian language capability, including the capability to translate Russian documents relating to nuclear weapons technology. EMND has hosted foreign visitors from Russia, China, England, France and Yugoslavia. EMND gained significant experience with Russian visitors and Russian nuclear weapons technology during the Joint Verification Experiment of
1988. Additional experience resulted from the Nonproliferation Experiment, in which nearly a kiloton of chemical explosives was detonated at the Nevada Test Site.

In the conduct of on-site inspections at Russian nuclear weapons test sites, EMND supports the OSIA. The Division has thus gained expertise in planning and coordinating for inspections. EMND manages logistical support and research and development as required for inspections. The Division continues to provide Russian language capability for on-site inspections, and to provide members to the on-site inspection team.

NEW FUNCTIONS

The draft Treaty of 10 April 1995 authorizes some activities which are different from those in which EMND historically has been involved. There are five major differences. First, the Inspecting Organization would perform any inspection, rather than OSIA. Second, the inspection activities could be performed at any location worldwide, rather than only at declared nuclear weapons test sites. Third, inspections envisioned under the CTBT are more intrusive than those executed under the TTBT. Fourth, a CTBT inspection would be performed with a notification of a few days, rather than the months which are required under the TTBT. Fifth, the CTBT inspections are likely to be performed in an atmosphere
of distrust if not outright hostility, although the United States desires an atmosphere of benign fairness.

The Draft Treaty of 10 April 1995, in the Protocol, Paragraph 39.5, makes provision for the following activities to be performed during an on-site inspection. These functions are described below.

**Topographic Work**

Topographic examination and mapping would be performed for the purposes set forth in the Draft Treaty, "determining the real coordinates of the inspection area and the coordinates of points where measurements shall be carried out in the area designated for inspection." This activity would determine the location for further inspection activity.

Surveying would tie in measurement points, including points for geophones for geophysical measurements. Surveying would also establish locations for seismometers for microseismic examination of a suspected cavity or chimney. Leveling or use of tiltmeters would detect subsidence resulting from collapse of a cavity or chimney.
Visual Observations

Visual observations would include attempts to detect a cavity or chimney resulting from a weapons test. Also vulnerable to visual examination are surface drilling and emplacement equipment necessary to conduct an underground test, as well as test cabling and surface structures dedicated to acquisition of test data.

Visual observation would extend to standard geologic mapping and sampling at a suspect site. In addition, non-standard fracture mapping and search for artifacts from a suspected nuclear explosion would be included.

Photography and Video Imagery

Overflights and aerial photography would comprise an essential inspection capability of the Organization. The ability to rapidly prepare aerial photographs and maps by automated means and to compare them with previously existing data would be an important method for initial evaluation of nuclear test activity. Such a capability on the part of the Organization would carry credibility in the view of many. Thus the Organization would need to have the ability to prepare photographs of fissures, subsidence craters and buried cabling relating to weapons testing. An ability to conduct aerial
magnetic and gravity surveys might reveal the presence of a cavity resulting from a weapons test. Aircraft mounted ground penetrating radar would provide a rapid estimate of subsurface conditions at a suspect site.

The Organization will require the capability to conduct over-ocean reconnaissance to address those situations in which a proliferant nation would execute a test in international waters. Aircraft with the capability to take photographs and perform real-time radiometric surveys would be necessary.

**Sampling Gas, Soil and Liquid**

Sampling and testing of soil for unusual heat flow and for presence of volatiles resulting from a nuclear explosion would also be conducted. These volatiles include radioactive noble gases and tritium, as well as stable gases such as CO$_2$, CH$_4$ and H$_2$. Radioactive gases are most likely to be detected first. In absence of radiation, CO$_2$, CH$_4$ and H$_2$ are indicative of a chemical high explosive detonation which could be detonated at shallow depth as a cover for a nuclear explosion at greater depth.
Measurement of Radionuclide Activity

Radioactivity from nuclear weapon debris can be detected and measured to provide evidence of clandestine nuclear weapons testing. The Draft Treaty envisions "radiation measurements in the atmosphere, on the ground surface, underground, underwater." A "spectral gamma survey" from aircraft or submarines is also envisioned. These activities are necessary to detect the presence of radioactivity resulting from a nuclear explosion.

Seismological Surveys

Seismological surveys would be necessary in many inspection scenarios. Most of these surveys use some source of energy input and they measure and interpret the seismic waves that result. These surveys have the potential to detect the presence of a cavity and chimney resulting from an underground nuclear test. Seismic surveys which do not use an input source can also detect and measure seismic signals resulting from the collapse of a cavity or chimney.

Magnetic, Gravitational and Thermal Measurements

Magnetic, gravitational and thermal measurements reveal other aspects of a nuclear test. An underground nuclear
A weapons test produces large quantities of ionized material, creates a large underground cavity, and emits heat into the surrounding media. Magnetic or electric prospecting of a suspect area may produce a signature indicative of a test. Gravitational surveying may disclose the presence of a cavity or chimney resulting from a weapons test. Thermal measurements may detect a thermal pulse resulting from a nuclear explosion.

**Drillback Operations**

The drillback operation is the activity of greatest credibility in the international environment. The ability of the Organization to conduct a drillback at any suspected site on a worldwide basis is the ultimate assurance of compliance with the CTBT. Carefully sited drilling at a ground zero location would be likely to detect a cavity, rubble zone or chimney. Samples of gas and rock core could be obtained, thereby increasing the credibility of the inspection process. In addition, in-hole geophysical techniques, sound measurements, and ground-penetrating radar techniques could also be performed. Down-hole radiation measurements would be an automatically envisioned activity. A drillback operation would entail a considerable logistics effort to move personnel, drill pipe, cement, mud, pumps and generators to the suspect site. A commercial drill crew cannot be expected to drill into a
radioactive mass, so additional training would be required. Radiation monitoring would be continuous. Depending on the scenario, with sufficient training and prior preparation, such a drillback operation could be conducted in a few weeks with a high probability of success.

Environmental issues arise concerning the disposition of radioactive particles in the drilling mud and also concerning a method to reclaim the drill sites, as well as disposal of radioactive drill components. In all of these activities, EMND would have ability to provide technical expertise directly to the inspection effort or to train others to perform the necessary operations.

RECOMMENDATIONS

Under the CTBT, EMND's functions would thus be significantly different from those presently exercised under the TTBT. Under the TTBT, EMND supported OSIA in inspections only in Russia or the United States. Under the CTBT, EMND must support U.S. interests wherever they relate to the new international Organization.

Concerns about proliferation and emphasis on the CTBT change the technical monitoring focus of the EMND. Heretofore, EMND's effort was primarily yield estimation of declared tests
at two declared sites in Russia. Hosting Russian inspectors at the NTS has been an important additional mission. Under the CTBT, EMND's mission would include backstopping exercises, training, and support for a U.S. contribution to the Organization or to a deployment. Hosting inspectors in the United States would be a continuing mission.

Comparison of EMND's present capabilities and the tasks that would be required of it under the CTBT show that additional capabilities will be required. Consideration of these necessities leads to the following recommendations.

**Enhance Use of EMND within Nevada Operations Office**

Because of valid delegations and long-standing expertise, the Emergency Management and Nonproliferation Division should remain in Nevada as a unit of the Nevada Operations Office. EMND can interact with DoE Headquarters units to provide expertise in the development of a workable CTBT, Protocol and implementation documents. The implementation documents are particularly important because they define the details of an on-site inspection. EMND is well-prepared to contribute in this function. In Nevada, the EMND would also be well situated to support implementation of CTBT provisions relating to establishment of the Organization and on-site

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inspection capabilities. A Nevada-based EMND would be best able to minimize intrusions and impact on U.S. activities at NTS and to support Operations Security functions. EMND is close to the relevant contractors and National Laboratories and is well situated to manage development of scientific systems for on-site inspections.

**Reconfigure EMND to Reflect New CTBT**

Under DoE Headquarters guidance, EMND should be reconfigured to reflect the needs of the CTBT. EMND should acquire new capabilities as the CTBT progresses through the ratification process and as the Organization is established.

EMND should provide expertise for U.S. efforts to interpret data provided by the International Data Center. This implies that EMND should maintain existing capabilities in seismic technology and in detection of radionuclides. EMND should develop expertise in hydroacoustic monitoring and in infrasonic techniques.

EMND may support OSIA for inspections in the U.S. Under the new regime, EMND would support a U.S. contribution to a multinational inspection effort under the auspices of the Organization. This effort would include developing the capability of performing a rapid on-site inspection at any
suspect site. The possibility of performing multiple widely-separated inspections simultaneously is quite real, and EMND should be prepared to provide support in such a contingency. EMND should continue its ability to host foreign inspectors against the possibility of a challenge concerning an alleged U.S. test.

Assign to EMND the Conduct of CTBT Training for the International Inspectorate

The new international Organization will require competent and trained personnel to perform inspections. To maintain credibility, the Organization will necessarily maintain a fully deployable inspection capability at all times. To meet the intent of the CTBT, the Organization's inspection team[s] will necessarily be multinational and the team must not be composed of so many inspectors from one nation that the ability to inspect in that nation is thereby compromised. A relatively large foreign cadre would be required in the Organization, for example, if the U.S. were to be challenged.

During the period in which the Organization is forming, the EMND can be expected to provide a U.S. contribution to technical inspection capability for the Organization. EMND would train U.S. citizens and nationals of other States Parties to perform inspection duties. In the interest of both ethical and
practical concerns regarding safety, EMND would have opportunity to inject the highest and most effective safety standards into the forming Organization.

Deployment

In any deployment of the Organization’s inspection team, EMND would have a major support role. To meet the deployment needs embodied in the new treaty, EMND should acquire new capabilities. In general the new capabilities enhance EMND’s support of a U.S. contribution and team members to the Inspectorate during a deployment intended to detect or verify clandestine testing, or to a practice deployment. In addition EMND would provide an observer for those inspections resulting from a U.S. challenge. EMND would be expected to learn from initial deployments and to rapidly incorporate new techniques and knowledge into future activities.

EMND should retain existing expertise and capabilities because they are necessary to the Department of Energy’s mission and relate not only to the requirements of the TTBT but also to the CTBT. Existing expertise and capabilities would enable EMND to function as a consultant, to support U.S. team members functioning on inspection teams, to provide personnel for inspection teams and to interpret data from monitoring and
from inspections. EMND should continue a coordinating and managing function. Additional capabilities will be necessary when EMND supports a U.S. contribution to a deployment whose activities are those authorized by the CTBT. These new capabilities are set forth below.

Topographic Work

EMND should be prepared to contribute to topographic and surveying work at any location in the world. In addition, EMND should acquire surveying expertise sufficient to perform three-dimensional surveying in English or metric units at any location. EMND should therefore become familiar with the surveying coordinate systems of every nation judged likely to become an inspected party under the CTBT as well as the surveying system which the Technical Secretariat chooses to adopt.

Visual Observations

EMND should retain the observational expertise of its personnel in performing visual observations. These observational skills should include detection of evidence of nuclear weapons testing such as ground disturbance, presence of drilling equipment, presence of powerlines, presence of test
cabling, distressed vegetation, and rockfalls resulting from seismic disturbance. Relevant personnel should become familiar with locations judged likely to become clandestine testing areas in the future. Geologic inspection abilities should also be retained. In addition, EMND should acquire ability to conduct most inspection activities underground. Therefore, the personnel should be trained in underground technology and safety.

Photography and Video Imagery

Regarding its functions of hosting an inspection in the U.S., EMND should maintain an ability in photography and imaging. This ability should include up-to-date video imaging as well as real-time data transmission by satellite. In addition, EMND should develop procedures to provide photographic services and imaging ability at any location in U.S. territory.

For support of an on-site inspection in foreign territory, EMND should develop imaging systems which are compatible with those of the Organization. EMND should thereby maintain capability to supply data to the Organization’s International Data Center.
EMND should acquire expertise in gas, soil, and liquid sampling theory and in statistical methods of analyzing and interpreting samples. EMND should acquire and maintain ability to perform sampling for evidence of bomb debris, noble gases and tritium and for $\text{CO}_2$, $\text{CH}_4$ and $\text{H}_2$.

The TTBT included a restricted protocol, which strictly limited the sampling procedures which could be used and similarly limited the samples which could be obtained. The CTBT, as presently envisioned, contains no such limitations. This difference opens significant possibilities for extensive overt sampling and also for covert sampling. EMND should acquire and maintain expertise to interpret sampling results from the International Data Center. This expertise should be sufficient, insofar as the state of the art permits, to locate a puddle resulting from an underground nuclear weapons test. Such a capability, along with existing capabilities in drillback operations, would likely prove useful in on-site inspections in foreign nations. This capability would also enable EMND to control sampling at NTS and to interpret sampling techniques used during an on-site inspection on U.S. territory.
Measurement of Radionuclide Activity

The CTBT authorizes radiometric activity to be performed in holes as much as 20 meters deep. EMND should therefore retain the expertise and ability to perform down-hole radiation measurements, as well as measurements of radioactivity in the atmosphere, soil and rock in the vicinity of a suspected site.

Seismological Surveys

EMND should maintain existing seismological surveying capability developed in response to the TTBT. In addition, EMND should retain expertise in ground penetrating radar and in-hole geophysical techniques as applied to the CTBT.

Magnetic, Gravitational and Thermal Measurements

To remain cognizant of the Organization's authorized abilities, EMND should acquire expertise in magnetic, gravitational and thermal measurements. This could take the form of contracts with academic institutions as well as commercial businesses and the National Laboratories.
Drillbacks

As developed above, drillbacks have the greatest credibility of all of the Organization's inspection techniques. EMND should therefore accord the drillback activity requisite resources and capabilities. Further, EMND should make plans to support a U.S. contribution to a drillback inspection on a worldwide basis. This is a very considerable task, but it would generate the greatest credibility which the CTBT can make in preventing proliferation of nuclear weapons.

The drillback scenario envisioned to be performed by the Organization differs significantly from drillbacks performed at the Nevada Test Site or from verification drilling performed under the TTBT. CTBT drillback operations could be performed at any location in a very rapid manner, and they would be intended to verify that a test has taken place rather than to measure the yield of an announced test. Any of the Organization's drillbacks could produce radioactive cuttings which would have to be handled with regard to safety and would have to be treated and disposed in a responsible manner.

In addition, there arises the issue of environmental restoration of a drillback operation. There is no present provision in the CTBT for this activity, but it is nevertheless a
vitaly important issue. EMND should be a prominent leader in this area.

Discussion

The new international initiative for banning nuclear explosions results from a changing international political climate and creates new challenges for EMND. The challenge is to reorganize, under DoE Headquarters guidance, to support treaty negotiations, to support a U.S. contribution to the Organization and to be prepared for a potential challenge inspection on U.S. territory.

Under the Threshold Test Ban Treaty, EMND supported the On-Site Inspection Agency in deployments to Novaya Zemlya and Semipalatinsk to determine the yield of Soviet nuclear weapons tests by seismic methods or by CORRTEX. Under the CTBT, the EMND could be expected to support inspections at any site worldwide.

EMND should acquire significant new capabilities to meet the expanded requirements of the new treaty. These capabilities are intended to enable EMND to provide logistical and operational support to a U.S. contribution to the operations of the Organization. They include capabilities in global positioning and surveying, underground examination, state-of-the-art imagery, sampling, down-hole radiation measurements,
ground penetrating radar and in-hole geophysical, magnetic, gravitational and thermal measurements, and a drillback at any location. These new capabilities would enable the EMND to make a significant contribution to the advancement of nuclear nonproliferation.
CHAPTER 4

CONCLUSIONS

In the short term, the Comprehensive Test Ban Treaty will probably be effective to some degree in preventing or retarding proliferation of nuclear weapons, in that it supports the Nonproliferation Treaty. Many States Parties can be expected to adhere to the provisions of the developing nonproliferation scheme. The monitoring scheme gives every evidence of credibility and many potentially proliferant parties will certainly weigh the costs of having to face sanctions from the United Nations Security Council in response to a nuclear weapons test. However, the first nuclear weapon used in war, a gun-device using uranium as the fissile material, was not tested prior to use. The authorities had every reason to expect that the device would work, given then-available scientific knowledge. Modern design procedures are very much advanced over those available in 1945. For example, many low-cost desktop computers have much more capability than those formerly available only in National Laboratories. Testing is therefore not necessary in the construction and use of a
nuclear weapon; to that degree, the Comprehensive Test Ban Treaty is of no effect in preventing proliferation.

Considering a longer-term perspective, a frightening prospect emerges from an Augustinian assessment of human nature and motivations acting in a Structural Realistic system of nations as described by Waltz and summarized herein. The Comprehensive Test Ban Treaty intends to create inducements for potential proliferant parties to refrain from proliferating. These inducements are public exposure of nuclear weapons testing activities, and potential responses by the United Nations Security Council, including economic sanctions and military action. In Policy Paradox and Political Reason, Deborah Stone provides a relevant treatment of inducements. Stone's model assumes that, first, the target of inducement has control of its own behavior. When confronted with knowledge of a penalty or a reward, the model assumes, the target can adapt to the new circumstances by means of changing its behavior. Second, Stone's model assumes that the target of inducement is a unitary actor. "This means," she writes, "not that the actor is necessarily an individual, but that it is an entity capable of rational behavior" (212). This assumption is similar to that of Morgenthau and other Realistic political scientists who claim that, in international affairs, political actors behave more rationally than in other arenas. Third, Stone's model assumes that the target "has some orientation toward the future." Inducements are effective, she writes,
only to the extent that the target cares about the costs or rewards to be faced in the future and is willing to modify current behavior in order to shape future results. (215)

Stone provides a critique of these assumptions. There are situations wherein the designers of the sanctions have made them so drastic that the sanction givers are themselves reluctant to impose them. Inducements and sanctions lose their credibility in such a situation. Evasion of sanctions is common. Furthermore, she notes,

new inducements simply join a broad array of consequences the target already faces. The designer tends to focus on only the inducements he . . . designs. But for the target, new inducements always fit into a web of reinforcing and crosscutting consequences. (223)

In the international environment relating to nonproliferation, Stone's three criteria are questionable and her critiques are telling. First, a proliferant party may not have control of its own actions. A nation may have fallen under the control of a small group of fanatics who pursue policies at variance with that ordinarily expected. This development is to be expected on occasion, given Augustine's observation in Confessions 10:36 that some persons "desire to be feared . . . simply for the pleasure that it gives." Fearful examples abound. Second, many national actors do indeed approach their affairs in a more or less rational manner, but there is no
guarantee that they would invariably do so. In an Augustinian analysis, it would be expected that on occasion they would not behave rationally. In *Against Faustus* 22:74, Augustine describes "the desire to do harm, cruel vengence, a disposition that remains unappeased and implacable, a savage spirit of rebellion, a lust for domination." This is the ultimate reflection of irrationality. Third, future orientation is common amongst national actors, but that is not always so. Stone's critique is devastating to the notion that inducements and sanctions could be ultimately successful in invariably deterring proliferation. The Security Council has often declined to take military action or to impose sanctions upon parties who richly deserve it. Purposeful proliferants can be expected to evade the provisions of the Comprehensive Test Ban Treaty. Finally, it could be expected, given an Augustinian pessimistic view of human nature, that a proliferant may not care about sanctions resulting from a nuclear weapons test. Such a party would proliferate and test, regardless of the consequences.

From these considerations, the Comprehensive Test Ban Treaty may be expected to have little effect on the acquisition of nuclear weapons by terrorist groups or by nations determined to have them at whatever cost in time, money and effort. Fred Charles Ikle, in a *Foreign Affairs* article entitled "The Second Coming of the Nuclear Age," agrees. "Technologies for these weapons," he writes, "[has begun] to escape meaningful international controls" (126). There is "little
insurance against human folly” (125). Therefore, proliferation by ideology-driven actors in the Middle East will not be halted or even affected very much. Proliferation can be expected in the Far East, including Japan, in response to Chinese weapons development, testing, and American disengagement from East Asia. Kongdan Oh describes a significant potential for “proliferation in Japan and South Korea” (166) which may result from this situation. In that regard, the Comprehensive Test Ban Treaty contributes to a false sense of security.

The United States has made a decision to maintain an inventory of about 3500 nuclear weapons, a goal to be achieved by the turn of the century. (National Academy of Sciences 39). In a dangerous world, that is the only proper policy for prudent national leaders to pursue. Given that decision, complete cessation of nuclear weapons testing is not in the national interest of the United States or of any other declared nuclear weapons state. The Comprehensive Test Ban Treaty can only hinder the further development and testing of the U.S. arsenal and therefore must result in an arsenal of reduced effectiveness, reliability and safety, computer simulations and non-fissile testing notwithstanding.

Any nuclear explosive device spontaneously degrades over time and has a finite shelf life. As one example of the problems encountered, the high-explosive component of implosion-initiated nuclear explosive devices exudes a vapor
which condenses on the weapon's other components, thereby degrading overall performance. Weapons in the active stockpile must be periodically removed for maintenance and refabrication. Testing has heretofore been necessary to ensure that weapons may be relied upon to function properly. A complete test ban renders maintenance and reliability issues problematic.

Persons competent in the design and construction of nuclear weapons have a tendency to enter other challenging fields of work if their skills are not kept current. They thus take their expertise with them, and may not be in a position to make that expertise available in case of a future unspecified need. Jonathan Weisman has pointed out that, in the United States' nuclear weapons laboratories, scientists are continually seeking other challenges. This attitude leads to many of the scientists seeking employment elsewhere in the present moratorium on testing (16). If testing indeed is to be permanently banned, sufficient outlets for these persons' creative talents should be provided and their skills thereby retained.

The U. S. Department of Energy is required to certify that every weapon it produces will work as designed. The question naturally arises as to how to certify weapons in inventory under conditions of a test ban. In the United States, the current opinion is that weapons can be certified in the short
term, using computer simulations, zero-yield experiments, and reliance on data from previous tests. However, in an undefined long term, there is no proven precedent other than that of testing to establish certifiability.

In *The City of God* 14:13, Augustine reminds us that

our first parents fell into open disobedience because already they were secretly corrupted; for the evil act had never been done had not an evil will preceded it. And what is the origin of our evil will but pride? And what is pride but the craving for undue exaltation. And this undue exaltation becomes a kind of end to itself.

Each generation passes such a will to the next. The result, in *The City of God* 14:15, is that “our flesh . . . now torments us by insubordination.” Continuing in *The City of God* 15:4, Augustine describes the human society which necessarily follows. It is

often divided against itself by litigations, wars, quarrels, and such victories as are either life-destroying or short-lived. For each part of [society] that arms itself against another part of it seeks to triumph over the nations though itself in bondage to vice. Peace is purchased by toilsome war

Humankind has already fought one nuclear war. Were Augustine the Realist alive today, he would point out that, given the precedents and despite all efforts to the contrary, in a sufficiently desperate situation, nuclear weapons will be used again.
**LIST OF ACRONYMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CORRTEX</td>
<td>A method of determining the yield of a nuclear weapon by means of analysis of seismic waves generated by the explosion</td>
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<tr>
<td>CTBT</td>
<td>Comprehensive Test Ban Treaty, a pending treaty which would ban all nuclear explosions conducted by the signatory nations</td>
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<tr>
<td>DNA</td>
<td>Defense Nuclear Agency</td>
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<tr>
<td>DoE or DOE</td>
<td>United States Department of Energy, a cabinet-level agency charged with assembly and testing of nuclear weapons</td>
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<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<tr>
<td>INF</td>
<td>Intermediate Range Nuclear Forces Treaty</td>
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<tr>
<td>IDC</td>
<td>International Data Center</td>
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<tr>
<td>LTBT</td>
<td>Limited Test Ban Treaty, a treaty by which the United States and the former Soviet Union agreed to conduct nuclear weapons tests underground, not in the atmosphere, space or oceans</td>
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<tr>
<td>NV or NVO</td>
<td>Nevada Operations Office, U. S. Department of Energy, located in Las Vegas, Nevada. Responsible for operations on the Nevada Test Site</td>
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<tr>
<td>Acronym</td>
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<tr>
<td>NPT</td>
<td>Nonproliferation Treaty, a treaty by which nations agree to refrain from developing nuclear weapons. Originally signed in 1970, renewed in 1995.</td>
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<tr>
<td>NTS</td>
<td>Nevada Test Site, a tract of land of more than 1200 square miles in southern Nevada devoted to nuclear weapons testing, and to other national security activities.</td>
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<tr>
<td>OSIA</td>
<td>On-Site Inspection Agency, the entity of the U.S. Department of Defense which conducts nuclear weapons test site inspections under the provisions of the Threshold Test Ban Treaty.</td>
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<tr>
<td>TTBT</td>
<td>Threshold Test Ban Treaty, a treaty between the United States and the former Soviet Union which limited nuclear weapons tests to 150 kilotons yield, and which provided for bilateral inspections of nuclear weapons testing sites.</td>
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BIBLIOGRAPHY


