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**Nuclear Weapons and Global Secure
Sustainable Development**

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PACTA SUNT SERVANDA: NUCLEAR WEAPONS AND GLOBAL SECURE SUSTAINABLE DEVELOPMENT

*Jonathan Granoff**

The Holy See's Statement at the Vienna Conference on the Humanitarian Consequences of Nuclear Weapons provides ample evidence of the significance of the issues addressed in this article:

World leaders must be reminded that the commitment to disarm embedded in the NPT (Nuclear Nonproliferation Treaty) and other international documents is more than a legal-political detail, it is a moral commitment

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on which the future of the world depends. *Pacta sunt servanda* . . . is a first principle of the international system because it is the foundation on which trust can be built.¹

Pacta Sunt Servanda is Latin for “Agreements Must Be Kept.” This maxim is one of the most ancient foundations of law itself.² It is inextricably connected to good faith.³ Without it, the tools of law—words and agreements—become empty and entire social edifices collapse.⁴ Nations cannot work together nor commerce flourish without confidence in the integrity of promises. International stability and development at every level of society, including addressing poverty, depend on this principle.

In *The Road to Dignity by 2030: Ending Poverty, Transforming All Lives and Protecting the Planet*, a Synthesis report of the Secretary-General on the Post-2015 Sustainable Development Agenda, as part of the follow up to the UN Millennium Summit, the “Rule of Law” is extolled as a necessary element for development eight times.⁵ Section 78 states explicitly, “[T]he rule of law must be strengthened at the national and international level to secure justice for all.”⁶ Similarly, in the *Report of the Open Working Group of the General Assembly on Sustainable Development Goals*, there are numerous references to the importance of the Rule of Law.⁷ For example, Paragraph 12 of the Introduction states explicitly: “Good governance and the rule of law at the national and international levels are essential for sustained, inclusive and equitable economic growth, sustainable development and the eradication of poverty and hunger.”⁸

If good faith efforts to fulfill promises and obligations are not part of a culture, then the Rule of Law will never gain traction. Without the culture, words become empty shells; raw power rules. The most powerful must set an example. We live in an age where local cultures are dramatically impacted by world culture. World culture is led by the most powerful. Only when those empowered to choose to obey the law demonstrate commitment to obeying it does it become publicly apparent that the value of the Rule of Law is precious.⁹ When the powerful flaunt their legal obligations—when their promises are not treated as binding them—infusing the Rule of Law at the most local level becomes problematic.

Ending poverty requires promotion of the Rule of Law, just as global security requires the Rule of Law. This article will highlight one very specific yet important area where greater public advocacy by all institutions and individuals concerned with ending poverty, protecting the climate, and living in a peaceful world should be concerned. Promises made regarding nuclear weapons must be kept.

When confidence in the promises of the most powerful promises wanes, the integrity of international order itself is compromised. The

effective addressing of numerous specific issues, which require law and cooperation, becomes shadowed by uncertainty and lack of trust, and the consequential diminution of political will. When promises addressing the most existential threat to the very survival of humanity itself are ignored, not followed in good faith, or even addressed without engendering confidence in the sufficiency of commitments to fulfill obligations, how can the nations of the world expect to rely on promises relating to issues of lesser consequence?

The state with the most power and influence, the United States, sets an example. The world today is faced with a set of issues with global impact that require new levels of cooperation and trust to be adequately addressed. These issues include protecting the climate, oceans, and rainforests; eliminating poverty; controlling pandemic diseases; fighting terrorism; ensuring stable financial markets; and integrating cyber security. Without coherence in meeting the most salient challenge, how will there be appropriate cooperation in the others?

I. SIGNIFICANCE OF NUCLEAR WEAPONS

Nuclear weapons pose a unique existential threat to human survival. There are only nine states with nuclear arsenals: The United States and Russia, which together possess over 95% of the world's nuclear weapons, as well as the United Kingdom, France, China, India, Pakistan, Israel, and North Korea. Recent studies indicate that an exchange of less than 1% of the over 16,000 weapons in today's arsenals would discharge sufficient atmospheric debris to degrade agriculture at an unprecedented scale, causing billions of deaths from famine.¹⁰ Could civilization survive such a catastrophe?

The United States Atomic Energy Commission has explained how thermonuclear weapons differ qualitatively from conventional weapons:

[I]t differs from other bombs in three important respects: first, the amount of energy released by an atomic bomb is a thousand or more times as great as that produced by most powerful TNT bombs; second, the explosion of the bomb is accompanied by highly-penetrating, and deleterious, invisible rays, in addition to intense heat and light; and third, the substances which remain after the explosion are radioactive, emitting radiations capable of producing harmful consequences in living organisms.¹¹

Environmentalists usually, but not always, ignore the obvious. The World Commission on the Environment and Development stated bluntly:

The likely consequences of nuclear war make other threats to the environment pale into insignificance. Nuclear weapons represent a qualitatively new step in the development of warfare. One thermo-nuclear

bomb can have an explosive power greater than all the explosives used in wars since the invention of gunpowder. In addition to the destructive effects of blast and heat, immensely magnified by these weapons, they introduce a new lethal agent—ionizing radiation—that extends lethal effects over both space and time.¹²

General Lee Butler, ex-Commander of the Strategic Air Command of the United States, expressed “a growing alarm that despite all of the evidence, we have yet to fully grasp the monstrous effects of these weapons, that the consequences of their use defy reason, transcending time and space, poisoning the earth and deforming its inhabitants.”¹³ His personal testimony should no longer be ignored:

Over the last 27 years of my military career, I was embroiled in every aspect of American nuclear policy making and force structuring, from the highest councils of government to nuclear command centers; from the arms control arena to cramped bomber cockpits and the confines of ballistic missile silos and submarines. I have spent years studying nuclear weapons effects; inspected dozens of operational units; certified hundreds of crews for their nuclear mission; and approved thousands of targets for nuclear destruction. I have investigated a distressing array of accidents and incidents involving strategic weapons and forces. . . . As an advisor to the President on the employment of nuclear weapons, I have anguished over the imponderable complexities, the profound moral dilemmas, and the mind-numbing compression of decision making under threat of nuclear attack. I came away from that experience deeply troubled by what I see as the burden of building and maintaining nuclear arsenals; the increasingly tangled web of policy and strategy as the number of weapons and delivery systems multiply; the staggering costs; the relentless pressure of advancing technology; the grotesquely destructive war plans; the daily operational risks; and the constant prospect of a crisis that would hold the fate of entire societies at risk.¹⁴

II. COMMITMENTS MUST BE KEPT

General Butler’s concern is amplified by eyewitness testimony from Hiroshima.¹⁵ The extensive evidence presented on the unacceptable humanitarian consequences of nuclear weapons at recent conferences hosted by Norway, Mexico and Austria,¹⁶ along with the numerous human and computer errors that brought the world to the edge of catastrophe, highlight the daily risk under which we live.¹⁷ This evidence underscores why nuclear weapon states have made many commitments to rid the world of these horrific devices. John Burroughs, Executive Director of Lawyers Committee on Nuclear Policy, has set forth the most salient in recent remarks at an international conference in Chile, *Were Nuclear Weapons*

*Born Illegal?*¹⁸ However, the commitments of some nuclear states (including the U.S.), made in the most solemn of forums, remain substantively outside the realm of public debate and political discourse; they remain dramatically overshadowed by persistent concerns regarding the proliferation of the weapons to distrusted states. With the exception of the laudable achievement of substantial quantitative cuts in the nuclear arsenals of the United States and Russia under the START Treaties,¹⁹ commitments to obtain universal nuclear disarmament remain largely unfulfilled—confidence in such promises is endangered.²⁰

A. *Background of Commitments*

In the United States Constitution, the Supremacy Clause states that treaties are the “supreme Law of the Land,”²¹ so their significance should not be underestimated. Despite the legal status of treaties, adjudicative enforcement of their terms can be deferred to the political branches of government, primarily the executive branch based on a separation of powers theory: “A treaty is, of course, ‘primarily a compact between independent nations. . . . [Thus, it] depends for the enforcement of its provisions on the interest and the honor of the governments which are parties to it.’”²² Thus, when the Marshall Island brought suit in U.S. District Court demanding specific performance of Nuclear Nonproliferation Treaty obligations to pursue negotiations to obtain nuclear disarmament, the Court dismissed the claim on jurisdictional grounds. The Court found the complaint to raise fundamentally non-justiciable political questions constitutionally committed to the Executive Branch based on Article II, Section 2, of the Constitution.²³

It is dishonorable for the United States’ to fail in demonstrating the gravity of keeping promises relating to the existential survival of civilization in the form of a solemn treaty such as the Nuclear Non-Proliferation Treaty. Promoting international peace and security through the Rule of Law is inarguably in its interest. But more fundamentally, ending the threat posed by nuclear weapons is in its *supreme* interest. Recognizing this truth dates back many decades.²⁴

The Cuban Missile Crisis raised awareness of the dangers of nuclear weapons—in both corridors of power in the Soviet Union and United States. Negotiations to address the threat resulted in the Nuclear Non-Proliferation Treaty (NPT), wherein the U.S., Russia, the UK, China, and France are listed as the only States within the Treaty’s definition as “nuclear-weapon” States.²⁵ The Treaty entered into force March 5, 1970. It was ratified by a Senate vote of 83-15 on March 3, 1969. President Richard

Nixon signed the ratification documents for the Treaty in November, 1969. It is the Supreme Law of the Land. Thomas Graham, Jr., who led the U.S. negotiating team at the 1995 Review and Extension Conference of the NPT, states:

In exchange for a commitment from the nonnuclear weapon states (today, some 182 nations) not to develop or otherwise acquire nuclear weapons and to submit to international safeguards intended to verify compliance with the commitment (Article 2), the NPT nuclear weapon states promised unfettered access to peaceful nuclear technologies (e.g. nuclear power reactors and nuclear medicine; Article 4), and pledged to engage in disarmament negotiations aimed at the ultimate elimination of their nuclear arsenals (Article 6).²⁶

The disarmament portion of the bargain is embodied in Article VI of the NPT, which states, in its entirety, as follows:

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.²⁷

This is not precatory language, but operative duties requiring good faith compliance. Good faith duties are based in objective reasonableness.²⁸ Good faith estops a bound party from acting inconsistently with its commitments.²⁹

The International Court of Justice (ICJ) has interpreted the NPT unanimously concluding that “[t]here exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.”³⁰

The ICJ explicitly stated that Article VI entails “an obligation to achieve a precise result—nuclear disarmament in all its aspects—by adopting a particular course of conduct, namely, the pursuit of negotiations on the matter in good faith.”³¹ This is a duty that compels results. This advisory opinion from the ICJ goes beyond mere conduct *viz-a-viz* good faith negotiations, but specifically articulates an “obligation to pursue and to conclude negotiations.”³² The ICJ said that “fulfilling the obligation expressed in Article VI. . . remains without any doubt an objective of vital importance to the whole of the international community today.”³³ Article VI is the “only treaty provision in which the nuclear-weapon States (NWS) have undertaken a legal obligation to negotiate disarmament agreements.”³⁴ This Article could be considered “the single most important provision of the treaty. . . from the standpoint of long-term success or failure of the goal of proliferation prevention.”³⁵

B. Duty to Fulfill One's Obligations

The duty to fulfill Article VI, as stated by the ICJ advisory opinion, has been largely ignored by the nuclear weapon states,³⁶ yet they have pledged specific ways of fulfilling the duty in review conferences of the Treaty. Some background information is needed to understand this nuance.

During the negotiation process that eventually created the NPT, several prominent non-nuclear weapons states (NNWS), including Germany, Italy, and Sweden, refused to allow the Treaty to become permanent. Instead, these NNWS ensured that Article X of the Treaty would be reviewed after twenty-five years, and at that time the Treaty would either be extended for a fixed period, indefinitely extended, or terminated. The Treaty was entered into force in 1970, while its Review and Extension Conference occurred in 1995. Many NNWS were extremely dissatisfied with the progress on NWS disarmament. The NNWS bargained and made it clear they rejected the notion that the inequity of a dual, global system of nuclear haves and have-nots should continue indefinitely. Instead, they negotiated a Statement of Principles and Objectives for Nuclear Nonproliferation and Disarmament, which “politically if not legally, condition[ed] the extension of the [T]reaty.”³⁷ The Statement pledged to accomplish changes, including: (1) completing a Comprehensive Test Ban Treaty (CTBT) by the end of 1996; (2) reaffirming the commitment to pursue nuclear disarmament; and (3) commencing negotiations for a treaty to stop production of nuclear bomb materials.³⁸

The bargain to extend the NPT essentially articulated a good faith manner in which the disarmament duties could be fulfilled. The extended NPT centered on a strengthened review process with almost annual preparatory conferences and a rigorous review every five years.³⁹ Five years later in 2000 at the first Review Conference, all 187 States parties to the Treaty agreed on thirteen practical steps aimed at advancing the commitment to lower the salience of nuclear weapons in policies, reinforcing nonproliferation measures, and moving toward the elimination of nuclear weapons.⁴⁰ Pursuant to the standards of duty interpretation under treaties as set forth in the Vienna Convention on Treaties, fulfillment of these steps would indicate good faith compliance with Article VI disarmament duties of the NPT; a failure to do so brings into serious question good faith compliance.

C. Further Affirmation of Commitments

The NPT Review Conference of 2005 produced no new disarmament commitments and was considered a setback for arms control,

nonproliferation, and disarmament by experts.⁴¹ At the successful 2010 NPT Review Conference,⁴² an “action plan” was adopted that included twenty-two further concrete disarmament actions after reaffirming the commitments of 2000.⁴³ It clearly stated that a world free of nuclear weapons is the primary goal of nuclear disarmament.⁴⁴ It is noteworthy that all the States parties to the NPT, which is—every nation in the world except India, North Korea, Israel, and Pakistan, also agreed to convene a conference to advance the achievement of a Middle East free of weapons of mass destruction.⁴⁵ This commitment, like many others, remains unfulfilled. These commitments, specific and measurable, from 2000 and 2010, have not been substantially achieved; they would require changes in doctrine, policy, and implementation by the nuclear weapon states. As stated by the well-respected Austrian diplomat, Alexander Kmentt:

These changes have been promised in successive NPT review conferences, but have not happened and do not appear to be being pursued with determination. The continued reliance by nuclear-weapon states on nuclear weapons until an unspecified point in the future is seen as contradictory to the spirit and letter of agreed nuclear disarmament commitments and obligations.⁴⁶

In addition to the nuclear disarmament commitment under Article VI of the NPT and the numerous unfulfilled specific commitments made at the Review Conferences, we cannot ignore the dictates of International Humanitarian Law regarding nuclear weapons. In fact, the state parties to the NPT specifically acknowledged that this body of law applies to nuclear weapons.⁴⁷

III. INTERNATIONAL HUMANITARIAN LAW⁴⁸

The ICJ, when addressing the legality of the use or threat of use of nuclear weapons, unequivocally stated that the rules of armed conflict, including humanitarian law, prohibit the use of any weapon that is: likely to cause unnecessary suffering to combatants; incapable of distinguishing between civilian and military targets; violates principles protecting neutral states (e.g., through fall-out or nuclear winter); not a proportional response to an attack; or that does permanent damage to the environment. Under no circumstance may states make civilians the object of attack, nor can they use weapons that are incapable of distinguishing between civilian and military targets. These limitations continue to hold regardless of whether the survival of a state acting in self defense is at stake. For this reason, ICJ President Bedjaoui stated in forceful terms that the Court’s inability to go beyond its statement “can in no way be interpreted to mean that it is leaving

the door ajar to the recognition of the legality of the threat or use of nuclear weapons.”⁴⁹ He emphasized his point by stating that nuclear weapons are “the ultimate evil and destabilize humanitarian law[,] which is the law of the lesser evil. The very existence of nuclear weapons is therefore a major challenge to the existence of humanitarian law. . . .”⁵⁰

Judge Weeramantry,⁵¹ in a dissenting opinion, posed some questions about the dictates of public conscience and the consequences of using of nuclear weapons. The following is a list of his questions:

1. *Is it lawful for the purposes of war to induce cancers, keloid growths or leukemias in large numbers of the enemy population?*
2. *Is it lawful for the purposes of war to inflict congenital deformities and mental retardation on unborn children of the enemy population?*
3. *Is it lawful for the purposes of war to poison the food supplies of the enemy population?*
4. *Is it lawful for the purposes of war to inflict any of the above types of damage on the population of countries that have nothing to do with the quarrel leading to the nuclear war?*⁵²

Although the Court could not rule that under every circumstance the use or threat of use of a nuclear weapon is illegal—especially if a state’s very survival is at stake—the Court affirmed the overarching International Humanitarian Law (IHL) duty, stating in relevant part:

A threat or use of nuclear weapons should also be compatible with the requirements of the international law applicable in armed conflict, particularly those of the principles and rules of international humanitarian law, as well as with specific obligations under treaties and other undertakings which expressly deal with nuclear weapons; It follows from the above-mentioned requirements that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law.⁵³

IV. COOPERATION AND RULE OF LAW GLOBAL CHALLENGES

Nuclear weapons, much like the planet’s climate stability, pose an existential threat to humanity. Both require cooperation and the Rule of Law to be adequately addressed. Thus, trust in the keeping of promises is imperative. It is important to grasp the full extent of these threats in an empirical manner.

If the public knew simple facts about nuclear weapons, policies would likely change.⁵⁴ If just one, solitary detonation of a 10-kiloton bomb (half the size of the bomb dropped on Nagasaki; or the size of the largest bomb tested by North Korea to date) over the air of one, solitary U.S. city, the

devastation would be horrific.⁵⁵ By comparison, if a 5-megaton nuclear weapon—the size of a warhead currently deployed on China’s intercontinental ballistic missiles—were exploded over an urban population, it would surpass imagination.⁵⁶ Admiral Stansfield Turner, former Director of the United States Central Intelligence Agency, illustrated the effects of a nuclear explosion:

The fireball created by a nuclear explosion will be much hotter than the surface of the sun . . . and it will be hundreds or thousands of times brighter than the sun at noon. If the fireball is created by the detonation of a 1-MT [megaton] nuclear weapon, for example, within roughly eight- to nine-tenths of a second each section of its surface will be radiating about three times as much heat and light as a comparable area of the sun itself This flash of incredibly intense, nuclear driven sunlight could simultaneously set an uncountable number of fires over an area of close to 100 square miles.⁵⁷

But the most surprising effect of a detonated nuclear bomb is not the blast itself. As stated in a U.S. National Academy of Sciences study, “the primary mechanisms for human fatalities would likely not be from blast effects, not from thermal radiation burns [sic], and not from ionizing radiation, but, rather, from mass starvation.”⁵⁸ Nuclear weapons destruction of agricultural production can no longer be ignored.⁵⁹ For example, China would rapidly be unable to feed its population even if it was not a party to the nuclear exchange.⁶⁰

Threats posed by a failure to cooperate and utilize the Rule of Law in dealing with climate protection similarly challenge our capacity to grasp the consequences of failure. Sea levels are expected to rise between seven and twenty-three inches (eighteen and fifty-nine centimeters) by the end of the century, and continued melting at the poles could add between four and eight inches (ten to twenty centimeters).⁶¹ The pH of seawater has remained steady for millions of years. Before the industrial era began, the average pH at the ocean surface was 8.2. Today it is about 8.1. Emissions could reduce surface pH by another 0.4 units in this century and by as much as 0.7 units beyond 2100. We are hurtling toward an ocean different than the earth has known for more than 25 million years. Marine animals will find it harder to build skeletons, construct reefs, or simply to grow and breathe.⁶² Floods and droughts will become more common. Rainfall in Ethiopia, where droughts are already common, could decline by ten percent over the next fifty years.⁶³

Climate change will also wreak havoc in other ways. Some scientists believe that the concurrence of deforestation, climate change, and land-use changes will result in a dire scenario in which current trends in livestock,

agriculture, logging expansion, fire and drought could destroy or severely damage 55% of the Amazon rainforest by 2030.⁶⁴ Without the health of Earth's "lungs," as the rainforests are regarded, we lose critical ability to absorb carbon dioxide, thereby expediting the rate of climate change moreover. Additionally, hurricanes and other storms are likely to become stronger,⁶⁵ and more diseases will spread (e.g. malaria carried by mosquitoes).⁶⁶ These two challenges cannot be ignored—they share the requirement of heightened levels of trust and confidence amongst nations in the fulfillment of commitments, especially those made in treaties.

V. CONCLUSION: ALWAYS RETURN TO GOOD FAITH

In light of these threats, let us review duties relating the standard upon which trust is based—good faith—as set forth in The Restatement of Law of Contracts:

Good faith performance or enforcement of a contract emphasizes faithfulness to an agreed common purpose and consistency with the justified expectations of the other party; it excludes a variety of types of conduct characterized as involving "bad faith" because they violate community standards of decency, fairness or reasonableness. . . . A complete catalogue of types of bad faith is impossible, but the following types are among those which have been recognized in judicial decisions: evasion of the spirit of the bargain, lack of diligence and slacking off, willful rendering of imperfect performance, abuse of a power to specify terms, and interference with or failure to cooperate in the other party's performance.⁶⁷

Despite these legal obligations and the commitment by U.S. Presidents,⁶⁸ a *New York Times* article by William J. Broad and David E. Sanger revealed that the United States plans to spend between \$900 billion and \$1.1 trillion to "modernize" its nuclear arsenal.⁶⁹ This indicates no long-term plan to achieve nuclear disarmament and will dramatically diminish confidence in promises to achieve what President Obama called the "peace and security of a world without nuclear weapons."⁷⁰ But most tragically, it will also stimulate similar conduct inimical to progress in fulfillment of Article VI, disarmament obligations by other nuclear weapon states.

Such actions in the geopolitical realm have enormous impact across the entire range of issues that require global cooperation. The World Economic Forum has identified such geopolitical relations as having an adverse effect on progress on key issues in the global development agenda.⁷¹ "A serious breakthrough in the environmental negotiations requires trust because countries have to do something together at a cost," World Economic Forum

managing director Espen Barth Eide stated, adding that “[g]eostrategic competition takes away that trust.”⁷²

Presently, we have a serious need for global cooperation to address core development issues. To accomplish these goals, trust, cooperation, and the Rule of Law are required. This requires the keeping of promises.

The promise to pursue a world without nuclear weapons has been made. Fulfillment of this promise by negotiating a legal instrument has been advised by the ICJ. Fulfillment of this promise by specific practical steps has been agreed under the NPT. Yet, neither substantial fulfillment of the specific steps nor commencing negotiations on elimination have been accomplished. Thus, the world is faced with a very serious problem.

We have focused on the United States in this article, but it must be emphasized that every state with nuclear weapons is presently either modernizing or expanding their arsenals, or doing both in contravention of the obligation to work toward elimination. Lawyers have a duty to use their skills to analyze legal obligations and advocate for their fulfillment. Bankers have an obligation to ensure a sustainable and just economic order. But as global citizens, we all have a duty to press our governments to answer this question:

Given that over 130 nations in the United Nations have called for commencing negotiations on a treaty eliminating nuclear weapons;⁷³ given that good faith compliance with promises is a duty we all recognize and that nuclear weapons pose an enormous threat to trust and cooperation needed in so many areas; and given that negotiating a legal instrument or instruments that lower the political value of these horrific devices, leading to their universal, legal, verifiable, and enforceable elimination will take time and enormous effort, *is it not the time now* to commence the process of negotiating for a safer, saner world?

1. The Holy See, Nuclear Disarmament: Time for Abolition 5 (2014).

2. Black’s Law Dictionary 1282 (10th ed. 2014); Hans Wehberg, *Pacta Sunt Servanda*, 53 AM. J. INT’L L. 775, 780 (1959).

3. Vienna Convention on the Law of Treaties pmb., opened for signature May 23, 1969, 1155 U.N.T.S. 331 (“good faith and the *pacta sunt servanda* rule are universally recognized . . .”).

4. HUGO GROTIUS, THE RIGHTS OF WAR AND PEACE 417 (Rev. A.C. Campbell, trans., 1901) (1625) (“For good faith, in the language of Cicero, is not only the principal hold by which all governments are bound together, but is the key-stone by which the larger society of nations is united. Destroy this, says Aristotle, and you destroy the intercourse of mankind.”).

5. See U.N. Secretary-General, *The Road to Dignity by 2030: Ending Poverty, Transforming All Lives and Protecting the Planet: Synthesis Rep. of the Secretary-General on the Post-2015 Sustainable Development Agenda*, ¶¶ 3, 10, 23, 42, 49, 52, 78, 91, U.N. Doc. A/69/700 (Dec. 4, 2014).

6. *Id.* ¶ 78.

7. See Report of the Open Working Group of the General Assembly on Sustainable Development Goals, in letter dated Aug. 1, 2014 from the Permanent Representatives of Hungary and Kenya to the United Nations addressed to the President of the General Assembly, § III, ¶10, § IV, ¶¶ 7, 12, U.N. Doc. A/68/970 (Aug. 12, 2014).

8. *Id.* ¶ 12 (emphasis added).

9. Hugo Grotius highlights this responsibility of the powerful: “[a]nd this, the supreme rules of mankind ought to be more careful of preserving, in proportion as they have more impunity for their violations of it; so that if faith be taken away, they will be like wild beasts, whose strength in an object of horror. . . . And therefore it is especially the office of kings, to cherish good faith; first, for the sake of conscience, and then, for the sake of good opinion, by the authority of the kingdom stands.” HUGO GROTIUS & WILLIAM WHEWELL, GROTIUS ON THE RIGHTS OF WAR AND PEACE: AN ABRIDGED TRANSLATION 452 (The Lawbook Exchange 2009) (1853).

10. See Alan Robock et al., *Nuclear Winter Revisited with a Modern Climate Model and Current Nuclear Arsenals: Still Catastrophic Consequences*, 112 J. GEOPHYSICAL RES.: ATMOSPHERES 8235 (2007).

11. LOS ALAMOS SCIENTIFIC LAB., THE EFFECTS OF ATOMIC WEAPONS 1 (1950).

12. U.N. Secretary-General, *Rep. of the World Commission on Environment and Development: Note by the Secretary-General*, ¶ 18, U.N. Doc. A/42/427 (Aug. 4, 1987).

13. General Lee Butler, Ex-Commander of the Strategic Air Command, Remarks at the National Press Club Luncheon (Dec. 4, 1996).

14. *Id.*

15. I am personally moved by the eyewitness testimonies from the relatively small bombs dropped on Hiroshima. As an example: “A young medical worker described the aftermath of the bombing in the following manner: ‘I looked around me. Even though it was morning, the sky was dark as twilight. Then I saw streams of human beings shuffling away from the center of the city. Parts of their bodies were missing. Their eyes had been liquefied. They had blackened skin, and strips of flesh hung like ribbons from their bones. There was an awful stench in the air; the stench of burned flesh. I can’t describe that smell, but it was like broiled fish.’” VED P. NANDA & DAVID KRIEGER, NUCLEAR WEAPONS AND THE WORLD COURT 37 (1998) (quoting Hiroshima survivor, Setsuko Thurlow).

16. See Humanitarian Impact of Nuclear Weapons, Oslo, Norway, Mar. 4-5, 2013, *Immediate Humanitarian Impact of a Nuclear Weapon Detonation*; Second Conference on the Humanitarian Impact of Nuclear Weapons, Nayarit, Mexico, Feb. 12-14, 2014, *The Impact of a Nuclear Weapon Detonation on Global Public Health*; Vienna Conference on the Humanitarian Impact of Nuclear Weapons, Vienna, Austria, Dec. 8-9, 2014, *A “Bird’s-Eye View” on International Norms and the Humanitarian Impact of Nuclear Weapons*.

17. As General Butler so eloquently stated in a speech before the Canadian network against nuclear weapons, “Missiles that blew up in their silos and ejected their nuclear warheads outside of the confines of the silo. B52 aircraft that collided with tankers and scattered nuclear weapons across the coast and into the offshore seas of Spain. A B52 bomber with nuclear weapons aboard that crashed in North Carolina, and on investigation it was discovered that one of those weapons, six of the seven safety devices that prevent a nuclear explosion had failed as a result of the crash. There are dozens of such incidents. Nuclear missile-laden submarines that experienced catastrophic accidents and now lie at the bottom of the ocean.” General Lee Butler, Ex-Commander of the Strategic Air Command, Address at the Canadian Network Against Nuclear Weapons (Mar. 11, 1999); see Jonathan Granoff, *The Process of Zero*, WORLD POL’Y J., Winter 2009/2010, at 85, 86; ERIC SCHLOSSER, COMMAND AND CONTROL: NUCLEAR WEAPONS, THE DAMASCUS ACCIDENT, AND THE ILLUSION OF SAFETY 480 (2013); see also Nick Ritchie, Briefing Paper, *Nuclear Risk: The British Case*, 2014 ARTICLE36, at 3; PATRICIA LEWIS ET AL., CHATHAM HOUSE, TOO CLOSE FOR COMFORT: CASES OF NEAR NUCLEAR USE AND OPTIONS FOR

POLICY (Apr. 2014); *Risk Drivers: Miscalculation and Miscommunication Factsheet*, ATOMIC REPORTERS (Nov. 2014), <https://www.dotatomicreportersdotcom.files.wordpress.com/2014/12/factsheet5ar01122014.pdf>.

18. John Burroughs, Exec. Dir. of the Lawyers Comm. on Nuclear Policy, Address at International Seminar “Roads to Nuclear Disarmament: a Case of Convergence in Diversity,” Santiago, Chile, Jan. 8-9, 2014.

19. *E.g.*, Treaty Between the United States of America and the Union of the Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms, U.S.- U.S.S.R., July 31, 1991, S. TREATY DOC. NO. 102-20 (referenced as START I).

20. There are several scorecards on fulfillment of disarmament commitments. *See, e.g.*, GARETH EVANS ET AL., CTR. FOR NUCLEAR NON-PROLIFERATION & DISARMAMENT, NUCLEAR WEAPONS: THE STATE OF PLAY (2015). For a country-specific analyses, see JOHN AINSLIE ET AL., WOMEN’S INT’L LEAGUE FOR PEACE & FREEDOM, ASSURING DESTRUCTION FOREVER: NUCLEAR WEAPON MODERNIZATION AROUND THE WORLD (Ray Acheson ed., 2012). The Republic of the Marshall islands has recently sued the United States for breach of its obligations under the Nuclear Non-Proliferation Treaty. Complaint for Breach of the Treaty on the Non-Proliferation of Nuclear Weapons at 1, Republic of the Marshall Islands v. United States, No. 14 Civ. 01885, 2015 WL 457861 (N.D. Cal. Feb. 3, 2015). *But see* Bureau of Int’l Sec. & Nonproliferation, *Myths and Facts Regarding the Nuclear-Proliferation Treaty and Regime*, U.S. DEPARTMENT ST. (Apr. 14, 2014), <http://www.state.gov/t/isn/rls/fs/2015/240650.htm>.

21. U.S. CONST. art. VI, cl. 2.

22. *Medellin v. Texas*, 552 U.S. 491, 505 (2008) (quoting *Edye v. Robertson* 112 U.S. 580, 598 (1884)); Carlos Manuel Vázquez, *Treaties as Law of the Land: The Supremacy Clause and the Judicial Enforcement of Treaties*, 122 HARV. L. REV. 599, 604 (2008).

23. *Republic of the Marshall Islands*, 2015 WL 457861, at *4 (quoting *Earth Island Inst. v. Christopher*, 6 F.3d 648, 652 (9th Cir. 1993)).

24. As President Kennedy said when addressing the General Assembly of the United Nations September 25, 1961, “Today, every inhabitant of this planet must contemplate the day when this planet may no longer be habitable. Every man, woman and child lives under a nuclear sword of Damocles, hanging by the slenderest of threads, capable of being cut at any moment by accident or miscalculation or by madness. The weapons of war must be abolished before they abolish us. Men no longer debate whether armaments are a symptom or a cause of tension. The mere existence of modern weapons—ten million times more powerful than any that the world has ever seen, and only minutes away from any target on earth—is a source of horror, and discord and distrust. Men no longer maintain that disarmament must await the settlement of all disputes—for disarmament must be a part of any permanent settlement. And men may no longer pretend that the quest for disarmament is a sign of weakness—for in a spiraling arms race, a nation’s security may well be shrinking even as its arms increase.” John F. Kennedy, Address in New York City Before the General Assembly of the United Nations (Sept. 25, 1961), in 1 PUBLIC PAPERS OF THE PRESIDENTS OF THE UNITED STATES: JOHN F. KENNEDY, 1961, at 620 (1962).

25. Article IX of the NPT provides, “For purposes for this Treaty, a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other explosive device prior to 1 January, 1967.” Treaty on the Non-Proliferation of Nuclear Weapons art. IX, *opened for signature* July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161.

26. AMBASSADOR THOMAS GRAHAM JR., COMMONSENSE ON WEAPONS OF MASS DESTRUCTION 52 (2004).

27. Treaty on the Non-Proliferation of Nuclear Weapons, *supra* note 25, 21 U.S.T. at 490, 729 U.N.T.S. at 173.

28. LORI FISLER DAMROSCH & SEAN D. MURPHY, INTERNATIONAL LAW: CASES AND MATERIALS 1293 (6th ed. 2014).

29. *See id.* at 161-62.

30. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶ 105(2)(F) (July 8).

31. *Id.* ¶ 99.

32. *Id.* ¶ 100.

33. *Id.* ¶ 103.

34. Miguel Marin Bosch, The Non-Proliferation Treaty and its Future, in *INTERNATIONAL LAW, THE INTERNATIONAL COURT OF JUSTICE AND NUCLEAR WEAPONS* 375, 388 (Laurence Boisson de Chazournes & Philippe Sands eds., 1999).

35. Edwin Brown Firmage, *The Treaty on the Non-Proliferation of Nuclear Weapons*, 63 AM. J. INT'L L. 711, 732 (1969).

36. The Marshall Islands filed suit in the International Court of Justice against the nine states with nuclear weapons—India, Pakistan, Israel, North Korea, the United States, Russia, China, France and the UK—requesting a declaratory judgment of breach of obligations relating to nuclear disarmament and an order to take, within one year of the judgment, all steps necessary to comply with those obligations, including the pursuit, by initiation if necessary, of negotiations in good faith aimed at the conclusion of a convention on nuclear disarmament in all its aspects under strict and effective international control. *The Marshall Islands' Nuclear Zero Cases in the International Court of Justice*, LAW COMMITTEE ON NUCLEAR POL'Y, <http://www.lcnp.org/RMI/index.html> (last visited Mar. 13, 2015). The claims are for: breach of the obligation to pursue in good faith negotiations leading to nuclear disarmament by refusing to commence multilateral negotiations to that end, and/or by implementing policies contrary to the objective of nuclear disarmament; breach of the obligation to pursue negotiations in good faith on cessation of the nuclear arms race at an early date; failure to perform the above obligations in good faith by planning to retain nuclear forces for decades into the future; failure to perform obligations relating to nuclear disarmament and cessation of the nuclear arms race in good faith by effectively preventing the great majority of non-nuclear weapon states from fulfilling their part of those obligations. *E.g.*, Application Instituting Proceedings Against the United Kingdom (Marsh. Is. v. U.K.), 2014 I.C.J. 3, ¶ 99-113 (Apr. 24, 2014); Application Instituting Proceedings Against Pakistan (Marsh. Is. v. Pak.), 2014 I.C.J. 3, ¶ 51-59 (Apr. 24, 2014); Application Instituting Proceedings Against the Republic of India (Marsh. Is. v. India), 2014 I.C.J. 3, ¶ 57-64 (Apr. 24, 2014). For the NPT nuclear-weapon states (the U.S., UK, France, Russia, and China), the claims are made under both the NPT and customary international law. Press Release, ICJ, The Republic of the Marshall Islands Files Applications Against Nine States for Their Alleged Failure to Fulfill Their Obligations with Respect to the Cessation of the Nuclear Arms Race at an Early Date and to Nuclear Disarmament (Apr. 25, 2014), <http://www.icj-cij.org/presscom/files/0/18300.pdf>.

37. GRAHAM JR., *supra* note 26, at 53.

38. *Id.* at 54. In addition, the Statement pledged the following changes: (4) sharply reducing global nuclear arsenals; (5) encouraging the creation of nuclear-weapon-free zones; (6) vigorously working to make the treaty universal by bringing in Israel, Pakistan, and India—nations with nuclear weapons that remain outside the treaty; (7) enhancing International Atomic Energy Agency (IAEA) safeguards and verification capacity; and (8) reinforcing negative security assurances already given to NNWS against the use or threat of use of nuclear weapons against them. *Id.*

39. 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Apr. 17-May 12, 1995, *Final Document Part I: Organization and Work of the Conference*, NPT/CONF.1995/32 (Part I) (this process will strengthen and ensure the success of “[t]he determined pursuit by the nuclear-weapon States of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goals of eliminating those weapons . . .”).

40. *Weapons of Mass Destruction—Current Nuclear Proliferation Challenges: Hearing Before the Subcomm. on Nat'l Sec., Emerging Threats, & Int'l Relations of the H.R. Comm. on*

Gov't Reform, 109th Cong. 177-78 (2006). The State Parties to the NPT at the 2000 Review Conference unanimously agreed on the following:

(1) Signing the CTBT: The importance and urgency of signatures and ratifications, without delay and conditions, and in accordance with constitutional processes to achieve the early entry into force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT);

(2) Stopping Testing: A moratorium on nuclear weapon-test explosions or any other nuclear explosions pending entry into force of the CTBT;

(3) Fissile Material Cut Off Treaty: The necessity of negotiations in the Conference on Disarmament on a non-discriminatory, multilateral, and internationally and effectively verifiable treaty that bans the production of fissile material for nuclear weapons or other nuclear explosive devices. The Conference on Disarmament is urged to agree on a program of work that includes the immediate commencement of negotiations on such a treaty with a view to their conclusion within five years;

(4) Negotiations on Nuclear Disarmament: The necessity of establishing in the Conference on Disarmament an appropriate subsidiary body with a mandate to deal with nuclear disarmament. The Conference on Disarmament is urged to agree on a program of work that includes the immediate establishment of such a body;

(5) Irreversibility: The principle of irreversibility to apply to nuclear disarmament and nuclear and other related arms control and reduction measures;

(6) Commitment to Progress on Elimination: An unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States Parties are committed under Article VI;

(7) Upholding Existing Treaties: The early entry into force and full implementation of Strategic Arms Reduction Treaty (START) II and the conclusion of START III as soon as possible, all while preserving and strengthening the ABM Treaty as a cornerstone of strategic stability and as a basis for further reductions of strategic offensive weapons in accordance with its provisions;

(8) Implementing Existing Treaties: The completion and implementation of the Trilateral Initiative between the United States, the Russian Federation, and the International Atomic Energy Agency;

(9) Progress by NWS: Steps by all the nuclear-weapon States leading to nuclear disarmament in a way that promotes international stability and is based on the principle of undiminished security for all;

(10) Excess Fissile Materials Under IAEA Control: Arrangements by all nuclear-weapon States to place, as soon as practicable, fissile material designated by each of them as no longer required for military purposes under IAEA or other relevant international verification and arrangements for the disposition of such material for peaceful purposes;

(11) General and Complete Disarmament: Reaffirmation that the ultimate objective of the efforts of States in the disarmament process is general and complete disarmament under effective international control. This commitment was disjoined from nuclear disarmament obligations;

(12) Reporting: Regular reporting within the framework of the NPT-strengthened review process by all States parties on the implementation of Article VI and paragraph 4(c) of the 1995 Decision on "Principles and Objectives for Nuclear Non-Proliferation and Disarmament," and recalling the July 8, 1996 Advisory Opinion of the International Court;

(13) Verifying: The further development of the verification capabilities that will be required to provide assurance of compliance with nuclear disarmament agreements for the achievement and maintenance of a nuclear-weapon-free world. 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Review of the Operation of the Treaty, Taking into Account the Decisions and the Resolution Adopted by the 1995 Review and Extension Conference*, Apr. 24-May 19, 2000, NPT/CONF.2000/28 (Part I and II).

41. See Rebecca Johnson, *Politics and Protection: Why the 2005 NPT Review Conference Failed*, ACRONYM INST. DISARMAMENT DIPL. (Nov. 5, 2011), <http://www.acronym.org.uk/dd/dd80/80npt.htm>; see also Jonathan Granoff, *The Nuclear Nonproliferation Treaty and Its 2005 Review Conference: A Legal and Political Analysis*, 39 N.Y.U. J. INT'L L. & POL. 995, 1002 (2007); HARALD MÜLLER, WEAPONS OF MASS DESTRUCTION COMM'N, THE 2005 NPT REVIEW CONFERENCE: REASONS AND CONSEQUENCES OF FAILURE AND OPTIONS FOR REPAIR (2005).

42. See Deepti Choubey, *Understanding the 2010 NPT Review Conference*, CARNEGIE ENDOWMENT FOR INT'L PEACE (June 3, 2010), <http://carnegieendowment.org/2010/06/03/understanding-2010-npt-review-conference>.

43. 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, May 3-28, 2010, *Review of the Operation of the Treaty, as Provided for in Its Article VIII (3), Taking into Account the Decisions and the Resolution Adopted by the 1995 Review and Extension Conference and the Final Document of the 2000 Review Conference*, 19-24, NPT/CONF.2010/50 (Vol I) [hereinafter 2010 NPT Review Conference].

44. See *id.* at 19.

45. See *id.* at 16-18.

46. Alexander Kmentt, *How Divergent Views on Nuclear Disarmament Threaten the NPT*, ARMS CONTROL TODAY, Dec. 4, 2013, available at http://www.armscontrol.org/act/2013_12/How-Divergent-Views-on-Nuclear-Disarmament-Threaten-the-NPT.

47. The Principles and Objectives of the Final Statement of the 2010 NPT Review states, "The Conference expresses its deep concern at the catastrophic humanitarian consequences of any use of nuclear weapons and reaffirms the need for all States at all times to comply with applicable international law, including international humanitarian law." 2010 NPT Review Conference, *supra* note 43, at 19.

48. For insight into humanitarian law's relationship to nuclear weapons, see for example Charles J. Moxley, Jr. et al., *Nuclear Weapons and Compliance with International Humanitarian Law and the Nuclear Non-Proliferation Treaty*, 34 FORDHAM INT'L L. J. 595, 678-91 (2011); Dean Granoff & Jonathan Granoff, Op-Ed, *International Humanitarian Law and Nuclear Weapons: Irreconcilable Differences*, BULL. ATOMIC SCIENTISTS, Dec. 15, 2011, at 53, 54-55.

49. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, 270 (July 8) (separate opinion of Judge Bedjaoui).

50. *Id.* at 272.

51. Judge Weeramantry included a UN-based values analysis in his dissenting opinion because nuclear weapons could bring humanity to a condition worse than the stone age. According to Winston Nagan's outstanding article:

"Judge Weeramantry in his dissent has insightfully drawn attention to what he describes as six keynote precepts that are the foundation of the UN Charter:

1. Principle of Humanity: The very first words in the Charter recognize that it is based on 'We the people of the United Nations.' This means that every individual human being on the planet is a part of 'we the peoples' and has a vital interest in promoting and defending the values of survival and progress of 'we the peoples of the planet.' Moreover, in the context of the law of war the interest of the peoples is expressed in terms of the 'principles of humanity' and the 'dictates of public conscience.'

2. Rights of Future Generations: Determination of the peoples to save the succeeding generations from the scourge of war. Clearly, this would be meaningless if it precluded war using nuclear weapons. Peace is a foundational people's value.

3. Dignity and worth of the individual human being: The mass slaughter of vast human aggregates or indeed the entire corpus of humanity is a thorough denial of this value.

4. Rights of human aggregates in large or small States: Clearly, the concentration of nuclear weapons in large States erodes the equality of human aggregates in small States.

5. Other Sources of International Law: The fifth keynote precept or value insists on the respect for maintaining obligations arising from international agreements as well as ‘other sources of international law.’ We should note here that the legality of nuclear weapons is in fact challenged by these ‘other sources of international law.’

6. Promotion of Social Progress: The sixth keynote precept or value describes as a fundamental Charter expectation the promotion of social progress and improved standards of life.” Winston P. Nagan, *Simulated ICJ Judgment: Revising the Lawfulness of the Threat or Use of Nuclear Weapons*, CADMUS, Apr. 2012, at 93, 104-05.

52. Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. at 489 (dissenting opinion of Judge Weeramantry). Judge Weeramantry lists the destructive horror caused by nuclear weapons: Nuclear weapons cause death and destruction; induce cancers, leukemia, keloids and related afflictions; cause gastrointestinal, cardiovascular, and related afflictions; continue for decades after their use to induce the health related problems mentioned above; damage the environmental rights of future generations; cause congenital deformities, mental retardation and genetic damage; carry the potential to cause a nuclear winter; contaminate and destroy the food chain; imperil the ecosystem; produce lethal levels of heat and blast; produce radiation and radioactive fallout; produce a disruptive electromagnetic pulse; produce social disintegration; imperil all civilization; threaten human survival; wreak cultural devastation; span a time range of thousands of years; threaten all life on the planet; irreversibly damage the rights of future generations; exterminate civilian populations; damage neighboring states; produce psychological stress and fear syndromes as no other weapons do. *Id.* at 471-72.

53. *Id.* at 266.

54. REPORT OF THE CANBERRA COMMISSION ON THE ELIMINATION OF NUCLEAR WEAPONS 7 (1996) (“The destructiveness of nuclear weapons is immense. Any use would be catastrophic. . . . There is no doubt that, if the peoples of the world were more fully aware of the inherent danger of nuclear weapons and the consequences of their use, they would reject them, and not permit their continued possession or acquisition on their behalf by their governments, even for an alleged need for self-defense.”).

55. *Cf.* NUKEMAP, http://nuclearsecrecy.com/nukemap/?&kt=10&lat=37.7564509&lng=-122.4245517&hob_opt=1&hob_psi=5&hob_ft=2207&casualties=1&fallout=1&zm=14 (last visited Mar. 22, 2015) (NUKEMAP in an interactive map which enables users to model the explosion of nuclear weapons on virtually any terrain). 3.5 square kilometers of the detonation would be in the “radiation radius,” suffering a 500-rem radiation dose, resulting in 50-90% mortality rate from acute effects alone. Dying takes between several hours to several weeks. In the air blast radius of 7.21 square kilometers of “ground zero,” most residential buildings would collapse, injuries would be universal, and fatalities would be widespread.

56. *Cf.* NUKEMAP, http://nuclearsecrecy.com/nukemap/?&kt=5000&lat=37.7564509&lng=-122.4245517&hob_opt=1&hob_psi=5&hob_ft=17519&casualties=1&fallout=1&ff=50&zm=10 (last visited March 22, 2015). The air blast radius would be 454 square kilometers while the thermal radiation radius would be 1,880 square kilometers. A detonation this size in New York City would cause over three million deaths and almost 5 million injuries. *Id.*

57. STANSFIELD TURNER, CAGING THE NUCLEAR GENIE: AN AMERICAN CHALLENGE FOR GLOBAL SECURITY 127-128 (1997) (according to Turner’s calculations, power of nearly 500,000 Hiroshima-type bombs exist in today’s approximately 16,000 nuclear warheads).

58. Mark A. Harwell & Christine C. Harwell, *Nuclear Famine: The Indirect Effects of Nuclear War*, in THE MEDICAL IMPLICATIONS OF NUCLEAR WAR, 117, 118 (Fredric Solomon & Robert Q. Marston eds., 1986).

59. *See id.* at 128; *see also* IRA HELFAND, PHYSICIANS FOR SOC. RESPONSIBILITY, AN ASSESSMENT OF THE EXTENT OF PROJECTED GLOBAL FAMINE RESULTING FROM LIMITED, REGIONAL NUCLEAR WAR (2007) (comparing predicted climate effects of a regional nuclear war with past episodes of abrupt global cooling due to volcanic activity that caused major crop failures and famine).

60. Ira Helfand, PHYSICIANS FOR SOC. RESPONSIBILITY, NUCLEAR FAMINE: TWO BILLION PEOPLE AT RISK? GLOBAL IMPACTS OF LIMITED NUCLEAR WAR ON AGRICULTURE, FOOD SUPPLIES, AND HUMAN NUTRITION (2d ed. 2013). Chinese wheat production would decrease 50% the first year, with a 31% reduction averaged out over the next nine years. *Id.* at 2. Maize—China’s largest grain crop used mostly for animal feed—would drop by 15%, affecting 20% of the caloric intake currently consumed by cows and chickens. More than a billion people in China would face severe food insecurity. *Id.* at 17.

61. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS 750-51 (2007) [hereinafter IPCC 2007 Report].

62. Peter G. Brewer & James Barry, *The Other CO₂ Problem*, SCI. AM. EARTH 3.0 (Special Issue) 22-23 (2008).

63. *Effects of Global Warming: Signs are Everywhere*, NAT’L GEOGRAPHIC, <http://environment.nationalgeographic.com/environment/global-warming/gw-effects> (last visited Mar. 5, 2015) (citing IPCC 2007 Report). Less fresh water will also be available. If the Quelccaya ice cap in Peru continues to melt at its current rate, it will be gone by 2100, leaving thousands of people who rely on it for drinking water and electricity without a source of either necessity. *Id.* Southern and central Europe are seeing more frequent heat waves, forest fires and droughts. *Climate Change Consequences, Climate Action*, EUROPEAN COMMISSION, http://ec.europa.eu/clima/change/consequences/index_en.htm (last visited Mar. 19, 2015). The Mediterranean area is becoming drier, making it even more vulnerable to drought and wildfires. *Id.* Northern Europe is getting significantly wetter, and winter floods could become common. *Id.* Urban areas, where four out of five Europeans now live, are exposed to heat waves, flooding, or rising sea levels, but are often ill equipped for adapting to climate change. *Id.* The U.S. Global Change Research Program, as cited by NASA, warns of heat waves, heavy downpours, rising sea levels, floods, erosion, increased wildfires, insect outbreaks, and tree disasters—to name just a few of the foreseen consequences for infrastructure, agriculture, transportation, and the various regional economies of the continental United States. *The Current and Future Consequences of Global Change*, NASA, <http://climate.nasa.gov/effects> (last visited Mar. 22, 2015) (referencing IPCC 2007 Report).

64. Daniel C. Nepstad et al., *Interactions Among Amazon Land Use, Forest and Climate: Prospects for a Near-Term Forest Tipping Point*, 363 PHIL. TRANSACTIONS ROYAL SOC’Y B: BIOLOGICAL SCI. 1737 (2008).

65. *Effects of Global Warming, supra* note 63. The thirteen warmest years ever recorded have occurred since 1997. Press Release, World Meteorological Org., 2011: World’s 10th Warmest Year, Warmest Year with La Niña Event, Lowest Arctic Sea Ice Volume, Press Release No. SC/935. The United States has sustained 178 extreme weather and climate disasters since 1980, where overall damages reached or exceeded \$1 billion. *Billion-Dollar Weather and Climate Disasters*, NOAA, <http://www.ncdc.noaa.gov/billions> (last visited Mar. 9, 2015). Interdependent species may become out of sync. For example, plants could bloom earlier than their pollinating insects become active. *Effects of Global Warming, supra* note 64. Ecosystems will change—some species will move farther north or become more successful; others will not be able to move and could become extinct. Wildlife research scientist Martyn Obbard has found that since the mid-1980s, with less ice on which to live and fish for food, polar bears have gotten considerably skinnier. Polar bear biologist Ian Stirling has found a similar pattern in Hudson Bay. He fears that if sea ice disappears, the polar bears will as well. *Id.*

66. *Effects of Global Warming, supra* note 63. The Natural Resource Defense Center predicts that “[i]f we don’t do more to reduce fossil fuel emissions and other heat-trapping greenhouse gases that are making heat waves more intense, more than 150,000 Americans could die by the end of this century due to excessive heat.” *Extreme Weather: Impacts of Climate Change*, NAT’L RESOURCES DEF. COUNCIL, <http://www.nrdc.org/globalwarming/climate-change-impacts> (last revised Jan. 15, 2014).

67. RESTATEMENT (SECOND) OF CONTRACTS § 205 cmt. a, d (1981).

68. *See, e.g.*, Barack Obama, U.S. President, Remarks by President Barack Obama at Hradčany Square, Prague, Czech Republic (April 5, 2009) (“I state clearly and with conviction America’s commitment to seek the peace and security of a world without nuclear weapons.”); Ronald Reagan, U.S. President, The Second Regan-Mondale Presidential Debate (Oct. 21, 1984) (“A nuclear war cannot be won and must never be fought.”); John F. Kennedy, U.S. President, Address before the General Assembly of the U.N. (Sept. 25, 1961) (“every man, woman and child lives under a nuclear sword of Damocles, hanging by the slenderest of threads, capable of being cut at any moment by accident, or miscalculation, or by madness. The weapons of war must be abolished before they abolish us.”).

69. William J. Broad & David E. Sanger, *U.S. Ramping up Major Renewal in Nuclear Arms*, N.Y. TIMES, Sept. 22, 2014, at A1, A12.

70. Barack Obama, *supra* note 68.

71. WORLD ECON. FORUM, GLOBAL RISKS 2015, 10TH EDITION 14 (2015).

72. *Realpolitik Threatens Global CO2 Deal*, ARGUS (Jan. 15, 2015), <http://www.argusmedia.com/pages/NewsBody.aspx?id=977644&menu=yes>.

73. Tim Wright, *Growing Support for a Nuclear Abolition Treaty*, DISARMAMENT TIMES, Summer 2010, at 6.

