

# THE FATE OF HUMANITY

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NOVEMBER 21, 2019

*“These [nuclear] bombs were built as ‘weapons’ for ‘war,’ but their significance greatly transcends war and all its causes and outcomes. They grew out of history, yet they threaten to end history. They were made by men, yet they threaten to annihilate man. They are a pit into which the whole world can fall—a nemesis of all human intentions, actions, and hopes.”*

Jonathan Schell  
*The Fate of the Earth*

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## INTRODUCTION

The fate of humanity and that of all other inhabitants of the planet rests far too comfortably in the hands of a small number of national leaders who have the authority to launch nuclear weapons. They hold in their hands the fate of every man, woman and child on the planet. On any given morning or afternoon any of these individuals could launch their country's nuclear weapons, triggering retaliatory responses. The skies would darken with the ash and soot rising from burning cities, creating a nuclear winter. Even a small nuclear war could cause a nuclear famine, leading to the deaths by starvation of two billion of the most vulnerable people on the planet.

Those with the power and control over nuclear weapons could turn this planet, unique in all the universe in supporting life, into the charred remains of a global Hiroshima. Should any leader hold so much power to destroy? Should we be content to allow such power to rest in any hands at all?

Bertrand Russell and Albert Einstein described the starkness of our dilemma more than six decades ago in the Russell-Einstein Manifesto: "There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal as human beings to human beings: Remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death."

Humanity has a choice to make. We can continue with business as usual, standing in the dark shadows of apathy, conformity, ignorance and denial, or we can take action to abolish nuclear weapons. Doing nothing all but assures that nuclear weapons will spread to other countries and eventually again be used by accident or design. Doing all we can to move the world to Nuclear Zero is our best chance to save the planet from nuclear devastation, and help assure a human future. We can start by changing apathy to empathy, conformity to critical thinking, ignorance to wisdom, and denial to recognition of the threat posed by nuclear weapons.

The time is short and what is at risk is all we love and treasure.

## **TWELVE POSSIBLE NAMES FOR WORLD WAR III**

The Great Fire War

The Long Afternoon War

The End of Civilization War

The Unwanted War

The Failure of Deterrence War

The Ice Age Trigger War

The No Heroes War

The Mutant Creation War

The Dark Skies War

The Unending Fall-Out War

The Green Glow of Defeat War

The War of No Winners

## TEN MYTHS ABOUT NUCLEAR WEAPONS

### **Nuclear weapons were needed to defeat Japan in World War II.**

It is widely believed, particularly in the United States, that the use of nuclear weapons against the Japanese cities of Hiroshima and Nagasaki was necessary to defeat Japan in World War II. This is not, however, supported by the opinions of the leading U.S. military figures in the war, including General Dwight Eisenhower, General Omar Bradley, General Hap Arnold and Admiral William Leahy. General Eisenhower, for example, who was the Supreme Allied Commander Europe during World War II and later U.S. president, wrote, “I had been conscious of a feeling of depression and so I voiced [to Secretary of War Stimson] my grave misgivings, first on the basis of my belief that Japan was already defeated and that dropping the bomb was completely unnecessary, and secondly because I thought that our country should avoid shocking world opinion by the use of a weapon whose employment was, I thought, no longer mandatory as a measure to save American lives. It was my belief that Japan was, at that very moment, seeking some way to surrender with a minimum loss of ‘face’ ...” Not only was the use of nuclear force unnecessary, its destructive force was excessive, resulting in 220,000 deaths by the end of 1945.

### **Nuclear weapons prevented a war between the United States and the Soviet Union.**

Many people believe that the nuclear standoff during the Cold War prevented the two superpowers from going to war with each other, for fear of mutually assured destruction. While it is true that the superpowers did not engage in nuclear warfare during the Cold War, there were many confrontations between them that came uncomfortably close to nuclear war, the most well-known being the 1962 Cuban Missile Crisis. There were also many deadly conflicts and “proxy” wars carried out by the superpowers in Asia, Africa and Latin America. The Vietnam War, which took several million Vietnamese lives and the lives of more than 58,000 Americans, is an egregious example. These wars made the supposed nuclear peace very bloody and deadly. Lurking in the background was the constant danger of a nuclear exchange. The Cold War was an exceedingly dangerous time due to the massive nuclear arms race, and the human race was extremely fortunate to have survived it without suffering a nuclear war.

### **Nuclear threats have gone away since the end of the Cold War.**

In light of the Cold War’s end, many people believed that nuclear threats had gone away. While the nature of nuclear threats has changed since the end of the Cold War, these threats are far from having disappeared or even being significantly diminished. During the Cold War, the greatest threat was that of a massive nuclear exchange between the United States and Soviet Union. In the aftermath of the Cold War, a variety of new nuclear threats have emerged. Among these are the following dangers:

- Increased possibilities of nuclear weapons falling into the hands of terrorists who would not hesitate to use them;
- Nuclear war over Kashmir between India and Pakistan;

- Policies of the U.S. government to make nuclear weapons smaller and more usable;
- Use of nuclear weapons by accident, particularly by Russia, which has a substantially weakened early warning system; and
- Spread of nuclear weapons to other states, such as North Korea, which may perceive them to be an “equalizer” against a more powerful state.

### **The United States needs nuclear weapons for its national security.**

There is widespread belief in the United States that nuclear weapons are necessary for the U.S. to defend against aggressor states. However, U.S. national security would be far improved if the U.S. took a leadership role in seeking to eliminate all nuclear weapons throughout the world, including their own. Nuclear weapons are the only weapons that could actually destroy the United States, so their existence and proliferation threaten U.S. security. Continued high-alert deployment of nuclear weapons and research on producing smaller and more usable nuclear weapons by the U.S., combined with a more aggressive foreign policy, causes many weaker nations to feel threatened. Weaker states may think of nuclear weapons as an equalizer, giving them the ability to effectively neutralize the forces of a threatening nuclear weapons state. Thus, the U.S. threat may be instigating nuclear weapons proliferation, as in the case of North Korea. Continued reliance on nuclear weapons by the United States is setting the wrong example for the world, and is further endangering the country rather than protecting it. The United States has strong conventional military forces and would be far more secure in a world in which no country had nuclear arms.

### **Nuclear weapons make a country safer.**

It is a common belief that nuclear weapons protect a country by deterring potential aggressors from attacking. By threatening massive nuclear retaliation, the argument goes, possessing nuclear weapons prevents an attacker from starting a war. To the contrary, nuclear weapons are actually undermining the safety of the countries that possess them by providing a false sense of security. While nuclear deterrence can provide some psychological sense of security, there are no guarantees that the threat of retaliation will succeed in preventing an attack. There are many ways in which nuclear deterrence could fail, including misunderstandings, faulty communications, irrational leaders, miscalculations and accidents. In addition, the possession of nuclear weapons enhances the risks of terrorism, proliferation and ultimately nuclear annihilation.

### **No leader would be crazy enough to actually use nuclear weapons.**

Many people believe that the threat of retaliating with nuclear weapons can go on indefinitely as a means of deterring attacks because no leader would be crazy enough to use them for fear of retaliation. Unfortunately, nuclear weapons have been used, and it is likely that most, if not all, leaders possessing these weapons would, in fact, use them. U.S. leaders, considered by many to be highly rational, are the only ones who have ever used nuclear weapons in war, against the Japanese cities of Hiroshima and Nagasaki. In addition to these two actual U.S. bombings, leaders of other nuclear weapons states have repeatedly come close to using their nuclear

arsenals. Nuclear deterrence is based upon a credible threat of nuclear retaliation, and the threat of nuclear weapons use has been constant during the post-World War II period. U.S. policy currently provides that the U.S. will not threaten or use nuclear weapons against non-nuclear weapons states that are parties to the Nuclear Non-Proliferation Treaty (NPT) and in compliance with their non-proliferation obligations. Importantly, this leaves out other nuclear weapons states, as well as states not parties to the NPT and states the U.S. determines not to be in compliance with their non-proliferation obligations. U.S. leaders have regularly refused to take any option off the table in relation to potential conflicts. Threats of nuclear attack by India and Pakistan provide another example of nuclear brinkmanship that could turn into a nuclear war. Historically, leaders of nuclear-armed countries have done their best to indicate that they would use nuclear weapons. To assume that they would not do so would be extremely foolhardy.

### **Nuclear weapons are a cost-effective method of national defense.**

Some have argued that the threat or use of nuclear weapons, with their high yield of explosive power, offers the benefit of an effective defense for minimum investment. This is one reason behind ongoing research into lower-yield tactical nuclear weapons, which would be perceived as more usable. The cost of research, development, testing, deployment and maintenance of nuclear weapons and their delivery systems, however, exceeds \$7.5 trillion (in 2005 dollars) for the U.S. alone. The U.S. is planning to spend another \$1.7 trillion over the next three decades modernizing and upgrading every aspect of its nuclear arsenal. The nine nuclear-armed countries are spending over \$100 billion annually on their nuclear arsenals. With advances in nuclear technology and power, the costs and consequences of a nuclear war would be immeasurable.

### **Nuclear weapons are well protected and there is little chance that terrorists could get their hands on one.**

Many people believe that nuclear weapons are well protected and that the likelihood of terrorists obtaining these weapons is low. In the aftermath of the Cold War, however, the ability of the Russians to protect their nuclear forces has declined precipitously. In addition, a coup in a country with nuclear weapons could lead to a government coming to power that would be willing to provide nuclear weapons to terrorists. In general, the more nuclear weapons there are in the world and the more nuclear weapons proliferate to additional countries, the greater the possibility that nuclear weapons will end up in the hands of terrorists. The best remedy for keeping nuclear weapons out of the hands of terrorists is to drastically reduce their numbers and institute strict international inspections and controls on all nuclear weapons and weapons-grade nuclear materials in all countries, until these weapons and the materials for making them can be eliminated. The 2016 Nuclear Security Summit had a narrow focus on protecting civilian stores of highly enriched uranium (HEU), which accounts for only a very small percentage of the world's weapons-grade material.

### **The United States is working to fulfill its nuclear disarmament obligations.**

Most U.S. citizens believe that the United States is working to fulfill its nuclear disarmament obligations. In fact, the United States has failed for five decades to fulfill its obligations under Article VI of the nuclear Non-Proliferation Treaty to negotiate in good faith for an end to the

nuclear arms race at an early date and for nuclear disarmament. Rather than negotiating to end the nuclear arms race, the U.S. is planning to upgrade and modernize all aspects of its nuclear arsenal, delivery vehicles and nuclear infrastructure. The United States has also failed to ratify the Comprehensive Test Ban Treaty. Further, it has unilaterally withdrawn from the Anti-Ballistic Missile Treaty, thereby abrogating this important treaty. More recently, under the Trump administration, the U.S. has unilaterally withdrawn from the Intermediate-Range Nuclear Forces (INF) Treaty and from the Joint Comprehensive Plan of Action (the “Iran deal”). The New START (Strategic Arms Reduction Treaty) between the U.S. and Russia, which was signed in April 2010 and entered into force in February 2011, has reduced the number of deployed strategic warheads on each side to 1,550. This is not, however, a fulfillment of the U.S. treaty obligations under the NPT.

### **Nuclear weapons are needed to combat threats from terrorists and “rogue states.”**

It has been argued that nuclear weapons are needed to protect against terrorists and “rogue states.” Yet nuclear weapons, whether used for deterrence or as offensive weaponry, are not effective for this purpose. The threat of nuclear force cannot act as a deterrent against terrorists because they do not have a territory to retaliate against. Thus, terrorists would not be deterred from attacking a country for fear of nuclear retaliation. Nuclear weapons also cannot be relied on as a deterrent against “rogue states” because their responses to a nuclear threat may be irrational and deterrence relies on rationality. If the leaders of a rogue state do not use the same calculus regarding their losses from retaliation, deterrence can fail. As offensive weaponry, nuclear force only promises tremendous destruction to troops, civilians and the environment. It might work to annihilate a rogue state, but the force entailed in using nuclear weaponry would be illegal (indiscriminate, cause unnecessary suffering, and be disproportionate to a prior attack), as well as highly immoral. It would not be useful against terrorists because strategists could not be certain of locating an appropriate target for retaliation.

## TEN SERIOUS FLAWS IN NUCLEAR DETERRENCE THEORY

Nuclear deterrence is the threat of nuclear retaliation for a proscribed behavior, generally an attack upon the threatening state. The theory of nuclear deterrence posits that such threat, if perceived as real and likely to cause sufficient devastation, will prevent an attack or other proscribed behavior from occurring.

The desire for a nuclear deterrent existed even before nuclear weapons were created. Refugee scientists from Europe, concerned about the possible development of German nuclear weapons during World War II, encouraged the United States to explore the use of uranium for building nuclear weapons. Albert Einstein was among the scientists who urged President Roosevelt to initiate a program to explore the feasibility of creating such weapons as a deterrent to the use of a German nuclear weapon, should the Germans succeed in their quest. After the atomic bombings of Hiroshima and Nagasaki, Einstein would consider this to be one of the great mistakes of his life.

By the time the United States succeeded in developing nuclear weapons in July 1945, Germany was already defeated. The U.S. used its powerful new bombs on the Japanese cities of Hiroshima and Nagasaki. In doing so, it sent a nuclear deterrent message to other states, particularly the Soviet Union, that the U.S. possessed nuclear weapons and was willing to use them. This would spur on the secret Soviet nuclear weapons program to deter future use of the U.S. nuclear arsenal. Other states would follow suit. Britain and France also developed nuclear arsenals to deter the Soviets. China developed nuclear arms to deter the U.S. and the Soviets. Israel did so to assure its independence and deter potential interventions from the other nuclear weapons states. India developed nuclear weapons to deter China and Pakistan, and Pakistan to deter India. North Korea did so to deter the U.S.

One steady factor in the Nuclear Age has been the adherence of the nuclear-armed states to the theory of nuclear deterrence. Each country that developed nuclear weapons has justified doing so by the pursuit of nuclear deterrence. The security of not only the nuclear-armed states but of civilization has rested uneasily upon the reliability of the theory of nuclear deterrence. Vast numbers of people throughout the world believe that nuclear deterrence contributes to the security of the planet and perhaps to their personal security and that of their family. But does it? What if nuclear deterrence is a badly flawed theory? What if nuclear deterrence fails? What if political and military leaders in all nuclear-armed states – who have treated nuclear deterrence theory as sacrosanct and imbued it with godlike, but unrealistic, powers of protection – are wrong? The future itself would stand in grave danger, for the failure of nuclear deterrence could pose an existential threat to all humanity.

As a former commander of the U.S. Strategic Command, General George Lee Butler was in charge of all U.S. nuclear weapons. After retiring from the U.S. Air Force, General Butler critiqued nuclear deterrence, stating that it “suspended rational thinking in the Nuclear Age about the ultimate aim of national security: to ensure the survival of the nation.” He concluded that nuclear deterrence is “a slippery intellectual construct that translates very poorly into the real

world of spontaneous crises, inexplicable motivations, incomplete intelligence and fragile human relationships.”

As volcanoes often give off strong warning signals that they may erupt, so we have witnessed such signals regarding nuclear arsenals and the failure of nuclear deterrence theory over the course of the Nuclear Age. Nuclear arsenals could erupt with volcano-like force, totally overwhelming the relatively flimsy veneer of “protection” provided by nuclear deterrence theory. In the face of such dangers, we must not be complacent. Nor should we continue to be soothed by the “experts” who assure us not to worry because the weapons will keep us safe. There is, in fact, much to worry about, much more than the nuclear policy makers and theorists in each of the nuclear weapons states have led us to believe. I will examine below what I believe are ten serious flaws in nuclear deterrence theory, flaws that lead to the conclusion that the theory is unstable, unreliable and invalid.

1. **It is only a theory.** It is not proven and cannot be proven. A theory may posit a causal relationship; for example, if one party does something, certain results will follow. In the case of nuclear deterrence theory, it is posited that if one party threatens to retaliate with nuclear weapons, the other side will not attack. That an attack has not occurred, however, does not prove that it was prevented by nuclear deterrence. That is, in logic, a false assumption of causality. In logic, one cannot prove a negative, that is, that doing something causes something else *not* to happen. That a nuclear attack has not happened may be a result of any number of other factors, or simply of exceptional good fortune. To attribute the absence of nuclear war to nuclear deterrence is to register a false positive, which imbues nuclear deterrence with a false sense of efficacy.
2. **It requires a commitment to mass murder.** Nuclear deterrence leads to policy debates about how many threatened deaths with nuclear weapons are enough to deter an adversary. Are one million deaths sufficient to deter adversary A? Is it a different number for adversary B? How many deaths are sufficient? One million? Ten million? One hundred million? More? There will always be a tendency to err on the side of more deaths, and thus the creation of more elaborate nuclear killing systems. Such calculations, in turn, drive arms races, requiring huge allocations of resources to weapons systems that must never be used. Leaders must convince their own populations that the threat of mass murder and the expenditure of resources to support this threat make them more secure and is preferable to other allocations of scientific and financial resources. The result is not only a misallocation of resources, but also a diversion of effort away from cooperative solutions to global problems.
3. **It requires effective communications.** In effect, nuclear deterrence is a communications theory. Side A must communicate its capability and willingness to use its nuclear arsenal in retaliation for an attack by adversary B, thereby preventing adversary B from attacking. The threat to retaliate and commit mass murder must be believable to a potential attacker. Communications take place verbally in speeches by national leaders and parliamentary statements, as well as news reports and even by rumors. Communications also take place non-verbally in the form of alliance formations and nuclear weapon and missile tests. In relation to nuclear deterrence, virtually everything

that each side does is a deliberate or inadvertent form of communication to a potential adversary. There is much room for error and misunderstanding.

4. **It requires rational decision makers.** Nuclear deterrence will not be effective against a decision maker who is irrational. For example, side A may threaten nuclear retaliation for an attack by adversary B, but the leader of side B may irrationally conclude that the leader of side A will not do what he says. Or, the leader of side B may irrationally attack side A because he does not care if one million or ten million of his countrymen die as a result of side A's nuclear retaliation. I believe two very important questions to consider are these: Do all leaders of all states behave rationally at all times, particularly under conditions of extreme stress when tensions are very high? Can we be assured that all leaders of all states will behave rationally at all times in the future? Most people believe the answer to these questions is an unqualified No.
5. **It instills a false sense of confidence.** Nuclear deterrence is frequently confused with nuclear "defense," leading to the conclusion that nuclear weapons provide some form of physical protection against attack. This conclusion is simply wrong. The weapons and the threat of their use provide no physical protection. The only protection provided is psychological and once the weapons start flying it will become clear that psychological protection is not physical protection. A leader may believe the weapons make him or her safer, but this is not the same as actually being safer. Because nuclear deterrence theory provides a false sense of confidence, it could lead a possessor of the weapons to take risks that would be avoided without nuclear threats in place. Such risks could be counterproductive and actually lead to nuclear war.
6. **It does not work against an accidental use.** Nuclear deterrence is useful, if at all, only against the possibility of an intentional, premeditated nuclear attack. Its purpose is to make the leader who contemplates the intentional use of a nuclear weapon decide against doing so. But nuclear deterrence cannot prevent an accidental use of a nuclear weapon, such as an accidental launch. This point was made in the movie *Dr. Strangelove*, in which a U.S. nuclear attack was accidentally set in motion against the Soviet Union. In the movie, bomber crews passed their "failsafe" point in a training exercise and couldn't be recalled. The president of the United States had to get on the phone with his Soviet counterpart and try to explain that the attack on Moscow that had been set in motion was just an accident. The Americans were helpless to stop the accident from occurring, and so were the Soviets. Accidents happen! There is no such thing as a "foolproof" system, and when nuclear weapons are involved it is extremely dangerous to think there is.
7. **It doesn't work against terrorist organizations.** Nuclear deterrence is based upon the threat of retaliation. Since it is not possible to retaliate against a foe that you cannot locate, the threat of retaliation is not credible under these circumstances. Further, terrorists are often suicidal (e.g., "suicide bombers"), and are willing to die to inflict death and suffering on an adversary. For these reasons, nuclear deterrence will be ineffective in preventing nuclear terrorism. The only way to prevent nuclear terrorism is to prevent the weapons themselves from falling into the hands of terrorist organizations.

This will become increasingly difficult if nuclear weapons and the nuclear materials to build them proliferate to more and more countries.

8. **It encourages nuclear proliferation.** To the extent that the theory of nuclear deterrence is accepted as valid and its flaws overlooked or ignored, it will make nuclear weapons seem to be valuable instruments for the protection of a country. Thus, the uncritical acceptance of nuclear deterrence theory provides an incentive for nuclear proliferation. If it is believed that nuclear weapons can keep a country safe, there will be commensurate pressure to develop such weapons.
9. **It is not believable.** In the final analysis, it is likely that even the policy makers who promote nuclear deterrence do not truly believe in it. If policy makers did truly believe that nuclear deterrence works as they claim, they would not need to develop and deploy missile defenses. The United States alone spent \$200 billion on developing missile defenses from 1985 to 2019, and is continuing to spend some \$10 billion annually on missile defense systems. Such attempts at physical protection against nuclear attacks are unlikely to ever be fully successful, but they demonstrate the underlying understanding of policy makers that nuclear deterrence alone is insufficient to provide protection to a country. If policy makers understand that nuclear deterrence is far from foolproof, then who is being fooled by nuclear deterrence theory? In all likelihood, the only people being fooled by the promised effectiveness of nuclear deterrence theory are the ordinary people who place their faith in their leaders, the same people who are the targets of nuclear weapons and will suffer the consequences should nuclear deterrence fail. Their political and military leaders have made them the “fools” in what is far from a “foolproof” system.
10. **Its failure would be catastrophic.** Nuclear deterrence theory requires the development and deployment of nuclear weapons for the threat of retaliation. These weapons can, of course, be used for initiating attacks as well as for seeking to prevent attacks by means of threatened retaliation. Should deterrence theory fail, such failure could result in consequences beyond our greatest fears. For example, scientists have found in simulations of the use of 100 Hiroshima-size nuclear weapons in an exchange between India and Pakistan, the deaths could reach two billion individuals due to blast, fire, radiation, climate change, crop failures and resulting starvation. A larger nuclear war between the U.S. and Russia would surely destroy civilization as we know it.

The flaws in nuclear deterrence theory cannot be waved aside, and they show that the theory has inherent weaknesses that cannot be overcome. Over time, the theory will suffer more and more stress fractures and, like a poorly constructed bridge, it will fail. Rather than staying docilely on the sidelines, citizens of the nuclear-armed states must enter the arena of debate. In fact, they must create the debate by challenging the efficacy and validity of nuclear deterrence theory.

After these many years of accepting nuclear deterrence theory as valid and unimpeachable, it is time to awaken to the reality that it could fail, and fail catastrophically. The answer to the risks posed by nuclear deterrence theory is not to shore up an inherently flawed theory, but to take a new path, a path leading to the elimination of all nuclear weapons from the planet. This is not an

impossible dream and, in fact, the risks of taking this path are far less than maintaining nuclear arsenals justified by an unstable and unproven theory. But for this dream to be realized, citizens will have to raise their voices, challenge their leaders, and refuse to be docile in the face of the overwhelming threat that nuclear weapons pose to all humanity.

## TEN REASONS TO ABOLISH NUCLEAR WEAPONS

1. **Fulfill Existing Obligations.** The nuclear weapons states have made solemn promises to the international community to negotiate in good faith to achieve nuclear disarmament. The United States, Russia, Britain, France and China accepted this obligation when they signed the Non-Proliferation Treaty (NPT), and extended their promises at the 1995 NPT Review and Extension Conference and again at the 2000 NPT Review Conference. India and Pakistan, which are not signatories of the NPT, have committed themselves to abolishing their nuclear arsenals if the other nuclear weapons states agree to do so. The only nuclear weapons states that have not made this promise are Israel and North Korea, and surely they could be convinced to do so if the other nuclear weapons states agreed to the elimination of their nuclear arsenals. The International Court of Justice, the world's highest court, unanimously highlighted the obligation to nuclear disarmament in its 1996 Opinion: "There 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." This means an obligation to reduce the world's nuclear arsenals to zero.

2. **Stop Nuclear Weapons Proliferation.** The failure of nuclear weapons states to act to eliminate their nuclear arsenals will likely result in the proliferation of nuclear weapons to other nations. If nuclear weapons states continue to maintain the position that nuclear weapons preserve their security, it is only reasonable that other nations with less powerful military forces will decide that their security should also be maintained by nuclear arsenals. Without substantial progress toward nuclear disarmament, the nuclear Non-Proliferation Treaty will be in jeopardy.

3. **Prevent Nuclear Terrorism.** The very existence of nuclear weapons and their production endanger our safety because they are susceptible to terrorist exploitation. Nuclear weapons and production sites all over the world are vulnerable to terrorist attack or to theft of weapons or weapons-grade materials. Russia, due to the breakup of the former Soviet Union, has a weakened command and control system, making its substantial arsenal especially vulnerable to terrorists. In addition, nuclear weapons are not effective in defending against or responding to terrorism because nuclear weapons cannot target a group that is not locatable.

4. **Avoid Nuclear Accidents.** The risk of accidental war through miscommunication, miscalculation or malfunction is especially dangerous given the thousands of nuclear warheads deployed and on high alert status. Given the short time periods available in which to make decisions about whether or not a state is under nuclear attack, and whether to launch a retaliatory response, the risk of miscalculation is high. In addition, the breakup of the former Soviet Union has weakened Russia's early warning system, since many parts of this system were located outside of Russia, and this increases the likelihood of a nuclear accident.

5. **Cease the Immorality of Threatening Mass Murder.** It is highly immoral to base the security of a nation on the threat to destroy cities and potentially murder millions of people. This immoral policy is named nuclear deterrence, and it is relied upon by all nuclear weapons states. Nuclear deterrence is a dangerous policy. Its implementation places humanity and most forms of life in jeopardy of annihilation.

**6. Reverse the Concentration of Power.** Nuclear weapons undermine democracy by giving a few individuals the power to destroy the world as we know it. No one should have this much power. If these individuals make a mistake or misjudgment, everyone in the world will pay for it.

**7. Promote Democratic Openness.** Decisions about nuclear weapons have been made largely in secrecy with little involvement from the public. In the United States, for example, nuclear weapons policy is set forth in highly classified documents, which are not made available to the public and come to public attention only by leaks. On this most important of all issues facing humanity, there is no informed consent of the people.

**8. Halt the Drain on Resources.** Nuclear weapons have drained resources, including scientific resources, from other more productive uses. A 1998 study by the Brookings Institution found that the United States alone had spent more than \$5.5 trillion on nuclear weapons programs between 1940 and 1996. The United States continues to spend some \$25-\$35 billion annually on research, development and maintenance of its nuclear arsenal. All of these misspent resources represent lost opportunities for improving the health, education and welfare of the people of the world.

**9. Heed Warnings by Distinguished Leaders.** Distinguished leaders throughout the world, including generals, admirals, heads of state and government, scientists and Nobel Peace Laureates, have warned of the dangers inherent in relying upon nuclear weapons for security. These warnings have gone unheeded by the leaders of nuclear weapons states.

**10. Meet Our Responsibility.** We each have a responsibility to our children, grandchildren and future generations to end the threat that nuclear weapons pose to humanity and all life. This is a responsibility unique in human history. If we do not accept responsibility to speak out and act for a world free of nuclear weapons, who will?

## **FIFTEEN MORAL REASONS TO ABOLISH NUCLEAR WEAPONS**

1. Thou shalt not kill.
2. Thou shalt not threaten to slaughter the innocent.
3. Thou shalt not cause unnecessary suffering.
4. Thou shalt not poison the future.
5. Thou shalt not hold hostage cities and their inhabitants.
6. Thou shalt not threaten to destroy civilization.
7. Thou shalt not abandon stewardship of fish and fowl, birds and beasts.
8. Thou shalt not put all of Creation at risk of annihilation.
9. Thou shalt not use weapons that cannot be contained in space or time.
10. Thou shalt not waste resources on weapons that could be far better used for meeting basic human needs.
11. Thou shalt not fail to fulfill one's obligations to negotiate in good faith for nuclear disarmament.
12. Thou shalt not covet thy neighbor's missiles.
13. Thou shalt not worship false idols.
14. Thou shalt not keep silent in the face of the nuclear threat to all we love and treasure.
15. Thou shalt live by the Golden Rule, doing unto others as you would have them do unto you.

## TEN WORST ACTS OF THE NUCLEAR AGE

The ten worst acts of the Nuclear Age described below have set the tone for our time. They have caused immense death and suffering; been tremendously expensive; encouraged nuclear proliferation; opened the door to nuclear terrorism, nuclear accidents and nuclear war; and are leading the world back into a second Cold War. These “ten worst acts” are important information for anyone attempting to understand the time in which we live, and how the nuclear dangers that confront U.S. have been intensified by the leadership and policy choices made by the United States and the other eight nuclear-armed countries.

1. **Bombing Hiroshima (August 6, 1945).** The first atomic bomb was dropped by the United States on the largely civilian population of Hiroshima, killing some 70,000 people instantly and 140,000 people by the end of 1945. The bombing demonstrated the willingness of the U.S. to use its new weapon of mass destruction on cities.
2. **Bombing Nagasaki (August 9, 1945).** The second atomic bomb was dropped on the largely civilian population of Nagasaki before Japanese leaders had time to assess the death and injury caused by the atomic bomb dropped on Hiroshima three days earlier. The atomic bombing of Nagasaki took another 70,000 lives by the end of 1945.
3. **Pursuing a unilateral nuclear arms race (1945 – 1949).** The first nuclear weapon test was conducted by the U.S. on July 16, 1945, just three weeks before the first use of an atomic weapon on Hiroshima. As the only nuclear-armed country in the world in the immediate aftermath of World War II, the U.S. continued to expand its nuclear arsenal and began testing nuclear weapons in 1946 in the Marshall Islands, a trust territory the U.S. was asked to administer on behalf of the United Nations. Altogether the U.S. tested 67 nuclear weapons in the Marshall Islands between 1946 and 1958, with the equivalent explosive power of 1.6 Hiroshima bombs daily for that 12 year period.
4. **Initiating Atoms for Peace (1953).** President Dwight Eisenhower put forward an Atoms for Peace proposal in a speech delivered on December 8, 1953. This proposal opened the door to the spread of nuclear reactors and nuclear materials for purposes of research and power generation. This resulted in the later proliferation of nuclear weapons to additional countries, including Israel, South Africa, India, Pakistan and North Korea.
5. **Engaging in a Cold War bilateral nuclear arms race (1949 – 1991).** The nuclear arms race became bilateral when the Soviet Union tested its first atomic weapon on August 29, 1949. This bilateral nuclear arms race between the U.S. and USSR reached its apogee in 1986 with some 70,000 nuclear weapons in the world, enough to destroy civilization many times over and possibly result in the extinction of the human species.
6. **Atmospheric Nuclear Testing (1945 – 1980).** Altogether there have been 528 atmospheric nuclear tests. The U.S., UK and USSR ceased atmospheric nuclear testing in 1963, when they signed the Partial Test Ban Treaty. France continued atmospheric nuclear testing until 1974 and China continued until 1980. Atmospheric nuclear testing

has placed large amounts of radioactive material into the atmosphere, causing cancers and leukemia in human populations.

7. **Breaching the disarmament provisions of the NPT (1968 – present).** Article VI of the Nuclear Non-Proliferation Treaty (NPT) states, “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....” The five nuclear weapons-states parties to the NPT (U.S., Russia, UK, France and China) remain in breach of these obligations. The other four nuclear-armed states (Israel, India, Pakistan and North Korea) are in breach of these same obligations under customary international law.
8. **Treating nuclear power as an “inalienable right” in the NPT (1968 – present).** This language of “inalienable right” contained in Article IV of the NPT encourages the development and spread of nuclear power plants and thereby makes the proliferation of nuclear weapons more likely. Nuclear power plants are also attractive targets for terrorists. As yet, there are no good plans for long-term storage of radioactive wastes created by these plants. Government subsidies for nuclear power plants also take needed funding away from the development of renewable energy sources.
9. **Failing to cut a deal with North Korea (1992 to present).** During the Clinton administration, the U.S. was close to a deal with North Korea to prevent it from developing nuclear weapons. This deal was never fully implemented and negotiations for it were abandoned under the George W. Bush administration. Consequently, North Korea withdrew from the NPT in 2003 and conducted its first nuclear weapon test in 2006.
10. **Abrogating the ABM Treaty (2002).** Under the George W. Bush administration, the U.S. unilaterally abrogated the Anti-Ballistic Missile (ABM) Treaty. This allowed the U.S., in combination with expanding NATO to the east, to place missile defense installations near the Russian border. It has also led to emplacement of U.S. missile defenses in East Asia. Missile defenses in Europe and East Asia have spurred new nuclear arms races in these regions.

Vying for a place on the Ten Worst Acts of the Nuclear Age are Trump’s withdrawal from various international agreements, including the Paris Agreement (climate change), the Joint Comprehensive Plan of Action (“Iran deal”), and the Intermediate-Range Nuclear Forces (INF) Treaty.

## TEN REASONS WHY NUKES ARE NUTS

There are many reasons why nukes are nuts. Here are my top ten:

1. **Nuclear weapons are insanely powerful.** A single nuclear weapon can destroy a city. A few nuclear weapons can destroy a country. A small regional nuclear war can cause a nuclear famine taking 2 billion lives globally. An all-out nuclear war could end civilization and cause the extinction of most complex life on the planet.
2. **Nuclear weapons kill indiscriminately.** Their effects cannot be contained in time or space. They are equal opportunity destroyers – killing and maiming men, women and children. The radioactive materials in nuclear weapons keep on killing long after the blast, heat and fire of the explosive force have taken their toll. They are capable of causing genetic mutations and killing or injuring generations of innocent victims, as was the case with the repeated U.S. atmospheric nuclear testing in the Marshall Islands.
3. **There is no defense against nuclear weapons.** Nuclear weapons are a technological spear against which there is no shield. Missile defense tests, even when rigged for success, nearly always fail. Without actual defenses, there is only nuclear deterrence, the threat of massive nuclear retaliation against innocent people. But such retaliation is not defense; it is simply retaliatory vengeance.
4. **Nuclear deterrence assumes rational leaders.** A rational political leader would be unlikely to use nuclear weapons if he or she understood that the consequences could be a retaliatory nuclear strike on his or her country. But no leader behaves rationally at all times and under all conditions. In fact, some leaders behave irrationally much of the time. Would you knowingly gamble on humanity's future resting on the rational behavior of all political leaders of all nuclear-armed countries at all times?
5. **Accidents happen.** Human beings are fallible creatures and our technological creations are subject to failure. Powerful examples of mixing human fallibility with technological imperfection have occurred with accidents at nuclear power plants, including at Three Mile Island in the U.S., Chernobyl in the former Soviet Union and Fukushima Dai-ichi in Japan. There have been many false alarms and near disasters with nuclear weapons as well, one involving weapons accidentally falling from U.S. bombers, and others in plane crashes, coming very near to catastrophic nuclear detonations. The Department of Defense has issued a report listing 32 serious nuclear incidents from 1950 to 1980. It confirms that accidents with nuclear weapons do happen and that the world has so far been very fortunate that such accidents have not resulted in nuclear detonations.
6. **Perfection is an impossible standard.** The U.S. inter-continental ballistic missile (ICBM) force strives to maintain perfection as its standard. As a result of that impossible goal, a culture developed in which young officers cheated on their examinations, took drugs, and covered up for the lax standards of other officers. Also, one general in charge

of the U.S. ICBM force was fired from his post for drunkenness and cavorting with Russian women on an official trip to Moscow.

7. **Possession promotes proliferation.** That some countries possess nuclear weapons and base their military strategies on those weapons almost certainly provides an incentive for their proliferation to other countries. There are few analysts who would argue that nuclear proliferation is a global good (even though some experts would argue for almost anything). The U.S., UK and USSR originally negotiated and promoted the nuclear Non-Proliferation Treaty (NPT) to try to prevent other countries from developing or acquiring nuclear arsenals. In the treaty, though, these nuclear weapons states, and others that later became parties to the treaty (France and China), agreed to level the playing field by pursuing negotiations in good faith for a cessation of the nuclear arms race at an early date and for nuclear disarmament. The treaty entered into force in 1970 and “an early date” has long passed. Additionally, the nuclear-armed countries are continuing to modernize their nuclear arsenals, and are failing to engage in multilateral negotiations for nuclear disarmament. Many countries have concluded that the nuclear-armed states parties to the NPT are not acting in good faith. These conditions are ripe for nuclear proliferation.
8. **Nuclear arsenals are extremely costly.** The nine nuclear weapons states plan to spend over \$1 trillion over the next decade on maintaining and “modernizing” their nuclear arsenals. The U.S. alone plans to spend \$1.7 trillion over the next three decades on “modernizing” its nuclear arsenal. These extraordinarily large sums could be far better used for alleviating poverty in the countries possessing nuclear weapons and throughout the world. Nuclear arsenals are Cold War relics that endanger all complex life on the planet. They should be dismantled and allowed to rust in peace. Surely, we can put humanity’s scientific and technological, as well as financial, resources to better use than modernizing the means of our own annihilation.
9. **Nuclear weapons are cowards’ weapons.** They are long-distance killing devices that make cowards of their possessors. There is nothing about them that is honorable or brave. They can only be used to threaten annihilation or to cause it. This is a likely a contributing factor, along with boredom and lack of career advancement opportunities, to the widely reported low morale among U.S. Air Force missile launch officers.
10. **The threat or use of nuclear weapons is a crime under international law.** Under international humanitarian law there are limitations to what force can be used in warfare. Weapons that kill indiscriminately, cause unnecessary suffering or are disproportionate to a prior attack are prohibited. Committing a crime against peace, a war crime or a crime against humanity is punishable criminally under international law. Just as the Nazi leaders were held to account for these crimes at Nuremberg after World War II, those who threaten or use nuclear weapons should also be subject to criminal accountability.

Given that there are strong reasons why nukes are nuts, steps should be urgently taken to assure that nuclear weapons are never used again – by accident, miscalculation, insanity or design. Article VI of the nuclear Non-Proliferation Treaty and customary international law require the

pursuit of negotiations in good faith for a cessation of the nuclear arms race at an early date and for nuclear disarmament in all its aspects. In July 2017, the United Nations adopted the Treaty on the Prohibition of Nuclear Weapons (TPNW), banning the possession, threat and use of nuclear weapons. The TPNW will enter into force after its fiftieth ratification is deposited with the United Nations. Unfortunately, under international law, the treaty will only apply to the countries that sign it, and none of the nuclear-armed countries have done so. In fact, the U.S., UK, and France have gone further and pledged never to sign, ratify, or support the new treaty—demonstrating once again that not only nukes are nuts, but also the leadership of the countries that possess these instruments of annihilation.

## TEN LESSONS FROM CHERNOBYL AND FUKUSHIMA

George Santayana famously said, “Those who cannot remember the past are condemned to repeat it.” The same may be said of those who fail to understand the past or to learn from it. If we failed to learn the lessons from the nuclear power plant accident at Chernobyl more than three decades ago or to understand its meaning for our future, perhaps the more recent accident at Fukushima will serve to underline those lessons. Here are ten lessons drawn from the Chernobyl and Fukushima disasters.

1. **Nuclear power is a highly complex, expensive and dangerous way to boil water.** Nuclear power does nothing more than provide a high-tech and extremely dangerous way to boil water to create steam to turn turbines.
2. **Accidents happen and the worst-case scenario often turns out to be worse than imagined or planned for.** Although the nuclear industry continues to assure the public that nuclear power plants are safe, the plants continue to have accidents, some of which exceed worst-case projections.
3. **The nuclear industry and its experts cannot plan for every contingency or prevent every disaster.** Although it was known that Fukushima is subject to earthquakes and tsunamis, the nuclear industry and its experts did not plan for the combination of a 9.0 earthquake and the larger-than-expected tsunami that followed.
4. **Governments do not effectively regulate the nuclear industry to assure the safety of the public.** Government regulators of nuclear industry often come from the nuclear industry and tend to be too close to the industry to regulate it effectively.
5. **Hubris, complacency and high-level radiation are a deadly mix.** Hubris on the part of the nuclear industry and its government regulators, along with complacency on the part of the public, have led to the creation of vast amounts of high-level radiation that must be guarded from release to the environment for tens of thousands of years, far longer than civilization has existed.
6. **Nuclear power plants can catastrophically fail, causing vast human and environmental damage.** The corporations that run the power plants, however, are protected from catastrophic economic failure by government limits on liability, which shift the economic burden to the public. If the corporations that own nuclear power plants had to bear the burden of potential financial losses in the event of a catastrophic accident, they would not build the plants because they know the risks are unacceptable. It is government liability limits, such as the Price-Anderson Act in the U.S., that make nuclear power plants possible, leaving the taxpayers responsible for the overwhelming monetary costs of nuclear industry failures. No other private industry is given such liability protection.

7. **Radiation releases from nuclear accidents cannot be contained in space and will not stop at national borders.** The wind will carry long-lived radioactive materials around the world and affect the people and environment of many countries and regions. The radiation will also affect the oceans of the world, which are the common heritage of humankind.
8. **Radiation releases from nuclear accidents cannot be contained in time and will adversely affect countless future generations.** The radioactive materials from nuclear power plant accidents, as well as from radioactive wastes, are a legacy we are bequeathing to future generations of humans and other forms of life on the planet.
9. **Nuclear energy, as well as nuclear weapons, and human beings cannot co-exist without the risk of future catastrophes.** The survivors of the atomic bombings of Hiroshima and Nagasaki have long known that nuclear weapons and human beings cannot co-exist. The Fukushima accident, like that at Chernobyl before it, makes clear that human beings and nuclear power plants also cannot co-exist without courting future disasters.
10. **The accidents at Fukushima and Chernobyl are a wake-up call to phase out nuclear energy and replace it with energy conservation and more human- and environmentally-friendly forms of renewable energy.** For decades it has been clear that various forms of renewable energy are needed to replace both nuclear and fossil fuel energy sources. Now it is clearer than ever. The choice is not between nuclear and fossil fuels. The solution is to disavow both of these forms of energy and to move as rapidly as possible to a global energy plan based upon various forms of renewable energy: solar cells, wind, geothermal, ocean thermal, currents, tides, etc.

The nuclear power plant accident at Chernobyl was repeated, albeit with a different set of circumstances, at Fukushima. Have our societies yet learned any lessons from Chernobyl and Fukushima that will prevent the people of the future from experiencing such devastation? As poet Maya Angelou points out, “History, despite its wrenching pain, cannot be unlived, but if faced with courage doesn’t need to be lived again.” We need the courage to phase out nuclear power globally and replace it with energy conservation and renewable energy sources. In doing so, we will not only be acting responsibly with regard to nuclear power, but will also reduce the risks of nuclear weapons proliferation and strengthen the global foundations for the abolition of these weapons.

## TEN REASONS TO OPPOSE NUCLEAR WEAPONS

1. **They are long-distance killing machines incapable of discriminating between soldiers and civilians, the aged and the newly born, or between men, women and children.** As such, they are instruments of dehumanization as well as annihilation.

2. **They threaten the destruction of cities, countries and civilization;** of all that is sacred, of all that is human, of all that exists. Nuclear war could cause deadly climate change, putting human existence at risk.

3. **They threaten to foreclose the future,** negating our common responsibility to future generations.

4. **They make cowards of their possessors,** and in their threat or use there can be no decency or honor. This was recognized by most of the top U.S. military leaders of World War II, including General Dwight Eisenhower, General Hap Arnold and Admiral William Leahy.

5. **They divide the world's nations into nuclear "haves" and "have-nots,"** bestowing false and unwarranted prestige and privilege on those that possess them.

6. **They are a distortion of science and technology,** siphoning off our scientific and technological resources and twisting our knowledge of nature to destructive purposes.

7. **They mock international law, displacing it with an allegiance to raw power.** The International Court of Justice has ruled that the threat or use of nuclear weapons is generally illegal and any use that violates international humanitarian law would be illegal. It is virtually impossible to imagine a threat or use of nuclear weapons that would not violate international humanitarian law (fail to discriminate between soldiers and civilians, cause unnecessary suffering or be disproportionate to a preceding attack).

8. **They waste our resources on the development of instruments of annihilation.** The United States alone has spent over \$7.5 trillion on nuclear weapons and their delivery systems since the onset of the Nuclear Age, and plans to spend another \$1.7 trillion on "modernizing" its nuclear arsenal.

9. **They concentrate power in the hands of a small group of individuals and, in doing so, undermine democracy.** In each country that possesses nuclear weapons, the decision to use them is the prerogative of a small number of individuals. By turning over country- and world-destroying power to a few individuals, democracy is usurped by the leaders of the national security state.

10. **They are morally abhorrent,** as recognized by virtually every religious organization, and their mere existence corrupts our humanity.

## **TWELVE WORTHY REASONS NOT TO WASTE BILLIONS MODERNIZING THE U.S. NUCLEAR ARSENAL**

1. It is not sane, sensible or rational.
2. It will not make the U.S. or the world safer or more secure.
3. It is provocative activity that will trigger existing nuclear-armed countries to modernize their nuclear arsenals and result in new nuclear arms races.
4. It demonstrates U.S. commitment to nuclear weapons rather than to nuclear weapons abolition.
5. It will make nuclear weapons appear more reliable and accurate and therefore more usable.
6. It is not necessary for purposes of nuclear deterrence.
7. It sends a strong message to non-nuclear-armed countries that nuclear weapons have perceived military value, and thus creates an inducement to nuclear proliferation.
8. It breaches the U.S. obligation in the nuclear Non-Proliferation Treaty to negotiate in good faith on effective measures to end the nuclear arms race at an early date.
9. It breaches the U.S. obligation in the nuclear Non-Proliferation Treaty to negotiate in good faith on effective measures for nuclear disarmament.
10. It is an immoral waste of resources that are desperately needed for meeting basic human needs for food, water, shelter, education and environmental protection.
11. Despite the \$1.7 trillion price tag already proposed for U.S. nuclear weapons modernization over the next three decades, as with most “defense” plans, original budgets are generally vastly underestimated.
12. Benefits of U.S. nuclear weapons modernization will go overwhelmingly to enrich “defense” contracting corporations and their executives.

## LESSONS FROM EINSTEIN FOR SCIENTISTS TODAY

Albert Einstein is widely recognized as the greatest scientist of his time. In 2005, physics societies throughout the world celebrated the 100<sup>th</sup> anniversary year of Einstein's "miracle year," in which he produced five papers that would change humanity's view of the universe. The year 2005 also marked the 50<sup>th</sup> anniversary of Einstein's death and of the issuing of his last public appeal, the *Russell-Einstein Manifesto*. It is an appropriate time to consider what lessons we might draw from Einstein's life that would benefit those engaged in scientific activities today.

### **Lesson 1: Think for Yourself**

Einstein was a scientist who challenged prevailing assumptions, both in science and in society. He was an innovative thinker, a man who thought for himself. He never just went along with prevailing attitudes or structures. He asked startlingly fresh questions, reached his own conclusions, and stood by them no matter what orthodoxies or power structures they challenged.

### **Lesson 2: Reflect upon the Social Implications of Science and Technology**

Einstein was extremely thoughtful about the implications of science and technology. He understood the potential power of science and technology for both constructive and destructive purposes. Fearing destructive uses of atomic power by Germany, he signed a letter to President Roosevelt in 1939, warning the U.S. of the potential for a German atomic bomb and encouraging the U.S. to undertake research on such a bomb in order to deter a German bomb.

Later, when the U.S. used its own atomic bombs at Hiroshima and Nagasaki, after the Germans had already been defeated, Einstein called his letter to Roosevelt the greatest mistake of his life. For the remaining years of his life, Einstein worked with other scientists to end the nuclear weapons threat to humanity, and was an outspoken advocate of this cause.

### **Lesson 3: Engage with Society**

Einstein spoke out regularly on issues of social importance. He opposed militarism and war, and warned society of the new dangers of the Nuclear Age. "The unleashed power of the atom," he said, "has changed everything save our modes of thinking, and we thus drift toward unparalleled catastrophe." Einstein was never reluctant to lend his name or express his thoughts in support of issues he considered to be of social importance.

### **Lesson 4: Be Responsive to Civil Society**

Einstein not only spoke out on issues he considered to have social relevance. He was also responsive to those who asked for his opinions on key social issues, such as war and peace, weaponry and world government. He took time to respond to individuals from all walks of life, including youth. He also engaged in important public intellectual exchanges with other leading figures of his time, including psychoanalyst Sigmund Freud and poet Rabindranath Tagore.

## **Lesson 5: Be a World Citizen**

Einstein viewed himself as a citizen of the world, and believed that world government, at least as it pertained to security, was necessary to control war and nuclear weaponry. Einstein identified with humanity as a whole more than with any one country, and he was critical of any country, including his own by birth or choice, that promoted militarism.

## **Lesson 6: Challenge Authority**

Einstein was not a servant of authority. He was willing to stand toe-to-toe with power. When Einstein had a highly respected professorship in Germany in his early career, and nearly all the scientific community signed onto a statement supportive of German militarism, Einstein was one of only a handful of vocal opponents to this statement who signed a counter-statement. He was unwilling to give his name in support of what he did not agree with. He was his own person, and quite willing to stand up to and challenge authority.

## **Lesson 7: Let Your Conscience Be Your Guide**

Einstein believed in letting one's conscience be his or her guide, and lived this way throughout his life. He was a strong supporter of conscientious objection to war. He stated, "I believe that a refusal on conscientious grounds to serve in the army when called up, if carried out by 50,000 men at the same moment, would be irresistible."

## **Lesson 8: Remember Your Humanity**

The Russell-Einstein Manifesto, which was the final public appeal that Einstein signed before his death, may be thought of as his final testament. In this appeal, the signers posed two starkly different potential futures: one characterized as a paradise on earth and the other characterized by universal death. The key to a positive future, as expressed in the Manifesto, was to "Remember your humanity, and forget the rest." Einstein himself never lost touch with his own humanity. He always stood at the cutting edge of the arc of justice and, with the exception of advocating the defeat of the Nazi regime in World War II, was an unwavering pacifist and proponent of peace.

## **Conclusion**

Were Einstein able to view the world of today, more than 60 years following his death, I think he would be deeply disappointed by the manner in which most of the world's scientists have failed to take responsibility for the consequences of their work. Einstein's example for scientists was first and foremost to be compassionate human beings who care about the world around them and other human beings, regardless of their nationality or ethnicity. He did not view science and technology as neutral. He wanted its destructive purposes to be controlled, and he called for a world government capable of preventing war and eliminating weapons of mass destruction.

I believe that Einstein would have been proud of the scientists who have followed in his footsteps. Certainly he would have been extremely pleased by Joseph Rotblat, the youngest signer of the Russell-Einstein Manifesto, who went on to organize and lead the Pugwash

Conferences on Science and World Affairs. He would have applauded Professor Rotblat and Pugwash receiving the 1995 Nobel Peace Prize for their efforts to cross the Cold War divide and reduce the nuclear threat to humanity.

I'm sure Einstein would also have been proud of the scientists and engineers who created and have participated in the International Network of Engineers and Scientists for Global Responsibility (INES) for the bold steps they have taken to promote nuclear disarmament, prevent nuclear proliferation, pursue sustainable development, and support scientific whistleblowing and higher ethical standards for scientists and engineers.

Einstein was a most remarkable human being, a man who changed our view of the universe, and who also demonstrated a great moral imagination and a high level of commitment to a more just and peaceful world. Scientists today would do well to learn from Einstein's life the lessons that made him both a responsible scientist and a great human being. While it is highly unlikely that scientists today will reach Einstein's pinnacle of brilliant achievement, all have the possibility to follow his example of personal integrity, moral leadership, public outreach and commitment to restricting scientific endeavor to constructive purposes.

## TEN LESSONS YOU SHOULD LEARN ABOUT NUCLEAR WEAPONS

Here are ten lessons that I learned about nuclear weapons in the process of working for their abolition for the past four decades. I wish I could share these lessons with every citizen of the planet, all of whom are endangered by these weapons.

1. **The effects of nuclear weapons cannot be contained in space or time.** Radiation from a nuclear detonation is carried by the wind and cannot be stopped at national borders. Radioactive materials also have long lives. Plutonium-239, for example, has a half-life of 24,000 years and will remain deadly if inhaled for the next 240,000 years.
2. **Nuclear weapons have made possible *omnicide*, the death of all.** Omnicide is a 20th century concept created by philosopher John Somerville. It is the logical extension of suicide, homicide, genocide. Although it is a concept too final to even imagine, it must be taken seriously.
3. **The survivors of the atomic bombings of Hiroshima and Nagasaki are the ambassadors of the nuclear age,** having witnessed first-hand the horror of nuclear weapons use and not wanting their past to become anyone else's future. Many survivors, known in Japanese as *hibakusha*, have made it their life's work to speak out to educate others and to rid the world of nuclear weapons.
4. **Nuclear deterrence does not provide physical protection against nuclear weapons** – it provides only a false sense of security and the possibility of retaliation and vengeance. Reliance on nuclear deterrence opens the door to *omnicide*.
5. **Nine countries with nuclear weapons are playing Nuclear Roulette with the human future.** Nuclear weapons are like having grenades pointed at the heart of humanity, putting everything we love and treasure at risk. With Nuclear Roulette the odds are not with humanity.
6. **Einstein warned: “The unleashed power of the atom has changed everything save our modes of thinking, and we thus drift toward unparalleled catastrophe.”** For ourselves, our countries and our planet, we must change our modes of thinking and end the widespread ignorance and apathy surrounding nuclear weapons. We must rid the world of nuclear weapons before they rid the world of us.
7. **Nuclear weapons are an absolute and ultimate evil.** Their only purpose is to kill indiscriminately – women, men and children, as well as other forms of complex life.
8. **There are many ways a nuclear war could begin: by malice, madness, mistake, miscalculation or manipulation (hacking).** That we have not yet had a nuclear war is more from good fortune than good planning. We have come chillingly close on numerous occasions.

9. **Nuclear weapons make us all reliant for our lives and futures on the sanity and wisdom of a small number of national leaders.** It is far too much power to put in the hands of any leader. We must speak out, join together and demand that these weapons be abolished before they abolish us.
  
10. **The choice between two iconic images of the 20th century will determine whether humankind survives the 21st: the image of the mushroom cloud, and the image of the earth from outer space.** The first is an image of death and destruction, while the second is an image of the fragility of our planetary home, the only place we know of in the universe where life exists. The choice should be clear, and it calls out to us to choose peace, not war; survival, not devastation; hope, not despair; and engagement, not complacency, to save our planet and the precious gift of life it harbors.

## **WHY WORK TO ABOLISH NUCLEAR WEAPONS?**

We can change the world in important and necessary ways.

We can take a giant step forward for humankind.

We can join with others in demonstrating good stewardship of the planet.

We can take control of our most dangerous technology.

We can help shape a more decent common future.

We can end the threat of omnicide posed by nuclear weapons.

We can uphold international law for the common benefit.

We can lead the way toward ending war as a human institution.

We can meet the greatest challenge confronting our species.

We can put compassion into action and action into compassion.

We can help to protect everything in life that we treasure.

We can pass on a more secure world to our children, grandchildren, and all future generations.

## **CHECKLIST FOR EVALUATING NUCLEAR POLICY**

1. Makes nuclear weapons use less likely.
2. Makes nuclear proliferation less likely.
3. Makes new arms races less likely.
4. Provides for verification.
5. Meets obligations under international law.
6. Is based upon a universal standard for all nations.
7. Assures that no safer alternative exists.
8. Increases global security.
9. Promotes Earth stewardship.
10. Upholds the rights of future generations.

## PRINCIPLES FOR GLOBAL SUSTAINABILITY

1. Responsibility to allocate resources so that greed of the few does not eclipse need of the many. (Survival Principle; Democracy Principle)
2. Responsibility to preserve the planet and its resources for future generations. (Intergenerational Equity Principle)
3. Responsibility to do no irreparable harm to the planet and its inhabitants. (Precautionary Principle)
4. Responsibility to foster diversity of species and ideas. (Anti-Monopoly Principle)
5. Responsibility to make war a last resort, not a first resort of the powerful. (Nonviolence Priority Principle)
6. Responsibility to hold accountable the perpetrators of crimes against peace, war crimes, and crimes against humanity, including genocide. (Nuremberg Principles; International Criminal Court)
7. Responsibility to guarantee basic human rights for all individuals. (Human Rights Principle: Universal Declaration of Human Rights, Torture Convention, etc.)
8. Responsibility to cooperate across national borders to achieve these ends. (State Cooperation Principle: Global problems are incapable of solution by any single state, no matter how powerful.)
9. Responsibility to choose hope over despair. (Hope Principle; Perseverance Principle)
10. Responsibility to leave the planet a better place than you found it. (Individual Action Principle; Horace Mann Principle: “Be ashamed to die until you have won some victory for humanity.”)
11. Responsibility to educate for global sustainability. (Education Principle; Critical Thinking Principle)

In sum, I would encourage you to seek to advance global sustainability by adopting a planetary perspective, doing no harm, engaging in doing good for the planet and its present and future inhabitants, choosing hope, and persevering. If we accept these responsibilities as individuals and work to implement them in our national and international policies, we can turn Earth Day into a year-around commitment to creating a planet we can be proud to pass on to future generations.

**A MESSAGE TO TODAY'S YOUNG PEOPLE:  
PUT AN END TO THE NUCLEAR WEAPONS ERA**

1. Nuclear weapons were created to kill indiscriminately. That means women, men, children – everyone. Even during war, under the rules of international law, that kind of mass killing is illegal. It is also immoral.
2. The nuclear weapons that destroyed Hiroshima and Nagasaki at the end of World War II were small by comparison with today's far more powerful nuclear weapons.
3. There are currently about 14,000 nuclear weapons in the world. The use of just a tiny fraction of these is more than enough to kill most, if not all, humans on the planet. Nuclear weapons make human beings an endangered species.
4. The U.S. and Russia have more than 90 percent of the world's nuclear weapons. The other seven countries that have them are: the UK, France, China, Israel, India, Pakistan, and North Korea.
5. Atmospheric scientists say that a “small” nuclear war, in which each side used 50 Hiroshima-size nuclear weapons on the other side's cities, would result in putting enough soot into the stratosphere to limit sunlight from reaching the earth, shorten growing seasons and cause crop failures. That would lead to some two billion people dying globally from starvation related to diminished food production.
6. A “major” nuclear war, using only some 300 nuclear weapons, would be even worse. It could send the world spiraling into a cold, dark ice age that would destroy civilization and lead to the death of most complex life on the planet.
7. A nuclear war could be started by malice, madness, mistake, miscalculation, or manipulation (hacking). Nuclear deterrence – the threat of nuclear retaliation – can't protect against malice with any degree of certainty, and it cannot protect at all against madness, mistake, or manipulation.
8. Nuclear weapons put us all in jeopardy. There hasn't been a nuclear attack since the end of World War II, but there have been many close calls. The world may not be so fortunate going forward.
9. Each generation has a responsibility to pass the world on intact to the next generation. It's time for your generation to step up and deal with the nuclear dangers that continue to threaten all humanity.
10. As young people, you have a unique ability to influence today's political and military leaders throughout the world to put an end to the nuclear era. For your own future, and that of all humanity, will you accept the challenge and join in advocating for a Nuclear Zero world?

## LESSONS FOR YOUTH

*“It takes a long time to grow young.” --Pablo Picasso*

1. Learn from others, but think for yourself. (Use your mind and judgment.)
2. Decide for yourself what is right or wrong. (Use your conscience.)
3. Speak out for what you believe in. (Use your voice.)
4. Stand up for what is right. (Use your power as an individual.)
5. Set goals and be persistent in working for them. (Use your vision and determination.)
6. Live by the Golden Rule. (Use your feelings as a point of reference.)
7. Recognize the miracle that you are. (Be spiritually aware.)
8. Never harm another miracle. (Be nonviolent.)
9. Believe in yourself. (Be trustworthy, even to yourself.)
10. Be a citizen of the world. (Be inclusive and embrace all life.)
11. Be a force for peace and justice. (Be courageous and committed.)
12. Be kinder than necessary (Be kind.)

## NAVIGATING THE SEVEN C's

By navigating the seven C's each of us can have the power to change the world for the better. But first we must be aware that the world is badly flawed and we must believe that we can play a role in making it better. We must also have the desire to play a role in bringing about a more decent world.

The seven C's are: Compassion, Commitment, Courage, Conscience, Creativity, Cooperation and Celebration.

**Compassion:** we must live with compassion, caring about others in our communities and in our shared world.

**Commitment:** we must be committed to creating a more decent world, not only for ourselves and those close to us, but for all humanity.

**Courage:** we must stand up for what we know is right, taking risks and breaking the bonds of conformity.

**Conscience:** we must listen to our conscience, that most noble of human gifts, and act in accord with it.

**Creativity:** we must be creative in navigating our way along the path toward a better world, at times looking to the ancient stars to guide us.

**Cooperation:** we must rely upon others along the way, for none of us can forge the path to a better world alone.

**Celebration:** we must take time to celebrate and experience the joys of life or we may be tempted to give up our quest to create a more decent world.

## **WHAT IS THE NUCLEAR AGE PEACE FOUNDATION?**

### **A voice of conscience in the Nuclear Age.**

The Foundation views peace as an imperative of the Nuclear Age, and believes that any war fought today has the potential to become a nuclear war of mass annihilation.

### **An advocate for peace, international law and a world without nuclear weapons.**

The Foundation not only educates but is a nonpartisan advocate of achieving peace, strengthening international law, and abolishing nuclear weapons.

### **A force for challenging reliance on nuclear weapons.**

The Foundation challenges the rationale of countries that justify reliance upon nuclear weapons for deterrence (see our DVD “The Myth of Nuclear Deterrence” and our “Santa Barbara Declaration: Reject Nuclear Deterrence, an Urgent Call to Action”).

### **An advocate of renewable energy sources and of eliminating nuclear power.**

The Foundation supports shifting to renewable energy sources to dramatically reduce polluting the planet and to halt climate change. Nuclear power must be eliminated due to its proven potential for the proliferation of nuclear weapons, its attractiveness to terrorists seeking to obtain and disburse radioactive materials, and for other reasons, including its potential for accidents and the lack of a solution to long-term radioactive waste storage.

### **A source of inspiration to the next generation that a better world is possible.**

The Foundation empowers young people through contests, internships and Peace Literacy trainings, seeking to raise their level of awareness and engagement in issues of peace, nuclear disarmament and global security.

### **A pioneer in Peace Literacy training.**

The Foundation is pioneering Peace Literacy trainings and workshops for people throughout the country and beyond. The program is led by Paul K. Chappell, a West Point graduate and author of six books on ending war and waging peace.

### **A catalyst for engaging the arts in peace.**

The Foundation encourages the involvement of the arts in the pursuit of peace through its annual Barbara Mandigo Kelly Peace Poetry Awards and its annual Swackhamer Disarmament Video Contest.

### **A forum for examining national and global priorities.**

The Foundation organizes forums and lectures, including its annual Frank K. Kelly Lecture on Humanity's Future, on key issues confronting humankind.

**A storehouse of memory and source of analysis concerning key nuclear issues.**

The Foundation has created NuclearFiles.org as an on-going source of key information about the Nuclear Age. It also maintains extensive archives of articles on its WagingPeace.org website.

**A participant on the international stage.**

The Foundation has consultative status to the United Nations and has been designated by the UN as a Peace Messenger Organization.

**An organization that seeks to move nations to act for humanity.**

The Foundation participates in major international networks and campaigns as well as international meetings, such as the Non-Proliferation Treaty Review Conferences. It seeks to influence national positions to achieve safer and saner policies, including participating in the International Campaign to Abolish Nuclear Weapons (ICAN) and support for the Treaty on the Prohibition of Nuclear Weapons (TPNW). The Foundation was a consultant to the Republic of the Marshall Islands in its courageous Nuclear Zero lawsuits against the nine nuclear-armed countries in the International Court of Justice and, separately, against the U.S. in U.S. Federal Court.

**A community of committed global citizens.**

The Foundation is composed of individuals from all walks of life and all parts of the globe who seek to end the nuclear weapons threat to humanity and to build a more just and peaceful world.

## WHAT YOU CAN DO

1. **Recognize that national security has no meaning apart from global security.** We live in one world, we are part of one humanity, and all global problems require global solutions. Be a world citizen.
2. **Recognize that nuclear deterrence does not provide security.** It is no more than a hypothesis about human behavior, and it has come close to failing on many occasions. Nuclear deterrence is entirely psychological. It provides no physical protection against nuclear attacks.
3. **Recognize that humans are fallible creatures, incapable of perfection, and thus the only way to achieve security from nuclear weapons is to abolish them.**
4. **Recognize that over the long run the odds of survival from nuclear weapons are very low and the odds of nuclear catastrophe are very high.**
5. **Recognize that cities are the primary targets of nuclear weapons, and that today's nuclear weapons are often many times more powerful than those that destroyed Hiroshima and Nagasaki.**
6. **Recognize that it is not only cities that are threatened by nuclear weapons.** It is civilization, the human species and all other forms of complex life on the planet.
7. **Understand the difference between non-proliferation, nuclear disarmament and nuclear abolition.** Success in non-proliferation is not, in itself, sufficient. The “grand bargain” in the nuclear Non-Proliferation Treaty is the tradeoff between non-proliferation on the part of the non-nuclear weapons states and negotiations in good faith for complete nuclear disarmament by the nuclear weapons states.
8. **Stand up for nuclear weapons abolition.** Judge and support political leaders based on their commitment to a nuclear weapons-free future. Communicate your views to political leaders. Support the Treaty on the Prohibition of Nuclear Weapons (TPNW).
9. **Speak out on this issue to friends and family, directly and through social media.** Be a voice of reason in your own networks as well as an advocate for a nuclear weapons-free future.
10. **Join in with larger organizations working for a world free of nuclear weapons.** By joining larger organizations you can continue to learn more and join in timely actions to amplify your voice and increase your influence on policy.

11. **Contribute funds, if you can, to the abolition movement, as well as your own special talents, whatever these may be.**
12. **Persevere.** Any great goal, such as preserving a human future, requires perseverance. Never give up!