

COLLECTED ESSAYS, Part 2
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Introduction

This book contains a collection of articles, most of which were first published in *Countercurrents* and in Professor Johan Galtung's *Transcend Media Service Weekly Digest* during the second half of 2013 and early 2014.

Exceptions to this are the first essay, "The Future of International Law", and an essay at the end, "The Urgent Need For Renewable Energy", which were first published in *Erudito*, a journal of the World Academy of Art and Science.

I hope that readers will enjoy this book and will forgive whatever they find unpleasant and offensive in it. I have tried to tell the truth, even at the risk unpleasantness, because I think that our present global situation is so precarious that we need to analyse the crisis in every possible way, and to urgently search for rational solutions.

THE FUTURE OF INTERNATIONAL LAW

“With law shall our land be built up, but with lawlessness laid waste.” Njal’s Saga, Iceland, c 1270.

Abstract

After the invention of agriculture, roughly 10,000 years ago, humans began to live in progressively larger groups, which were sometimes multi-ethnic. In order to make towns, cities and finally nations function without excessive injustice and violence, both ethical and legal systems were needed. Today, in an era of global economic interdependence, instantaneous worldwide communication and all-destroying thermonuclear weapons, we urgently need new global ethical principles and a just and enforceable system of international laws.

What is law?

The principles of law, ethics, politeness and kindness function in slightly different ways, but all of these behavioral rules help human societies to function in a cohesive and trouble-free way. Law is the most coarse. The mesh is made finer by ethics, while the rules of politeness and kindness fill in the remaining gaps.

Legal systems began at a time at a time when tribal life was being replaced by life in villages, towns and cities. One of the oldest legal documents that we know of is a code of laws enacted by the Babylonian king Hammurabi in about 1754 BC. It consists of 282 laws, with scaled punishments, governing household behavior, marriage, divorce, paternity, inheritance, payments for services, and so on. An ancient



Figure 1: *A portion of Hammurabi's Code, written in the Akkadian language, using cuneiform script. Source: www.livescience.com*

2.24 meter stele inscribed with Hammurabi's Code can be seen in the Louvre. The laws are written in the Akkadian language, using cuneiform script.

Humanity's great ethical systems also began during a period when the social unit was growing very quickly. It is an interesting fact that many of history's greatest ethical teachers lived at a time when the human societies were rapidly increasing in size. One can think, for example of Moses, Confucius, Lao-Tzu, Gautama Buddha, the Greek philosophers, and Jesus. Muhammad came slightly later, but he lived and taught at a time when tribal life was being replaced by city life in the Arab world. During the period when these great teachers lived, ethical systems had become necessary to over-write raw inherited human emotional behavior patterns

in such a way that increasingly large societies could function in a harmonious and cooperative way, with a minimum of conflicts.

Magna Carta, 1215

2015 marks the 800th anniversary of the Magna Carta, which is considered to be the foundation of much of our modern legal system. It was drafted by the Archbishop of Canterbury to make peace between the unpopular Norman King John of England and a group of rebel barons. The document promised the protection of church rights, protection for the barons from illegal imprisonment, access to swift justice, and limitations feudal payments to the Crown. It was renewed by successive English sovereigns, and its protection against illegal imprisonment and provisions for swift justice were extended from the barons to ordinary citizens. It is considered to be the basis for British constitutional law, and in 1789, it influenced the drafting of the Constitution of the United States. Lord Denning described the Magna Carta as "the greatest constitutional document of all times: the foundation of the freedom of the individual against the arbitrary authority of the despot".

The English Bill of Rights, 1689

When James II was overthrown by the Glorious Revolution the Dutch stadholder William III of Orange-Nassau and his wife, Mary II of England were invited to be joint sovereigns of England. The Bill of Rights was originally part of the invitation, informing the couple regarding the limitations that would be imposed on their powers. Later the same year, it was incorporated into English law. The Bill of Rights guar-



Figure 2: *John of England signing the Magna Carta*, from *Cassell's History of England* (circa 1902). Public domain, *Wikimedia Commons*

anted the supremacy of Parliament over the monarch. It forbid cruel and unusual punishments, excessive bail and excessive fines. Freedom of speech and free elections were also guaranteed, and a standing army in peacetime was forbidden without the explicit consent of Parliament. The Bill of Rights was influenced by the writings of the Liberal philosopher, John Locke (1632-1704).

The United States Constitution and Bill of Rights, 1789

The history of the Federal Constitution of the United States is an interesting one. It was preceded by the Articles of Confederation, which were written by the Second Continental Congress between 1776 and 1777, but it soon became clear that Confederation was too weak a form of union for a collection of states.

George Mason, one of the drafters of the Federal Constitution, believed that “such a government was necessary as could directly operate on individuals, and would punish those only whose guilt required it”, while another drafter, James Madison, wrote that the more he reflected on the use of force, the more he doubted “the practicality, the justice and the efficacy of it when applied to people collectively, and not individually.”

Finally, Alexander Hamilton, in his Federalist Papers, discussed the Articles of Confederation with the following words: “To coerce the states is one of the maddest projects that was ever devised... Can any reasonable man be well disposed towards a government which makes war and carnage the only means of supporting itself, a government that can exist only by the sword? Every such war must involve the innocent with the guilty. The single consideration should be

enough to dispose every peaceable citizen against such government... What is the cure for this great evil? Nothing, but to enable the... laws to operate on individuals, in the same manner as those of states do.”

In other words, the essential difference between a confederation and a federation, both of them unions of states, is that a federation has the power to make and to enforce laws that act on individuals, rather than attempting to coerce states (in Hamilton’s words, “one of the maddest projects that was ever devised.”) The fact that a confederation of states was found to be far too weak a form of union is especially interesting because our present United Nations is a confederation. We are at present attempting to coerce states with sanctions that are “applied to people collectively and not individually.” The International Criminal Court, which we will discuss below, is a development of enormous importance, because it acts on individuals, rather than attempting to coerce states.

There are many historical examples of successful federations; but in general, unions of states based on the principle of confederation have proved to be too weak. Probably our best hope for the future lies in gradually reforming and strengthening the United Nations, until it becomes a federation.

In the case of the Federal Constitution of the United States, there were Anti-Federalists who opposed its ratification because they feared that it would be too powerful. Therefore, on June 8, 1789, James Madison introduced in the House of Representatives a series of 39 amendments to the constitution, which would limit the government’s power. Of these, only amendments 3 to 12 were adopted, and these have become known collectively as the Bill of Rights.

Of the ten amendments that constitute the original Bill of



Figure 3: *George Washington presiding at the Philadelphia Convention. The painting is by Howard Chandler Christy. Public domain, Wikimedia Commons.*

Rights, we should take particular notice of the First, Fourth and Sixth, because they have been violated repeatedly and grossly by the present government of the United States.

The First Amendment requires that “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.” The right to freedom of speech and freedom of the press has been violated by the punishment of whistleblowers. The right to assemble peaceably has also been violated repeatedly and brutally by the present government’s militarized police.

The Fourth Amendment states that “The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.” It is hardly necessary to elaborate on the U.S. Government’s massive violations of the Fourth Amendment. Edward Snowden’s testimony has revealed a huge secret industry carrying out illegal and unwarranted searches and seizures of private data, not only in the United States, but also throughout the world. This data can be used to gain power over citizens and leaders through blackmail. True democracy and dissent are thereby eliminated.

The Sixth Amendment requires that “In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be

confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favor, and to have the Assistance of Counsel for his defense.” This constitutional amendment has also been grossly violated.

In the context of federal unions of states, the Tenth Amendment is also interesting. This amendment states that “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.” We mentioned above that historically, federations have been very successful. However, if we take the European Union as an example, it has had some problems connected with the principle of subsidiarity, according to which as few powers as possible should be decided centrally, and as many issues as possible should be decided locally. The European Union was originally designed as a free trade area, and because of its history commercial considerations have trumped environmental ones. The principle of subsidiarity has not been followed, and enlightened environmental laws of member states have been declared to be illegal by the EU because they conflicted with free trade. These are difficulties from which we can learn as we contemplate the conversion of the United Nations into a federation.

The United States Bill of Rights was influenced by John Locke and by the French philosophers of the Enlightenment. The French Declaration of the Rights of Man (August, 1789) was almost simultaneous with the U.S. Bill of Rights.

We can also see the influence of Enlightenment philosophy in the wording of the U.S. Declaration of independence (1776): “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.—That to secure these rights, Governments are instituted among Men, deriv-

ing their just powers from the consent of the governed...” Another criticism that can be leveled against the present government of the United States is that its actions seem to have nothing whatever to do with the consent of the governed, not to mention the violations of the rights to life, liberty and the pursuit of happiness implicit in extrajudicial killings.

Kellogg-Briand Pact, 1928

World War I was a catastrophe that still casts a dark shadow over the future of humanity. It produced enormous suffering, brutalization of values, irreparable cultural loss, and a total of more than 37 million casualties, military and civilian. Far from being the “war to end war”, the conflict prepared the way for World War II, during which nuclear weapons were developed; and these now threaten the existence the of human species and much of the biosphere.

After the horrors of World War I, the League of Nations was set up in the hope of ending the institution of war forever. However, many powerful nations refused to join the League, and it withered. Another attempt to outlaw war was made in 1928. in the form of a pact named after its authors, U.S. Secretary of State, Frank B. Kellogg and French Foreign Minister Astrid Briand. The Kellogg-Briand Pact is formally called the General Treaty for the Renunciation of War as an Instrument of National Policy. It was ultimately ratified by 62 Nations, including the United States (by a Senate vote of 85 to 1). Although frequently violated, the Pact remains in force today, establishing a norm which legally outlaws war.

United Nations Charter, 1945

The Second World War was even more disastrous than the First. Estimates of the total number of people who died as a result of the war range between 50 million and 80 million. With the unspeakable suffering caused by the war fresh in their minds, representatives of the victorious allied countries assembled in San Francisco to draft the charter of a global organization which they hoped would end the institution of war once and for all.

The Preamble to the United Nations Charter starts with the words: “We , the peoples of the United Nations, determined to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind; and to unite our strength to maintain international peace and security; and to ensure, by the acceptance of principles and the institution of methods, that armed force shall not be used, save in the common interest; and to employ international machinery for the promotion of the economic and social advancement of all peoples, have resolved to combine our efforts to accomplish these aims.”

Article 2 of the UN Charter requires that “All members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state.” This requirement is somewhat qualified by Article 51, which says that “Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security.” Thus, in general, war is illegal under the UN Charter. Self-defense against an armed attack is permitted, but only for a limited time, until the Security Council has had



Figure 4: *Stamps issued by the United Nations Postal Service to commemorate the signing of the UN Charter.*

time to act. The United Nations Charter does not permit the threat or use of force in preemptive wars, or to produce regime changes, or for so-called “democratization”, or for the domination of regions that are rich in oil.¹

Clearly, the United Nations Charter aims at abolishing the institution of war once and for all; but the present Charter has proved to be much too weak to accomplish this purpose, since it is a confederation of the member states rather than a federation. This does not mean that that our present United Nations is a failure. Far from it! The UN has achieved almost universal membership, which the League of Nations failed to do. The Preamble to the Charter speaks of “the promotion of the economic and social advancement of all peoples”, and UN agencies, such as the World Health Organization, the Food and Agricultural Organization and UNESCO,

¹<http://www.un.org/en/documents/charter/preamble.shtml>

have worked very effectively to improve the lives of people throughout the world. Furthermore, the UN has served as a meeting place for diplomats from all countries, and many potentially serious conflicts have been resolved by informal conversations behind the scenes at the UN. Finally, although often unenforceable, resolutions of the UN General Assembly and declarations by the Secretary General have great normative value.

When we think of strengthening and reforming the UN, then besides giving it the power to make and enforce laws that are binding on individuals, we should also consider giving it an independent and reliable source of income. As it is, rich and powerful nations seek to control the UN by means of its purse strings: They give financial support only to those actions that are in their own interests.

A promising solution to this problem is the so-called “Tobin tax”, named after the Nobel-laureate economist James Tobin of Yale University. Tobin proposed that international currency exchanges should be taxed at a rate between 0.1 and 0.25 percent. He believed that even this extremely low rate of taxation would have the beneficial effect of damping speculative transactions, thus stabilizing the rates of exchange between currencies. When asked what should be done with the proceeds of the tax, Tobin said, almost as an afterthought, “Let the United Nations have it.”

The volume of money involved in international currency transactions is so enormous that even the tiny tax proposed by Tobin would provide the United Nations with between 100 billion and 300 billion dollars annually. By strengthening the activities of various UN agencies, the additional income would add to the prestige of the United Nations and thus make the organization more effective when it is called upon to resolve international political conflicts. The budgets of

UN agencies, such as the World Health Organization, the Food and Agricultural Organization, UNESCO and the UN Development Programme, should not just be doubled but should be multiplied by a factor of at least twenty.

With increased budgets the UN agencies could sponsor research and other actions aimed at solving the world's most pressing problems: AIDS, drug-resistant infections diseases, tropical diseases, food insufficiencies, pollution, climate change, alternative energy strategies, population stabilization, peace education, as well as combating poverty, malnutrition, illiteracy, lack of safe water and so on. Scientists would be less tempted to find jobs with arms-related industries if offered the chance to work on idealistic projects. The United Nations could be given its own television channel, with unbiased news programs, cultural programs, and "State of the World" addresses by the UN Secretary General.

In addition, the voting system of the United Nations General Assembly needs to be reformed, and the veto power in the Security Council needs to be abolished.

International Court of Justice, 1946

The International Court of Justice (ICJ) is the judicial arm of the United Nations. It was established by the UN Charter in 1945, and it began to function in 1946. The IJC is housed in the Peace Palace in the Hague, a beautiful building constructed with funds donated by Andrew Carnegie. Since 1946, the IJC has dealt with only 161 cases. The reason for this low number is that only disputes between nations are judged, and both the countries involved in a dispute have to agree to abide by the Court's jurisdiction before the case can be accepted.

Besides acting as an arbitrator in disputes between nations, the IJC also gives advisory opinions to the United Nations and its agencies. An extremely important judgment of this kind was given in 1996: In response to questions put to it by WHO and the UN General Assembly, the Court ruled that “the threat and use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and particularly the principles and rules of humanitarian law.” The only possible exception to this general rule might be “an extreme circumstance of self-defense, in which the very survival of a state would be at stake”. But the Court refused to say that even in this extreme circumstance the threat or use of nuclear weapons would be legal. In addition, the World Court added unanimously that “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 international control.”

This landmark decision has been criticized by the nuclear weapon states as being decided “by a narrow margin”, but the structuring of the vote made the margin seem more narrow than it actually was. Seven judges voted against Paragraph 2E of the decision (the paragraph which states that the threat or use of nuclear weapons would be generally illegal, but which mentions as a possible exception the case where a nation might be defending itself from an attack that threatened its very existence.) Seven judges voted for the paragraph, with the President of the Court, Muhammad Bedjaoui of Algeria casting the deciding vote. Thus the Court adopted it, seemingly by a narrow margin. But three of the judges who voted against 2E did so because they believed that no possible exception should be mentioned! Thus, if the vote had been slightly differently structured, the result would have been ten to four.

Of the remaining four judges who cast dissenting votes, three represented nuclear weapons states, while the fourth thought that the Court ought not to have accepted the questions from WHO and the UN. However Judge Schwebel from the United States, who voted against Paragraph 2E, nevertheless added, in a separate opinion, "It cannot be accepted that the use of nuclear weapons on a scale which would, or could, result in the deaths of many millions in indiscriminate inferno and by far-reaching fallout, have pernicious effects in space and time, and render uninhabitable much of the earth, could be lawful."

Judge Higgins from the UK, the first woman judge in the history of the Court, had problems with the word "generally" in Paragraph 2E and therefore voted against it, but she thought that a more profound analysis might have led the Court to conclude in favor of illegality in all circumstances.

Judge Fleischhauer of Germany said, in his separate opinion, "The nuclear weapon is, in many ways, the negation of the humanitarian considerations underlying the law applicable in armed conflict and the principle of neutrality. The nuclear weapon cannot distinguish between civilian and military targets. It causes immeasurable suffering. The radiation released by it is unable to respect the territorial integrity of neutral States."

President Bedjaoui, summarizing the majority opinion, called nuclear weapons "the ultimate evil", and said "By its nature, the nuclear weapon, this blind weapon, destabilizes humanitarian law, the law of discrimination in the use of weapons... The ultimate aim of every action in the field of nuclear arms will always be nuclear disarmament, an aim which is no longer Utopian and which all have a duty to pursue more actively than ever."



Figure 5: *Stamp commemorating the establishment of the International Court of Justice. One of its most important decisions ruled that the threat or use of nuclear weapons violates international humanitarian law. Public domain, Wikimedia Commons.*

Nuremberg Principles, 1947

In 1946, the United Nations General Assembly unanimously affirmed “the principles of international law recognized by the Charter of the Nuremberg Tribunal and the judgment of the Tribunal”. The General Assembly also established an International Law Commission to formalize the Nuremberg Principles. The result was a list that included Principles VI, which is particularly important in the context of the illegality of NATO:

Principle VI: The crimes hereinafter set out are punishable as crimes under international law:

a) Crimes against peace: (I) Planning, preparation, initiation or waging of a war of aggression or a war in violation of international treaties, agreements or assurances; (II) Participation in a common plan or conspiracy for accomplishment of any of the acts mentioned under (I).

Robert H. Jackson, who was the chief United States prosecutor at the Nuremberg trials, said that “To initiate a war of aggression is therefore not only an international crime; it is the supreme international crime, differing from other war crimes in that it contains within itself the accumulated evil of the whole.” Furthermore, the Nuremberg principles state that “The fact that a person acted pursuant to order of his Government or of a superior does not relieve him from responsibility under international law, provided a moral choice was in fact possible to him.” The training of soldiers is designed to make the trainees into automatons, who have surrendered all powers of moral judgment to their superiors. The Nuremberg Principles put the the burden of moral responsibility squarely back where it ought to be: on the shoulders of the individual.

The Universal Declaration of Human Rights, 1948

On December 10, 1948, the General Assembly of the United Nations adopted a Universal Declaration of Human Rights. 48 nations voted for adoption, while 8 nations abstained from voting. Not a single state voted against the Declaration. In addition, the General Assembly decided to continue work on the problem of implementing the Declaration. The Preamble to the document stated that it was intended “as a common standard of achievement for all peoples and nations, to the end that every individual and every organ of society, keeping this Declaration constantly in mind, shall strive by teaching and education to promote respect for these rights and freedoms.”

Articles 1 and 2 of the Declaration state that “all human beings are born free and equal in dignity and in rights”, and that everyone is entitled to the rights and freedoms mentioned in the Declaration without distinctions of any kind. Neither race color, sex, language, religion, political or other opinion, national or social origin, property or social origin must make a difference. The Declaration states that everyone has a right to life, liberty and security of person and property. Slavery and the slave trade are prohibited, as well as torture and cruel, inhuman or degrading punishments. All people must be equal before the law, and no person must be subject to arbitrary arrest, detention or exile. In criminal proceedings an accused person must be presumed innocent until proven guilty by an impartial public hearing where all necessary provisions have been made for the defense of the accused.

No one shall be subjected to interference with his privacy, family, home or correspondence. Attacks on an individual’s

honor are also forbidden. Everyone has the right of freedom of movement and residence within the borders of a state, the right to leave any country, including his own, as well as the right to return to his own country. Every person has the right to a nationality and cannot be arbitrarily deprived of his or her nationality.

All people of full age have a right to marry and to establish a family. Men and women have equal rights within a marriage and at its dissolution, if this takes place. Marriage must require the full consent of both parties.

The Declaration also guarantees freedom of religion, of conscience, and of opinion and expression, as well as freedom of peaceful assembly and association. Everyone is entitled to participate in his or her own government, either directly or through democratically chosen representatives. Governments must be based on the will of the people, expressed in periodic and genuine elections with universal and equal suffrage. Voting must be secret.

Everyone has the right to the economic, social and cultural conditions needed for dignity and free development of personality. The right to work is affirmed. The job shall be of a persons own choosing, with favorable conditions of work, and remuneration consistent with human dignity, supplemented if necessary with social support. All workers have the right to form and to join trade unions.

Article 25 of the Declaration states that everyone has the right to an adequate standard of living, including food, clothing, housing and medical care, together with social services. All people have the right to security in the event of unemployment, sickness, disability, widowhood or old age. Expectant mothers are promised special care and assistance, and children, whether born in or out of wedlock, shall enjoy the same social protection. Everyone has the right to edu-

cation, which shall be free in the elementary stages. Higher education shall be accessible to all on the basis of merit. Education must be directed towards the full development of the human personality and to strengthening respect for human rights and fundamental freedoms. Education must promote understanding, tolerance, and friendship among all nations, racial and religious groups, and it must further the activities of the United Nations for the maintenance of peace.

A supplementary document, the Convention on the Rights of the Child, was adopted by the United Nations General Assembly on the 12th of December, 1989. Furthermore, in July 2010, the General Assembly passed a resolution affirming that everyone has the right to clean drinking water and proper sanitation.

Many provisions of the Universal Declaration of Human Rights, for example Article 25, might be accused of being wishful thinking. In fact, Jean Kirkpatrick, former US Ambassador to the UN, cynically called the Declaration “a letter to Santa Claus”. Nevertheless, like the Millennium Development Goals, the Universal Declaration of Human Rights has great value in defining the norms towards which the world ought to be striving.

It is easy to find many examples of gross violations of basic human rights that have taken place in recent years. Apart from human rights violations connected with interventions of powerful industrial states in the internal affairs of third world countries, there are many cases where governmental forces in the less developed countries have violated the human rights of their own citizens. Often minority groups have been killed or driven off their land by those who coveted the land, as was the case in Guatemala in 1979, when 1.5 million poor Indian farmers were forced to abandon their villages and farms and to flee to the mountains of Mexico in order



Figure 6: *The Universal Declaration of Human Rights, and Eleanor Roosevelt, one of the main people involved in drafting it. Source: [research.archives.gov](https://www.research.archives.gov)*

to escape murderous attacks by government soldiers. The blockade of Gaza and extrajudicial killing by governments must also be regarded as blatant human rights violations, and there are many recent examples of genocide.

Wars in general, and in particular, the use of nuclear weapons, must be regarded as gross violations of human rights. The most basic human right is the right to life; but this is right routinely violated in wars. Most of the victims of recent wars have been civilians, very often children and women. The use of nuclear weapons must be regarded as a form of genocide, since they kill people indiscriminately, babies, children, young adults in their prime, and old people, without any regard for guilt or innocence.

Geneva Conventions, 1949

According to Wikipedia, “The Geneva Conventions comprise four treaties, and three additional protocols, that establish the standards of international law for the humanitarian treatment of war. The singular term, Geneva Convention, usually denotes the agreements of 1949, negotiated in the aftermath of the Second World War (1939-1945), which updated the terms of the first three treaties (1864, 1906, 1929) and added a fourth. The Geneva Conventions extensively defined the basic rights of wartime prisoners (civilians and military personnel); established protection for the wounded; and established protections for civilians in and around a war-zone. The treaties of 1949 were ratified, in whole or with reservations, by 196 countries.” In a way, one might say that the Geneva Conventions are an admission of defeat by the international community. We tried to abolish war entirely through the UN Charter, but failed because the Charter was too weak.

Under the Fourth Geneva Convention, collective punishment is war crime. Article 33 states that “No protected person may be punished for an offense that he or she did not personally commit.” Articles 47-78 also impose substantial obligations on occupying powers, with numerous provisions for the general welfare of the inhabitants of an occupied territory. Thus Israel violated the Geneva Conventions by its collective punishment of the civilian population of Gaza in retaliation for largely ineffective Hamas rocket attacks. The larger issue, however, is the urgent need for lifting of Israel’s brutal blockade of Gaza, which has created what Noam Chomsky calls the “the world’s largest open-air prison”. This blockade violates the Geneva conventions because Israel, as an occupying power, has the duty of providing for the welfare of the people of Gaza.

Nuclear Non-Proliferation Treaty, 1968

In the 1960's, negotiations were started between countries that possessed nuclear weapons, and others that did not possess them, to establish a treaty that would prevent the spread of these highly dangerous weapons, but which would at the same time encourage cooperation in the peaceful uses of nuclear energy. The resulting treaty has the formal title Treaty on the Non-Proliferation of Nuclear Weapons (abbreviated as the NPT). The treaty also aimed at achieving general and complete disarmament. It was opened for signature in 1968, and it entered into force on the 11th of May, 1970.

190 parties have joined the NPT, and more countries have ratified it than any other arms limitation agreement, an indication of the Treaty's great importance. Four countries outside the NPT have nuclear weapons: India, Pakistan, North Korea and Israel. North Korea had originally joined the NPT, but it withdrew in 2003. The NPT has three main parts or "pillars", 1) non-proliferation, 2) disarmament, and 3) the right to peaceful use of nuclear technology. The central bargain of the Treaty is that "the NPT non-nuclear weapon states agree never to acquire nuclear weapons and the NPT nuclear weapon states agree to share the benefits of peaceful use of nuclear technology and to pursue nuclear disarmament aimed at the ultimate elimination of their nuclear arsenals".

Articles I and II of the NPT forbid states that have nuclear weapons to help other nations to acquire them. These Articles were violated, for example, by France, which helped Israel to acquire nuclear weapons, and also by China, which helped Pakistan to do the same. They are also violated by the "nuclear sharing" agreements, through which US tactical nuclear weapons will be transferred to several countries in Europe in a crisis situation. It is sometimes argued that

in the event of a crisis, the NPT would no longer be valid, but there is nothing in the NPT itself that indicates that it would not hold in all situations.

The most blatantly violated provision of the NPT is Article VI. It requires the member states 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 negotiations towards a “Treaty on general and complete disarmament”. In other words, the states that possess nuclear weapons agreed to get rid of them. However, during the 47 years that have passed since the NPT went into force, the nuclear weapon states have shown absolutely no sign of complying with Article VI. There is a danger that the NPT will break down entirely because of the majority of countries in the world are so dissatisfied with this long-continued non-compliance. Looking at the NPT with the benefit of hindsight, we can see the third “pillar”, the “right to peaceful use of nuclear technology” as a fatal flaw of the treaty. In practice, it has meant encouragement of nuclear power generation, with all the many dangers that go with it.

The enrichment of uranium is linked to reactor use. Many reactors of modern design make use of low enriched uranium as a fuel. Nations operating such a reactor may claim that they need a program for uranium enrichment in order to produce fuel rods. However, by operating their ultracentrifuge a little longer, they can easily produce highly enriched (weapons-usable) uranium.

The difficulty of distinguishing between a civilian nuclear power generation program and a military nuclear program is illustrated by the case of Iran. In discussing Iran, it should be mentioned that Iran is fully in compliance with the NPT. It is very strange to see states that are long-time blatant violators of the NPT threaten Iran because of a nuclear program

that fully complies with the Treaty. I believe that civilian nuclear power generation is always a mistake because of the many dangers that it entails, and because of the problem of disposing of nuclear waste. However, a military attack on Iran would be both criminal and insane. Why criminal? Because such an attack would violate the UN Charter and the Nuremberg Principles. Why insane? Because it would initiate a conflict that might escalate uncontrollably into World War III.

Biological Weapons Convention, 1972

During World War II, British and American scientists investigated the possibility of using smallpox as a biological weapon. However, it was never used, and in 1969 President Nixon officially ended the American biological weapons program, bowing to the pressure of outraged public opinion. In 1972, the United States, the United Kingdom and the Soviet Union signed a Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. Usually this treaty is known as the Biological Weapons Convention (BWC), and it has now been signed by virtually all of the countries of the world.

However, consider the case of smallpox: A World Health Organization team led by D.A. Henderson devised a strategy in which cases of smallpox were isolated and all their contacts vaccinated, so that the disease had no way of reaching new victims. Descriptions of the disease were circulated, and rewards offered for reporting cases. The strategy proved to be successful, and finally, in 1977, the last natural case of smallpox was isolated in Somalia. After a two-year waiting period, during which no new cases were reported, WHO

announced in 1979 that smallpox, one of the most frightful diseases of humankind, had been totally eliminated from the world. This was the first instance of the complete eradication of a disease, and it was a demonstration of what could be achieved by the enlightened use of science combined with international cooperation. The eradication of smallpox was a milestone in human history.

It seems that our species is not really completely wise and rational; we do not really deserve to be called “*Homo sapiens*”. Stone-age emotions and stone-age politics are alas still with us. Samples of smallpox virus were taken to “carefully controlled” laboratories in the United States and the Soviet Union. Why? Probably because these two Cold War opponents did not trust each other, although both had signed the Biological Weapons Convention. Each feared that the other side might intend to use smallpox as a biological weapon. There were also rumors that unofficial samples of the virus had been saved by a number of other countries, including North Korea, Iraq, China, Cuba, India, Iran, Israel, Pakistan and Yugoslavia.

Chemical Weapons Convention, 1997

On the 3rd of September, 1992, the Conference on Disarmament in Geneva adopted a Convention on the Prohibition of Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction. This agreement, which is usually called the Chemical Weapons Convention (CWC), attempted to remedy some of the shortcomings of the Geneva Protocol of 1925. The CWC went into force in 1997, after Hungary deposited the 65th instrument of ratification.

The provisions of Article I of the CWC are as follows:

1. Each State Party to this convention undertakes never un-

der any circumstances: (a) To develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone; (b) To use chemical weapons; (c) To engage in any military preparation to use chemical weapons; (d) To assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party in accordance with the provisions of this Convention. 2. Each State Party undertakes to destroy chemical weapons it owns or possesses, or that are located any place under its jurisdiction or control, in accordance with the provisions of this Convention. 3. Each State Party undertakes to destroy all chemical weapons it abandoned on the territory of another State Party, in accordance with the provisions of this Convention. 4. Each State Party undertakes to destroy any chemical weapons production facilities it owns or possesses, or that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention. 5. Each State Party undertakes not to use riot control agents as a method of warfare.

The CWC also makes provision for verification by teams of inspectors, and by 2004, 1,600 such inspections had been carried out in 59 countries. It also established an Organization for the Prevention of Chemical Warfare. All of the declared chemical weapons production facilities have now been inactivated, and all declared chemical weapons have been inventoried. However of the worlds declared stockpile of chemical warfare agents (70,000 metric tons), only 12 percent have been destroyed. One hopes that in the future the CWC will be ratified by all the nations of the world and that the destruction of stockpiled chemical warfare agents will become complete.

Mine Ban Treaty, 1999

In 1991, six NGOs organized the International Campaign to Ban Landmines, and in 1996, the Canadian government launched the Ottawa process to ban landmines by hosting a meeting among like-minded anti-landmine states. A year later, in 1997, the Mine Ban Treaty was adopted and opened for signatures. In the same year, Jody Williams and the International Campaign to ban Landmines were jointly awarded the Nobel Peace Prize. After the 40th ratification of the Mine Ban Treaty in 1998, the treaty became binding international law on the 1st of March, 1999. The Ottawa Treaty functions imperfectly because of the opposition of several militarily powerful nations, but nevertheless it establishes a valuable norm, and it represents an important forward step in the development of international law.

International Criminal Court, 2002

In 1998, in Rome, representatives of 120 countries signed a statute establishing an International Criminal Court (ICC), with jurisdiction over the crime of genocide, crimes against humanity, war crimes and the crime of aggression.

Four years were to pass before the necessary ratifications were gathered, but by Thursday, April 11, 2002, 66 nations had ratified the Rome agreement, 6 more than the 60 needed to make the court permanent. It would be impossible to overstate the importance of the ICC. At last, international law acting on individuals has become a reality! The only effective and just way that international laws can act is to make individuals responsible and punishable, since (in the words of Alexander Hamilton) "To coerce states is one of the maddest projects that was ever devised."

At present, the ICC functions very imperfectly because

of the bitter opposition of several powerful countries, notable the United States. U.S. President George W. Bush signed into law the American Servicemembers Protection Act of 2002, which is intended to intimidate countries that ratify the treaty for the ICC. The new law authorizes the use of military force to liberate any American or citizen of a U.S.-allied country being held by the court, which is located in The Hague. This provision, dubbed the “Hague invasion clause,” has caused a strong reaction from U.S. allies around the world, particularly in the Netherlands.²

Despite the fact that the ICC now functions so imperfectly, it is a great step forward in the development of international law. It is there and functioning. We have the opportunity to make it progressively more impartial and to expand its powers.

Arms Trade Treaty, 2013

On April 2, 2013, a historic victory was won at the United Nations, and the world achieved its first treaty limiting international trade in arms. Work towards the Arms Trade Treaty (ATT) began in the Conference on Disarmament in Geneva, which requires a consensus for the adoption of any measure. Over the years, the consensus requirement has meant that no real progress in arms control measures has been made in Geneva, since a consensus among 193 nations is impossible to achieve.

To get around the blockade, British U.N. Ambassador Mark Lyall Grant sent the draft treaty to Secretary-General Ban Ki-moon and asked him on behalf of Mexico, Australia and a number of others to put the ATT to a swift vote in

²<http://www.hrw.org/news/2002/08/03/us-hague-invasion-act-becomes-law>



Figure 7: *Logo of the International Criminal Court. Despite the fact that the ICC now functions very imperfectly, it would be impossible to overstate its importance. For the first time, it makes international law act on individuals. Public domain, Wikimedia Commons.*

the General Assembly, and on Tuesday, April 3, 2013, it was adopted by a massive majority. Among the people who have worked hardest for the ATT is Anna Macdonald, Head of Arms Control at Oxfam. The reason why Oxfam works so hard on this issue is that trade in small arms is a major cause of poverty and famine in the developing countries. On April 9, Anna Macdonald wrote: “Thanks to the democratic process, international law will for the first time regulate the 70 billion dollar global arms trade. Had the process been launched in the consensus-bound Conference on Disarmament in Geneva, currently in its 12th year of meeting without even being able to agree on an agenda, chances are it would never have left the starting blocks...”

The passage of the Arms Trade Treaty by a majority vote in the UN General Assembly opens new possibilities for progress on other seemingly-intractable issues. In particular, it gives hope that a Nuclear Weapons Convention might be adopted by a direct vote on the floor of the General Assembly. The adoption of the NWC, even if achieved against the bitter opposition of the nuclear weapon states, would make it clear that the world’s peoples consider the threat of an all-destroying nuclear war to be completely unacceptable.

We can pass a Nuclear Weapons Convention in the UN General Assembly

A convention banning nuclear weapons could be adopted by a majority vote on the floor of the UN General Assembly, following the precedent set by the Arms Trade Treaty. Indeed, this is the path forward advocated by the International Campaign to Abolish Nuclear Weapons (ICAN). In the case of a Nuclear Weapons Convention, world public opinion would have especially great force. It is generally agreed that a full-

scale nuclear war would have disastrous effects, not only on belligerent nations but also on neutral countries. Mr. Javier Prez de Cullar, former Secretary-General of the United Nations, emphasized this point in one of his speeches:

“I feel”, he said, “That the question may justifiably be put to the leading nuclear powers: by what right do they decide the fate of humanity? From Scandinavia to Latin America, from Europe and Africa to the Far East, the destiny of every man and woman is affected by their actions. No one can expect to escape from the catastrophic consequences of a nuclear war on the fragile structure of this planet...”

“Like supreme arbiters, with our disputes of the moment, we threaten to cut off the future and to extinguish the lives of innocent millions yet unborn. There can be no greater arrogance. At the same time, the lives of all those who lived before us may be rendered meaningless; for we have the power to dissolve in a conflict of hours or minutes the entire work of civilization, with the brilliant cultural heritage of humankind.”

Racism, Colonialism and Exceptionalism

A just system of laws must apply equally and without exception to everyone. If a person, or, in the case of international law, a nation, claims to be outside the law, or above the law, then there is something fundamentally wrong. For example, when U.S. President Obama said in a 2013 speech, “What makes America different, what makes us exceptional, is that we are dedicated to act”, then thoughtful people could immediately see that something was terribly wrong with the system. If we look closely, we find that there is a link between racism, colonialism and exceptionalism. The racist and colonialist concept of “the white man’s burden” is linked

to the Neo-Conservative self-image of benevolent (and violent) interference in the internal affairs of other countries.³

The Oslo Principles on Climate Change Obligation, 2015

The future of human civilization and the biosphere is not only threatened by thermonuclear war: It is also threatened by catastrophic climate change. If prompt action is not taken to curb the use of fossil fuels: if the presently known reserves of fossil fuels are not left in the ground, then there is a great danger that we will pass a tipping point beyond which human efforts to stop a catastrophic increase in global temperatures will be useless because feedback loops will have taken over. There is a danger of a human-initiated 6th geological extinction event, comparable with the Permian-Triassic event, during which 96 percent of marine species and 70 percent of terrestrial vertebrates became extinct.

Recently there have been a number of initiatives which aim at making the human obligation to avert threatened environmental mega-catastrophes a part of international law. One of these initiatives can be seen in the proposal of the Oslo Principles on Climate Change Obligations; another is the Universal Declaration of the Rights of Mother Earth; and a third can be found in the concept of Biocultural Rights. These are extremely important and hopeful initiatives, and they point to towards the future development of international law for which we must strive.⁴

³<http://www.countercurrents.org/avery101013.htm>
<https://www.youtube.com/watch?v=efl6T8lovqY>
<https://www.youtube.com/watch?v=IdBDRbjx9jo>

⁴<https://www.transcend.org/tms/2015/04/oslo-principles-on-global-climate-change-obligations/>

Hope for the future, and responsibility for the future

Can we abolish the institution of war? Can we hope and work for a time when the terrible suffering inflicted by wars will exist only as a dark memory fading into the past? I believe that this is really possible. The problem of achieving internal peace over a large geographical area is not insoluble. It has already been solved. There exist today many nations or regions within each of which there is internal peace, and some of these are so large that they are almost worlds in themselves. One thinks of China, India, Brazil, the Russian Federation, the United States, and the European Union. Many of these enormous societies contain a variety of ethnic groups, a variety of religions and a variety of languages, as well as striking contrasts between wealth and poverty. If these great land areas have been forged into peaceful and co-operative societies, cannot the same methods of government be applied globally?

Today, there is a pressing need to enlarge the size of the political unit from the nation-state to the entire world. The need to do so results from the terrible dangers of modern weapons and from global economic interdependence. The progress of science has created this need, but science has also given us the means to enlarge the political unit: Our almost miraculous modern communications media, if properly used, have the power to weld all of humankind into a single

<https://www.transcend.org/tms/2015/04/climate-change-at-last-a-breakthrough-to-our-catastrophic-political-impasse/>
<http://www.commondreams.org/news/2015/04/14/lawsuit-out-love-unprecedented-legal-action-accuses-dutch-government-failing-climate>
<http://www.elgaronline.com/view/journals/jhre/6-1/jhre.2015.01.01.xml>
<http://therightsofnature.org/universal-declaration/>

supportive and cooperative society.

We live at a critical time for human civilization, a time of crisis. Each of us must accept his or her individual responsibility for solving the problems that are facing the world today. We cannot leave this to the politicians. That is what we have been doing until now, and the results have been disastrous. Nor can we trust the mass media to give us adequate public discussion of the challenges that we are facing. We have a responsibility towards future generations to take matters into our own hands, to join hands and make our own alternative media, to work actively and fearlessly for better government and for a better society.

We, the people of the world, not only have the facts on our side; we also have numbers on our side. The vast majority of the world's peoples long for peace. The vast majority long for abolition of nuclear weapons, and for a world of kindness and cooperation, a world of respect for the environment. No one can make these changes alone, but together we can do it.

Together, we have the power to choose a future where international anarchy, chronic war and institutionalized injustice will be replaced by democratic and humane global governance, a future where the madness and immorality of war will be replaced by the rule of law.

We need a sense of the unity of all mankind to save the future, a new global ethic for a united world. We need politeness and kindness to save the future, politeness and kindness not only within nations but also between nations. To save the future, we need a just and democratic system of international law; for with law shall our land be built up, but with lawlessness laid waste.

SCIENCE CHANGES THE CHARACTER OF WAR

Casualties produced by modern weapons

The American Civil War was the first war in which breech-loading and repeating rifles were used on a large scale, and observers came from Europe to study their horrifying effectiveness. Together, the North and South had 3,867,000 men under arms - about 11 percent of Americas population at that time. By its end, the Civil War had killed or wounded almost a million people! No war before or since has resulted in as many American casualties, either absolutely or proportionately. Neither side had expected anything of the kind. They had entered lightheartedly a war that both North and South had expected to be romantic and brief, but a new technology of killing had changed the character of war

In the First World War, it became still clearer that the romantic ideal of war no longer existed. Ideals of heroism, patriotism and gallantry filled the minds of the millions of young men who went to war in 1914, but instead of the romantic adventures they expected, they experienced the horrors of trench warfare, gangrene, barbed wire, artillery bombardments, machine-gun slaughter, and poison gas. Sixty-five million soldiers were mobilized in the First World War. When it was over, 37.5 million of these were casualties: either killed, wounded or missing. For some countries, the percentage of casualties among the mobilized soldiers was astonishingly high: Austria-Hungary mobilized 7.8 million soldiers, and of these, 7.0 million were casualties, i.e., 90 percent!

In the Second World War, the number of soldiers killed was roughly the same as in World War I, but the numbers of



Figure 8: *Dead soldiers at the Battle of Gettysburg. The American Civil War killed or wounded almost a million people. Public domain, Wikimedia Commons*

civilian deaths was much larger. In the USSR alone, about 20 million people are thought to have been killed, directly or indirectly, by World War II, and of these only 7.5 million were battle deaths. Many of the USSRs civilian deaths were caused by starvation, disease or exposure. Civilian populations also suffered greatly in the devastating bombings of cities such as London, Coventry, Rotterdam, Warsaw, Dresden, Cologne, Berlin, Tokyo, Hiroshima and Nagasaki. Estimates of the total number of soldiers and civilians killed in World War II range between 60 million and 85 million (Wikipedia).

Nuclear weapons threaten to destroy human civilization and much of the biosphere

There is much worry today about climate change, but an ecological catastrophe of equal or greater magnitude could be produced by a nuclear war. One can gain a small idea of what this would be like by thinking of the radioactive contamination that has made an area half the size of Italy near to Chernobyl permanently uninhabitable. It is too soon to know the full effects of the Fukushima disaster, but it appears that it will be comparable with Chernobyl or worse.

The testing of hydrogen bombs in the Pacific half a century ago continues to cause cancer and birth defects in the Marshall Islands today. This too can give us a small idea of the environmental effects of a nuclear war.

In 1954, the United States tested a hydrogen bomb at Bikini. The bomb was 1,300 times more powerful than the bombs that destroyed Hiroshima and Nagasaki. Fallout from the bomb contaminated the island of Rongelap, one of the Marshall Islands 120 kilometers from Bikini. The islanders experienced radiation illness, and many died from cancer. Even today, half a century later, both people and animals on Rongelap and other nearby islands suffer from birth defects. The most common defects have been “jelly fish babies”, born with no bones and with transparent skin. Their brains and beating hearts can be seen. The babies usually live a day or two before they stop breathing.

The environmental effects of a nuclear war would be catastrophic. A war fought with hydrogen bombs would produce radioactive contamination of the kind that we have already experienced in the areas around Chernobyl and Fukushima and in the Marshall Islands, but on an enormously increased scale. We have to remember that the total explosive power

of the nuclear weapons in the world today is 500,000 times as great as the power of the bombs that destroyed Hiroshima and Nagasaki. What is threatened by a nuclear war today is the complete breakdown of human civilization.

Besides spreading deadly radioactivity throughout the world, a nuclear war would inflict catastrophic damage on global agriculture. Firestorms in burning cities would produce many millions of tons of black, thick, radioactive smoke. The smoke would rise to the stratosphere where it would spread around the earth and remain for a decade. Prolonged cold, decreased sunlight and rainfall, and massive increases in harmful ultraviolet light would shorten or eliminate growing seasons, producing a nuclear famine. Even a small nuclear war could endanger the lives of the billion people who today are chronically undernourished. A full-scale war fought with hydrogen bombs would mean that most humans would die from hunger. Many animal and plant species would also be threatened with extinction.

But politicians still threaten the world with war!

Most of our politicians learned nothing at all from the million casualties of the American Civil War. They learned nothing whatever from the 37,5 million killed, wounded or missing in the slaughter of the First World War. They learned absolutely nothing from the 60-85 million soldiers and civilians who died miserably in World War II. They have resolved to learn nothing from the horrors of Hiroshima and Nagasaki. They are totally blind to the implications of Chernobyl, Fukushima and the Marshall Islands, blind to the threat that a nuclear war would damage global agriculture to such an extent that the resulting famine might kill, not

millions of people, but billions. They act as though war were still a perfectly legitimate human institution, despite the fact that technological progress has turned war into a highly dangerous anachronism.

Our ideas and our political institutions adjust much too slowly to the realities of technology. A nuclear war today could destroy human civilization and much of the biosphere. But politicians continue to risk the future of the world by initiating potentially catastrophic wars.

ETHICS FOR THE FUTURE

In the long run, because of the enormously destructive weapons, which have been produced through the misuse of science, the survival of civilization can only be ensured if we are able to abolish the institution of war. We must also stop destroying our planet through unlimited growth of industry and population.

Science and technology have shown themselves to be double-edged, capable of doing great good or of producing great harm, depending on the way in which we use the enormous power over nature, which science has given to us. For this reason, ethical thought is needed now more than ever before. The wisdom of the world's religions, the traditional wisdom of humankind, can help us as we try to ensure that our overwhelming material progress will be beneficial rather than disastrous.

The crisis of civilization, which we face today, has been produced by the rapidity with which science and technology have developed. Our institutions and ideas adjust too slowly to the change. The great challenge which history has given to our generation is the task of building new international political structures, which will be in harmony with modern technology. We must abolish war and stabilize the global population. At the same time, we must develop a new global ethic, which will replace our narrow loyalties by loyalty to humanity as a whole.

Abolition of the institution of war will require the construction of structures of international government and law to replace our present anarchy at the global level. Today's technology has shrunk the distances, which once separated nations; and our present system of absolutely sovereign nation-states has become both obsolete and dangerous.

Besides a humane, democratic and just framework of international law and governance, we urgently need a new global ethic, an ethic where loyalty to family, community and nation will be supplemented by a strong sense of the brotherhood of all humans, regardless of race, religion or nationality. Schiller expressed this feeling in his Ode to Joy, the text of Beethoven's Ninth Symphony. Hearing Beethoven's music and Schiller's words, most of us experience an emotion of resonance and unity with its message: All humans are brothers and sisters - not just some - all! It is almost a national anthem of humanity. The feelings which the music and words provoke are similar to patriotism, but broader. It is this sense of a universal human family, which we need to cultivate in education, in the mass media, and in religion.

Educational reforms are urgently needed, particularly in the teaching of history. As it is taught today, history is a chronicle of power struggles and war, told from a biased national standpoint. Our own race or religion is superior; our own country is always heroic and in the right.

We urgently need to replace this indoctrination in chauvinism by a reformed view of history, where the slow development of human culture is described, giving adequate credit to all those who have contributed. Our modern civilization is built on the achievements of ancient cultures. China, India, Mesopotamia, ancient Egypt, Greece, the Islamic world, Christian Europe, and Jewish intellectual traditions all have contributed. Potatoes, corn and squash are gifts from the American Indians. Human culture, gradually built up over thousands of years by the patient work of millions of hands and minds, should be presented to students of history as a precious heritage: far too precious to be risked in a thermonuclear war.

Tribalism, cultural evolution and ethics

Our remote ancestors, 100,000 years ago, lived in small, genetically homogeneous tribes, competing for territory on the grasslands of Africa. It was during this period that human emotions were formed. Since marriage was far more common within a tribe than outside it, the members of a tribe shared a common gene pool, and the tribe as a whole was the unit upon which the forces of natural selection acted. The tribe as a whole either survived or perished. This fact can explain the pattern of altruism and aggression that we observe in human emotional behavior. Humans show great altruism and loyalty to members of their own group, but they can show terrible aggression to outsiders if they believe that their own group is threatened by them.

The rapid and constantly accelerating speed of cultural evolution of humans has changed the way of life of our hunter-gatherer ancestors beyond recognition. As the pace of cultural information accumulation quickened, genetic change could no longer keep up. Genetically we are almost identical with our Neolithic ancestors; but their world has been replaced by a world of quantum theory, relativity, supercomputers, antibiotics, genetic engineering and space telescopes; unfortunately also a world of nuclear weapons and nerve-gas. Because of the slowness of genetic evolution in comparison to the rapid and constantly-accelerating rate of cultural change, our bodies and emotions are not adapted to our new way of life. They still reflect the way of life of our hunter-gatherer ancestors.

Fortunately humans show a great capacity for overwriting primitive emotions with learned ethical behavior. Many of the great ethical teachers of history lived at a time when cultural evolution was changing humans from hunter-gatherers

and pastoral peoples to farmers and city dwellers. To live and cooperate in larger groups, humans needed to overwrite their instinctive behavior patterns with culturally-determined behavior involving a wider range of cooperation than previously. This period of change is marked by the lives and ideas of a number of great ethical teachers: Moses, Buddha, Lao Tse, Confucius, Socrates, Aristotle, Jesus, and Saint Paul. Muhammad lived at a slightly later period, but it was still a period of transition for the Arab peoples, a period during which their range cooperation needed to be enlarged.

Today, the world is divided into sovereign nation-states, whose leaders appeal to our primitive tribal emotions to create quasi-religious cults of nationalism. However, because of the terrible destructive power of modern weapons, which are capable of destroying human civilization and much of the biosphere, nationalism has today become a dangerous anachronism. We urgently need a higher ethic, an ethic for the future, where nationalism is replaced by loyalty to humanity as a whole. It must also be an ethic where we strongly feel a duty to protect all living creatures and the earth's environment.

The world's religions

There is a remarkable agreement on ethical principles between the major religions of the world. The central ethical principles of Christianity can be found in the Sermon on the Mount and in the Parable of the Good Samaritan. In the Sermon on the Mount, we are told that we must not only love our neighbors as much as we love ourselves; we must also love and forgive our enemies. This seemingly impractical advice is in fact of great practicality, since escalatory cycles of revenge and counter-revenge can only be ended by

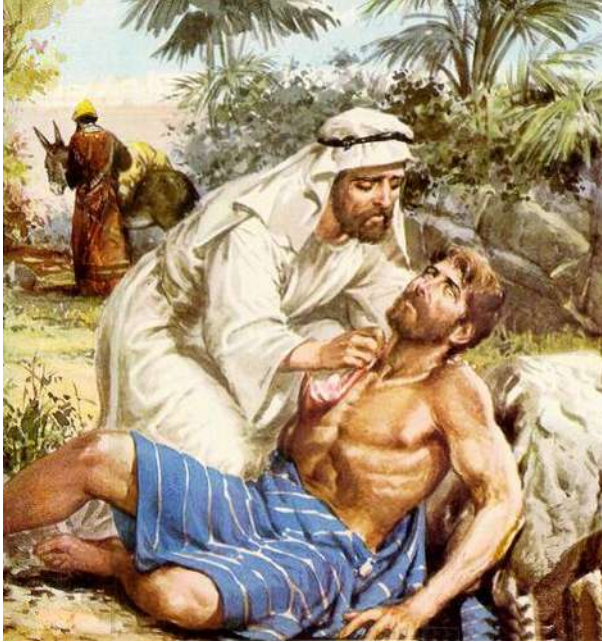


Figure 9: *The Parable of the Good Samaritan: Our neighbor may live on the other side of the world and belong to an entirely different race or culture; but he or she still deserves our love and care. The painting is by Oscar Espinoza Castillio. [CC BY-SA 3.0], Wikimedia Commons*

unilateral acts of kindness.

In the Parable of the Good Samaritan, we are told that our neighbor, whom we must love, is not necessarily a member of our own ethnic group. Our neighbor may live on the other side of the world and belong to an entirely different race or culture; but he or she still deserves our love and care.

It is an interesting fact that the Golden Rule, “Do unto others as you would have them do unto you”, appears in various forms in all of the world’s major religions. The Wikipedia

article on the Golden Rule gives an impressive and fascinating list of the forms in which the rule appears in many cultures and religions. For example, in ancient China, both Confucius and Laozi express the Golden Rule, but they do it slightly differently: Zi Gong asked, saying, "Is there one word that may serve as a rule of practice for all one's life?" The Master said, "Is not reciprocity such a word?" (Confucius) and "The sage has no interest of his own, but takes the interests of the people as his own. He is kind to the kind; he is also kind to the unkind: for Virtue is kind. He is faithful to the faithful; he is also faithful to the unfaithful: for Virtue is faithful." (Laozi)

In the Jewish tradition, we have "The stranger who resides with you shall be to you as one of your citizens; you shall love him as yourself, for you were strangers in the land of Egypt" (Leviticus)

In Islam: A Bedouin came to the prophet, grabbed the stirrup of his camel and said: O the messenger of God! Teach me something to go to heaven with. The Prophet said: "As you would have people do to you, do to them; and what you dislike to be done to you, don't do to them. This maxim is enough for you; go and act in accordance with it!" (Kitab al-Kafi, vol. 2, p. 146)

These fundamental ethical principles, shared by all of the world's major religions, would be enough to make war impossible if they were only followed. But too often, religion has emphasized the differences between ethnic groups rather than appealing for comprehensive human solidarity. Too often, religion has been a source of conflict and war, rather than a force which would make war impossible. Too often, religion has been part of the problem, rather than the solution, but it could potentially be the solution. Every week, in churches, mosques, temples and synagogues, congregations

listen to sermons which could potentially carry the message of peace, abolition of war, abolition of nuclear weapons and also the message of universal human brotherhood. If our religious leaders do not use this opportunity, they will be failing humanity at a time of mortal danger.

Can ethical principles be derived from science?

It is often said that ethical principles cannot be derived from science, that they must come from somewhere else. Nevertheless, when nature is viewed through the eyes of modern science, we obtain some insights which seem almost ethical in character. Biology at the molecular level has shown us the complexity and beauty of even the most humble living organisms, and the interrelatedness of all life on earth. Looking through the eyes of contemporary biochemistry, we can see that even the single cell of an amoeba is a structure of miraculous complexity and precision, worthy of our respect and wonder.

Knowledge of the second law of thermodynamics , the statistical law favoring disorder over order, reminds us that life is always balanced like a tight-rope walker over an abyss of chaos and destruction. Living organisms distill their order and complexity from the flood of thermodynamic information which reaches the earth from the sun. In this way, they create local order; but life remains a fugitive from the second law of thermodynamics. Disorder, chaos, and destruction remain statistically favored over order, construction, and complexity.

It is easier to burn down a house than to build one, easier to kill a human than to raise and educate one, easier to force a species into extinction than to replace it once it is

gone, easier to burn the Great Library of Alexandria than to accumulate the knowledge that once filled it, and easier to destroy a civilization in a thermonuclear war than to rebuild it from the radioactive ashes. Knowing this, we can form an almost ethical insight: To be on the side of order, construction, and complexity, is to be on the side of life. To be on the side of destruction, disorder, chaos and war is to be against life, a traitor to life, an ally of death. Knowing the precariousness of life, knowing the statistical laws that favor disorder and chaos, we should resolve to be loyal to the principle of long continued construction upon which life depends.

War is based on destruction, destruction of living persons, destruction of homes, destruction of infrastructure, and destruction of the biosphere. If we are on the side of life, if we are not traitors to life and allies of death, we must oppose the institution of war. We must oppose the military-industrial complex. We must oppose the mass media when they whip up war-fever. We must oppose politicians who vote for obscenely enormous military budgets at a time of financial crisis. We must oppose these things by working with dedication, as though our lives depended on it. In fact, they do.

The need for a new system of economics

Our present economic system is one of the main causes of war, and one of the main reasons why we are destroying the earth's environment. We need a new economic system, which will have both a social conscience and an environmental conscience.

According to the great classical economist Adam Smith (1723-1790), self-interest (even greed) is a sufficient guide to

human economic actions. The passage of time has shown that Smith was right in many respects. The free market, which he advocated, has turned out to be the optimum prescription for economic growth. However, history has also shown that there is something horribly wrong or incomplete about the idea that individual self-interest alone, uninfluenced by ethical and ecological considerations, and totally free from governmental intervention, can be the main motivating force of a happy and just society. There has also proved to be something terribly wrong with the concept of unlimited economic growth.

During the early phases of the Industrial Revolution, the landowners of Scotland were unquestionably following self-interest as they burned the cottages of their crofters because it was more profitable to have sheep on the land; and self-interest motivated overseers as they whipped half-starved child workers in England's mills. Adam Smith's "invisible hand" no doubt guided their actions in such a way as to maximize production. But the result was a society with enormous contrasts between rich and poor, a society in which a large fraction of the population lived in conditions of gross injustice and terrible suffering. Self-interest alone was not enough.

A society following purely economic laws, a society where selfishness is exalted as the mainspring for action, lacks both the ethical and ecological dimensions that are needed for social justice, widespread happiness, and sustainability. That is true today, just as it was during the early phases of the Industrial Revolution. In fact, Adam Smith himself would have accepted this criticism of his enthronement of self-interest as the central principle of society. He believed that his "invisible hand" would not work for the betterment of society except within the context of governmental regulation. His

modern Neoliberal admirers, however, forget this aspect of Smith's philosophy, and maintain that market forces alone can achieve a desirable result

Today, in many countries, gigantic corporations control governments, and they act not only to promote "resource wars", but also to promote the unlimited economic growth that is destroying the global environment. The idea that growth can continue forever on a finite planet is an absurdity. Therefore we urgently need a new form of economics: Ecological Economics or Steady-State Economics.

When possessions are used for the purpose of social competition, demand has no natural upper limit; it is then limited only by the size of the human ego, which, as we know, is boundless. This would be all to the good if unlimited industrial growth were desirable; but today, when further industrial growth implies future collapse, western society urgently needs to find new values to replace our worship of power, our restless chase after excitement, and our admiration of excessive consumption. We must stop using material goods for the purpose of social competition.

In the world of the future, a future of changed values, women will take their places beside men in positions of responsibility, children will be educated rather than exploited, non-material human qualities, such as kindness, politeness, knowledge and musical and artistic ability will be valued more highly, and people will derive a larger part of their pleasure from conversation and from the appreciation of unspoiled nature. These are the values that we need for the future, a future that belongs not only to ourselves, but to our children and grandchildren.

In the world as it is today, 1.7 trillion dollars are wasted on armaments each year; and while this is going on, children in the developing countries sift through garbage dumps

searching for scraps of food. In today's world, the competition for jobs and for material possessions makes part of the population of the industrial countries work so hard that they damage their health and neglect their families; and while this is going on, another part of the population suffers from unemployment, becoming vulnerable to depression, mental illness, alcoholism, drug abuse and crime.

In the world of the future, which we now must build, the institution of war will be abolished, and the enormous resources now wasted on war will be used constructively. In the future world as it can be if we work to make it so, a stable population of moderate size will live without waste or luxury, but in comfort and security, free from the fear of hunger or unemployment. The world which we want will be a world of changed values, where human qualities will be valued more than material possessions. Let us try to combine wisdom and religious ethics from humanity's past with today's technology to build a sustainable, livable and equitable future world.

HUMANITARIAN MISSILE STRIKES AGAINST SYRIA?

The issue of chemical weapons is obscuring the more important issues of legality, and the question of whether an attack on Syria would not greatly increase the suffering of the people of that region because of escalation.

Whether or not the United States Congress approves a US attack on Syria, such an attack would unambiguously violate the United Nations Charter, and it would be a war crime under the Nuremberg Principles. Both President Obama, ordering the attack, and the military personnel carrying it out, would be war criminals and liable to punishment for the remainder of their lives.

The idea of a “humanitarian” missile strike is an absurdity. What targets would be hit? Chemical weapons depots? This would spread nerve gas throughout the surrounding areas. Airfields and military barracks? What do these have anything to do with chemical weapons? Could the United States avoid killing many civilians? Absolutely not! Does the Obama Administration think that it can save civilian lives by a missile attack which would kill many more of them?

What would be the effect of a US missile attack on Syria? Would it make a political settlement of the civil war more likely? No, it would lead to an extremely dangerous escalation of the conflict, and possibly World War III. The danger of escalation is underlined by the statements by Assad’s government and by Iran concerning what they would do in retaliation if attacked, (for example, missile strikes on Israel and on US bases) and by Russian and Chinese warships that are now sailing into the Mediterranean.

A large-scale war in the Middle East might lead to the overthrow of Pakistan’s less-than-stable government , bring-

ing that country's nuclear weapons into the conflict on the side of Syria and Iran. Also the closing of the Straits of Hormuz would lead to extremely high oil prices, whose likely effect on the global economy would be to cause a worldwide depression of unprecedented severity.

The proper response to the tragic events now taking place in Syria would be for all parties to refrain from sending weapons to the region, and to support a conference that would seek a diplomatic solution. In the meantime, a sufficient amount of money should be made available to help Syrian refugees who are at present facing a humanitarian crisis. If chemical weapons have been used, the correct response is for an international tribunal to conduct an investigation and trial of whoever might be guilty.

It is strange that the United States is trying to stand on high moral ground with respect to chemical weapons, when its record for using them or encouraging their use is so abysmal. In its article on Agent Orange, Wikipedia states that "Agent Orange or Herbicide Orange (HO) is one of the herbicides and defoliants used by the US military as part of its chemical warfare program, Operation Ranch Hand, during the Vietnam War from 1961 to 1971. Vietnam estimates 400,000 people were killed or maimed and 500,000 children born with birth defects as a result of its use. The Red Cross of Vietnam estimates that up to 1 million people are disabled or have birth defects due to Agent Orange."

Depleted uranium munitions, which have been liberally used by the United States in its various wars, have caused extremely numerous cases of cancer, especially in Iraq.

Furthermore, the US backed Saddam Hussein's use of chemical weapons: In 1980, encouraged to do so by the fact that Iran had lost its US backing, Saddam Hussein's government attacked Iran. This was the start of a extremely bloody



Figure 10: *Middle aged gentleman stands at a cathedral entrance seeking money while he shows his severe arm deformity. The Red Cross of Vietnam estimates that up to 1 million people are disabled or have birth defects due to Agent Orange. Uploaded by Emilio Labrador. [CC BY 2.0], Wikimedia Commons.*

and destructive war that lasted for eight years, inflicting almost a million casualties on the two nations. Iraq used both mustard gas and the nerve gases Tabun and Sarin against Iran, in violation of the Geneva Protocol.

Both the United States and Britain had helped Saddam Husseins government to obtain chemical weapons. A chemical plant, called Falluja 2, was built by Britain in 1985, and this plant was used to produce mustard gas and nerve gas. Also, according to the Riegel Report to the US Senate, May 25, (1994), the Reagan Administration turned a blind eye to the export of chemical weapon precursors to Iraq, as well as anthrax and plague cultures that could be used as the basis for biological weapons. When (in 1988) Hussein went so far as to use poison gas against civilian citizens of his own country in the Kurdish village of Halabja, the United States worked to prevent international condemnation of the act.

It is not at all clear that it was Assad's government that used chemical weapons in Syria. There are a number of factors that make a false flag attack seem more likely. Why would Assad use chemical weapons at the precise moment when Obama had declared that this was the red line which, if crossed, would lead him to attack Syria? Assad does not want greater US involvement in the conflict; Israel wants it. Furthermore, Assad's first action was to invite UN inspectors, while the United States' first action was to try to persuade the UN not to send inspectors. Finally, the US does not have a good record with respect to starting wars on the basis of lies. But let us return to the most important issues:

A large-scale war in the Middle East would cause immense suffering to the people of the region, and it might turn into a Third World War. It would be a criminal act to initiate such a war, violating both the United Nations Charter and the Nuremberg Principles.

SYRIA, DEMOCRACY AND INTERNATIONAL LAW

The central purpose of the UN organization, when it was set up in 1945, was to make war illegal. The enormous suffering caused by two world wars had convinced the men and women who drafted the Charter that security based on national military forces had to be replaced by a system of collective security.

The fact that the basic purpose of the United Nations is the abolition of war is made clear in Article 2, where Section 2.3 states that “All Members shall settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered.” Section 2.4 adds that All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.

The abolition of war implies the abolition of the colonial system, in which technologically advanced nations maintain their dominance over less developed regions by means of superior weapons. If the institution of war is abolished, this becomes impossible.

Despite the high aims of the founders of the United Nations, both war and neocolonialism have persisted. Some of the wars that we see today are civil wars, but others are characterized by the use of military force by highly industrialized countries to extract resources from the developing countries on unfair economic terms.

In his book, “Resource Wars: The New Landscape of Global Conflict” (2002), Michael T. Klare shows that many recent wars can be interpreted as struggles for the control of

natural resources. For example, many conflicts in the Middle East can be seen in terms of the desire of industrialized countries to control the petroleum resources of the region (“blood for oil”). Are not the efforts of the United States to obtain complete hegemony in the Middle East at least partly motivated by the lust for oil? Syria and Iran resist this hegemony, and therefore they are scheduled for attacks.

But there is a second motive for the US plan to attack Syria and Iran: Israel regards these two countries as threats; and Israel seems to control the United States government. Much of the drive towards a US military attack on Syria seems to come from the American Israel Public Affairs Committee. The American people oppose such an attack; but the government ignores the wishes of its citizens because it has been enslaved by Israel.

Since the United Nations has, until now, failed in its efforts to abolish the institution of war, some people argue that we should let the United States function as a “global policeman”. There are a number of reasons why this is a terrible idea, one of which is that no single country can be an impartial judge in international conflicts. The special motives (oil and Israel) for a US attack on Syria illustrate this point.

Furthermore, whatever system we have for global governance ought to be democratic, with equal rights for all nations. The United Nations, in some form, is the appropriate place for all nations to have their say. If a single bully, “the world’s sole superpower”, dominates all other nations, we do not have a global democracy but a tyranny of brutal military power.

In fact, the United States has lost its own internal democracy and degenerated into an Orwellian surveillance state. The Occupy Wall Street movement’s slogan, “We are the 99

percent", points to the fact that a very small power elite, perhaps only 1 percent of the population, has a hugely disproportionate amount of economic and political power in the United States. In this sense, the United States is no longer a democracy, since neither the economic system nor the government serve the will and needs of the people. They serve instead the interests of the wealthy and powerful 1 percent, who control not only the mass media and the financial system, but also the politicians of both major parties.

Law has always been the protector of the weak against the raw power of aggressors. This is why tyrants hate law and ignore the law. But today, in a world of thermonuclear weapons capable of destroying human civilization and much of the biosphere, international law is our only hope.

A US attack on Syria would unambiguously violate not only Article 2 of the United Nations Charter, but also the Nuremberg Principles. Does President Obama really want to turn himself from a Nobel Peace Prize winner into a war criminal?

Today the world has become a global village. It is no longer possible to regard nations as separated from each other. They are linked together by nearly instantaneous communications and by a shared economy. So nationalism has become anachronistic, and we can no longer afford to have anarchy at the international level; we need to have some sort of global governance. The United Nations fills that role, and its agencies perform extremely important services for the world community. For example, essential work is done by the World Health Organization, the Food and Agricultural Organization, the International Panel on Climate Change, the UN Development Program and UNESCO. Furthermore, the United Nations is a forum and a meeting place where international problems can be discussed and solved.

Rather than undermining the United Nations, we need to strengthen and reform it. A just and democratic system of international is our only hope for the future.

NOBEL PEACE PRIZE WINNER AND WAR CRIMINAL?

In 1946 the United Nations General Assembly unanimously affirmed “the principles of international law recognized by the Charter of the Nuremberg Tribunal and the judgment of the Tribunal”. The General Assembly also established an International Law Commission to formalize the Nuremberg Principles, and the result was the following list.

- Principle I: Any person who commits an act which constitutes a crime under international law is responsible, and therefore liable to punishment.
- Principle II: The fact that internal law does not impose a penalty for an act which constitutes a crime under international law does not relieve the person who committed the act from responsibility under international law.
- Principle III: The fact that the person who committed an act which constitutes a crime under international law acted as Head of State or responsible government official does not relieve him from responsibility under international law.
- Principle IV: The fact that a person acted pursuant to order of his Government or of a superior does not relieve him of responsibility under international law, provided that a moral choice was in fact possible for him.

- Principle V: Any person charged with a crime under international law has the right to a fair trial on the facts and law.
- Principle VI: The crimes hereinafter set out are punishable as crimes under international law: a. Crimes against peace: (i) Planning, preparation, initiation or waging of war of aggression or a war in violation of international treaties, agreements or assurances; (ii) Participation in a common plan or conspiracy for the accomplishment of any of the acts mentioned under (i). b. War crimes: Violations of the laws or customs of war which include, but are not limited to, murder, ill-treatment of prisoners of war or persons on the seas, killing of hostages, plunder of public or private property, wanton destruction of cities, towns or villages, or devastation not justified by military necessity. c. Crimes against humanity: Atrocities and offenses, including but not limited to, murder, extermination, deportation, imprisonment, torture, rape, or other inhumane acts committed against any civilian population, or persecutions on political, racial or religious grounds, whether or not in violation of the laws of the country where perpetrated.
- Principle VII: Complicity in the commission of a crime against peace, a war crime, or a crime against humanity as set forth in Principle VI is a crime under international law.
- The Nuremberg Principles are being used today as the basis for the International Criminal Courts trials of individuals accused of genocide and war crimes in the former Yugoslavia and elsewhere.

- Notice that under Principle III, Heads of State can be prosecuted for war crimes, and that according to Principle IV, a soldier carrying out orders to commit a war crime is also guilty.

Robert H. Jackson, who was the chief United States prosecutor at the Nuremberg trials stated that “To initiate a war of aggression, therefore, is not only an international crime, it is the supreme international crime, differing from other war crimes in that it contains within itself the accumulated evil of the whole”

Perhaps, before initiating a war that could escalate uncontrollably into World War III; a war that could involve Pakistan’s nuclear weapons on the side of Iran and Syria; a war that would cause the price of oil to reach unprecedented heights, thus causing a catastrophic global depression; a war that could involve Russia and China, staunch allies of Syria; a war with no end in sight; perhaps before initiating such a war, President Obama should remember August Pinochet who was indicted for crimes against humanity by a Spanish court, and narrowly escaped extradition from the UK.

Does President Obama really wish to turn himself from a Nobel Peace Prize winner into a wanted war criminal by initiating a world-destroying war? Does he really wish to disgrace his name throughout all future history?

SYRIA AND IRAN: AUTOMATIC ESCALATION TO WORLD WAR III?

As we approach the 100th anniversary of the start of World War I, we ought to remember that this catastrophic event started as a minor engagement in which the Austrian Empire sought to punish a group of Serbian nationalists. No one involved at the outset of this small conflict had any idea that it would escalate into a world-destroying disaster, which still casts a dark shadow over civilization a century later.

Can we not see a parallel to the intention of the United States and its allies to punish the Assad regime in Syria for an alleged use of poison gas, (which might in fact be a “false flag” attack)? The parallel with the start of World War I is particularly disturbing because the intervening century has witnessed the development of thermonuclear weapons with the capacity to destroy human civilization and much of the biosphere.

The following is a report from Information Clearing House, dated August 26: “As talk and rumors of an impending Western attack against Syria mount, a top Syrian official said Monday that if attacked, his country would react against Israel.”

“Speaking to an Arabic-language radio station operated by the United States, Syria’s Deputy Information Minister Halaf Al-Maftah said that Israel would face not only Syria in the event that the US, Britain and France attempted to unseat Bashar al-Assad. A coalition consisting of Iran, Iraq, Lebanon, and Syria would respond to any attack against Assad with a response against Israel. In addition, terrorist

groups in Syria and Lebanon would attack Israel with full force.”

“Al-Maftah added that Syria has ‘strategic weapons’ that it would use in its attack on Israel. He did not specify what those weapons were.”

“Syria is ready to deal with all scenarios,” said Al-Maftah. “We consider these declarations of a possible attack as a form of psychological warfare and pressure on Syria. We are not worried about them. We hope that those threatening us will listen closely to what we are saying. We believe that the only solution for the Syrian issue is a political one,” he added.

“In recent days, the U.S. has sent warships off Syria’s coast, with the assumption being that they were waiting for word from the White House to attack Syria and remove Assad from power. Over the weekend, the U.S. Navy expanded its presence in the Mediterranean Sea with a fourth cruise-missile-armed warship.”

Should the conflict spread to Iran, we can recall a statement by Brigadier General Amir Ali Hajizadeh , who is in charge of the Revolutionary Guards missile systems told Iran’s Arabic-language television network that should Israel and Iran engage militarily, “nothing is predictable... and it will turn into World War III”.

He added that Iran would deem any Israeli strike to be conducted with US authorisation, so “whether the Zionist regime attacks with or without US knowledge, then we will definitely attack US bases in Bahrain, Qatar and Afghanistan.”

The first point to notice is that an attack on Iran by Israel would be both criminal and insane. It would be criminal because it would be a violation of the United Nations Charter and the Nuremberg Principles. It would be insane because it would initiate a conflict that might escalate in an unpredictable way. Such a conflict might easily be the start

of a Third World War. A large-scale conflict in the Middle East could lead to the overthrow of Pakistan's less-than stable government, thus introducing Pakistan's nuclear weapons into the conflict on the side of Syria and Iran. China and India, steadfast allies of Syria and Iran, might also become involved.

Must we allow the actions of a few power-blinded politicians to start a conflict that could lead to the deaths of ourselves and our children?

SOME PEACE EDUCATION INITIATIVES IN DENMARK

Introduction

This essay will discuss some Danish peace education activities, especially those of the Danish Peace Academy, the Danish National Group of Pugwash Conferences on Science and World Affairs (Nobel Peace Prize, 1995), and the Grundtvigian adult education colleges.

The Danish Peace Academy is an organization whose aim it is to promote peace education both in Denmark and throughout the world. The Academy organizes symposia and publishes books on subjects related to peace, but its main activity is a website which now contains 79,000 documents and illustrations.. The website has several thousand visitors each day from many parts of the the world.

The peace education activities of the Danish Pugwash Group will also be described. These include a program for awarding student peace prizes to gymnasium students for projects related to peace, the solution of global problems, or to the work of the United Nations.

The essay will also describe the educational traditions of the “people’s colleges” founded by N.F.S. Grundtvig in the 19th century. These colleges have a special historical relationship to democratic government in Denmark, and they are also pioneers of peace education.

The use of radio and television and exhibitions for peace education will also be discussed, as well as university courses dealing with the social responsibility of scientists and engineers.

The Danish Peace Academy

The Danish Peace Academy and its enormous website are interesting because they were founded and developed almost single-handedly by one person: Holger Terp, who has for many years been nearly blind as a result of a stroke. A few years ago he also suffered a severe heart attack which required a 5-fold bypass operation. Despite these seemingly insurmountable health problems, Holger works from early morning to late at night in the cause of world peace and international understanding.

Holger Terp completed his education as a librarian in 1992. In 1996, he participated in a course on "Internet and Presentation Technique" at the Academy of Fine Arts in Copenhagen. However, in 1999 he suffered a stroke, which made him blind in one eye and almost blind in the other. The stroke also affected Holgers speech, so that it was difficult to understand him when he talked. Instead of giving up, as many people would have done, Holger resolved to devote the remainder his life to the cause of world peace. Despite his severe handicap, he has achieved almost incredible results, a full account of which can be found on the link www.fredsakademiet.dk/ht.htm .

Holgers greatest achievement has been to found the Danish Peace Academy and to single-handedly create its enormous website. The website contains more than 79,000 images and files related to peace, in Danish, English and German, and it is currently visited by between 2,000 and 4,000 different people each day. Many of the visitors are from schools and universities in various parts of the world, who use the information on the website as a part of their studies.

In creating his website, Holger has used both his training as a librarian and the knowledge that he gained from the



Figure 11: *Holger Terp. Despite being almost completely blind, he singlehandedly established an enormous and popular website devoted to peace. Source: Danish Peace Academy*

1996 course at Copenhagens Academy of Fine Arts. As a result, many parts of the website have great visual beauty because of the liberal use of images. For example, one can enjoy Holgers Greenham Common Songbook, which is an account of the successful efforts of the womans peace movement in England to prevent common land at Greenham from being used as a base for nuclear weapons. The songbook is a piece of history, illustrated not only by the songs, which the visitor to the website can hear performed by such artists as Peggy Seeger, but also by countless beautiful posters and photos from the era. Other special features of the website are numerous books, articles, poetry and song collections, a peace-related encyclopedia, and a timeline showing the history of the peace movement, from the middle ages up to the present. For example, one can find on the website the interesting fact that war was once completely unknown to the inhabitants of Greenland. When Danish teachers in the 19th century explained European history to the Greenlanders, they had to teach them what war is, since the people of Greenland had never heard of it!

Holger himself is the author or editor of numerous books, and he has translated Gandhis autobiography into Danish. The example of Gandhis life has always been a guide for Holger, and perhaps Holgers life can be a guide for our own efforts, as we strive to work for peace. If he could achieve so much with such a severe handicap, then the rest of us ought to be able to do something too.

The Danish National Group of Pugwash Conferences on Science and World Affairs

In March, 1954, the US tested a hydrogen bomb at the Bikini Atoll in the Pacific Ocean. It was 1000 times more powerful

than the Hiroshima bomb. The Japanese fishing boat, Lucky Dragon, was 130 kilometers from the Bikini explosion, but radioactive fallout from the test killed one crew member and made all the others seriously ill.

Concerned about the effects of a large-scale war fought with such bombs, or even larger ones, Albert Einstein and Bertrand Russell published a manifesto containing the words: "Here then is the problem that we present to you, stark and dreadful and inescapable: Shall we put an end to the human race, or shall mankind renounce war?... 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."

The Russell-Einstein Manifesto called for a meeting of scientists from both sides of the Cold War to try to minimize the danger of a thermonuclear conflict. The first meeting took place in 1957 at the summer home of the Canadian philanthropist Cyrus Eaton at the small village of Pugwash, Nova Scotia.

From this small beginning, a series of conferences developed, in which scientists, especially physicists, attempted to work for peace, and tried to address urgent problems related to science. These conferences were called Pugwash Conferences on Science and World Affairs, taking their name from the small village in Nova Scotia where the first meeting was held. From the start, the main aim of the meetings was to reduce the danger that civilization would be destroyed in a thermonuclear war.

Many countries have local Pugwash groups, and the Danish National Pugwash Group is one of these. Our activities



Figure 12: *The Russell-Einstein Manifesto: “Shall we put an end to the human race, or shall mankind renounce war?”*
 Source: *Pugwash Conferences on Science and World Affairs*.

include conferences at the Danish Parliament, aimed at influencing decision-makers, but other activities are aimed influencing public opinion. Peace education activities include the award of student peace prizes on United Nations Day.

United Nations Day Student Peace Prizes

In collaboration with the Danish Peace Academy, and with the help of the Hermod Lannung Foundation the Danish National Group of Pugwash Conferences on Science and World Affairs has offered prizes each year to students at 10 Danish gymnasiums for projects related to global problems and their solutions and to the United Nations.

These projects are essays, dramatic sketches, videos, websites, posters, etc., and they were judged on UN Day, before large audiences of students. The background for this project is as follows: In 2007, in collaboration with several other

NGOs, we arranged a visit to Copenhagen by Dr. Tadatoshi Akiba, the Mayor of Hiroshima. In connection with his visit, we arranged a Peace Education Conference at the University of Copenhagen.

In connection with Dr. Akibas visit, we also arranged a day of peace education at Copenhagens Open Gymnasium. About 15 people from various branches of Denmarks peace movement arrived at the gymnasium at 7.00 a.m., and between 8.00 and 10.00 they talked to 15 groups of about 25-50 students about topics related to peace. At 10.30, all 500 students assembled in a large hall, where Dr. Akiba gave an address on abolition of nuclear weapons. A chorus from the gymnasium sang, and finally there was a panel discussion.

The students were extremely enthusiastic about the whole program. The success of our 2007 effort made us want to do something similar in 2008, and perhaps to broaden the scope. Therefore we wrote to the Minister of Education, and proposed that October 24, United Nations Day, should be a theme day in all Danish schools and gymnasiums, a day devoted to the discussion of global problems and their solutions. We received the very kind reply. The Minister said that he thought our idea was a good one, but that he did not have the power to dictate the curricula to schools. We needed to contact the individual schools, gymnasiums and municipalities.

In the autumn of 2008 we arranged a United Nations Day program on October 24 at Sankt Annæ Gymnasium with the cooperation of Nørre Gymnasium. We offered prizes to drama students at the two gymnasiums for the best peace-related dramatic sketch, a condition being that the sketches should be performed and judged before a large audience. Our judges were the famous actress Mia Luhne, Johan Olsen, the lead singer of a popular rock group, and the dramatist



Figure 13: *A painting representing the work of the United Nations. It won first prize at a UN Day Student Peace Prize competition. Source: Danish National Pugwash Group*

Steen Haakon Hansen. The students sketches and the judges speeches about the meaning of peace were very strong and moving. Everyone was very enthusiastic about the day. The judges have said that they would be willing to work with us again on peace-related cultural events.

Our successes in 2007 and 2008 have made us wish to continue and possibly expand the idea of making United Nations Day a theme day in Danish schools and gymnasiums, a day for discussion of global problems and their solutions, with special emphasis on the role of the United Nations. The Hermod Lannung Foundation supported our project for extending this idea to 10 Danish gymnasiums in 2010, 2011 and 2012.

The Hermod Lannung Foundation has generously awarded us funds to continue the project in 2013. The Danish United Nations Association worked with us on this project in 2011, and we hope that they will help us to expand it in the future, with additional funding from the Ministry of Education.

The Gruntvigian Peoples' Colleges

A unique feature of the Danish educational system is the adult education that is available at about a hundred Folkehjsskole (Peoples' Colleges). This tradition of adult education dates back to the Danish poet-bishop N.F.S. Grundtvig (1783-1872). Besides writing more than half of the hymns presently used in Danish churches, Grundtvig also introduced farmers cooperatives into Denmark and founded a system of adult education.

At the time when Grundtvig lived, the Industrial Revolution had already transformed England into a country that exported manufactured goods but was unable to feed itself because of its large population. In this situation, Denmark began a prosperous trade, exporting high quality agricultural produce to England. Grundtvig realized that it would be to the advantage of small-scale Danish farmers to process and export these products themselves, thus avoiding losing a part of their profits to large land-owners or other middlemen who might do the processing and exporting for them. He organized the small farmers into cooperatives, and in order to give the farmers enough knowledge and confidence to run the cooperatives, Grundtvig created a system of adult education: the Peoples' Colleges. The cooperatives and the adult education system contributed strongly to making Denmark a prosperous and democratic country.

Of the hundred or so Grundtvigian Peoples' Colleges existing today, about forty offer peace education as a subject. An example of such a peace education course was the two-week summer school "Towards a Non-violent Society", held at the International College in Elsinore during the summer of 1985. Since it was supported not only by the students fees but also by a government subsidy, the summer school was able to pay the travel and living expenses for lecturers who came from many parts of the world.

Among the stars of the summer school were former US Governor Harold Stassen, the only living person who had signed the UN Charter; the famous Cambridge University ethologist, Professor Robert Hinde; Professor Suman Khana from India, an expert on non-violence and Gandhi; Sister George, a Catholic nun from Jerusalem, who spoke 12 languages during the course of her daily work and who was an expert on the conflicts of the Middle East; and Meta Ditzel, a member of the Danish Parliament who advocated legislation to make excessively violent videos less easily available to children. Other lectures were given by representatives of Amnesty International and the Center for Rehabilitation of Torture Victims.

Since the summer school took place outside the regular term, all of the rooms at the International College were available, and students came not only from Denmark, but also from other parts of Scandinavia and Europe. Part of the summer tradition of the Grundtvigian High Schools is that students of all ages pay the modest fees in order to have an intellectually stimulating vacation, during the course of which they will form new friendships. Thus the summer school had a social function as well as a pedagogical one. Accordingly, Suman Khana taught a yoga class as well as a class on the Gandhian tradition of non-violence.

In order to illustrate how horrible excessively violent videos can be, the Danish parliamentarian Meta Ditzel was scheduled to show one of the worst videos of this type to the group. She went to a video shop and asked for the worst one available, saying that it was needed as part of her campaign to make violent videos illegal. The owner of the shop, realizing that his livelihood was being threatened, gave her the most innocent film that he could find, and the horrible example later that evening turned out to be less than horrifying. (Meta Ditzel had not previewed it.)

Ethics for Science and Engineering Students

The summer school “Towards a Nonviolent Society”, which I helped to plan, had an interesting consequence, which affected my activities in the peace movement: One of the other people involved in organizing the summer school urged me to enter an essay contest sponsored by the Nuclear Age Peace Foundation. The contest called for essays on how to give scientists and engineers a sense of social responsibility. Following my friend’s suggestion, I wrote an essay saying that universities ought to offer courses on the history and social impact of science. As the course reached modern times, it would be natural to introduce a discussion of the ethical, social and political problems created by the extremely rapid development of science and technology.

My essay did not win the contest, but the friend who had asked me to write it was so pleased with what I had written that he translated it into Danish and submitted it to “Politiken”, one of the major Danish newspapers. When it was published, students from the University of Copenhagen, where I was teaching, came to me and said, “Well, if you really believe what you have written, you have to make such

a course!" As the result of their urging I planned a course entitled "Science, Ethics and Politics", but I had great difficulties in getting the studies committee to accept it as part of the curriculum. They apparently thought that science, ethics and politics were three entirely separate things, which ought not to have anything to do with each other.

Finally the course was accepted under the condition that neither I nor any of the students who attended the course should get any credit for it. However, it was a great success. Later, the name was changed to "Science and Society", and the students were finally given credit for attending the course. Meanwhile, the President of the University of Copenhagen heard about the course, and he kept sending me encouraging notes. One day he called me on the telephone, and said that since he knew that I was interested in global problems related to the rapid development of science and technology, he wondered whether I would like to be the Contact Person for Denmark for the Pugwash Conferences on Science and World Affairs. They had asked him to do this job, but he was too busy with his work as President. Since he was my boss, I had to say yes.

I continued to give the "Science and Society" course until my retirement in 2003. Meanwhile, at the Niels Bohr Institute and at the Royal Agricultural College, similar courses were started. Finally, all of us who were involved in these courses wrote to the Minister of Education and proposed that such courses ought to be compulsory for all science and engineering students in Denmark. The Minister called together the heads of the Danish institutions of higher education and put the question to them. They accepted the idea, but it could not be put into practice immediately because there were not enough people qualified to give the courses.

A program was started by Prof. Claus Emmeche of the



Figure 14: *A program was started by Prof. Claus Emmeche of the Niels Bohr Institute to train people to teach the new courses. Source: Danish National Pugwash Group*

Niels Bohr Institute to train people to teach the new courses. Finally, everything was ready, and starting in the autumn of 2004, all Danish science and engineering students at the university level have been required to take a course on the philosophy of science and its ethical aspects. The curriculum covers the history of science and technology, emphasizing cases where technology has produced socially harmful results as well as cases where the results have been beneficial. Global problems related to science are also be a part of the curriculum.

Peace Education in Danish Elementary Schools

A book entitled “Et barn har brug for fred!” (“A Child Needs Peace!”) by Nils Hartmann of the Danish UNICEF Committee provides a good example of peace education at the elementary level. Here are rough translations of a few of the paragraphs of Nils Hartmanns book:

“Peace and solidarity: A more just division of the resources of the world requires that we, in our part of the world, feel more solidarity with people in the less developed countries. In other words we must feel that we have much in common with them. People who feel solidarity with each other dont fight. They are friends. Solidarity means more than just making sacrifices for each other. If we only give others things we have too much of, something is missing. True solidarity also means that we must have respect for each other - respect for each others culture, actions, religion and life. When we respect each other, we are also open towards each other. We need each other and learn from each other.”

“Peace and fundamental needs: When peoples fundamen-

tal needs are satisfied, they are able to feel secure, and the reasons for war and conflicts disappear. But it is important that every person satisfies these fundamental needs in a way that doesn't harm or exploit others.

- If I buy a weapon in order to feel more safe, there will be others who feel threatened.
- If I exploit others in order to satisfy my own needs, there will be dissatisfaction and conflicts.
- If I use more food than I need, others will go hungry.
- If I dig a well and claim all the water for myself, others will go thirsty.
- If I buy unnecessary things, others will go without necessities”

“What can we get for the money that is wasted on armaments? In 1985 the world used about 8,000 billion (8 million million) kroner for military purposes. In other words, half a billion kroner are being wasted while this lesson is going on. Here are a few examples of things we could have bought for a fraction of that amount of money:”

“Health: Almost everywhere in the world there is a lack of doctors, nurses and hospitals. This is especially true in the poorest country districts and slums of developing countries. A large number of children in these countries need to be vaccinated against some of the illnesses that are already eliminated from our part of the world. Measels, whooping cough, diphtheria, polio, tuberculosis and lockjaw cost the lives of millions of children each year. Also, many children need to come to a health clinic to get medicine and vitamins.

Building up even a very basic health system would do wonders. The cost of a basic health system for the whole world is estimated to be 17 billion kroner per year.”

“Safe drinking water: More than 2 billion people have no way of getting safe water. Impure water and lack of water lead to many diseases. Today, diarrhoea is the most common cause of death for small children in the developing countries. The United Nations has declared the period 1981-1990 to be the International Water Decade. The United Nations has calculated that by using a total of 50 billion kroner, it would be possible to give pure drinking water to all the people of the world.”

“Education: In developing countries, less than half of the adults have more than a year of schooling. Education is the best investment that we can make if we want to modernize a society and to create positive development. Building schools for all of the developing countries, educating teachers, and producing teaching materials would cost 55 billion kroner. (Eight Danish kroner = one US dollar.)”

These paragraphs from Nils Hartmanns book are illustrated with photographs of children from the developing countries. The paragraphs are written in simple language, and the examples used are related to the needs of children.

Denmark has for many years had an educational policy that aims at teaching children cooperative attitudes and habits rather than purely competitive ones. This system makes use of projects in which several children cooperate rather than individual projects. The use of cooperative projects in the Danish educational system can be thought of as an indirect form of peace education. Even at the university level, the Danish educational system makes much more use of cooperative projects than is the case in most other countries.

Alternative media in Denmark.

Modern powerholders are acutely aware of the importance of propaganda. Thus the media are a battleground where reformers struggle for attention, but are defeated with great regularity by the wealth and power of the establishment. This is a tragedy because today there is an urgent need to make public opinion aware of the serious problems facing civilization, and the steps that are needed to solve these problems. The mass media could potentially be a great force for public education, but in general their role is not only unhelpful; it is often negative. War and conflict are blatantly approved of by television and newspapers.

Today we are faced with the task of creating a new global ethic in which loyalty to family, religion and nation will be supplemented by a higher loyalty to humanity as a whole. In case of conflicts, loyalty to humanity as a whole must take precedence. In addition, our present culture of violence must be replaced by a culture of peace.

How do the media fulfill this life-or-death responsibility? Do they give us insight? No, they give us pop music. Do they give us an understanding of the sweep of evolution and history? No, they give us sport. Do they give us an understanding of need for strengthening the United Nations, and the ways that it could be strengthened? No, they give us soap operas. Do they give us unbiased news? No, they give us news that has been edited to conform with the interests of the military-industrial complex and other powerful lobbies. Do they present us with the need for a just system of international law that acts on individuals? On the whole, the subject is neglected. Do they tell of the essentially genocidal nature of nuclear weapons? No, they give us programs about gardening and making food.

In general, the mass media behave as though their role is to prevent the peoples of the world from joining hands and working to change the world and to save it from thermonuclear and environmental catastrophes. The television viewer sits slumped in a chair, passive, isolated, disempowered and stupefied. The future of the world hangs in the balance, the fate of children and grandchildren hang in the balance, but the television viewer feels no impulse to work actively to change the world or to save it. The Roman emperors gave their people bread and circuses to numb them into political inactivity. The modern mass media seem to be playing a similar role.

Since today's powerholders completely control the mass media, workers for peace must create alternative media. In Denmark, several people have been active in this field. Holger Terp's Danish Peace Academy website can be thought of as an important alternative medium for peace education. Holger has also produced a series of radio programs devoted to the history of peace songs.

Another important worker for peace education via alternative radio is Arne Hansen. He also maintains a website, where recordings of his radio programs can be accessed. In addition, Arne has an Internet newsletter with a large readership, which calls attention to his radio broadcasts, and to other matters of interest to the peace movement.

Troels Peter Schmidt and his wife Nina Larsen produce an extremely valuable alternative television station called "TV Gaderummet" (TV Streetspace). Although they are only able to broadcast their programs at times when not many viewers can see them, the broadcasts have a large impact because they are available on YouTube. Troels uses his Internet mailing list to call his programs to the attention of people who might be interested in them.

These are a few examples of peace education initiatives in Denmark. It is my great hope that some of the techniques described above will be useful for peace education in other countries

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PROTECTING WHISTLEBLOWERS

The world urgently needs a system of international laws for protecting whistleblowers. There are many reasons for this, but among the most urgent is the need for saving civilization and the biosphere from the threat of a catastrophic nuclear war.

It is generally recognized that a war fought with nuclear weapons would be a humanitarian and environmental disaster, affecting neutral nations throughout the world, as well as combatants. For example, on 4-5 March 2013 the Norwegian Minister of Foreign Affairs, Mr. Espen Barth Eide hosted an international Conference on the Humanitarian Impact of Nuclear Weapons.

The Conference provided an arena for a fact-based discussion of the humanitarian and developmental consequences of a nuclear weapons detonation. Delegates from 127 countries as well as several UN organisations, the International Red Cross movement, representatives of civil society and other relevant stakeholders participated.

The Austrian representatives to the Oslo Conference commented that “Austria is convinced that it is necessary and overdue to put the humanitarian consequences of nuclear weapons at the center of our debate, including in the NPT. Nuclear weapons are not just a security policy issue for a few states but an issue of serious concern for the entire international community. The humanitarian, environmental, health, economic and developmental consequences of any nuclear weapons explosion would be devastating and global and any notion of adequate preparedness or response is an illusion.”

China stated that “China has always stood for the complete prohibition and thorough destruction of nuclear weapons, and [has] actively promoted the establishment of a world free of nuclear weapons. The complete prohibition and total elimination of nuclear weapons, getting rid of the danger of nuclear war and the attainment of a nuclear-weapon-free world, serve the common interests and benefits of humankind.”

Japan’s comment included the words: “As the only country to have suffered atomic bombings during wartime, Japan actively contributed to the Oslo Conference on the Humanitarian Impact of Nuclear Weapons in March. With strengthened resolve to seek a nuclear-weapons-free world, we continue to advance disarmament and non-proliferation education to inform the world and the next generation of the dreadful realities of nuclear devastation.” Many other nations represented at the Oslo Conference made similarly strong statements advocating the complete abolition of nuclear weapons.

Recently UN Secretary General Ban Ki-Moon has introduced a 5-point Program for the abolition of nuclear weapons. In this program he mentioned the possibility of a Nuclear Weapons Convention, and urged the Security Council to convene a summit devoted to the nuclear abolition. He also urged all countries to ratify the Comprehensive Test-Ban Treaty.

Three-quarters of all nations support UN Secretary General Ban’s proposal for a treaty to outlaw and eliminate nuclear weapons. The 146 nations that have declared their willingness to negotiate a new global disarmament pact include four nuclear weapon states: China, India, Pakistan and North Korea.

Nuclear disarmament has been one of the core aspirations



of the international community since the first use of nuclear weapons in 1945. A nuclear war, even a limited one, would have global humanitarian and environmental consequences, and thus it is a responsibility of all governments, including those of non-nuclear countries, to protect their citizens and engage in processes leading to a world without nuclear weapons.

Now a new process has been established by the United Nations General Assembly, an Open Ended Working Group (OEWG) to Take Forward Multilateral Nuclear Disarmament Negotiations. The OEWG convened at the UN offices in Geneva on May 14, 2013. Among the topics discussed was a Model Nuclear Weapons Convention.

The Model Nuclear Weapons Convention prohibits development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons. States possessing nuclear weapons will be required to destroy their arsenals according to a series of phases.

The Convention also prohibits the production of weapons

usable fissile material and requires delivery vehicles to be destroyed or converted to make them non-nuclear capable.

Verification will include declarations and reports from States, routine inspections, challenge inspections, on-site sensors, satellite photography, radionuclide sampling and other remote sensors, information sharing with other organizations, and citizen reporting. Persons reporting suspected violations of the convention will be provided protection through the Convention including the right of asylum.

Thus we can see that the protection of whistleblowers is an integral feature of the Model Nuclear Weapons Convention now being discussed. As Sir Joseph Rotblat (1908-2005, Nobel Laureate 1995) frequently emphasized in his speeches, societal verification must be an integral part of the process of “going to zero” (i.e, the total elimination of nuclear weapons). This is because nuclear weapons are small enough to be easily hidden. How will we know whether a nation has destroyed all of its nuclear arsenal? We have to depend on information from insiders, whose loyalty to the whole of humanity prompts them to become whistleblowers. And for this to be possible, they need to be protected.

In general, if the world is ever to be free from the threat of complete destruction by modern weapons, we will need a new global ethic, an ethic as advanced as our technology. Of course we can continue to be loyal to our families, our localities and our countries. But this must be supplemented by a higher loyalty: a loyalty to humanity as a whole.

A GOVERNMENT WITH MANY SECRETS IS NOT A DEMOCRACY

“I know no safe depositary of the ultimate powers of the society but the people themselves...”, Thomas Jefferson, (1743-1826)

The frantic efforts of President Obama to capture and punish whistleblower Edward Snowden indicate that the secrets that the US government is trying to hide are by no means limited to the massive electronic spying operations that Snowden revealed.

Snowden has already said most of what he has to say. Nevertheless, Washington was willing to break international law and the rules of diplomatic immunity by forcing its European allies to ground the plane of Bolivian President Evo Morales following a rumor that Snowden was on board. This was not done to prevent Snowden from saying more, but with the intention of making a gruesome example of him, as a warning to other whistleblowers.

Furthermore, President Obama has initiated an enormous Stasi-like program called “Insider Threats”, which forces millions of federal employees, in a wide variety of agencies, to spy on each other and to report anything that looks like a move towards whistleblowing.

According to an article written by Marisa Taylor and Jonathan S. Landay of the McLatchy Washington Bureau, “...It extends beyond the US national security bureaucracies to most federal departments and agencies nationwide, including the Peace Corps, the Social Security Administration, and the Education and Agriculture Departments.”

Apparently the US government has very many secrets to hide, and very many potential whistleblowers that it fears. But who are they? Who are the potential whistleblowers who must be forced into terrified silence by the examples made of Edward Snowden, Bradley Manning and Julian Assange?

Are these potential whistleblowers CIA agents who have stories to tell about dirty wars and assassinations in Latin America? Are they people who know the details about how John and Robert Kennedy were shot? Are they people who know how Martin Luther King Jr. was killed? Are they the New York firemen who heard a series of explosions as the buildings of the World Trade Center collapsed? Are they the people in New York who collected samples of the dust that was collected from the falling buildings; dust that was shown by chemical analysis to contain nanothermite, a powerful heat-producing compound that could have melted the steel structures of the buildings? Are they the CIA insiders who could give evidence that the US government knew well in advance of the planned 9/11 attacks, and made them worse than they otherwise would have been by planting explosives in the World Trade Center buildings? Are they people who know Obama's own secrets?

Whoever these potential whistleblowers are, it is clear that Obama fears them, and that the US government has many secrets. But if it has many secrets, then the present government of the United States cannot be a democracy. In a democracy, the people must know what their government is doing.

THE SOCIAL RESPONSIBILITY OF SCIENTISTS

Ethical considerations have traditionally been excluded from scientific discussions. This tradition perhaps has its roots in the desire of the scientific community to avoid the bitter religious controversies which divided Europe following the Reformation. Whatever the historical reason may be, it has certainly become customary to speak of scientific problems in a dehumanized language, as though science had nothing to do with ethics or politics.

The great power of science is derived from an enormous concentration of attention and resources on the understanding of a tiny fragment of nature; but this concentration is at the same time a distortion of values. To be effective, a scientist must believe, at least temporarily, that the problem on which he or she is working is more important than anything else in the world, which is of course untrue. Thus a scientist, while seeing a fragment of reality better than anyone else, becomes blind to the larger whole. For example, when one looks into a microscope, one sees the tiny scene on the slide in tremendous detail, but that is all one sees. The remainder of the universe is blotted out by this concentration of attention.

The system of rewards and punishments in the training of scientists produces researchers who are highly competent when it comes to finding solutions to technical problems, but whose training has by no means encouraged them to think about the ethical or political consequences of their work.

Scientists may, in fact, be tempted to escape from the intractable moral and political difficulties of the world by immersing themselves in their work. Enrico Fermi, (whose research as much as that of any other person made nuclear

weapons possible), spoke of science as soma - the escapist drug of Aldous Huxleys *Brave New World*. Fermi perhaps used his scientific preoccupations as an escape from the worrying political problems of the 30s and 40s.

The education of a scientist often produces a person with a strong feeling of loyalty to a particular research discipline, but perhaps without sufficient concern for the way in which progress in that discipline is related to the general welfare of humankind. To remedy this lack, it would be very desirable if the education of scientists could include some discussion of ethics, as well as a review of the history of modern science and its impact on society.

The explosive growth of science-driven technology during the last two centuries has changed the world completely; and our social and political institutions have adjusted much too slowly to the change. The great problem of our times is to keep society from being shaken to pieces by the headlong progress of science, the problem of harmonizing our social and political institutions with technological change. Because of the great importance of this problem, it is perhaps legitimate to ask whether anyone today can be considered to be educated without having studied the impact of science on society. Should we not include this topic in the education of both scientists and non-scientists?

Science has given us great power over the forces of nature. If wisely used, this power will contribute greatly to human happiness; if wrongly used, it will result in misery. In the words of the Spanish writer, Ortega y Gasset, "We live at a time when man, lord of all things, is not lord of himself"; or as Arthur Koestler has remarked, "We can control the movements of a spaceship orbiting about a distant planet, but we cannot control the situation in Northern Ireland."

To remedy this situation, educational reforms are needed.

Science and engineering students ought to have some knowledge of the history and social impact of science. They could be given a course on the history of scientific ideas; but in connection with modern historical developments, such as the industrial revolution, the global population explosion, the development of nuclear weapons, genetic engineering, and information technology, some discussion of social impact could be introduced. One might hope to build up in science and engineering students an understanding of the way in which their work is related to the general welfare of humankind. These elements are needed in science education if rapid technological development is to be beneficial rather than harmful.

As an example of the horrors that have been produced by lack of conscience in the application of science and engineering, one can think of drones, which make the illegal killing of men, women and children in distant countries into a sort of computer game played by operators sitting in the comfort of their Nevada bunkers. Now, apparently, there is a move to make killer robots completely free from human control, as can be seen from the following excerpt from a statement by the Campaign to Ban Killer Robots:

“Over the past decade, the expanded use of unmanned armed vehicles has dramatically changed warfare, bringing new humanitarian and legal challenges. Now rapid advances in technology are resulting in efforts to develop fully autonomous weapons. These robotic weapons would be able to choose and fire on targets on their own, without any human intervention. This capability would pose a fundamental challenge to the protection of civilians and to compliance with international human rights and humanitarian law.”

“Several nations with high-tech militaries, including China, Israel, Russia, the United Kingdom, and the United States, are moving toward systems that would give greater

combat autonomy to machines. If one or more chooses to deploy fully autonomous weapons, a large step beyond remote-controlled armed drones, others may feel compelled to abandon policies of restraint, leading to a robotic arms race. Agreement is needed now to establish controls on these weapons before investments, technological momentum, and new military doctrine make it difficult to change course.”

“Allowing life or death decisions to be made by machines crosses a fundamental moral line.... The use of fully autonomous weapons would create an accountability gap, as there is no clarity on who would be legally responsible for a robots actions: the commander, programmer, manufacturer, or robot itself?... A comprehensive, pre-emptive prohibition on the development, production and use of fully autonomous weapons—weapons designed to kill without human intervention—is urgently needed.”

Like doctors, scientists and engineers have life-and-death decisions in their hands. It has been proposed that graduates in science and engineering should take an oath, analogous to that taken by graduating medical students. They should promise never to use their education in the service of war, nor for the production of weapons, nor in any way that might be harmful to society or to the environment.

THE TASK BEFORE US

As a result of the Fukushima catastrophe, world public opinion now increasingly rejects nuclear power generation. We can hope that the disaster will also contribute to a rejection of nuclear weapons.

We value and love our natural environment for its beauty, but we are also starting to realize how closely our lives are linked to nature. We are becoming more conscious of how human activities may damage the natural systems on which we depend for our existence. There is much worry today about climate change, but an ecological catastrophe of equal or greater magnitude could be produced by a nuclear war. One can gain a small idea of what this would be like by thinking of the radioactive contamination that has made large areas near to Chernobyl and Fukushima uninhabitable, or the testing of hydrogen bombs in the Pacific, which continues to cause leukemia and birth defects in the Marshall Islands more than half a century later.

In 1954, the United States tested a hydrogen bomb at Bikini. The bomb was 1,300 times more powerful than the bombs that destroyed Hiroshima and Nagasaki. Fallout from the bomb contaminated the island of Rongelap, one of the Marshall Islands 120 kilometers from Bikini. The islanders experienced radiation illness, and many died from cancer. Even today, half a century later, both people and animals on Rongelap and other nearby islands suffer from birth defects.

A girl from Rongelap describes the situation in the following words: "I cannot have children. I have had miscarriages on seven occasions. Our culture and religion teach us that reproductive abnormalities are a sign that women have been unfaithful. For this reason, many of my friends keep quiet about the strange births that they have had. In privacy they give birth, not to children as we like to think of them, but to

things we could only describe as octopuses, apples, turtles, and other things in our experience. We do not have Marshallese words for these kinds of babies, because they were never born before the radiation came.”

The environmental effects of a nuclear war would be catastrophic. It would produce radioactive contamination of the kind that we have already experienced in the areas around Chernobyl and Fukushima and in the Marshall Islands, but on an enormously increased scale. We have to remember that the total explosive power of the nuclear weapons in the world today is 500,0000 time as great as the power of the bombs that destroyed Hiroshima and Nagasaki. What is threatened by a nuclear war today is the complete breakdown of human civilization.

Besides spreading deadly radioactivity throughout the world, a nuclear war would inflict catastrophic damage on global agriculture. Firestorms in burning cities would produce millions of tons of black, thick, radioactive smoke. The smoke would rise to the stratosphere where it would spread around the earth and remain for a decade. Prolonged cold, decreased sunlight and rainfall, and massive increases in harmful ultraviolet light would shorten or eliminate growing seasons, producing a nuclear famine. Even a small nuclear war could endanger the lives of the billion people who today are chronically undernourished. A full-scale nuclear war would mean that most humans would die from hunger. Many animal and plant species would also be threatened with extinction.

Today, the system that is supposed to give us security is called Mutually Assured Destruction, appropriately abbreviated as MAD. It is based on the idea of deterrence, which maintains that because of the threat of massive retaliation, no sane leader would start a nuclear war.

Before discussing other defects in the concept of deterrence, it must be said very clearly that the idea of massive nuclear retaliation is a form of genocide and is completely unacceptable from an ethical point of view. It violates not only the principles of common human decency and common sense, but also the ethical principles of every major religion.

Having said this, we can now turn to some of the other faults in the concept of nuclear deterrence. One important defect is that nuclear war may occur through accident or miscalculation, through technical defects or human failings, or by terrorism. This possibility is made greater by the fact that despite the end of the Cold War, thousands of missiles carrying nuclear warheads are still kept on hair-trigger alert with a quasi-automatic reaction time measured in minutes. There is a constant danger that a nuclear war will be triggered by error in evaluating the signal on a radar screen.

Incidents in which global disaster is avoided by a hair's breadth are constantly occurring. For example, on the night of 26 September, 1983, Lt. Col. Stanislav Petrov, a young software engineer, was on duty at a surveillance center near Moscow. Suddenly the screen in front of him turned bright red.

An alarm went off. Its enormous piercing sound filled the room. A second alarm followed, and then a third, fourth and fifth. The computer showed that the Americans had launched a strike against us, Petrov remembered later. His orders were to pass the information up the chain of command to Secretary General Yuri Andropov. Within minutes, a nuclear counterattack would be launched. However, because of certain inconsistent features of the alarm, Petrov disobeyed orders and reported it as a computer error, which indeed it was.

Most of us probably owe our lives to his coolheaded de-

cision and knowledge of software systems. The narrowness of this escape is compounded by the fact that Petrov was on duty only because of the illness of another officer with less knowledge of software, who would have accepted the alarm as real.

Narrow escapes such as this show us clearly that in the long run, the combination of space-age science and stone-age politics will destroy us. We urgently need new political structures and new ethics to match our advanced technology. Modern science has, for the first time in history, offered humankind the possibility of a life of comfort, free from hunger and cold, and free from the constant threat of death through infectious disease. At the same time, science has given humans the power to obliterate their civilization with nuclear weapons, or to make the earth uninhabitable through overpopulation and pollution. The question of which of these paths we choose is literally a matter of life or death for ourselves and our children.

Will we use the discoveries of modern science constructively, and thus choose the path leading towards life? Or will we use science to produce more and more lethal weapons, which sooner or later, through a technical or human failure, will result in a catastrophic nuclear war? Will we thoughtlessly destroy our beautiful planet through unlimited growth of population and industry? The choice among these alternatives is ours to make. We live at a critical moment of history, a moment of crisis for civilization.

No one alive today asked to be born at a time of crisis, but history has given each of us an enormous responsibility. Of course we have our ordinary jobs, which we need to do in order to stay alive; but besides that, each of us has a second job, the duty to devote both time and effort to solving the serious problems that face civilization during the 21st

century. We cannot rely on our politicians to do this for us. Many politicians are under the influence of powerful lobbies. Others are waiting for a clear expression of popular will. It is the people of the world themselves who must choose their own future and work hard to build it.

No single person can achieve the changes that we need, but together we can do it. The problem of building a stable, just, and war-free world is difficult, but it is not impossible. The large regions of our present-day world within which war has been eliminated can serve as models. There are a number of large countries with heterogeneous populations within which it has been possible to achieve internal peace and social cohesion, and if this is possible within such extremely large regions, it must also be possible globally.

We must replace the old world of international anarchy, chronic war, and institutionalized injustice by a new world of law. The United Nations Charter, the Universal Declaration of Human Rights and the International Criminal Court are steps in the right direction. These institutions need to be greatly strengthened and reformed. We also need a new global ethic, where loyalty to ones family and nation will be supplemented by a higher loyalty to humanity as a whole. Tipping points in public opinion can occur suddenly. We can think, for example, of the Civil Rights Movement, or the rapid fall of the Berlin Wall, or the sudden change that turned public opinion against smoking, or the sudden movement for freedom and democracy in the Arab world. A similar sudden change can occur soon regarding war and nuclear weapons.

We know that war is madness. We know that it is responsible for much of the suffering that humans experience. We know that war pollutes our planet and that the almost unimaginable sums wasted on war prevent the happiness and

prosperity of mankind. We know that nuclear weapons are insane, and that the precariously balanced deterrence system can break down at any time through human error or computer errors or through terrorist actions, and that it definitely will break down within our lifetimes unless we abolish it. We know that nuclear war threatens to destroy civilization and much of the biosphere.

The logic is there. We must translate into popular action which will put an end to the undemocratic, money-driven, power-lust-driven war machine. The peoples of the world must say very clearly that nuclear weapons are an absolute evil; that their possession does not increase anyones security; that their continued existence is a threat to the life of every person on the planet; and that these genocidal and potentially omnicidal weapons have no place in a civilized society.

Modern science has abolished time and distance as factors separating nations. On our shrunken globe today, there is room for one group only: the family of humankind. We must embrace all other humans as our brothers and sisters. More than that, we must feel that all of nature is part of the same sacred family; meadow flowers, blowing winds, rocks, trees, birds, animals, and other humans, all these are our brothers and sisters, deserving our care and protection. Only in this way can we survive together. Only in this way can we build a happy future.

SECRECY VERSUS DEMOCRACY

Can a government, many of whose operations are secret, be a democracy? Obviously this is impossible. The recent attempts of the United States to arrest whistleblower Edward Snowden call attention to the glaring contradiction between secrecy and democracy.

In a democracy, the power of judging and controlling governmental policy is supposed to be in the hands of the people. It is completely clear that if the people do not know what their government is doing, then they cannot judge or control governmental policy, and democracy has been abolished. There has always been a glaring contradiction between democracy and secret branches of the government, such as the CIA, which conducts its assassinations and its dirty wars in South America without any public knowledge or control.

The gross, wholesale electronic spying on citizens revealed by Snowden seems to be specifically aimed at eliminating democracy. It is aimed at instilling universal fear and conformity, fear of blackmail and fear of being out of step, so that the public will not dare to oppose whatever the government does, no matter how criminal or unconstitutional.

Henry Kissinger famously remarked: The illegal we do at once. The unconstitutional takes a little longer. Well, Henry, that may have been true in your time, but today the unconstitutional does not take long at all.

The Magna Carta is trashed. No one dares to speak up. Habeus Corpus is trashed. No one dares to speak up. The United Nations Charter is trashed. No one dares to speak up. The Universal Declaration of Human Rights is trashed. No one dares to speak up. The Fourth Amendment to the US Constitution is trashed. No one dares to speak up.

The President claims the right to kill both US and foreign citizens, at his own whim. No one dares to speak up.

But perhaps this is unjust. Perhaps some people would dare to protest, except that they cannot get their protests published in the mainstream media. We must remember that the media are owned by the same corporate oligarchs who own the government.

George Orwell, you should be living today! We need your voice today! After Snowden's revelations, the sale of Orwell's 1984 soared. It is now on the bestseller list. Sadly, Orwell's distopian prophesy has proved to be accurate in every detail.

What is the excuse for the massive spying reported by Snowden, spying not only on US citizens but also on the citizens of other countries throughout the world? "We want to protect you from terrorism.", the government answers. But terrorism is not a real threat, it is an invented one. It was invented by the military-industrial complex because, at the end of the Cold War, this enormous money-making conglomerate lacked enemies.

Globally, the number of people killed by terrorism is vanishingly small compared to the number of children who die from starvation every year. It is even vanishingly small compared with the number of people who are killed in automobile accidents. It is certainly small compared with the number of people killed in wars aimed at gaining western hegemony over oil-rich regions of the world.

In order to make the American people really fear terrorism, and in order to make them willing to give up their civil liberties, a big event was needed, something like the 9/11 attacks on the World Trade Center.

There is strong evidence, available on the Internet for anyone who wishes to look at it, that the US government knew well in advance that the 9/11 attacks would take place,

and that government agents made the disaster worse than it otherwise would have been by planting explosives in the buildings of the World Trade Center. For example, CIA insider Susan Lindauer has testified that the US government knew about the planned attacks as early as April, 2001. Other experts have testified that explosives must have been used to bring the buildings down.

Numerous samples of the dust from the disaster were collected by people in New York City, and chemical analysis of the dust has shown the presence of nanothermite, a compound that produces intense heat. Pools of recently-melted steel were found in the ruins of the buildings before these were sealed off from the public. An ordinary fire does not produce temperatures high enough to melt steel.

Thus it seems probable that the US government participated in the 9/11 attacks, and used them in much the same way that the Nazis used the Reichstag fire, to abridge civil liberties and to justify a foreign invasion. Soon afterward, the Patriot Act was passed. It's Orwellian name is easily understood by anyone who has read "1984".

But in Shelly's words, "We are many; they are few!" The people who want democracy greatly outnumber those who profit from maintaining a government based on secrecy and fear. Let us rise like lions after slumbers, in unvanquishable numbers. Let us abolish governmental secrecy and reclaim our democracy.

THE ARROGANCE OF POWER

“What need we fear who knows it, when none can call our power to account?” Shakespeare’s Lady Macbeth

According to testimony given by CIA insider Susan Lindauer, the CIA knew about the planned attack on the World Trade Center as early as April, 2001. According to Lindauer, it was realized that airplanes striking the buildings would not cause their collapse, and so the disaster was deliberately made worse than it otherwise would have been by US government agents, who planted charges of explosive.

Other evidence supports Lindauer’s testimony. Numerous people in New York saved samples of the dust produced by the collapse of the WTC buildings, and chemical analysis of the dust shows the presence of nanothermite, a powerful heat-producing compound which seems to have been used to melt the steel framework of the strongly-constructed sky scrapers. Videos the collapse of the buildings, especially Building 7, show them falling freely in the manner of structures brought down in a controlled demolition. The videos also show molten steel pouring out of the buildings. Furthermore, pools of recently-melted steel were found in the ruins before these were sealed off from the public. An ordinary fire does not produce temperatures high enough to melt steel. New York Fire Department workers report hearing numerous explosions in the WTC buildings before they collapsed.

Thus there is strong evidence, available to everyone who is willing to look at it on the Internet, which shows that the official version of 9/11 is untrue, and that the US government made the disaster worse than it otherwise would have been in order to justify not only an unending “War on Terror”, but also the abridgement of civil liberties within

the United States. But very few people wish to challenge the official version of the attack on the World Trade Center. Those who accept the official version are, by definition, respectable citizens, while those who challenge it are “leftists” and “probably terrorist sympathizers”. As George W. Bush said, “You are either for us, or you are against us”.

9/11 is an example of the arrogance of power. There is strong evidence of a governmental lie, but very few dare to point to it. Like Lady Macbeth, the US government is saying, “What need we fear who knows it, when none can call our power to account?” However, we should remember that things ended badly for Macbeth and his wife.

The fear-enforced conformity of Nazi Germany is also an example of the arrogance of power. There are strong parallels between 9/11 and the way in which the Nazi’s used the Reichstag Fire as an excuse both for attacking civil liberties within Germany, and for invading Poland. All of us remember seeing in films the quasi-religious expressions of ecstasy on the faces of enormous crowds of Germans as they listened to Hitler’s speeches. Fanatical nationalism appeals to primitive emotions of tribalism which all of us have inherited from our remote ancestors; but in the faces of the crowds listening to Hitler’s hypnotic speeches we can see something more: conformity enforced by fear. But what about ourselves? Are we really fearless? If so, why don’t we speak truth to power? Why don’t we challenge governmental lies?

Attempts to rule the world through military power were tyrannical and undemocratic under the Roman Empire, tyrannical under the British Empire, and tyrannical under Napoleon. The ambition of military world dominance was evil when it was the aim of Hitler; and it is evil today when practiced by any country, much more so now than in earlier times because of the invention of nuclear weapons.

It is generally agreed that a full-scale nuclear war would have disastrous effects, not only on belligerent nations but also on neutral countries. A nuclear war would be the ultimate ecological catastrophe, inflicting enormous damage on global agriculture, and making very large regions of the world permanently uninhabitable through long-lasting radioactive contamination. Worst case scenarios even include the elimination of most life on earth. Mr. Javier Pérez de Cuéllar, former Secretary-General of the United Nations, emphasized this point in one of his speeches, where he cited the actions of nuclear weapon states as examples of the arrogance of power:

“I feel”, he said, that the question may justifiably be put to the leading nuclear powers: by what right do they decide the fate of humanity? From Scandinavia to Latin America, from Europe and Africa to the Far East, the destiny of every man and woman is affected by their actions. No one can expect to escape from the catastrophic consequences of a nuclear war on the fragile structure of this planet. ...”

“No ideological confrontation can be allowed to jeopardize the future of humanity. Nothing less is at stake: today's decisions affect not only the present; they also put at risk succeeding generations. Like supreme arbiters, with our disputes of the moment, we threaten to cut off the future and to extinguish the lives of innocent millions yet unborn. There can be no greater arrogance. At the same time, the lives of all those who lived before us may be rendered meaningless; for we have the power to dissolve in a conflict of hours or minutes the entire work of civilization, with all the brilliant cultural heritage of humankind.”

“...In a nuclear age, decisions affecting war and peace cannot be left to military strategists or even to governments. They are indeed the responsibility of every man and woman. And it is therefore the responsibility of all of us... to break

the cycle of mistrust and insecurity and to respond to humanity's yearning for peace."

These eloquent words by Javier Pérez de Cuéllar remind us that each of us has a stake in saving the future, and each of us has a duty to do everything within our abilities to save it.

In order to save the future, and in order to make a world in which we and our children and grandchildren have a chance of survival, we must have the courage to defy the arrogance of power, and the courage to speak truth to power. Let us stop worshiping power. Let us stop obeying power, when power is lawless. Remembering that power is enforced through fear, let us not abandon the future; let us instead abandon our fears!

RACISM, COLONIALISM AND EXCEPTIONALISM

“What makes America different, what makes us exceptional, is that we are dedicated to act.” (Barak Obama, speech, September, 2013)

It seems to be possible for nations, and the majority of their citizens, to commit the worst imaginable atrocities, including torture, murder and genocide, while feeling that what they are doing is both noble and good. Some understanding of how this is possible can be gained by watching the 3-part BBC documentary, “The History of Racism”.

The series was broadcast by BBC Four in March 2007. and videos of the broadcasts are available on the Internet. Watching this eye-opening documentary can give us much insight into the link between racism and colonialism. We can also begin to see how both racism and colonialism are linked to US exceptionalism and neocolonialism.

Looking at the BBC documentary we can see how often in human history economic greed and colonial exploitation have been justified by racist theories. The documentary describes almost unbelievable cruelties committed against the peoples of the Americas and Africa by Europeans. For example, in the Congo, a vast region which King Leopold II of Belgium claimed as his private property, the women of villages were held as hostages while the men were forced to gather rubber in the forests. Since neither the men nor the women could produce food under these circumstances, starvation was the result.

Leopold’s private army of 90,000 men were issued ammunition, and to make sure that they used it in the proper way, the army was ordered to cut off the hands of their victims

and send them back as proof that the bullets had not been wasted. Human hands became a kind of currency, and hands were cut off from men, women and children when rubber quotas were not fulfilled. Sometimes more than a thousand human hands were gathered in a single day. During the rule of Leopold, roughly 10,000,000 Congolese were killed, which was approximately half the population of the region.

According to the racist theories that supported these atrocities, it was the duty of philanthropic Europeans like Leopold to bring civilization and the Christian religion to Africa. Similar theories were used to justify the genocides committed by Europeans against the native inhabitants of the Americas. Racist theories were also used to justify enormous cruelties committed by the British colonial government in India. For example, during the great famine of 1876-1878, in which ten million people died, the Viceroy, Lord Lytton, oversaw the export from India to England of a record 6.4 million hundredweight of wheat.

Meanwhile, in Europe, almost everyone was proud of the role which they were playing in the world. All that they read in newspapers and in books or heard from the pulpits of their churches supported the idea that they were serving the non-Europeans by bringing them the benefits of civilization and Christianity. Kipling wrote: "Take up the White Man's burden, Send forth the best ye breed, Go bind your sons to exile, To serve your captives' need; To wait in heavy harness, On fluttered folk and wild, Your new-caught, sullen peoples, Half-devil and half-child." On the whole, the mood of Europe during this orgy of external cruelty and exploitation, was self-congratulatory.

Can we not see a parallel with the self-congratulatory mood of the American people and their allies, who export violence, murder, torture and neocolonialism to the whole

world, and who justify it by thinking of themselves as “exceptional”?

The world urgently needs a new ethic, in which loyalty to humanity as a whole is fundamental. Racism, colonialism and exceptionalism can have no place in the future if humanity is to survive in an era of thermonuclear weapons.

THE CASE FOR ECONOMIC REFORM

The serious threats which civilization is facing in the 21st century are well known. Nevertheless, it may be useful to list them and to examine how they are related to each other and to our growth-obsessed, war-addicted economic system.

Climate change

The concentration of carbon dioxide in the earth's atmosphere recently passed 400 ppm. The last time that the levels of this heat-trapping gas were so high was several million years ago. At that time the Arctic was free from ice and sea levels were 40 meters higher than they are today. The isotope ratio in gases trapped in Arctic ice cores shows that there is a close correlation between carbon dioxide concentration and temperature. Therefore we must expect that, after some delay, the Arctic will once again be ice-free, and that ocean levels will be very much higher than at present.

As global temperatures increase there are several feedback loops that may be initiated, which will cause temperatures to increase even more sharply. One of these is the albedo effect: As the polar oceans become ice-free, light-reflecting white ice and snow will be replaced by dark, light-absorbing water. As the balance between absorption and reflection is changed, the temperature will rise further, melting more ice. Thus the effect is self-re-enforcing.

Another feedback loop, which may cause temperatures to increase more rapidly than predicted by standard models, is the drying out and burning of tropical rain forests. When tropical forests, such as those in the Amazon Basin, are dried out by increasing temperatures, they become vulnerable to

fires started by lightning. The effect of the fires is to release more carbon into the atmosphere, thus increasing the temperature and starting still more fires, in a vicious circle.

By far the most serious threatened feedback loop, however, comes from methane clathrates (hydrates) in frozen tundra and especially on ocean floors. Methane is a very much more potent greenhouse gas than carbon dioxide, although its half-life in the atmosphere is only 7 years. At high pressures, methane combines with water to form crystals called clathrates. These crystals are stable at the temperatures currently existing on ocean floors, but whenever the water temperature rises sufficiently, the crystals become unstable and methane gas bubbles to the surface. This effect has already been observed in the Arctic seas north of Russia. The total amount of methane clathrates on ocean floors is not precisely known, but it is estimated to be very large, corresponding to between 3,000 and 11,000 gigatons of carbon. The release of even a small fraction of this amount of methane into our atmosphere would greatly accelerate rising temperatures, leading to the release of still more methane, in a dangerous feedback loop.

The serious effects of climate change can already be observed in the form of droughts and floods, as well as the increased severity of hurricanes, tornadoes and wildfires. In the long term, anthropogenic climate change threatens to make much of the world uninhabitable and to lead to large-scale species extinctions.

How is it that our supposedly rational species has not long ago mobilized the political will to take the steps needed to prevent catastrophic climate change? Perhaps we can find an answer to this question by examining the faults in our present economic system: For example, large oil corporations, motivated only by greed, see the melting of Arctic ice

not as a warning of future catastrophe, but as an opportunity to exploit the fossil fuel resources of the region, thus adding another dangerous feedback loop to those already mentioned. The more the Arctic icecap melts, the more oil can be extracted and burned, thus raising the temperature still further and melting more ice!

The threat of a catastrophic nuclear war

The concept of nuclear deterrence is seriously flawed, and it violates the fundamental ethical principles of all major religions. Besides being morally unacceptable, nuclear weapons are also illegal according to a historic 1996 decision of the International Court of Justice, a ruling that reflects the opinion of the vast majority of the world's peoples.

Even a small nuclear war would be an ecological catastrophe, not only killing civilian populations indiscriminately in both belligerent and neutral countries, but also severely damaging global agriculture and making large areas of the earth permanently uninhabitable through radioactive contamination. The danger of accidental nuclear war continues to be very great today, and the danger of nuclear terrorism is increasing.

In the long run, the threat of catastrophic nuclear destruction of human civilization and the biosphere can only be averted if the institution of war is abolished. This is because the knowledge of how to produce nuclear weapons can never be lost. Even if even if all the world's nuclear weapons were destroyed, they could be reconstructed during a major war.

The all-destroying weapons that have been produced with the misuse of science have made the institution of war a highly dangerous anachronism, but our economic system re-

mains addicted to war. This is because of the almost unimaginable sums of money that are used for military purposes: 1.7 trillion dollars last year. The oligarchy, into whose pockets this vast river of money is flowing, uses it to control our governments and our mass media. To rid our society of this cancer-like military-industrial complex will require reforms of both our economic system, and our media. It will also require the restoration of democracy to the governments of many countries that claim to be democracies but which, in fact, more closely resemble the state described by George Orwell in his prophetic book, "1984".

The threat of global famine

There is a danger that a famine of unprecedented scale may occur during the present century, caused by prohibitively high prices of fossil fuels (on which modern agriculture depends) compounded by population growth and the effects of climate change.

Has the number of humans in the world already exceeded the earth's sustainable limits? Will the global population of humans crash catastrophically after having exceeded the carrying capacity of the environment? There is certainly a danger that this will happen, a danger that the 21st century will bring very large scale famines to vulnerable parts of the world, because modern energy-intensive agriculture will be dealt a severe blow by prohibitively high petroleum prices, and because climate change will reduce the world's agricultural output.

When the major glaciers in the Himalayas have melted, they will no longer be able to give India and China summer water supplies; rising oceans will drown much agricultural land; and aridity will reduce the output of many regions

that now produce much of the world's grain. Falling water tables in overdrawn aquifers, and loss of topsoil will add to the problem. We should be aware of the threat of a serious global food crisis in the 21st century if we are to have a chance of avoiding it.

We saw above how famine-producing climate change is driven by flaws in our present economic system. The threat of large-scale famine is also related to our economic system's addiction to war. The enormous quantities of money that are presently wasted on war could be used instead to stabilize the world's population.

Sir Partha Dasgupta of Cambridge University has pointed out that the changes needed to break the cycle of overpopulation and poverty are all desirable in themselves. Besides education and higher status for women, they include state-provided social security for old people, provision of water supplies near to dwellings, provision of health services to all, abolition of child labor and general economic development.

The intrinsically desirable measures advocated by Sir Partha could be carried out globally for a tiny fraction of the money that is currently poured into the bottomless pit of war. Furthermore, a small fraction of global military expenses could sponsor agricultural research and programs for soil and water conservation. Thus we begin to see that the serious threats that the world will face during the 21st century (and in the more distant future) are closely related to each other and to reform of our flawed economic system.

The threat of economic collapse

It is obvious that endless growth of industry on a finite planet is a logical impossibility, and this is especially clear if we look at the long-term future. Nevertheless, for most economists

and all governments, growth is the Holy Grail. To question the need for growth is political and economic heresy.

Some understanding of this irrational fixation on growth can be obtained by examining our fractional reserve banking system. In this system, private banks keep only a small fraction of the money that is entrusted to them by their depositors and lend out the remaining amount. Thus the money supply is controlled by the private banks rather than by the government, and also that profits made from any expansion of the money supply go to private corporations instead of being used to provide social services.

When an economy is growing, the fractional reserve banking system is unjust but not catastrophic. However if the economy contracts, the system produces a disaster. The depositors ask banks for their money, but it is not there. It has been lent out. We are familiar with this situation from the subprime mortgage crisis of 2008, when enormous banks were threatened with collapse, and were only saved by massive bailouts at the taxpayers' expense.

Looking towards the future, we can see that we are approaching a situation in which growth of industry will no longer be possible because of ecological constraints and because of exhaustion of non-renewable resources. When growth is no longer possible, economic stability can only be achieved by reforming our fractional reserve banking system.

What other reforms are needed? Labor must be moved to tasks related to ecological sustainability. The tasks include development of renewable energy, reforestation, soil and water conservation, replacement of private transportation by public transport. Health and family planning services must also be made available to all.

Opportunities for employment must be shared among those in need of work, even if this means reducing the number

of hours that each person works each week and simultaneously reducing the use of luxury goods, unnecessary travel, conspicuous consumption and so on. It will be necessary for governments to introduce laws reducing the length of the working week, thus ensuring that opportunities for employment are shared equally.

It is clear that our present economic system, where selfishness is exalted as the mainspring for action, lacks both the ethical and ecological dimensions that are needed to ensure the long-term survival of human civilization. We must mobilize the political will to reform the system, before it is too late.

AN ATTACK ON IRAN COULD ESCALATE INTO A GLOBAL NUCLEAR WAR

Despite the willingness of Iran's new President, Hassan Rouhani to make all reasonable concessions to US demands, Israeli pressure groups in Washington continue to demand an attack on Iran. But such an attack might escalate into a global nuclear war, with catastrophic consequences.

As we approach the 100th anniversary World War I, we should remember that this colossal disaster escalated uncontrollably from what was intended to be a minor conflict. Analogously, there is a danger that an attack on Iran would escalate into a large-scale war in the Middle East, entirely destabilizing a region that is already deep in problems.

The unstable government of Pakistan might be overthrown, and the revolutionary Pakistani government might enter the war on the side of Iran, thus introducing nuclear weapons into the conflict. Russia and China, firm allies of Iran, might also be drawn into a general war in the Middle East. Since much of the world's oil comes from the region, such a war would certainly cause the price of oil to reach unheard-of heights, with catastrophic effects on the global economy.

In the dangerous situation that could potentially result from an attack on Iran, there is a risk that nuclear weapons would be used, either intentionally, or by accident or miscalculation. Recent research has shown that besides making large areas of the world uninhabitable through long-lasting radioactive contamination, a nuclear war would damage global agriculture to such a extent that a global famine of previously unknown proportions would result.

Thus, nuclear war is the ultimate ecological catastrophe. It could destroy human civilization and much of the biosphere. To risk such a war would be an unforgivable offense against the lives and future all the peoples of the world, US citizens included.

To accept money from agents of a foreign power to perform actions that put one's own country in danger is, by definition, an act of treason.

Why are members of the US Senate and House of Representatives, who demonstrably have accepted money from agents of a foreign power, the State of Israel, not accused of treason when they are bribed to take actions that put their country in danger? If members of the US government should vote for an attack on Iran, they would be traitors not only to the United States, but to all of humanity, and indeed traitors to all living things.

THE HUMANITARIAN IMPACT OF NUCLEAR WEAPONS, MEXICO, FEBRUARY, 2014

On February 13 and 14, 2014, the government of Mexico will host a Conference on The Humanitarian Impact of Nuclear Weapons. The global peace movement must think carefully about how best to use the opportunities offered by the Mexico conference and by other recent breakthroughs in the struggle to eliminate the danger of a catastrophic thermonuclear war.

The urgent need for nuclear disarmament

Nuclear disarmament has been one of the core aspirations of the international community since the first use of nuclear weapons in 1945. A nuclear war, even a limited one, would have disastrous humanitarian and environmental consequences.

The total explosive power of today's weapons is equivalent to roughly half a million Hiroshima bombs. To multiply the tragedy of Hiroshima and Nagasaki by a factor of half a million changes the danger qualitatively. What is threatened today is the complete breakdown of human society.

Although the Cold War has ended, the dangers of nuclear weapons have not been appreciably reduced. Indeed, proliferation and the threat of nuclear terrorism have added new dimensions to the dangers. There is no defense against nuclear terrorism.

There are 20,000 nuclear weapons in the world today, several thousand of them on hair-trigger alert. The phrase “hair trigger alert” means that the person in charge has only 15 minutes to decide whether the warning from the radar system was true or false, and to decide whether or not to launch a counterattack. The danger of accidental nuclear war continues to be high. Technical failures and human failures have many times brought the world close to a catastrophic nuclear war. Those who know the system of “deterrence” best describe it as “an accident waiting to happen”.

A nuclear war would produce radioactive contamination of the kind that we have already experienced in the areas around Chernobyl and Fukushima and in the Marshall Islands, but on an enormously increased scale.

Also, recent studies by atmospheric scientists have shown that the smoke from burning cities produced by even a limited nuclear war would have a devastating effect on global agriculture. The studies show that the smoke would rise to the stratosphere, where it would spread globally and remain for a decade, blocking sunlight, blocking the hydrological cycle and destroying the ozone layer. Because of the devastating effect on global agriculture, darkness from even a small nuclear war could result in an estimated billion deaths from famine. This number corresponds to the fact that today, a billion people are chronically undernourished. If global agriculture were sufficiently damaged by a nuclear war, these vulnerable people might not survive.

A large-scale nuclear war would be an even greater global catastrophe, completely destroying all agriculture for a period of ten years. Such a war would mean that most humans would die from hunger, and many animal and plant species would be threatened with extinction.

Recent breakthroughs

On 4-5 March 2013 the Norwegian Minister of Foreign Affairs, Mr. Espen Barth Eide hosted an international Conference on the Humanitarian Impact of Nuclear Weapons. The Conference provided an arena for a fact-based discussion of the humanitarian and developmental consequences of a nuclear weapons detonation. Delegates from 127 countries as well as several UN organisations, the International Red Cross movement, representatives of civil society and other relevant stakeholders participated. Representatives from many nations made strong statements advocating the complete abolition of nuclear weapons. The conference in Mexico in 2014 will be a follow-up to the Oslo Conference.

Recently UN Secretary General Ban Ki-Moon has introduced a 5-point Program for the abolition of nuclear weapons. In this program he mentioned the possibility of a Nuclear Weapons Convention, and urged the Security Council to convene a summit devoted to the nuclear abolition. He also urged all countries to ratify the Comprehensive Test-Ban Treaty.

Three-quarters of all nations support UN Secretary-General Ban's proposal for a treaty to outlaw and eliminate nuclear weapons. The 146 nations that have declared their willingness to negotiate a new global disarmament pact include four nuclear weapon states: China, India, Pakistan and North Korea.

On April 2, 2013, a historic victory was won at the United Nations, and the world achieved its first treaty limiting international trade in arms. Work towards the ATT was begun in the Conference on Disarmament in Geneva, which requires a consensus for the adoption of any measure. Over the years, the consensus requirement has meant that no real progress



Figure 15: *Towards Zero (an image produced by the UK United Nations Association).*

in arms control measures has been made in Geneva, since a consensus among 193 nations is impossible to achieve.

To get around the blockade, British U.N. Ambassador Mark Lyall Grant sent the draft treaty to Secretary-General Ban Ki-moon and asked him on behalf of Mexico, Australia and a number of others to put the ATT to a swift vote in the General Assembly, and on Tuesday, April 3, it was adopted by a massive majority.

The method used for the adoption of the Arms Trade Treaty suggests that progress on other seemingly intractable issues could be made by the same method, by putting the relevant legislation to a direct vote on the floor of the UN General Assembly, despite the opposition of militarily powerful states. Similarly a Nuclear Weapons Convention might be put to a direct vote on the floor of the UN General Assembly. According to ICAN, 151 nations support a ban on nuclear weapons, while only 22 nations oppose it.⁵ The key

⁵<http://www.icanw.org/why-a-ban/positions/>

feature of these proposals is that negotiations must not be allowed to be blocked by the nuclear weapons states. Asking them to participate in negotiations would be like asking tobacco companies to participate in laws to ban cigarettes, or like asking narcotics dealers to participate in the drafting of laws to ban narcotics, or, to take a recent example, it would be like inviting big coal companies to participate in a conference aimed at preventing dangerous climate change.

In 2013, the United Nations has established an Open Ended Working Group on Nuclear Disarmament, which consisted both of nations and of individuals. The OEWG met in the spring of 2013 and again in August, to draft a set of proposals to be sent to the UN General Assembly.

On 28 September, 2013, a High Level Meeting of the 68th Session of the UN General Assembly took place. It was devoted to nuclear disarmament. Although the nuclear weapon states attempted to label the new negotiations as counter-productive, the overwhelming consensus of the meeting was that nuclear abolition must take place within the next few years, and that the humanitarian and environmental impact of nuclear weapons had to be central to all discussions.

The opportunity presented by the conference in Mexico in February 2014 must not be wasted. We must use it to take concrete steps towards putting legislation for the abolition of nuclear weapons to a direct vote on the floor of the UN General Assembly.

MANDELA AND GANDHI

Nelson Rohihlahla Mandela (1918-2013) and Mahatma Gandhi (1869-1948) were two of history's greatest leaders in the struggle against governmental oppression. They are also remembered as great ethical teachers. Their lives had many similarities; but there were also differences.

Similarities:

Both Mandela and Gandhi were born into politically influential families. Gandhi's father, and also his grandfather, were Dewans (prime ministers) of the Indian state of Porbandar. Mandela's great-grandfather was the ruler of the Thembu peoples in the Eastern Cape Province of South Africa. When Mandela's father died, his mother brought the young boy to the palace of the Thembu people's Regent, Chief Jogintaba Dalindyebo, who became the boy's guardian. He treated Mandela as a son and gave him an outstanding education.

Both Mandela and Gandhi studied law. Both were astute political tacticians, and both struggled against governmental injustice in South Africa. Both were completely fearless. Both had iron wills and amazing stubbornness. Both spent long periods in prison as a consequence of their opposition to injustice.

Both Mandela and Gandhi are remembered for their strong belief in truth and fairness, and for their efforts to achieve unity and harmony among conflicting factions. Both treated their political opponents with kindness and politeness.

When Gandhi began to practice law South Africa, in his first case, he was able to solve a conflict by proposing a compromise that satisfied both parties. Of this result he said, "My joy was boundless. I had learnt the true practice



Figure 16: *Mandela was given an outstanding education by his guardian, the Regent of the Thembu people. Public domain, Wikimedia Commons*

of law. I had learnt to find out the better side of human nature and to enter men's hearts. I realized that the true function of a lawyer was to unite parties riven asunder."

Mandela is also remembered as a great champion of reconciliation. Wikipedia describes his period as President of South Africa in the following words:

"Presiding over the transition from apartheid minority rule to a multicultural democracy, Mandela saw national reconciliation as the primary task of his presidency. Having seen other post-colonial African economies damaged by the departure of white elites, Mandela worked to reassure South Africa's white population that they were protected and represented in 'The Rainbow Nation'. Mandela attempted to

create the broadest possible coalition in his cabinet, with de Klerk as first Deputy President while other National Party officials became ministers for Agriculture, Energy, Environment, and Minerals and Energy, and Buthelezi was named Minister for Home Affairs..." Mandela also introduced, and presided over, a Truth and Reconciliation Commission.

Both Gandhi and Mandela believed strongly in the power of truth. Gandhi called this principle "Satyagraha", and he called his autobiography "The Story of My Experiments With Truth".

Mandela's realization of the power of truth came during the Rivonia Trial (1963-1964), where he was accused of plotting to overthrow the government of South Africa by violence, and his life was at stake. Remembering this event, Mandela wrote: "In a way I had never quite comprehended before, I realized the role I could play in court and the possibilities before me as a defendant. I was the symbol of justice in the court of the oppressor, the representative of the great ideals of freedom, fairness and democracy in a society that dishonored those virtues. I realized then and there that I could carry on the fight even in the fortress of the enemy"

During his defense statement, Mandela said: "I have fought against white domination and I have fought against black domination. I have cherished the ideal of a democratic and free society in which all persons will live together with equal opportunities. It is an ideal which I hope to live for and see realized. But my Lord, if it needs to be, it is an ideal for which I am prepared to die."

Although the prosecutor demanded the death penalty, Mandela was sentenced to lifelong imprisonment. His defense statement became widely known throughout the world, and he became the era's most famous prisoner of conscience. The South African apartheid regime was universally condemned

by the international community, and while still in prison, Mandela was given numerous honors, including an honorary doctorate in Lesotho, the Jawaharlal Nehru Award for International Understanding and Freedom of the City of Glasgow. “Free Mandela” concerts were held in England and the UN Security Council demanded his release.

Finally, as it became increasingly clear that the South African apartheid regime was untenable, Mandela was released in February 1990. He spoke to an enormous and wildly cheering crowd of supporters, who had waited four hours to hear him. Four years later, he was elected President of South Africa. He was awarded 250 major honors, including the Nobel Peace Prize, which he shared with de Klerk.

Both Mandela and Gandhi are considered to be the fathers of their countries. Gandhi is called “Mahatma”, which means “Great Soul”, but he was also known by the affectionate name “Bapu”, which means “father”. Mandela was affectionately called “Tata”, which also means “father”.

Differences:

The greatest difference between Mandela and Gandhi concerns non-violence. While Mandela believed that violent protest could sometimes be necessary in the face of governmental violence, Gandhi rejected this idea. He did so partly because of his experience as a lawyer. In carrying out non-violent protests against governmental injustice, Gandhi was making a case before the jury of international public opinion. He thought that he had a better chance of succeeding if he was very clearly in the right.

Furthermore, to the insidious argument that “the end justifies the means”, Gandhi answered firmly: “They say that ‘means are after all means’. I would say that ‘means

are after all everything'. As the means, so the end. Indeed, the Creator has given us limited power over means, none over end... The means may be likened to a seed, and the end to a tree; and there is the same inviolable connection between the means and the end as there is between the seed and the tree. Means and end are convertible terms in my philosophy of life."

What can we learn from Mandela and Gandhi?

Today, as never before, governmental injustice, crime and folly are threatening the future of humankind. If our children and grandchildren are to have a future, each of us must work with dedication for truly democratic government, for a just and effective system of international law, for abolition of the institution of war, for abolition of nuclear weapons, for the reform of our economic system, for stabilization of the global population, and for protection of the global environment against climate change and other dangers. This is not the responsibility of a few people. It is everyone's responsibility. The courage, wisdom and dedication of Mandela and Gandhi can give us inspiration as we approach the great tasks that history has given to our generation.

SOME EXAMPLES OF GENOCIDE

Last Monday, 65 years ago, the United Nations adopted a convention prohibiting genocide. It therefore seems appropriate to recall some examples of genocide, many of which have occurred since 1948

Article II of the 1948 convention defines genocide as “any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such: killing members of the group; causing serious bodily or mental harm to members of the group; deliberately inflicting on the group conditions of life, calculated to bring about its physical destruction in whole or in part; imposing measures intended to prevent births within the group; [and] forcibly transferring children of the group to another group.”

Instances of genocide stain much of human history. Readers of Charles Darwins book describing “The Voyage of the Beagle” will remember his horrifying account of General Rosas’ genocidal war against the Amerind population of Argentina. Similar genocidal violence has been experienced by indigenous peoples throughout South and Central America, and indeed throughout the world.

In general, the cultures of indigenous peoples require much land, and greed for this land is the motive for violence against them. However, the genetic and cultural heritage of indigenous peoples can potentially be of enormous value to humanity, and great efforts should be made to protect them.

In North America, we can recall that military commanders, such as Lord Jeffrey Amherst, deliberately inoculated the Indians with smallpox by giving them blankets from smallpox hospitals. Amherst wrote to his associate, Colonel Henry Bouquet “You will do well to try to inoculate the

Indians, by means of blankets, as well as to try every other method that can serve to extirpate this execrable race.” This is clearly an instance of genocide, as well as being an example of the use of biological weapons.

The website of the Holocaust Museum Houston states that “Civil war existed in Guatemala since the early 1960s due to inequalities existing in the economic and political life. In the 1970s, the Maya began participating in protests against the repressive government, demanding greater equality and inclusion of the Mayan language and culture. In 1980, the Guatemalan army instituted Operation Sophia, which aimed at ending insurgent guerrilla warfare by destroying the civilian base in which they hid. This program specifically targeted the Mayan population, who were believed to be supporting the guerilla movement. Over the next three years, the army destroyed 626 villages, killed or ‘disappeared’ more than 200,000 people and displaced an additional 1.5 million, while more than 150,000 were driven to seek refuge in Mexico. Forced disappearance policies included secretly arresting or abducting people, who were often killed and buried in unmarked graves.”

The Holocaust Museum Houston has resources that cover not only genocide committed by the Nazis in Europe during World War II, but also genocides in Congo, Armenia, Bosnia-Herzegovina, Cambodia, Darfur and Rwanda, besides Argentina and Guatemala.

Regarding Palestine, Francis A. Boyle, Professor of International Law at the University of Illinois, states that “What we are seeing in Gaza now, is pretty much slow motion genocide against the 1.5 million people who live in Gaza... If you read the 1948 Genocide convention, it clearly says that one instance of genocide is the deliberate infliction of conditions of life calculated to bring about the physical destruction of

people in whole or in part..., and that is exactly what has been done since the imposition of the blockade by Israel.”

I would like to end by pointing out that nuclear warfare is an example of genocide, since it kills entire populations, including babies, young children, adults in their prime and old people, without any regard for guilt or innocence. The retention of nuclear weapons, with the intent to use them under some circumstances, must be seen as the intent to commit genocide. Is it not morally degrading to see our leaders announce their intention to commit the ultimate crime against humanity?

But the use of nuclear weapons involves not only genocide, but also omnicide, since a large-scale thermonuclear war would destroy human civilization and much of the biosphere.

If humanity is to survive in an era of all-destroying weapons, we must develop an advanced ethic to match our advanced technology. We must regard all humans as our brothers and sisters, More than that, we must actively feel our kinship with all living things, as well as our duty to protect inanimate nature.

NUCLEAR WARFARE AS GENOCIDE

Sixty-five years ago, on December 9, 1948, the United Nations General Assembly adopted a convention prohibiting genocide. It seems appropriate to discuss nuclear warfare against the background of this important standard of international law.

Cannot nuclear warfare be seen as an example of genocide? It is capable of killing entire populations, including babies, young children, adults in their prime and old people, without any regard for guilt or innocence. The retention of nuclear weapons, with the intent to use them under some circumstances, must be seen as the intent to commit genocide. Is it not morally degrading to see our leaders announce their intention to commit the "crime of crimes" in our names?

The use of nuclear weapons potentially involves not only genocide, but also omnicide, the death of all, since a large-scale thermonuclear war would destroy human civilization and much of the biosphere.

If humanity is to survive in an era of all-destroying nuclear weapons, we must develop an advanced ethic to match our advanced technology. We must regard all humans as our brothers and sisters. More than that, we must actively feel our kinship with all living things, and accept and act upon our duty to protect both animate and inanimate nature.

Modern science has, for the first time in history, offered humankind the possibility of a life of comfort, free from hunger and cold, and free from the constant threat of death through infectious disease. At the same time, science has given humans the power to obliterate their civilization with nuclear weapons, or to make the earth uninhabitable through overpopulation and pollution. The question of which of these



Figure 17: *A stamp honouring the great Hungarian bio-chemist, Albert Szent-Györgyi*

paths we choose is literally a matter of life or death for ourselves and our children.

Will we use the discoveries of modern science constructively, and thus choose the path leading towards life? Or will we use science to produce more and more lethal weapons, which sooner or later, through a technical or human failure, may result in a catastrophic nuclear war? Will we thoughtlessly destroy our beautiful planet through unlimited growth of population and industry? The choice among these alternatives is ours to make. We live at a critical moment of history - a moment of crisis for civilization.

No one living today asked to be born at such a moment, But history has given our generation an enormous responsibility, and two daunting tasks: We must stabilize global population, and, more importantly, we must abolish both nuclear weapons and the institution of war.

The human brain has shown itself to be capable of solving even the most profound and complex problems. The mind

that has seen into the heart of the atom must not fail when confronted with paradoxes of the human heart.

The problem of building a stable, just, and war-free world is difficult, but it is not impossible. The large regions of our present-day world within which war has been eliminated can serve as models. There are a number of large countries with heterogeneous populations within which it has been possible to achieve internal peace and social cohesion, and if this is possible within such extremely large regions, it must also be possible globally. We must replace the old world of international anarchy, chronic war and institutionalized injustice, by a new world of law.

The Nobel laureate biochemist Albert Szent-Györgyi once wrote: "...Modern science has abolished time and distance as factors separating nations. On our shrunken globe today, there is room for one group only: the family of man."

ARE WE BEING DRIVEN LIKE CATTLE?

As we stand in line for security checks at airports, we may have the distinct feeling that we are being herded like cattle. Air travel has changed, and has become much less pleasant, since the fear of terrorism replaced the fear of communism as the excuse that governments give for diverting colossal sums of money from desperately needed social goals into the bottomless pit of war. Innocent grandmothers, and their grandchildren, are required to remove their shoes and belts. Everyone is treated like a criminal. It is a humiliating experience. We may well feel like dumb driven cattle; and the purpose of the charade is not so much to prevent airliners from being sabotaged as it is to keep the idea of terrorism fresh in our minds.

Is the threat of terrorism real? Or is it like the barking of a dog driving a herd? The threat of climate change is very real indeed. The threat to future global food security is real too. Already 11 million children die every year from malnutrition and poverty-related causes. The threat to human civilization and the biosphere posed by a possible Third World War is real. The threat of exhaustion of non-renewable resources and economic collapse is real. The dangers associated with our unstable fractional reserve banking system are also real. Beside these all too real threats to our future, the threat of terrorism is negligible.

Millions starve. Millions die yearly from preventable diseases. Millions die as a consequence of wars. Compared with these numbers, the total count of terrorist victims is vanishingly small. It is even invisible compared with the number of people killed yearly in automobile accidents.

Terrorism is an invented threat. Our military industrial complex invented it to take the place of the threat of communism after the end of the Cold War. They invented it so that they would be able to continue spending 1,700,000,000,000 dollars each year on armaments, an amount almost too large to be imagined.

So the people, the driven cattle, have been made to fear terrorism. How was this done? It was easy after 9/11. Could it be that the purpose of the 9/11 disaster was to make people fear terrorism, so that they could be more easily manipulated, more easily deprived of their civil rights, more easily driven into a war against Iraq? There is strong evidence that many highly placed governmental figures knew well in advanced that the World Trade Center would be attacked, and that they made the disaster much worse than it otherwise would have been. This evidence is available on the Internet.⁶

Are we being driven like cattle into another war, by another fake threat? Is Iran really a threat? It is a country which has not attacked any of its neighbors for a century, although it has frequently itself been attacked. Israel has 300 nuclear weapons, and the US has many thousands, yet they claim that Iran's civilian nuclear program is a threat. Is it a real threat, or are we being driven, like cattle, by a false threat.

The precipice towards which we are being driven is very dangerous indeed. There is a real danger that a military attack on Iran could escalate uncontrollably into World War III. As we approach the 100th anniversary of the start of

⁶<http://www.transcend.org/tms/2013/12/911-explosive-evidence-experts-speak-out/>
<https://www.youtube.com/watch?v=7OE3Adu4l0g>
<http://www.youtube.com/watch?v=e-wXcJA-et0>

World War I, we should remember that this catastrophic conflagration was started as a limited operation by Austria to punish the Serbian nationalists, but it escalated uncontrollably

The Middle East is already a deeply troubled region, and it is a region in which the US and Israel cannot be said to be universally popular. Might not an attack on Iran initiate a revolution in Pakistan, thus throwing Pakistan's nuclear weapons into the conflict on the side of Iran? Furthermore, both China and Russia are staunch allies of Iran. Perhaps they would be drawn into the war. At the very least, China would certainly do economic damage to the US by means of its large dollar holdings. Furthermore, much of the world's supply of oil flows through the Strait of Hormuz. A conflict in the region would probably stop this flow and send petroleum prices through the roof. The economic consequences would be disastrous.

Let us stop being driven like cattle by invented threats. Let us instead look at the very real dangers that threaten human civilization, and do our utmost to avoid them.

DOES THE AMERICAN JEWISH COMMUNITY REALLY WANT A GENERAL WAR IN THE MIDDLE EAST?

A large-scale general war in the Middle East would be a catastrophe for everyone involved. It would be a catastrophe for Syria. Iraq and Iran; a catastrophe for the other Islamic states of the Middle East; a catastrophe for Pakistan and Russia, should they become involved; and a catastrophe for Israel and the United States. In fact, all of the peoples of the world would suffer.

How could such a general war come about? Several paths are possible. The United States has recently agreed to give Israel the sophisticated aerial refueling equipment that would be needed to attack Iran, making such an attack more likely.

What would be the consequences, if Israel should bomb Iran? Last September, Brigadier General Amir Ali Hajizadeh, the commander of Iran's missile systems, stated that if there is a military conflict between Israel and Iran, "nothing is predictable...and it will turn into World War III." He added that Iran would consider any Israeli strike to be conducted with US authorization, and so "whether the Zionist regime attacks with or without US knowledge, then we will definitely attack US bases in Bahrain, Qatar and Afghanistan." Thus the decision on whether there will be a war involving Israel, the US and Iran seems to be in the dangerous hands of Benjamin Netanyahu's government.

Meanwhile, President Obama has stated that if Israel is attacked by Iran, "all options are on the table". This is

clearly a threat of US military involvement. But if Israel bombs Iran, how can Iran fail to respond?

The Middle East is already a deeply troubled region, filled with wars, proxy wars, revolutions and civil wars. It is a region in which Israel and the United States can hardly be said to be universally popular. What would be the reaction of the Islamic states to a military conflict between Iran, Israel and the United States? Would not all of them, including Pakistan, join the war on the side of Iran? Pakistan's government is very unstable, and it might be overthrown in such a situation, putting nuclear weapons into the hands of religious fanatics.

Russia has always been a staunch ally of Iran and Syria, and we read that Russia is preparing for the threatened war by massing troops and supplies in Armenia. It seems likely that Russia would enter a general war in the Middle East on the side of the Islamic states.

The bombing of Iran by Israel is one path by which a large-scale general war in the Middle East might start, but it is not the only one. There has been a massive buildup of US forces in the Persian Gulf, and also an incident in which a US Navy ship fired on an unarmed Indian fishing boat, killing one person and injuring three others. We must remember that in the past, small incidents have often escalated into general wars. As long as the presence of a US fleet in the Persian Gulf is maintained, there is a danger of incidents that will escalate into a large-scale general war in the Middle East.

At the entrance of the Persian Gulf is the Strait of Hormuz, through which much of the Middle East's oil must pass to reach the outside world. Any large-scale conflict in the region would endanger or entirely stop this flow of oil, with the result that oil prices throughout the world would skyrocket.

Just as the Middle East is already a deeply troubled region, so also the global economy is already deeply troubled. In fact we are balancing on the edge of a depression that might rival or surpass the Great Depression of the 1930's. A steep rise in oil prices might well push us over the edge.

In addition we must remember that a large-scale general war in the Middle East might escalate uncontrollably into a nuclear war, especially since Pakistan's nuclear weapons would be involved. A nuclear war would be the ultimate ecological disaster, inflicting great damage on global agriculture and making large areas of the world permanently uninhabitable because of long-lasting radioactive contamination.

Those who doubt that small wars can escalate uncontrollably into large ones should remember the events that started World War I: A small action by Austria, aimed at punishing Pan-Serbian nationalists, escalated uncontrollably into a nightmarish disaster that still casts a dark shadow over the world a century later.

Members of the Jewish community should ask themselves whether this is really what they want. Would not Israel suffer in the event of a general war in the Middle East? Would not the United States also suffer? Would not all the peoples of the world suffer from such a war?

One hopes that these questions will be debated in liberal Jewish organizations devoted to peace, such as J Street and Jewish Voice for Peace. Perhaps the question of whether a general war in the Middle East is really desirable could even be debated at meetings of the American Israel Public Affairs Committee (AIPAC).

Organizations such as AIPAC are currently pushing the United States government in the direction of what might turn out to be a global disaster of enormous proportions. It is time to pause for a moment and think.

THE FRAGILITY OF OUR COMPLEX CIVILIZATION

The rapid growth of knowledge

Cultural evolution depends on the non-genetic storage, transmission, diffusion and utilization of information. The development of human speech, the invention of writing, the development of paper and printing, and finally, in modern times, mass media, computers and the Internet: all these have been crucial steps in society's explosive accumulation of information and knowledge. Human cultural evolution proceeds at a constantly-accelerating speed, so great in fact that it threatens to shake society to pieces.

In many respects, our cultural evolution can be regarded as an enormous success. However, at the start of the 21st century, most thoughtful observers agree that civilization is entering a period of crisis. As all curves move exponentially upward, population, production, consumption, rates of scientific discovery, and so on, one can observe signs of increasing environmental stress, while the continued existence and spread of nuclear weapons threaten civilization with destruction. Thus, while the explosive growth of knowledge has brought many benefits, the problem of achieving a stable, peaceful and sustainable world remains serious, challenging and unsolved.

Our modern civilization has been built up by means of a worldwide exchange of ideas and inventions. It is built on the achievements of many ancient cultures. China, Japan, India, Mesopotamia, Egypt, Greece, the Islamic world, Christian Europe, and the Jewish intellectual traditions, all have contributed. Potatoes, corn, squash, vanilla, chocolate, chili peppers, and quinine are gifts from the American Indians.

The sharing of scientific and technological knowledge is essential to modern civilization. The great power of science is derived from an enormous concentration of attention and resources on the understanding of a tiny fragment of nature. It would make no sense to proceed in this way if knowledge were not permanent, and if it were not shared by the entire world.

Science is not competitive. It is cooperative. It is a great monument built by many thousands of hands, each adding a stone to the cairn. This is true not only of scientific knowledge but also of every aspect of our culture, history, art and literature, as well as the skills that produce everyday objects upon which our lives depend. Civilization is cooperative. It is not competitive.

Our cultural heritage is not only immensely valuable; it is also so great that no individual comprehends all of it. We are all specialists, who understand only a tiny fragment of the enormous edifice. No scientist understands all of science. Perhaps Leonardo da Vinci could come close in his day, but today it is impossible. Nor do the vast majority people who use cell phones, personal computers and television sets every day understand in detail how they work. Our health is preserved by medicines, which are made by processes that most of us do not understand, and we travel to work in automobiles and buses that we would be completely unable to construct.

The fragility of modern society

As our civilization has become more and more complex, it has become increasingly vulnerable to disasters. We see this whenever there are power cuts or transportation failures due to severe storms. If electricity should fail for a very long

period of time, our complex society would cease to function. The population of the world is now so large that it is completely dependent on the high efficiency of modern agriculture. We are also very dependent on the stability of our economic system.

The fragility of modern society is particularly worrying, because, with a little thought, we can predict several future threats which will stress our civilization very severely. We will need much wisdom and solidarity to get safely through the difficulties that now loom ahead of us.

We can already see the the problem of famine in vulnerable parts of the world. Climate change will make this problem more severe by bringing aridity to parts of the world that are now large producers of grain, for example the Middle West of the United States. Climate change has caused the melting of glaciers in the Himalayas and the Andes. When these glaciers are completely melted, China, India and several countries in South America will be deprived of their summer water supply. Water for irrigation will also become increasingly problematic because of falling water tables. Rising sea levels will drown many rice-growing areas in South-East Asia. Finally, modern agriculture is very dependent on fossil fuels for the production of fertilizer and for driving farm machinery. In the future, high-yield agriculture will be dealt a severe blow by the rising price of fossil fuels.

Economic collapse is another threat that we will have to face in the future. Our present fractional reserve banking system is dependent on economic growth. But perpetual growth of industry on a finite planet is a logical impossibility. Thus we are faced with a period of stress, where reform of our growth-based economic system and great changes of lifestyle will both become necessary.

How will we get through the difficult period ahead? I believe that solutions to the difficult problems of the future are possible, but only if we face the problems honestly and make the adjustments which they demand. Above all, we must maintain our human solidarity.

AN ACCIDENT WAITING TO HAPPEN

In Stanley Kubrick's film, "Dr. Strangelove", a paranoid ultra-nationalist brigadier general, Jack D. Ripper, orders a nuclear attack on the Soviet Union because he believes that the Soviets are using water fluoridation as a means to rob Americans of their "precious bodily fluids". Efforts are made to recall the US bombers, but this proves to be impossible, and the attack triggers the Soviet Doomsday Machine. The world is destroyed.

Kubrick's film is a black comedy, and we all laugh at it, especially because of the brilliant performance of Peter Sellers in multiple roles. Unfortunately, however, the film comes uncomfortably close to reality. An all-destroying nuclear war could very easily be started by an insane or incompetent person whose hand happens to be on the red button.

This possibility (or probability) has recently come to public attention through newspaper articles revealing that 11 of the officers responsible for launching US nuclear missiles have been fired because of drug addiction. Furthermore, a larger number of missile launch officers were found to be cheating on competence examinations. Three dozen officers were involved in the cheating ring, and some reports state that an equal number of others may have known about it., and remained silent. Finally, it was shown that safety rules were being deliberately ignored. The men involved, were said to be "burned out".

According to an article in *The Guardian* (Wednesday, 15 January, 2014), "Revelations of misconduct and incompetence in the nuclear missile program go back at least to 2007, when six nuclear-tipped cruise missiles were acciden-

tally loaded onto a B-52 bomber in Minot, North Dakota, and flown to a base in Louisiana.”

“Last March, military inspectors gave officers at the ICBM base in Minot the equivalent of a ‘D’ grade for launch mastery. A month later, 17 officers were stripped of their authority to launch the missiles.”

“In October, a senior air force officer in charge of 450 ICBM’s, major general Michael Carey, was fired after accusations of drunken misconduct during a summer trip to Moscow. An internal investigation found that Carey drank heavily, cavorted with two foreign women and visited a nightclub called La Cantina, where Maj. Gen. Carey had alcohol and kept trying to get the band to let him play with them.”

The possibility that a catastrophic nuclear war could be triggered by a madman gains force from the recent statements of Benjamin Netanyahu, who has said repeatedly that, with or without US help, Israel intends to attack Iran. Such an attack, besides being a war crime, would be literally insane.

If Netanyahu believes that a war with Iran would be short or limited, he is ignoring several very obvious dangers. Such a war would most probably escalate into a widespread general war in the Middle East. It could cause a revolution in Pakistan, and the new revolutionary government of Pakistan would be likely to enter the war on the side of Iran, bringing with it Pakistan’s nuclear weapons. Russia and China, both staunch allies of Iran, might be drawn into the conflict. There is a danger that the conflict could escalate into a Third World War, where nuclear weapons might easily be used, either by accident or intentionally.

China could do grave economic damage to the United States through its large dollar holdings. Much of the world’s supply of petroleum passes through the Straits of Hormuz,

and a war in the region could greatly raise the price of oil, triggering a depression that might rival or surpass the Great Depression of the 1920's and 1930's.

The probability of a catastrophic nuclear war occurring by accident is made greater by the fact that several thousand nuclear weapons are kept on "hair-trigger alert" with a quasi-automatic reaction time measured in minutes. There is a constant danger that a nuclear war will be triggered by an error in evaluating a signal on a radar screen.

A number of prominent political and military figures (many of whom have ample knowledge of the system of deterrence, having been part of it) have expressed concern about the danger of accidental nuclear war. Colin S. Grey (Chairman of the National Institute of Public Policy) expressed this concern as follows: "The problem, indeed the enduring problem, is that we are resting our future on a deterrence system concerning which we cannot tolerate even a single malfunction."

General Curtis E. LeMay, has written: "In my opinion a general war will grow through a series of political miscalculations and accidents, rather than through any deliberate attack by either side."

Bruce G. Blair of Brookings Institution has remarked that "It is obvious that the rushed nature of the process, from warning to decision to action, risks causing a catastrophic mistake... This system is an accident waiting to happen."

Fred Ikle of the Rand Corporation has written: "But nobody can predict that a fatal accident or unauthorized act will never happen... Given the huge and far-flung missile forces, ready to be launched from land or sea on both sides, the scope for disaster by accident is immense,.. In a matter of seconds, through technical accident or human failure, mutual deterrence might thus collapse."

In the perilous situation in which we find ourselves today, the only way that we can ensure that our children and grandchildren will live to enjoy our beautiful world, is to get rid of nuclear weapons entirely. To do so is the ardent wish of the vast majority of the world's peoples.

“ATOMS FOR PEACE”?

“Atoms for Peace”, the title of U.S. President Dwight D. Eisenhower’s 1953 speech to the U.N. General Assembly, may be regarded by future generations as being tragically self-contradictory. Nuclear power generation has led not only to dangerous proliferation of nuclear weapons, but also to disasters which have made large areas of the world permanently uninhabitable because of long-lived radioactive contamination.

According to Wikipedia, “...Under Atoms for Peace related programs, the US exported 25 tons of highly enriched uranium to 30 countries, mostly to fuel research reactors. The Soviet Union also exported 11 tons of HEU under a similar program.” This enormous quantity of loose weapons-usable highly enriched uranium, is now regarded as very worrying because of proliferation and terrorism risks.

A recent article in “The Examiner”⁷ pointed out that “...NRC and DOE could not account for the current location and disposition of U.S. HEW overseas in response to a 1992 congressional mandate. U.S. agencies, in a 1993 report produced in response to the mandate, were able to verify the location of only 1.160 kilograms out of 17,500 kilograms of U.S. HEW estimated to have been exported.”

The dangers of nuclear power generation are exemplified by the Chernobyl disaster: On the 26th of April, 1986, during the small hours of the morning, the staff of the Chernobyl nuclear reactor in Ukraine turned off several safety systems in order to perform a test. The result was a core meltdown in Reactor 4, causing a chemical explosion that blew off the reactor’s 1,000-ton steel and concrete lid. 190

⁷<http://www.examiner.com/article/nuclear-security-u-s-fails-to-protect-its-nuclear-materials-overseas>

tons of highly radioactive uranium and graphite were hurled into the atmosphere. The resulting radioactive fallout was 200 times greater than that caused by the nuclear bombs that destroyed Hiroshima and Nagasaki. The radioactive cloud spread over Belarus, Ukraine, Russia, Finland, Sweden and Eastern Europe, exposing the populations of these regions to levels of radiation 100 times the normal background. Ultimately, the radioactive cloud reached as far as Greenland and parts of Asia.

The exact number of casualties resulting from the Chernobyl meltdown is a matter of controversy, but according to a United Nations report, as many as 9 million people have been adversely affected by the disaster. Since 1986, the rate of thyroid cancer in affected areas has increased ten-fold. An area of 155,000 square kilometers (almost half the size of Italy) in Belarus, Ukraine and Russia is still severely contaminated. Even as far away as Wales, hundreds of farms are still under restrictions because of sheep eating radioactive grass.

The more recent disaster of 11 March, 2011, may prove to be very much worse than Chernobyl. According to an article by Harvey Wasserman⁸, the ongoing fallout from the Fukushima catastrophe is already far in excess of that from Chernobyl. Ecosystems of the entire Pacific ocean are being contaminated by the 300 tons of radioactive water from Fukushima that continue to pour into the Pacific every day.

Meanwhile, the increasingly militaristic government of Japan's Prime Minister Shinzo Abe has passed a State Secrets Act that makes it an offense punishable by 5 year's imprisonment for journalists to report on the situation. Under this cloak of secrecy, attempts are being made to remove highly radioactive used fuel rods balanced precariously in a

⁸(<http://www.commondreams.org/view/2014/02/03-3>)



Figure 18: *Map of radiation levels in 1996 around Chernobyl.* CIA Factbook, [CC BY-SA 4.0], Wikimedia Commons.

partially destroyed container hanging in the air above the stricken Unit Four. If an accident should occur, the released radioactivity could dwarf previous disasters.

Public opinion turned against nuclear power generation as a result of the Chernobyl and Fukushima catastrophes. Nevertheless, many governments insist on pushing forward their plans for opening new nuclear power plants, despite popular opposition. Nuclear power could never compete in price with solar energy or wind energy if it were not heavily subsidized by governments. Furthermore, if a careful accounting is made of the CO₂ released in the construction of nuclear power plants, the mining, refining and transportation of uranium ore, and the final decommissioning of the plants, the amount of CO₂ released is seen to be similar to that of coal-fired plants.

There are three basic reasons why nuclear power generation is one of the worst ideas ever conceived: First is

the danger of proliferation of nuclear weapons, which will be discussed in detail below. Secondly, there is the danger of catastrophic accidents, such as the ones that occurred at Chernobyl and Fukushima. Finally, the problem of how to safely dispose of or store used fuel rods has not been solved.

In thinking about the dangers posed by radioactive waste, we should remember that many of the dangerous radioisotopes involved have half-lives of hundreds of thousands of years. Thus, it is not sufficient to seal them in containers that will last for a century, or even a millennium. We must find containers that will last for a hundred thousand years or more, longer than any human structure has ever lasted.

The danger of proliferation

Of the two bombs that destroyed Hiroshima and Nagasaki, one made use of the rare isotope of uranium, U-235, while the other used plutonium. Both of these materials can be made by a nation with a nuclear power generation program.

Uranium has atomic number 92, i.e., a neutral uranium atom has a nucleus containing 92 positively-charged protons, around which 92 negatively-charged electrons circle. All of the isotopes of uranium have the same number of protons and electrons, and hence the same chemical properties, but they differ in the number of neutrons in their nuclei. For example, the nucleus of U-235 has 143 neutrons, while that of U-238 has 146. Notice that $92+143=235$, while $92+146=238$. The number written after the name of an element to specify a particular isotope is the number of neutrons plus the number of protons. This is called the “nucleon number”, and the weight of an isotope is roughly proportional to it. This means that U-238 is slightly heavier than U-235. If the two isotopes are to be separated, difficult physical methods dependent

on mass must be used, since their chemical properties are identical. In natural uranium, the amount of the rare isotope U-235 is only 0.7 percent.

A paper published in 1939 by Niels Bohr and John A. Wheeler indicated that it was the rare isotope of uranium, U-235, that undergoes fission. A bomb could be constructed, they pointed out, if enough highly enriched U-235 could be isolated from the more common isotope, U-238. Calculations later performed in England by Otto Frisch and Rudolf Peierls showed that the “critical mass” of highly enriched uranium needed is quite small: only a few kilograms.

The Bohr-Wheeler theory also predicted that an isotope of plutonium, Pu-239, should be just as fissionable as U-235. Both U-235 and Pu-239 have odd nucleon numbers. When U-235 absorbs a neutron, it becomes U-236, while when Pu-239 absorbs a neutron it becomes Pu-240. In other words, absorption of a neutron converts both these species to nuclei with even nucleon numbers.

According to the Bohr-Wheeler theory, nuclei with even nucleon numbers are especially tightly-bound. Thus absorption of a neutron converts U-235 to a highly-excited state of U-236, while Pu-239 is similarly converted to a highly excited state of Pu-240. The excitation energy distorts the nuclei to such an extent that fission becomes possible. Instead of trying to separate the rare isotope, U-235, from the common isotope, U-238, physicists could just operate a nuclear reactor until a sufficient amount of Pu-239 accumulated, and then separate it out by ordinary chemical means.

Thus in 1942, when Enrico Fermi and his coworkers at the University of Chicago produced the world’s first controlled chain reaction within a pile of cans containing ordinary (nonenriched) uranium powder, separated by blocks of very pure graphite, the chain-reacting pile had a double

significance: It represented a new source of energy, but it also had a sinister meaning. It represented an easy path to nuclear weapons, since one of the by-products of the reaction was a fissionable isotope of plutonium, Pu-239. The bomb dropped on Hiroshima in 1945 used U-235, while the Nagasaki bomb used Pu-239.

By reprocessing spent nuclear fuel rods, using ordinary chemical means, a nation with a power reactor can obtain weapons-usable Pu-239. Even when such reprocessing is performed under international control, the uncertainty as to the amount of Pu-239 obtained is large enough so that the operation might superficially seem to conform to regulations while still supplying enough Pu-239 to make many bombs.

The enrichment of uranium, i.e. production of uranium with a higher percentage of U-235 than is found in natural uranium is also linked to reactor use. Many reactors of modern design make use of low enriched uranium (LEU) as a fuel. Nations operating such a reactor may claim that they need a program for uranium enrichment in order to produce LEU for fuel rods. However, by operating their ultracentrifuges a little longer, they can easily produce highly enriched uranium (HEU), i.e. uranium containing a high percentage of the rare isotope U-235, and therefore usable in weapons.

Nuclear power generation is not a solution to the problem of obtaining energy without producing dangerous climate change: Known reserves of uranium are only sufficient for the generation of about 25 terawatt-years of electrical energy (Craig, J.R., Vaugn, D.J. and Skinner, B.J., "Resources of the Earth: Origin, Use and Environmental Impact, Third Edition"). This can be compared with the world's current rate of energy use of over 14 terrawatts. Thus, if all of our energy were obtained from nuclear power, existing reserves of uranium would only be sufficient for about 2 years.

It is sometimes argued that a larger amount of electricity could be obtained from the same amount of uranium through the use of fast breeder reactors, but this would involve totally unacceptable proliferation risks. In fast breeder reactors, the fuel rods consist of highly enriched uranium. Around the core, is an envelope of natural uranium. The flux of fast neutrons from the core is sufficient to convert a part of the U-238 in the envelope into Pu-239, a fissionable isotope of plutonium.

Fast breeder reactors are prohibitively dangerous from the standpoint of nuclear proliferation because both the highly enriched uranium from the fuel rods and the Pu-239 from the envelope are directly weapons-usable. It would be impossible, from the standpoint of equity, to maintain that some nations have the right to use fast breeder reactors, while others do not. If all nations used fast breeder reactors, the number of nuclear weapons states would increase drastically.

It is interesting to review the way in which Israel, South Africa, Pakistan, India and North Korea obtained their nuclear weapons, since in all these cases the weapons were constructed under the guise of “atoms for peace”, a phrase that future generations may someday regard as being tragically self-contradictory.

Israel began producing nuclear weapons in the late 1960's (with the help of a “peaceful” nuclear reactor provided by France, and with the tacit approval of the United States) and the country is now believed to possess 100-150 of them, including neutron bombs. Israel's policy is one of visibly possessing nuclear weapons while denying their existence. South Africa, with the help of Israel and France, also weaponized its civil nuclear program, and it tested nuclear weapons in 1979. In 1991 however, South Africa destroyed its nuclear weapons and signed the Nuclear Non-Proliferation Treaty.

India produced what it described as a "peaceful nuclear explosion" in 1974. By 1989 Indian scientists were making efforts to purify the lithium-6 isotope, a key component of the much more powerful thermonuclear bombs. In 1998, India conducted underground tests of nuclear weapons, and is now believed to have roughly 60 warheads, constructed from Pu-239 produced in "peaceful" reactors.

Pakistan's efforts to obtain nuclear weapons were spurred by India's 1974 "peaceful nuclear explosion". As early as 1970, the laboratory of Dr. Abdul Qadeer Khan, (a metallurgist who was to become Pakistan's leading nuclear bomb maker) had been able to obtain from a Dutch firm the high-speed ultracentrifuges needed for uranium enrichment. With unlimited financial support and freedom from auditing requirements, Dr. Khan purchased restricted items needed for nuclear weapon construction from companies in Europe and the United States. In the process, Dr. Khan became an extremely wealthy man. With additional help from China, Pakistan was ready to test five nuclear weapons in 1998.

The Indian and Pakistani nuclear bomb tests, conducted in rapid succession, presented the world with the danger that these devastating weapons would be used in the conflict over Kashmir. Indeed, Pakistan announced that if a war broke out using conventional weapons, Pakistan's nuclear weapons would be used "at an early stage".

In Pakistan, Dr. A.Q. Khan became a great national hero. He was presented as the person who had saved Pakistan from attack by India by creating Pakistan's own nuclear weapons. In a Washington Post article (1 February, 2004) Pervez Hoodbhoy wrote: "Nuclear nationalism was the order of the day as governments vigorously promoted the bomb as the symbol of Pakistan's high scientific achievement and self-respect..."

Early in 2004, it was revealed that Dr. Khan had for years been selling nuclear secrets and equipment to Libya, Iran and North Korea, and that he had contacts with Al Qaeda. However, observers considered that it was unlikely that Khan would be tried, since a trial might implicate Pakistan's army as well as two of its former prime ministers.

There is a danger that Pakistan's unpopular government may be overthrown, and that the revolutionists might give Pakistan's nuclear weapons to a subnational organization. This type of danger is a general one associated with nuclear proliferation. As more and more countries obtain nuclear weapons, it becomes increasingly likely that one of them will undergo a revolution, during the course of which nuclear weapons will fall into the hands of criminals or terrorists.

There is also a possibility that poorly-guarded fissionable material could fall into the hands of subnational groups, who would then succeed in constructing their own nuclear weapons. Given a critical mass of highly-enriched uranium, a terrorist group, or an organized criminal (Mafia) group, could easily construct a crude gun-type nuclear explosive device. Pu-239 is more difficult to use since it is highly radioactive, but the physicist Frank Barnaby believes that a subnational group could nevertheless construct a crude nuclear bomb (of the Nagasaki type) from this material.

We must remember the remark of U.N. Secretary General Kofi Annan after the 9/11/2001 attacks on the World Trade Center. He said, "This time it was not a nuclear explosion". The meaning of his remark is clear: If the world does not take strong steps to eliminate fissionable materials and nuclear weapons, it will only be a matter of time before they will be used in terrorist attacks on major cities, or by organized criminals for the purpose of extortion. Neither terrorists nor organized criminals can be deterred by the threat

of nuclear retaliation, since they have no territory against which such retaliation could be directed. They blend invisibly into the general population. Nor can a "missile defense system" prevent criminals or terrorists from using nuclear weapons, since the weapons can be brought into a port in any one of the hundreds of thousands of containers that enter on ships each year, a number far too large to be checked exhaustively.

Finally we must remember that if the number of nations possessing nuclear weapons becomes very large, there will be a greatly increased chance that these weapons will be used in conflicts between nations, either by accident or through irresponsible political decisions.

The slogan "Atoms for Peace" has proved to be such a misnomer that it would be laughable if it were not so tragic. Nuclear power generation has been a terrible mistake. We must stop before we turn our beautiful earth into a radioactive wasteland.

TRUTH VERSUS POWER

Thoreau said: "Rather than love, than money,
Than fame, give me truth".

Why did Thoreau prefer truth to all else?

Does not money deserve to be worshiped?

Does not fame deserve to be worshiped?

Does not power deserve to be worshiped?

I think that I agree with Thoreau,

Except that I sometimes prefer love to truth.

But to me, power seems ugly,

Because power means coercion.

It means making another person do something

By force or by threats.

The power of armies is ugly.

The power of governments is often ugly,

When they are not guided by ethics,

When they are not guided by truth.

A good friend said to me,

"What power do NGO's have?"

I answered. "No power at all.

They only have truth.

And NGO's must criticize governments,

When leaders are not guided by compassion,

When they are not guided by ethics,

When they are not guided by truth."

A good friend said to me,

"Is not truth often painful?"

I answered "Yes it is often painful,

But pain can be our friend,

Pain tells us to withdraw our hand,

So that a fire will not burn it.
 Pain tells us to withdraw our folly,
 So that our beautiful world will not burn.”

A good friend said to me,
 “Believe this and you will be happy.
 Believe this or you will suffer.
 Believe this or you will be punished.”
 I answered, “Where is the evidence?”
 I answered, “Where is the logic?
 If there is good evidence and logic,
 Then I will believe it.”

A good friend said to me,
 “Believe this because everyone believes it”
 I answered “I am true to myself.
 I have my own truth.
 Crowds often have been wrong.
 Multitudes have rushed down false paths.
 I will not follow them.
 I will be guided by compassion and truth.”

A good friend said to me,
 “Believe what you were taught as a child,
 Believe what you were taught at school,
 Believe what the television tells you.”
 I answered: “I am no longer a child.”
 I answered: “The schools may be wrong,
 I do not trust the newspapers today,
 The mass media have failed us.”

A good friend said to me,
 “You are standing alone.

You are only one person.
You have so little power!”
I answered, “I am not alone.
Many people can see the truth,
Together we can change the world.
In the end, truth and love will win.”

A good friend said to me: “There is no hope.
The forces against us are too powerful.
The money against us is too enormous,
Let’s just enjoy life while we have it.”
I answered: “I will not give up hope.
I will not abandon the future.
I will not abandon my children and grandchildren.
I will keep working because the stakes are so high.”

LESSONS FROM WORLD WAR I

There is no doubt that the founders of nationalism in Europe were idealists; but the movement that they created has already killed more than sixty million people in two world wars, and today it contributes to the threat of a catastrophic third world war.

Nationalism in Europe is an outgrowth of the Enlightenment, the French Revolution, and the Romantic Movement. According to the philosophy of the Enlightenment and the ideas of the French Revolution, no government is legitimate unless it derives its power from the will of the people. Speaking to the Convention of 1792, Danton proclaimed that “by sending us here as deputies, the French Nation has brought into being a grand committee for the general insurrection of peoples.”

Since all political power was now believed to be vested in the “nation”, the question of national identity suddenly became acutely important. France itself was a conglomeration of peoples - Normans, Bretons, Provencaux, Burgundians, Flemings, Germans, Basques, and Catalans - but these peoples had been united under a strong central government since the middle ages, and by the time of the French Revolution it was easy for them to think of themselves as a “nation”. However, what we now call Germany did not exist. There was only a collection of small feudal principalities, in some of which the most common language was German.

The early political unity of France enabled French culture to dominate Europe during the 17th and 18th centuries. Frederick the Great of Prussia and his court spoke and wrote in French. Frederick himself regarded German as a language of ignorant peasants, and on the rare occasions when he tried to speak or write in German, the result was almost incomprehensible. The same was true in the courts of Branden-

burg, Saxony, Pomerania, etc. Each of them was a small-scale Versailles. Below the French-speaking aristocracy was a German-speaking middle class and a German or Slavic-speaking peasantry.

The creators of the nationalist movement in Germany were young middle-class German-speaking students and theologians who felt frustrated and stifled by the narrow *kleinstädtisch* provincial atmosphere of the small principalities in which they lived. They also felt frustrated because their talents were completely ignored by the French-speaking aristocracy. This was the situation when the armies of Napoleon marched across Europe, easily defeating and humiliating both Prussia and Austria. The young German-speaking students asked themselves what it was that the French had that they did not have.

The answer was not hard to find. What the French had was a sense of national identity. In fact, the French Revolution had unleashed long-dormant tribal instincts in the common people of France. It was the fanatical support of the Marseillaise-singing masses that made the French armies invincible. The founders of the German nationalist movement concluded that if they were ever to have a chance of defeating France, they would have to inspire the same fanaticism in their own peoples. They would have to touch the same almost-forgotten cord of human nature that the French Revolution had touched.

The common soldiers who fought in the wars of Europe in the first part of the 18th century were not emotionally involved. They were recruited from the lowest ranks of society, and they joined the army of a king or prince for the sake of money. All this was changed by the French Revolution. In June, 1792, the French Legislative Assembly decreed that a Fatherland Alter be erected in each commune with the in-

scription, "The citizen is born, lives and dies for *la patrie*." The idea of a "Fatherland Alter" clearly demonstrates the quasi-religious nature of French nationalism.

The soldiers in Napoleon's army were not fighting for the sake of money, but for an ideal that they felt to be larger and more important than themselves - Republicanism and the glory of France. The masses, who for so long had been outside of the politics of a larger world, and who had been emotionally involved only in the affairs of their own village, were now fully aroused to large-scale political action. The surge of nationalist feeling in France was tribalism on an enormous scale - tribalism amplified and orchestrated by new means of mass communication.

This was the phenomenon with which the German nationalists felt they had to contend. One of the founders of the German nationalist movement was Johan Gottlieb Fichte (1762-1814), a follower of the philosopher Immanuel Kant (1724-1804). Besides rejecting objective criteria for morality, Fichte denied the value of the individual. According to him, the individual is nothing and the state is everything. Denying the value of the individual, Fichte compared the state an organism of which the individual is a part:

"In a product of nature", Fichte wrote, "no part is what it is but through its relation to the whole, and it would absolutely not be what it is apart from this relation; more, if it had no organic relation at all, it would be absolutely nothing, since without reciprocity in action between organic forces maintaining one another in equilibrium, no form would subsist... Similarly, man obtains a determinate position in the scheme of things and a fixity in nature only through his civil association... Between the isolated man and the citizen there is the same relation as between raw and organized matter... In an organized body, each part continuously main-

tains the whole, and in maintaining it, maintains itself also. Similarly the citizen with regard to the State.”

Another post-Kantian, Adam Müller (1779-1829) wrote that “the state is the intimate association of all physical and spiritual needs of the whole nation into one great, energetic, infinitely active and living whole... the totality of human affairs... If we exclude for ever from this association even the most unimportant part of a human being, if we separate private life from public life even at one point, then we no longer perceive the State as a phenomenon of life and as an idea.”

The doctrine that Adam Müller sets forth in this passage is what we now call Totalitarianism, i.e. the belief that the state ought to encompass “the totality of human affairs”. This doctrine is the opposite of the Liberal belief that the individual is all-important and that the role of the state ought to be as small as possible.

Fichte maintains that “a State which constantly seeks to increase its internal strength is forced to desire the gradual abolition of all favoritisms, and the establishment of equal rights for all citizens, in order that it, the State itself, may enter upon its own true right - to apply the whole surplus power of all its citizens without exception to the furtherance of its own purposes... Internal peace, and the condition of affairs in which everyone may by diligence earn his daily bread... is only a means, a condition and framework for what love of Fatherland really wants to bring about, namely that the Eternal and the Divine may blossom in the world and never cease to become more pure, perfect and excellent.”

Fichte proposed a new system of education which would abolish the individual will and teach individuals to become subservient to the will of the state. “The new education must consist essentially in this”, Fichte wrote, “that it completely

destroys the will in the soil that it undertakes to cultivate... If you want to influence a man at all, you must do more than merely talk to him; you must fashion him, and fashion him, and fashion him in such a way that he simply cannot will otherwise than you wish him to will.”

Fichte and Herder (1744-1803) developed the idea that language is the key to national identity. They believed that the German language is superior to French because it is an “original” language, not derived from Latin. In a poem that is obviously a protest against the French culture of Frederick’s court in Prussia, Herder wrote:

“Look at other nationalities!
Do they wander about
So that nowhere in the world they are strangers
Except to themselves?
They regard foreign countries with proud disdain.
And you, German, alone, returning from abroad,
Wouldst greet your mother in French?
Oh spew it out before your door!
Spew out the ugly slime of the Seine!
Speak German, O you German!

Another poem, “The German Fatherland”, by Ernst Moritz Arndt (1769-1860), expresses a similar sentiment:

“What is the Fatherland of the German?
 Name me the great country!
 Where the German tongue sounds
 And sings *Lieder* in God’s praise,
 That’s what it ought to be
 Call that thine, valiant German!
 That is the Fatherland of the German,
 Where anger roots out foreign nonsense,
 Where every Frenchman is called enemy,
 Where every German is called friend,
 That’s what it ought to be!
 It ought to be the whole of Germany!”

It must be remembered that when these poems were written, the German nation did not exist except in the minds of the nationalists. Groups of people speaking various dialects of German were scattered throughout central and eastern Europe. In many places, the German-speaking population was a minority. To bring together these scattered German-speaking groups would require, in many cases, the conquest and subjugation of Slavic majorities; but the quasi-religious fervor of the nationalists was such that aggression took on the appearance of a “holy war”. Fichte believed that war between states introduces “a living and progressive principle into history”. By war he did not mean a decorous limited war of the type fought in the 18th century, but “...a true and proper war - *a war of subjugation!*”

The German nationalist movement was not only quasi-religious in its tone; it also borrowed psychological techniques from religion. It aroused the emotions of the masses to large-scale political activity by the use of semi-religious political liturgy, involving myth, symbolism, and festivals. In his book “German Society” (1814), Arndt advocated the celebration

of “holy festivals”. For example, he thought that the celebration of the pagan festival of the summer solstice could be combined with a celebration of the victory over Napoleon at the Battle of Leipzig.

Arndt believed that special attention should be given to commemoration of the “noble dead” of Germany’s wars for, as he said, “...here history enters life, and life becomes part of history”. Arndt advocated a combination of Christian and pagan symbolism. The festivals should begin with prayers and a church service; but in addition, the oak leaf and the sacred flame of ancient pagan tradition were to play a part.

In 1815, many of Arndt’s suggestions were followed in the celebration of the anniversary of the Battle of Leipzig. This festival clearly exhibited a mixing of secular and Christian elements to form a national cult. Men and women decorated with oak leaves made pilgrimages to the tops of mountains, where they were addressed by priests speaking in front of alters on which burned “the sacred flame of Germany’s salvation”. This borrowing of psychological techniques from religion was deliberate, and it was retained by the Nazi Party when the latter adopted the methods of the early German nationalists. The Nazi mass rallies retained the order and form of Protestant liturgy, including hymns, confessions of faith, and responses between the leader and the congregation.⁹

In 1832, the first mass meeting in German history took place, when 32,000 men and women gathered to celebrate

⁹The Nazi sacred symbols and the concept of the swastika or “gamma cross”, the eagle, the red/black/white color scheme, the ancient Nordic runes (one of which became the symbol of the SS), were all adopted from esoteric traditions going back centuries, shared by Brahmins, Scottish Masons, Rosicrucians, the Knights Templars and other esoteric societies.

the "German May". Singing songs, wearing black, red, and gold emblems, and carrying flags, they marched to Hambrach Castle, where they were addressed by their leaders.

By the 1860's the festivals celebrating the cult of nationalism had acquired a definite form. Processions through a town, involving elaborate national symbolism, were followed by unison singing by men's choirs, patriotic plays, displays by gymnasts and sharp-shooters, and sporting events. The male choirs, gymnasts and sharp-shooters were required to wear uniforms; and the others attending the festivals wore oak leaves in their caps. The cohesion of the crowd was achieved not only by uniformity of dress, but also by the space in which the crowd was contained. Arndt advocated the use of a "sacred space" for mass meetings. The idea of the "sacred space" was taken from Stonehenge, which was seen by the nationalists as a typical ancient Germanic meeting place. The Nazi art historian Hubert Schrade wrote: "The space which urges us to join the community of the *Volk* is of greater importance than the figure which is meant to represent the Fatherland."

Dramas were also used to promote a feeling of cohesion and national identity. An example of this type of propagandist drama is Kleist's play, "Hermann's Battle", (1808). The play deals with a Germanic chieftain who, in order to rally the tribes against the Romans, sends his own men, disguised as Roman soldiers, to commit atrocities in the neighboring German villages. At one point in the play, Hermann is told of a Roman soldier who risked his own life to save a German child in a burning house. Hearing this report, Hermann exclaims, "May he be cursed if he has done this! He has for a moment made my heart disloyal; he has made me for a moment betray the august cause of Germany!... I was counting, by all the gods of revenge, on fire, loot, violence, murder, and

all the horrors of unbridled war! What need have I of Latins who use me well?"

At another point in the play, Hermann's wife, Thusnelda, tempts a Roman Legate into a romantic meeting in a garden. Instead of finding Thusnelda, the Legate finds himself locked in the garden with a starved and savage she-bear. Standing outside the gate, Thusnelda urges the Legate to make love to the she-bear, and, as the bear tears him to pieces, she faints with pleasure.

Richard Wagner's dramas were also part of the nationalist movement. They were designed to create "an unending dream of sacred *völkisch* revelation". No applause was permitted, since this would disturb the reverential atmosphere of the cult. A new type of choral theater was developed which "...no longer represented the fate of the individual to the audience, but that which concerns the community, the *Volk*... Thus, in contrast to the bourgeois theater, private persons are no longer represented, but only types."

We have primarily been discussing the growth of German nationalism, but very similar movements developed in other countries throughout Europe and throughout the world. Characteristic for all these movements was the growth of state power, and the development of a reverential, quasi-religious, attitude towards the state. Patriotism became "a sacred duty." According to Georg Wilhelm Friedrich Hegel, "The existence of the State is the movement of God in the world. It is the ultimate power on earth; it is its own end and object. It is an ultimate end that has absolute rights against the individual."

Nationalism in England (as in Germany) was to a large extent a defensive response against French nationalism. At the end of the 18th century, the liberal ideas of the Enlightenment were widespread in England. There was much sym-

pathy in England with the aims of the French Revolution, and a similar revolution almost took place in England. However, when Napoleon landed an army in Ireland and threatened to invade England, there was a strong reaction towards national self-defense. The war against France gave impetus to nationalism in England, and military heroes like Wellington and Nelson became objects of quasi-religious worship. British nationalism later found an outlet in colonialism.

Italy, like Germany, had been a collection of small principalities, but as a reaction to the other nationalist movements sweeping across Europe, a movement for a united Italy developed. The conflicts between the various nationalist movements of Europe produced the frightful world wars of the 20th century. Indeed, the shot that signaled the outbreak of World War I was fired by a Serbian nationalist.

War did not seem especially evil to the 18th and 19th century nationalists because technology had not yet given humanity the terrible weapons of the 20th century. In the 19th century, the fatal combination of space-age science and stone-age politics still lay in the future. However, even in 1834, the German writer Heinrich Heine was perceptive enough to see the threat:

“There will be”, Heine wrote, “Kantians forthcoming who, in the world to come, will know nothing of reverence for aught, and who will ravage without mercy, and riot with sword and axe through the soil of all European life to dig out the last root of the past. There will be well-armed Fichtians upon the ground, who in the fanaticism of the Will are not restrained by fear or self-advantage, for they live in the Spirit.”

The two world wars

In 1870, the fiercely nationalistic Prussian Chancellor, Otto von Bismark, won revenge for the humiliations which his country had suffered under Napoleon Bonaparte. In a lightning campaign, Prussia's modern army overran France and took Emperor Napoleon III prisoner. The victorious Prussians demanded from France not only the payment of a huge sum of money - five billion francs - but also the annexation of the French provinces of Alsace and Lorraine. In 1871, Kaiser Wilhelm I was proclaimed Emperor of all Germany in the Hall of Mirrors at Versailles. The dreams of the German nationalists had been realized! The small German-speaking states of central Europe were now united into a powerful nation dominated by Prussia.

Bismark had provoked a number of wars in order to achieve his aim - the unification of Germany under Prussia; but after 1871 he strove for peace, fearing that war would harm his new creation. "I am bored", Bismark remarked to his friends, "The great things are done. The German Reich is made."

In order to preserve the status quo in Europe, Bismark now made alliances not only with Austria-Hungary and Italy, but also with Russia. To make alliances with both Austria-Hungary and Russia required considerable diplomatic skill, since the two empires were enemies - rivals for influence in the Balkan Peninsula. Several small Balkan states had broken away from the decaying Turkish Empire. Both the Hapsburg Emperors and the Romanoff Czars were anxious to dominate these small states. However, nationalist emotions were even more frenzied in the Balkans than they were elsewhere in Europe. Nationalism was a cause for which 19th century Europeans were willing to kill each other, just as three cen-

turies earlier they had been willing to kill each other over their religious differences.

Serbia was an independent state, but the fanatical Serbian nationalists were far from satisfied. Their real aim was to create an independent Pan-Serbia (or Yugoslavia) which would include all the Slavic parts of Austria-Hungary. Thus, at the turn of the century, the Balkans were a trouble spot, much as the Middle East is a trouble spot today.

Kaiser Wilhelm I was a stable monarch, but in 1888 he died and the German throne passed to his son, Frederick III, who was incurably ill with cancer of the throat. After reigning only 90 days, Frederick also died, and his 29 year old son became the new German Emperor - Kaiser Wilhelm II. Wilhelm II had been born with a withered arm, and as a boy he had been constantly told that he must become a great warrior. His adult behavior sometimes showed tendencies towards both paranoia and megalomania.

In 1890, Wilhelm dismissed Otto von Bismark ("dropping the pilot"). Bismark was now on the side of peace, and he might have guided Germany safely through the troubled waters of European politics if he had been allowed to continue; but Wilhelm wanted to play Bismark himself.

Wilhelm's first act was to break off Germany's alliance with Russia. Czar Alexander III, against his principles, then formed an alliance with republican France. Realizing that he had blundered, Wilhelm tried to patch up relations with the Czar, but it was too late. Europe was now divided into two armed camps - Germany, Austria-Hungary and Italy, opposed by Russia and France.

Wilhelm's government then began to build a huge modern navy, much to the consternation of the English. The government of England felt that it was necessary for their country to have control of the sea, since England was a

densely-populated island, dependent on imports of food. It was not only with respect to naval power that England felt threatened: After being united in 1871, Germany had undergone an industrial revolution; and German industries were pouring out steel and high-quality manufactured goods that threatened England's dominance of world trade. Commercial and naval competition with the rising German Empire drove England into an informal alliance with Russia and France - the Triple Entente.

Meanwhile the situation in the Balkans became increasingly troubled, and at the end of July, 1914, the Austrian Foreign Minister, Count Brechtold, used the assassination of Archduke Francis Ferdinand and his wife as a pretext for crushing the Serbian Pan-Slavic movement. Russia mobilized against Austria in defense of the Serbs, and the Austrian government interpreted the mobilization as a declaration of war. Germany was linked to Austria by an alliance, while France was linked to Russia. In this way, both France and Russia were drawn into the conflict.

On August 2, Wilhelm demanded free passage of German troops through Belgium. The Belgians refused. They gave warning that an invasion would be resisted, and they appealed to England for support of their country's neutrality. On August 4, Britain sent an ultimatum to the Kaiser: Unless he halted the invasion of Belgium, Britain would enter the war. The invasion of Belgium rolled on. It was now too late to stop the great death-machine, and as it gained momentum, Sir Edward Grey spoke the sad and prophetic words. "The lamps are going out all over Europe; we shall not see them lit again in our lifetime."

None of the people who started the First World War had the slightest idea what it would be like. The armies of Europe were dominated by the old feudal landowning class, whose

warlike traditions were rooted in the Middle Ages. The counts and barons who still ruled Europe's diplomatic and military establishments knew how to drink champagne, dance elegantly, ride horses, and seduce women. They pranced off to war in high spirits, the gold on their colorful uniforms glittering in the sunshine, full of expectations of romantic cavalry charges, kisses stolen from pretty girls in captured villages, decorations, glory and promotion, like characters in "The Chocolate Soldier" or "Die Fledermaus". The romantic dreams of glory of every small boy who ever played with toy soldiers were about to become a thrilling reality!

But the war, when it came, was not like that. Technology had taken over. The railroads, the telegraph, high explosives and the machine gun had changed everything. The opposing armies, called up by means of the telegraph and massed by means of the railroads, were the largest ever assembled up to that time in the history of the world. In France alone, between August 2 and August 18, 1914, the railway system transported 3,781,000 people under military orders. Across Europe, the railways hurled more than six million highly armed men into collision with each other. Nothing on that scale had ever happened before, and no one had any idea of what it would be like.

At first the Schlieffen Plan seemed to be working perfectly. When Kaiser Wilhelm had sent his troops into battle, he had told them: "You will be home before the leaves are off the trees", and at first it seemed that his prediction would be fulfilled. However, the machine gun had changed the character of war. Attacking infantry could be cut down in heaps by defending machine gunners. The war came to a stalemate, since defense had an advantage over attack.

On the western front, the opposing armies dug lines of trenches stretching from the Atlantic to the Swiss border.

The two lines of trenches were separated by a tangled mass of barbed wire. Periodically the generals on one side or the other would order their armies to break through the opposing line. They would bring forward several thousand artillery pieces, fire a million or so high explosive shells to cut the barbed wire and to kill as many as possible of the defenders, and then order their men to attack. The soldiers had to climb out of the trenches and struggle forward into the smoke. There was nothing else for them to do. If they disobeyed orders, they would be court-martialled and shot as deserters. They were driven forward and slaughtered in futile attacks, none of which gained anything. Their leaders had failed them. Civilization had failed them. There was nothing for them to do but to die, to be driven forward into the poison gas and barbed wire and to be scythed down by machine gun fire, for nothing, for the ambition, vanity and stupidity of their rulers.

At the battle of Verdun, 700,000 young men were butchered in this way, and at the battle of Somme, 1,100,000 young lives were wasted. On the German side, the soldiers sang “Lili Marlein” - “She waits for a boy who’s far away...” and on the other side, British and American soldiers sang:

“There’s a long long trail a-winding
 into the land of my dreams
 where the nightingale is singing
 and the pale moon beams.
 There’s a long long night of waiting
 until my dreams all come true,
 ’til the day that I’ll be going
 down that long long trail with you.”

For millions of Europe’s young men, the long, long trail

lead only to death in the mud and smoke; and for millions of mothers and sweethearts waiting at home, dreams of the future were shattered by a telegram announcing the death of the boy for whom they were waiting.

When the war ended four years later, ten million young men had been killed and twenty million wounded, of whom six million were crippled for life. The war had cost 350 trillion 1919 dollars. This was a calculable cost; but the cost in human suffering and brutalization of values was incalculable. It hardly mattered whose fault the catastrophe had been. Perhaps the Austrian government had been more to blame than any other. But blame for the war certainly did not rest with the Austrian people nor with the young Austrians who had been forced to fight. However, the tragedy of the First World War was that it created long-lasting hatred between the nations involved; and in this way it led, only twenty years later, to an even more catastrophic global war.

The First World War brought about the downfall of four emperors: the Russian Czar, the Turkish Sultan, the Austro-Hungarian Emperor and the German Kaiser. The decaying and unjust Czarist government had for several years been threatened by revolution; and the horrors of the war into which the Czar had led his people were enough to turn them decisively against his government. During 1915 alone, Russia lost more than two million men, either killed or captured. Finally the Russian soldiers refused to be driven into battle and began to shoot their officers. In February, 1917, the Czar abdicated; and on December 5, 1917, the new communist government of Russia signed an armistice with Germany.

The German Chief of Staff, General Ludendorff, then shifted all his troops to the west in an all-out offensive. In March, 1918, he threw his entire army into a gigantic offensive which he called "the Emperor's Battle". The German

army drove forward, and by June they were again on the Marne, only 50 miles from Paris. However, the Allies counterattacked, strengthened by the first American troops, and using, for the first time, large numbers of tanks. The Germans fell back, and by September they had lost more than a million men in six months. Morale in the retreating German army was falling rapidly, and fresh American troops were landing in France at the rate of 250,000 per month. Ludendorff realized that the German cause was hopeless and that if peace were not made quickly, a communist revolution would take place in Germany just as it had in Russia.

The old feudal Prussian military caste, having led Germany into disaster, now unloaded responsibility onto the liberals. Ludendorff advised the Kaiser to abdicate, and a liberal leader, Prince Max of Baden, was found to head the new government. On November 9, 1918, Germany was proclaimed a republic. Two days later, an armistice was signed and the fighting stopped.

During the last years of the war the world, weary of the politics of power and nationalist greed, had looked with hope towards the idealism of the American President, Woodrow Wilson. He had proposed a "peace without victory" based on his famous Fourteen Points". Wilson himself considered that the most important of his Fourteen Points was the last one, which specified that "A general association of nations must be formed... for the purpose of affording mutual guaranties of political independence and territorial integrity of great and small states alike."

When Wilson arrived in Europe to attend the peace conference in Paris, he was wildly cheered by crowds of ordinary people, who saw in his idealism new hope for the world. Unfortunately, the hatred produced by four years of horrible warfare was now too great to be overcome. At the

peace conference, the aged nationalist Georges Clemenceau was unswerving in his deep hatred of Germany. France had suffered greatly during the war. Half of all French males who had been between the ages of 20 and 32 in 1914 had been killed; much of the French countryside had been devastated; and the retreating German armies had destroyed the French coal mines. Clemenceau was determined to extract both revenge and financial compensation from the Germans.

In the end, the peace treaty was a compromise. Wilson was given his dream, the League of Nations; and Clemenceau was given the extremely harsh terms which he insisted should be imposed on Germany. By signing the treaty, Germany would be forced to acknowledge sole responsibility for having caused the war; it would be forced to hand over the Kaiser and other leaders to be tried as war criminals; to pay for all civilian damage during the war; to agree to internationalization of all German rivers and the Kiel Canal; to give France, Belgium and Italy 25 million tons of coal annually as part of the reparations payments; to surrender the coal mines in Alsace-Lorraine to France; to give up all foreign colonies; to lose all property owned by Germans abroad; and to agree to Allied occupation of the Rhineland for fifteen years.

The loss of coal, in particular, was a death-blow aimed at German industry. Reading the terms of the treaty, the German Chancellor cried: "May the hand wither that signs such a peace!" The German Foreign Minister, Count Ulrich von Brockendorff-Rantzau, refused to sign, and the German government made public the terms of the treaty which it had been offered.

French newspapers picked up the information, and at 4 a.m. one morning, a messenger knocked at the door of the Paris hotel room where Herbert Hoover (the American war relief administrator) was staying, and handed him a copy of

the terms. Hoover was so upset that he could sleep no more that night. He dressed and went out into the almost deserted Paris streets, pacing up and down, trying to calm himself. "It seemed to me", Hoover wrote later, "that the economic consequences alone would pull down all Europe and thus injure the United States." By chance, Hoover met the British economist, John Maynard Keynes, who was walking with General Jan Smuts in the pre-dawn Paris streets. Both of them had received transcripts of the terms offered to Germany, and both were similarly upset. "We agreed that it was terrible", Hoover wrote later, "and we agreed that we would do what we could... to make the dangers clear."

In the end, continuation of the blockade forced the Germans to sign the treaty; but they did so with deeply-felt bitterness. Describing the signing of the Versailles treaty on June 28, 1919, a member of the American delegation wrote: "It was not unlike when in olden times the conqueror dragged the conquered at his chariot wheel."

While he participated in the peace negotiations, Wilson had been absent from the United States for six months. During that time, Wilson's Democratic Party had been without its leader, and his Republican opponents made the most of the opportunity. Republican majorities had been returned in both the House of Representatives and the Senate. When Wilson placed the peace treaty before the Senate, the Senate refused to ratify it. Wilson desperately wanted America to join the League of Nations, and he took his case to the American people. He traveled 8,000 miles and delivered 36 major speeches, together with scores of informal talks urging support for the League. Suddenly, in the middle of this campaign, he was struck with a cerebral thrombosis from which he never recovered.

Without Wilson's leadership, the campaign collapsed. The

American Senate for a second time rejected the peace treaty, and with it the League of Nations. Without American participation, the League was greatly handicapped. It had many successes, especially in cultural and humanitarian projects and in settling disputes between small nations; but it soon became clear that the League of Nations was not able to settle disputes between major powers.

Postwar Germany was in a state of chaos - its economy in ruins. The nation was now a republic, with its capital in Weimar, but this first experiment in German democracy was not running smoothly. Many parts of the country, especially Bavaria, were swarming with secret societies led by former officers of the German army. They blamed the republican government for the economic chaos and for signing a disgraceful peace treaty. The "war guilt" clause of the treaty especially offended the German sense of honor.

In 1920 a group of nationalist and monarchist army officers led by General Ludendorff staged an army revolt or "Putsch". They forcibly replaced the elected officials of the Weimar Republic by a puppet head of state named Dr. Kapp. However, the republic was saved by the workers of Berlin, who turned off the public utilities.

After the failure of the "Kapp Putsch", Ludendorff went to Bavaria, where he met Adolf Hitler, a member of a small secret society called the National Socialist German Workers Party. (The name was abbreviated as "Nazi" after the German pronunciation of the first two syllables of "National"). Together, Ludendorff and Hitler began to plot another "Putsch".

In 1921, the Reparations Commission fixed the amount that Germany would have to pay at 135,000,000,000 gold marks. Various western economists realized that this amount was far more than Germany would be able to pay; and in fact,



Figure 19: *Adolf Hitler speaking on the radio in 1933. Bundesarchiv, Bild 183-1987-0703-506 / CC-BY-SA 3.0, Wikimedia Commons*

French efforts to collect it proved futile. Therefore France sent army units to occupy industrial areas of the Ruhr in order to extract payment in kind. The German workers responded by sitting down at their jobs. Their salaries were paid by the Weimar government, which printed more and more paper money. The printing presses ran day and night, flooding Germany with worthless currency. By 1923, inflation had reached such ruinous proportions that baskets full of money were required to buy a loaf of bread. At one point, four trillion paper marks were equal to one dollar. This catastrophic inflation reduced the German middle class to poverty and destroyed its faith in the orderly working of society.

The Nazi Party had only seven members when Adolf Hitler joined it in 1919. By 1923, because of the desperation caused by economic chaos, it had grown to 70,000 members. On November 8, 1923, there was a meeting of nationalists and monarchists at the Bürgerbräw beer hall in Munich. The Bavarian State Commissioner, Dr. Gustav von Kahr, gave a speech denouncing the Weimar Republic. He added, however, that the time was not yet ripe for armed revolt.

In the middle of Kahr's speech, Adolf Hitler leaped to the podium. Firing two revolver bullets into the ceiling Hitler screamed that the revolution was on - it would begin immediately! He ordered his armed troopers to bar the exits, and he went from one Bavarian leader to the other, weeping with excitement, a beer stein in one hand and a revolver in the other, pleading with them to support the revolution. At this point, the figure of General Ludendorff suddenly appeared. In full uniform, and wearing all his medals, he added his pleading to that of Hitler. The Bavarian leaders appeared to yield to Hitler and Ludendorff; and that night the Nazis went into action. Wild disorder reigned in Munich. Republican

newspapers and trade union offices were smashed, Jewish homes were raided, and an attempt was made to seize the railway station and the post office. However, units of policemen and soldiers were forming to resist the Nazis. Hitler realized that the Bavarian government officials under Kahr had only pretended to go along with the revolution in order to escape from the armed troopers in the beer hall.

At dawn, Hitler grouped his followers together for a parade to show their strength and to intimidate opposition. With swastika flags flying, the Nazis marched to the main square of Munich. There they met troops of Bavarian government soldiers and policemen massed in force. A volley of shots rang out, and 18 Nazis fell dead. Many other Nazis were wounded, and the remainder scattered. Hitler broke his shoulder diving for the pavement. Only General Ludendorff remained standing where he was. The half-demented old soldier, who had exercised almost dictatorial power over Germany during the last years of the war, marched straight for the Bavarian government troops. They stepped aside and let him pass.

Adolf Hitler was arrested and sentenced to five years in prison. After serving less than a year of his sentence, he was released. He had used the time in prison to write a book, *Mein Kampf*.

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UKRAINE AND THE DANGER OF NUCLEAR WAR

The need for restraint and balance

The current situation in Ukraine and the Crimean Peninsula is an extremely dangerous one. Unless restraint and a willingness to compromise are shown by all of the the parties involved, the crisis might escalate uncontrollably into a full-scale war, perhaps involving nuclear weapons. What is urgently required is for all the stakeholders to understand each other's positions and feelings. Public understanding of the points of view of all sides is also very much needed.

We in the West already know the point of view of our own governments from the mainstream media, because they tell us of nothing else. For the sake of balance, it would be good for us to look closely at the way in which the citizens of Russia and the Crimean Peninsula view recent events. To them the overthrow of the government of Viktor Yanukovitch appears to be another in a long series of coups engineered by the US and its allies. The list of such coups is very long indeed. One can think, for example of the the overthrow Iran's democratically elected Prime Minister, Mohammad Mosaddegh, or the coup that overthrew Chile's democratically elected President, Salvador Allende, and replaced him with General Pinochet. There are very many other examples:

During the period from 1945 to the present, the US interfered, militarily or covertly, in the internal affairs of a large number of nations: China, 1945-49; Italy, 1947-48; Greece, 1947-49; Philippines, 1946-53; South Korea, 1945-53; Albania, 1949-53; Germany, 1950s; Iran, 1953; Guatemala, 1953-1990s; Middle East, 1956-58; Indonesia, 1957-58; British

Guiana, 1953-64; Vietnam, 1950-73; Cambodia, 1955-73; The Congo/Zaire, 1960-65; Brazil, 1961-64; Dominican Republic, 1963-66; Cuba, 1959-present; Indonesia, 1965; Chile, 1964-73; Greece, 1964-74; East Timor, 1975-present; Nicaragua, 1978-89; Grenada, 1979-84; Libya, 1981-89; Panama, 1989; Iraq, 1990-present; Afghanistan 1979-92; El Salvador, 1980-92; Haiti, 1987-94; Yugoslavia, 1999; and Afghanistan, 2001-present, Syria, 2013-present. Egypt, 2013-present. Most of these interventions were explained to the American people as being necessary to combat communism (or more recently, terrorism), but an underlying motive was undoubtedly the desire to put in place governments and laws that would be favorable to the economic interests of the US and its allies.

For the sake of balance, we should remember that during the Cold War period, the Soviet Union and China also intervened in the internal affairs of many countries, for example in Korea in 1950-53, Hungary in 1956, Czechoslovakia in 1968, and so on; another very long list. These Cold War interventions were also unjustifiable, like those mentioned above. Nothing can justify military or covert interference by superpowers in the internal affairs of smaller countries, since people have a right to live under governments of their own choosing even if those governments are not optimal.

In the case of Ukraine, there is much evidence that the Western coup was planned long in advance. On December 13, 2013, US Assistant Secretary of State for Europe, Victoria Nuland said: “Since the declaration of Ukrainian independence in 1991, the United States has supported the Ukrainians in the development of democratic institutions and skills in promoting civil society and a good form of government... We have invested more than 5 billion dollars to help Ukraine to achieve these and other goals.”¹⁰

¹⁰(<http://www.informationclearinghouse.info/article37599.htm>).



Map 2:

US Military and CIA Interventions since World War II

■ targeted countries ★ US bombings — US government assassination plots

Source: William Blum, *Killing Hope: U.S. Military and CIA Intervention Since World War II*, 2004 and *Rogue State*, 2005. (<http://www.killinghope.org/>)

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Although Victoria Nuland's December 13 2013 speech talks much about democracy, the people who carried out the coup in Kiev can hardly be said to be democracy's best representatives. Many belong to the Svoboda Party, which had its roots in the Social-National Party of Ukraine (SNPU). The name was an intentional reference to the Nazi Party in Germany. According to Der Spiegel's article about SNPU, "anti-Semitism is part of the extremist party's platform", which rejects certain minority and human rights. The article states that in 2013, a Svoboda youth leader distributed

Furthermore, Nuland's famous "Fuck the EU" telephone call (<http://www.thedailybeast.com/articles/2014/02/06/state-dept-official>

-caught-on-tape-fuck-the-eu.html), made well in advance of the coup, gives further evidence that the coup was planned long in advance, and engineered in detail.

Nazi propaganda written by Joseph Goebels. According to the journalist Michael Goldfarb, Svoboda's platform calls for a Ukraine that is "one race, one nation, one Fatherland".

The referendum regarding self-determination, which will soon take place in Crimea is perfectly legal according to international law. A completely analogous referendum will take place in Scotland, to determine whether Scotland will continue to be a part of the United Kingdom, or whether the majority of Scots would like their country to be independent. If Scotland decides to become independent, it is certain to maintain very close ties with the UK. Analogously, if Crimea chooses independence, all parties would benefit by an arrangement under which close economic and political ties with Ukraine would be maintained.

We should remember that for almost all the time since the reign of Catherine the Great, who established a naval base at Sevastopol, the Autonomous Republic of Crimea has been a part of Russia. But in 1954 the Soviet government under Nikita Krushchev passed a law transferring Crimea from the Russian Soviet Federative Socialist Republic to the Ukrainian Soviet Socialist Republic. After the dissolution of the Soviet Union, Russia still maintained its naval base at Sevastopol under an agreement which also allowed it to base a military force in Crimea.

It seems to be the intention of the US to establish NATO bases in Ukraine, no doubt armed with nuclear weapons. In trying to imagine how the Russians feel about this, we might think of the US reaction when a fleet of ships sailed to Cuba in 1962, bringing Soviet nuclear weapons. In the confrontation that followed, the world was brought very close indeed to an all-destroying nuclear war. Does not Russia feel similarly threatened by the thought of hostile nuclear weapons on its very doorstep? Can we not learn from the

past, and avoid the extremely high risks associated with the similar confrontation in Ukraine today?

Lessons from the First World War

Since we are now approaching the 100th anniversary of the outbreak of the First World War, it is appropriate to view the crisis in Ukraine against the background of that catastrophic event, which still casts a dark shadow over the future of human civilization. We must learn the bitter lessons which World War I has to teach us, in order to avoid a repetition of the disaster.

We can remember that the First World War started as a small operation by the Austrian government to punish the Serbian nationalists; but it escalated uncontrollably into a global disaster. Today, there are many parallel situations, where uncontrollable escalation might produce a world-destroying conflagration. In general, aggressive interventions, in Iran, Syria, Ukraine, the Korean Peninsula and elsewhere, all present dangers for uncontrollable escalation into large and disastrous conflicts, which might potentially threaten the survival of human civilization.

Another lesson from the history of World War I comes from the fact that none of the people who started it had the slightest idea of what it would be like. Science and technology had changed the character of war. The politicians and military figures of the time ought to have known this, but they didn't. They ought to have known it from the million casualties produced by the use of the breach-loading rifle in the American Civil War. They ought to have known it from the deadly effectiveness of the Maxim machine gun against the native populations of Africa, but the effects of the machine gun in a European war caught them by surprise.

Today, science and technology have again changed the character of war beyond all recognition. In the words of the Nobel Laureate biochemist, Albert Szent Györgyi, “The story of man consists of two parts, divided by the appearance of modern science.... In the first period, man lived in the world in which his species was born and to which his senses were adapted. In the second, man stepped into a new, cosmic world to which he was a complete stranger....The forces at mans disposal were no longer terrestrial forces, of human dimension, but were cosmic forces, the forces which shaped the universe. The few hundred Fahrenheit degrees of our flimsy terrestrial fires were exchanged for the ten million degrees of the atomic reactions which heat the sun....Man lives in a new cosmic world for which he was not made. His survival depends on how well and how fast he can adapt himself to it, rebuilding all his ideas, all his social and political institutions.”

Few politicians or military figures today have any imaginative understanding of what a war with thermonuclear weapons would be like. Recent studies have shown that in a nuclear war, the smoke from firestorms in burning cities would rise to the stratosphere where it would remain for a decade, spreading throughout the world, blocking sunlight, blocking the hydrological cycle and destroying the ozone layer. The effect on global agriculture would be devastating, and the billion people who are chronically undernourished today would be at risk. Furthermore, the tragedies of Chernobyl and Fukushima remind us that a nuclear war would make large areas of the world permanently uninhabitable because of radioactive contamination. A full-scale thermonuclear war would be the ultimate ecological catastrophe. It would destroy human civilization and much of the biosphere.

Finally, we must remember the role of the arms race in

the origin of World War I, and ask what parallels we can find in today's world. England was the first nation to complete the first stages of the Industrial Revolution. Industrialism and colonialism are linked, and consequently England obtained an extensive colonial empire. In Germany, the Industrial Revolution occurred somewhat later. However, by the late 19th century, Germany had surpassed England in steel production, and, particularly at the huge Krupp plants in Essen, Germany was turning to weapons production. The Germans felt frustrated because by that time there were fewer opportunities for the acquisition of colonies.

According to the historian David Stevensen (1954 -), writing on the causes of World War I, "A self-reinforcing cycle of heightened military preparedness... was an essential element in the conjuncture that led to disaster... The armaments race... was a necessary precondition for the outbreak of hostilities."

Today, the seemingly endless conflicts that threaten to destroy our beautiful world are driven by what has been called "The Devil's Dynamo". In many of the larger nations of the world a military-industrial complex seems to have enormous power. Each year the world spends roughly 1,700,000,000.000 US dollars on armaments, almost 2 trillion. This vast river of money, almost too large to be imagined, pours into the pockets of weapons manufacturers, and is used by them to control governments. This is the reason for the seemingly endless cycle of threats to peace with which the ordinary people of the world are confronted. Constant threats are needed to justify the diversion of such enormous quantities of money from urgently needed social projects into the bottomless pit of war.

World War I had its roots in the fanatical and quasi-religious nationalist movements that developed in Europe

during the 19th century. Nationalism is still a potent force in today's world, but in an era of all-destroying weapons, instantaneous worldwide communication, and global economic interdependence, fanatical nationalism has become a dangerous anachronism. Of course, we should continue to be loyal to our families, our local groups and our nations. But this must be supplemented by a wider loyalty to the human race as a whole. Human unity has become more and more essential, because of the serious problems that we are facing, for example climate change, vanishing resources, and threats to food security. The problems are soluble, but only within a framework of peace and cooperation.

We must not allow the military-industrial complex to continually bring us to the brink of a catastrophic nuclear war, from which our civilization would never recover. The peoples of the earth must instead realize that it is in their common interest to join hands and cooperate for the preservation and improvement of our beautiful world.

ADAM SMITH'S INVISIBLE HAND IS AT OUR THROATS

The invisible hand

As everyone knows, Adam Smith invented the theory that individual self-interest is, and ought to be, the main motivating force of human economic activity, and that this, in effect, serves the wider social interest. He put forward a detailed description of this concept in an immense book, "The Wealth of Nations" (1776).

Adam Smith (1723-1790) had been Professor of Logic at the University of Glasgow, but in 1764 he withdrew from his position at the university to become the tutor of the young Duke of Buccleuch. In those days a Grand Tour of Europe was considered to be an important part of the education of a young nobleman, and Smith accompanied Buccleuch to the Continent. To while away the occasional dull intervals of the tour, Adam Smith began to write an enormous book on economics which he finally completed twelve years later. He began his "Inquiry into the Nature and Causes of the Wealth of Nations" by praising division of labor. As an example of its benefits, he cited a pin factory, where ten men, each a specialist in his own set of operations, could produce 48,000 pins in a day. In the most complex civilizations, Smith stated, division of labor has the greatest utility.

The second factor in prosperity, Adam Smith maintained, is a competitive market, free from monopolies and entirely free from governmental interference. In such a system, he tells us, the natural forces of competition are able to organize even the most complex economic operations, and are able

also to maximize productivity. He expressed this idea in the following words:

“As every individual, therefore, endeavors as much as he can, both to employ his capital in support of domestic industry, and so to direct that industry that its produce may be of greatest value, each individual necessarily labours to render the annual revenue of the Society as great as he can.”

“He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of greatest value, he intends only his own gain; and he is in this, as in many other cases, led by an invisible hand to promote an end that was no part of his intention. Nor is it always the worse for Society that it was no part of it. By pursuing his own interest, he frequently promotes that of Society more effectively than when he really intends to promote it.”

In other words, Smith maintained that self-interest (even greed) is a sufficient guide to human economic actions. The passage of time has shown that he was right in many respects. The free market, which he advocated, has turned out to be the optimum prescription for economic growth. However, history has also shown that there is something horribly wrong or incomplete about the idea that individual self-interest alone, uninfluenced by ethical and ecological considerations, and totally free from governmental intervention, can be the main motivating force of a happy and just society. There has also proved to be something terribly wrong with the concept of unlimited economic growth. Here is what actually happened:

In pre-industrial Europe, peasant farmers held a low but nevertheless secure position, protected by a web of tradi-

tional rights and duties. Their low dirt-floored and thatched cottages were humble but safe refuges. If a peasant owned a cow, it could be pastured on common land.

With the invention of the steam engine and the introduction of spinning and weaving machines towards the end of the 18th Century, the pattern changed, at first in England, and afterwards in other European countries. Land-owners in Scotland and Northern England realized that sheep were more profitable to have on the land than “crofters” (i.e., small tenant farmers), and families that had farmed land for generations were violently driven from their homes with almost no warning. The cottages were afterwards burned to prevent the return of their owners.

The following account of the Highland Clearances has been left by Donald McLeod, a crofter in the district of Sutherland: “The consternation and confusion were extreme. Little or no time was given for the removal of persons or property; the people striving to remove the sick or helpless before the fire should reach them; next struggling to save the most valuable of their effects. The cries of the women and children; the roaring of the affrighted cattle, hunted at the same time by the yelling dogs of the shepherds amid the smoke and fire, altogether presented a scene that completely baffles description - it required to be seen to be believed... The conflagration lasted for six days, until the whole of the dwellings were reduced to ashes and smoking ruins.”

Between 1750 and 1860, the English Parliament passed a large number of “Enclosure Acts”, abolishing the rights of small farmers to pasture their animals on common land that was not under cultivation. The fabric of traditional rights and duties that once had protected the lives of small tenant farmers was torn to pieces. Driven from the land, poor families flocked to the towns and cities, hoping for employment in

the textile mills that seemed to be springing up everywhere. According to the new rules by which industrial society began to be governed, traditions were forgotten and replaced by purely economic laws.

Labor was viewed as a commodity, like coal or grain, and wages were paid according to the laws of supply and demand, without regard for the needs of the workers. Wages fell to starvation levels, hours of work increased, and working conditions deteriorated.

John Fielden's book, "The Curse of the Factory System" was written in 1836, and it describes the condition of young children working in the cotton mills. "The small nimble fingers of children being by far the most in request, the custom instantly sprang up of procuring 'apprentices' from the different parish workhouses of London, Birmingham and elsewhere... Overseers were appointed to see to the works, whose interest it was to work the children to the utmost, because their pay was in proportion to the quantity of pay that they could exact."

"Cruelty was, of course, the consequence; and there is abundant evidence on record to show that in many of the manufacturing districts, the most heart-rending cruelties were practiced on the unoffending and friendless creatures... that they were flogged, fettered and tortured in the most exquisite refinements of cruelty, that they were in many cases starved to the bone while flogged to their work, and that they were even in some instances driven to commit suicide... The profits of manufacture were enormous, but this only whetted the appetite that it should have satisfied."

Dr. Peter Gaskell, writing in 1833, described the condition of the English mill workers as follows: "The vast deterioration in personal form which has been brought about in the manufacturing population during the last thirty years...

is singularly impressive, and fills the mind with contemplations of a very painful character... Their complexion is sallow and pallid, with a peculiar flatness of feature caused by the want of a proper quantity of adipose substance to cushion out the cheeks. Their stature is low - the average height of men being five feet, six inches... Great numbers of the girls and women walk lamely or awkwardly... Many of the men have but little beard, and that in patches of a few hairs... (They have) a spiritless and dejected air, a sprawling and wide action of the legs..."

"Rising at or before daybreak, between four and five o'clock the year round, they swallow a hasty meal or hurry to the mill without taking any food whatever... At twelve o'clock the engine stops, and an hour is given for dinner... Again they are closely immured from one o'clock till eight or nine, with the exception of twenty minutes, this being allowed for tea. During the whole of this long period, they are actively and unremittingly engaged in a crowded room at an elevated temperature."

Dr. Gaskell described the housing of the workers as follows: "One of the circumstances in which they are especially defective is that of drainage and water-closets. Whole ranges of these houses are either totally undrained, or very partially... The whole of the washings and filth from these consequently are thrown into the front or back street, which, often being unpaved and cut into deep ruts, allows them to collect into stinking and stagnant pools; while fifty, or even more than that number, having only a single convenience common to them all, it is in a very short time choked with excrementous matter. No alternative is left to the inhabitants but adding this to the already defiled street."

"It frequently happens that one tenement is held by several families... The demoralizing effects of this utter absence

of domestic privacy must be seen before they can be thoroughly appreciated. By laying bare all the wants and actions of the sexes, it strips them of outward regard for decency - modesty is annihilated - the father and the mother, the brother and the sister, the male and female lodger, do not scruple to commit acts in front of each other which even the savage keeps hid from his fellows."

The landowners of Scotland were unquestionably following self-interest as they burned the cottages of their crofters; and self-interest motivated overseers as they whipped half-starved child workers in England's mills. Adam Smith's "invisible hand" no doubt guided their actions in such a way as to maximize production. But whether a happy and just society was created in this way is questionable. Certainly it was a society with large areas of unhappiness and injustice. Self-interest alone was not enough. A society following purely economic laws - a society where selfishness is exalted as the mainspring for action - lacks both the ethical and ecological dimensions needed for social justice, widespread happiness, and sustainability

Our greed-based economic system today

Today our greed-based, war addicted, and growth-obsessed economic system poses even greater threats than it did during the early phases of the Industrial Revolution. Today it threatens to destroy human civilization and much of the biosphere.

According to a recently-published study by Oxfam, just 1 percent of the world's population controls nearly half of the planet's wealth. The study says that this tiny slice of humanity controls 110 trillion US dollars, or 65 times the total wealth of the poorest 3.5 billion people. The world's

85 richest people own as much as the poorest 50 percent of humanity. 70 percent of the world's people live in a country where income inequality has increased in the past three decades.

This shocking disparity in wealth has led to the decay of democracy in many countries, because the very rich have used their money to control governments, and also to control the mass media and hence to control public opinion. The actions of many governments today tend not to reflect what is good for the people (or more crucially, what is good for the future of our planet), but rather what is good for special interest groups, for example, the fossil fuel industry and the military-industrial complex.

An excellent description of the military-industrial complex was given by US President Dwight D. Eisenhower. When he retired, he made a memorable farewell address, containing the following words: "...We have been compelled to create an armaments industry of vast proportions. Added to this, three and a half million men are directly engaged in the defense establishment....In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist. "

In another speech, Eisenhower said: "Every gun that is made, every warship launched, every rocket fired, signifies in a final sense, a theft from those who hunger and are not fed, those who are cold and are not clothed. The world in arms is not spending money alone. It is spending the sweat of its laborers, the genius of its scientists, and the hopes of its children."

Today the world spends roughly 1,700,000,000,000 US dollars on armaments, almost 2 trillion. This vast river of

money, almost too great to be imagined, flows into the pockets of arms manufacturers, and is used by them to control governments, which in turn vote for bloated military budgets and aggressive foreign policies which provoke the endless crises and conflicts that are necessary to justify the diversion of such vast sums of money from urgently-needed social goals into the bottomless pit of war.

The reelection of the slave-like politicians is ensured by the huge sums made available for their campaigns by the military-industrial complex. This pernicious circular flow of money, driving endless crises, has sometimes been called “The Devil’s Dynamo”. Thus the world is continually driven to the brink of thermonuclear war by highly dangerous interventions such as the recent ones in North Africa, the Middle East, Ukraine, South and Central America, and the Korean Peninsula.

It is doubtful that any of the political or military figures involved with this arrogant risking of human lives and the human future have any imaginative idea of what a thermonuclear war would be like. In fact it would be an ecological catastrophe of huge proportions, making large areas of the world permanently uninhabitable through long-lived radioactive contamination. The damage to global agriculture would be so great as to produce famine leading to a billion or more deaths from starvation. All the nations of the earth would suffer, neutrals as well as belligerents.

Besides supporting the appalling war machine, our bought-and-paid-for politicians also fail to take the actions that would be needed to prevent the worst effects of climate change. The owners of the fossil fuel industries have even mounted advertising campaigns to convince the public that the threat of anthropogenic climate change is not real. Sadly, the threat of catastrophic climate change is all too real, as 99 percent

the world's climate scientists have warned. The world has recently passed a dangerous landmark in atmospheric CO₂ concentration, 400 ppm. The last time that the earth experienced such high concentrations of this greenhouse gas were several million years ago. At that time the Arctic was free from ice, and sea levels were 40 meters higher than they are today.

Global warming is a slow and long-term effect, so such high sea levels will be slow in arriving, but ultimately we must expect that coastal cities and much of the world's low-lying land will be under water. We must also expect many tropical regions of the world to become uninhabitable because of high temperatures. Finally there is a threat of famine because agriculture will be hit by high temperatures and aridity.

There are several very dangerous feedback loops that may cause the earth's temperatures to rise much faster than has been predicted by the International Panel on Climate Change. By far the most dangerous of these comes from the melting of methane hydrate crystals that are currently trapped in frozen tundra and on the floor of seabeds.

At high pressures, methane combines with water to form crystals called hydrates or clathrates. These crystals are stable at the temperatures currently existing on ocean floors, but whenever the water temperature rises sufficiently, the crystals become unstable and methane gas bubbles to the surface. This effect has already been observed in the Arctic seas north of Russia.

The total amount of methane clathrates on ocean floors is not precisely known, but it is estimated to be very large indeed, corresponding to between 3,000 and 11,000 gigatons of carbon. The release of even a small fraction of this amount of methane into our atmosphere would greatly accelerate rising

temperatures, leading to the release of still more methane, in a highly dangerous feedback loop. We must at all costs avoid global temperatures which will cause this feedback loop to trigger in earnest.

Human motivations were not always so selfish

For the reasons mentioned above, we can see that an economic system where selfishness and greed are exalted as the mainspring for human actions lacks both a social conscience and an ecological conscience. Both these dimensions are needed for the long-term survival of human civilization and the biosphere.

We must remember, however, that the worship of the free market and the exaltation of selfishness are relatively recent developments in human history. During most of their million-year history, humans lived in small groups, not in great cities or nations, and sharing was part of their lifestyle. Perhaps that lifestyle is the one to which we should return if we wish the human future to stretch out for another million years.

UNFULFILLED RESPONSIBILITIES OF THE MEDIA

The wealth and power of the establishment

The media are a battleground where reformers struggle for attention, but are defeated with great regularity by the wealth and power of the establishment. This is a tragedy because today there is an urgent need to make public opinion aware of the serious problems facing civilization, and the steps that are needed to solve these problems. The mass media could potentially be a great force for public education, but in general their role is not only unhelpful - it is often negative.

War and conflict are blatantly advertised by television and newspapers. Think, for example, of television programs like the National Geographic Channel's "Battleground" series or the Discovery Channel and National Geographic Channel's enthusiastic programs praising the deadliness and efficiency of various modern weapons systems. Such outright advertisements for the institution of war seem to have the wholehearted support of the networks. Meanwhile the peace movement has almost no access to the mainstream media.

Newspapers and war

There is a true story about the powerful newspaper owner William Randolph Hearst that illustrates the relationship between the mass media and the institution of war: When an explosion sank the American warship USS Maine in the harbor of Havana, Hearst anticipated (and desired) that the incident would lead to war between the United States and

Spain. He therefore sent his best illustrator, Fredrick Remington, to Havana to produce drawings of the scene. After a few days in Havana, Remington cabled to Hearst, "All's quiet here. There will be no war." Hearst cabled back, "You supply the pictures. I'll supply the war." Hearst was true to his words. His newspapers inflamed American public opinion to such an extent that the Spanish-American War became inevitable. During the course of the war, Hearst sold many newspapers, and Remington many drawings. From this story one might almost conclude that newspapers thrive on war, while war thrives on newspapers.

Before the advent of widely-read newspapers, European wars tended to be fought by mercenary soldiers, recruited from the lowest ranks of society, and motivated by financial considerations. The emotions of the population were not aroused by such limited and decorous wars. However, the French Revolution and the power of newspapers changed this situation, and war became a total phenomenon that involved emotions. The media were able to mobilize on a huge scale the communal defense mechanism that Konrad Lorenz called "militant enthusiasm" - self-sacrifice for the defense of the tribe. It did not escape the notice of politicians that control of the media is the key to political power in the modern world. For example, Hitler was extremely conscious of the force of propaganda, and it became one of his favorite instruments for exerting power.

With the advent of radio and television, the influence of the mass media became still greater. Today, state-controlled or money-controlled newspapers, radio and television are widely used by the power elite to manipulate public opinion. This is true in most countries of the world, even in those that pride themselves on allowing freedom of speech. For example, during the US-led invasion of Iraq in 2003, the official

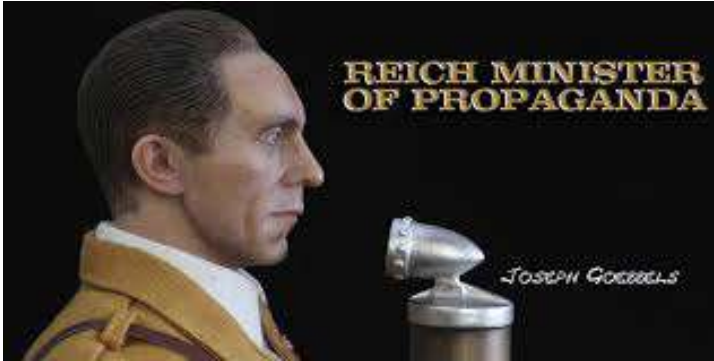


Figure 20: *Goebbels said: “Propaganda works best when those who are being manipulated are confident that they are acting on their own free will”.*

version of events was broadcast by CNN, and criticism of the invasion was almost absent from their transmissions.

The role of the mass media in creating values

In the mid-1950's, television became cheap enough so that ordinary people in the industrialized countries could afford to own sets. During the infancy of television, its power was underestimated. The great power of television is due to the fact that it grips two senses simultaneously, both vision and hearing. The viewer becomes an almost-hypnotized captive of the broadcast. In the 1950's, this enormous power, which can be used both for good and for ill, was not yet fully apparent. Thus insufficient attention was given to the role of television in education, in setting norms, and in establishing values. Television was not seen as an integral part of the total educational system.

It is interesting to compare the educational systems of traditional cultures with those of modern industrial societies. In traditional societies, multigenerational families often live together in the same dwelling. In general, there is a great deal of contact between grandparents and grandchildren, with much transmission of values and norms between generations. Old people are regarded with great respect, since they are considered to be repositories of wisdom, knowledge, and culture.

By contrast, modern societies usually favor nuclear families, consisting of only parents and children. Old people are marginalized. They live by themselves in communities or homes especially for the old. Their cultural knowledge and norms are not valued because they are “out of date”. In fact, during the life of a young person in one of the rapidly-changing industrial societies of the modern world, there is often a period when they rebel against the authority of their parents and are acutely embarrassed by their parents, who are “so old-fashioned that they don’t understand anything”.

Although the intergenerational transmission of values, norms, and culture is much less important in industrial societies than it is in traditional ones, modern young people of the west and north are by no means at a loss over where to find their values, fashions and role models. With every breath, they inhale the values and norms of the mass media, the norms of pop culture. Totally surrounded by a world of television and film images, they accept this world as their own. Unfortunately the culture of television, films and computer games is more often a culture of violence than a culture of peace, more often a culture of self-indulgence than an ethical culture, more often a culture of materialism than a culture of respect for nature.

Literature, art, architecture and music are capable of

transmitting humanism and internationalism to our young people, but these values are being lost today, and replaced by a culture of power worship, violence and consumerism. As Prof. Robert Jensen of the University of Texas puts it, "Mass media corporations have eroticized violence and comodified intimacy at an unprecedented level globally". Today's pop culture is addictive, as we can see when we observe people walking down the street wearing a head set, with a constant, reassuring supply of it pouring into their ears.

Computer games designed for young boys often give the strongest imaginable support to our present culture of violence. For example, a game entitled "Full Spectrum Warrior" was recently reviewed in a Danish newspaper. According to the reviewer, "...An almost perfect combination of graphics, sound, band design, and gameplay makes it seem exactly like the film *Black Hawk Down* - with the player as the main character. This is not just a coincidence, because the game is based on an army training program... Full Spectrum Warrior is an extremely intense experience, and despite the advanced possibilities, the controls are simple enough so that young children can play it... The player is completely drawn into the screen, and remains there until the end of the mission." The reviewer gave the game six stars (the maximum).

If entertainment is evaluated only on the basis of immediate fascination and popularity, what might be called "the pornography of violence" gets high marks. However, there is another way of looking at entertainment. It is a part, and a very important part, of our total educational system.

Even animals undergo education, and often the playing of young animals is a part of the educational process. For example, when lion cubs play, they are learning skills that are useful to them in hunting. The same can be said of kittens playing with bits of yarn. Books of adventures read by young

humans also have an educational value, and on a higher level, works of literature expand our ability to understand our fellow humans and to sympathize with them. Each culture, by means of oral traditions, songs, poems, and stories, as well as by means of formal education, tries to modify raw human nature and to mould it to the ideal of that particular society. In this process, entertainment and formal education go hand in hand, each contributing ethical values and norms that are desirable for the way of life of a particular group.

In modern industrial societies, this important educational function has been given by default to commercial interests. Instead of supporting socially desirable behavior, the entertainment industry, driven by the quest for higher popularity ratings and higher profits, explores increasingly murky depths in the swamp of popular taste. We would not want Coca Cola to run our schools, but entertainment is just as important as the school or home environment in forming values and norms, and entertainment is in the hands of commerce.

The mass media and our present predicament

Today we are faced with the task of creating a new global ethic in which loyalty to family, religion and nation will be supplemented by a higher loyalty to humanity as a whole. In case of conflicts, loyalty to humanity as a whole must take precedence. In addition, our present culture of violence must be replaced by a culture of peace. To achieve these essential goals, we urgently need the cooperation of the mass media.

The predicament of humanity today has been called “a race between education and catastrophe”: Human emotions have not changed much during the last 40,000 years. As we saw in Chapter 8, human nature still contains an element of

tribalism to which nationalistic politicians successfully appeal. The completely sovereign nation-state is still the basis of our global political system. The danger in this situation is due to the fact that modern science has given the human race incredibly destructive weapons. Because of these weapons, the tribal tendencies in human nature and the politically fragmented structure of our world have both become dangerous anachronisms.

After the tragedies of Hiroshima and Nagasaki, Albert Einstein said, "The unleashed power of the atom has changed everything except our way of thinking, and thus we drift towards unparalleled catastrophes." We have to learn to think in a new way. Will we learn this in time to prevent disaster? When we consider the almost miraculous power of our modern electronic media, we can be optimistic. Cannot our marvelous global communication network be used to change anachronistic ways of thought and anachronistic social and political institutions in time, so that the system will not self-destruct as science and technology revolutionize our world? If they were properly used, our instantaneous global communications could give us hope.

As we saw in Chapter 8, the success of our species is built on cultural evolution, the central element of which is cooperation. Thus human nature has two sides, tribal emotions are present, but they are balanced by the human genius for cooperation. The case of Scandinavia - once war-torn, now cooperative - shows that education is able to bring out either the kind and cooperative side of human nature, or the xenophobic and violent side. Which of these shall it be? It is up to our educational systems to decide, and the mass media are an extremely important part of education. Hence the great responsibility that is now in the hands of the media.

How do the media fulfill this life-or-death responsibility?

Do they give us insight? No, they give us pop music. Do they give us an understanding of the sweep of evolution and history? No, they give us sport. Do they give us an understanding of need for strengthening the United Nations, and the ways that it could be strengthened? No, they give us sitcoms and soap operas. Do they give us unbiased news? No, they give us news that has been edited to conform with the interests of the military-industrial complex and other powerful lobbys. Do they present us with the need for a just system of international law that acts on individuals? On the whole, the subject is neglected. Do they tell of the essentially genocidal nature of nuclear weapons, and the need for their complete abolition? No, they give us programs about gardening and making food.

A consumer who subscribes to the “package” of broadcasts sold by a cable company can often search through all 35 or 45 channels without finding a single program that offers insight into the various problems that are facing the world today. What the viewer finds instead is a mixture of pro-establishment propaganda and entertainment. Meanwhile the neglected global problems are becoming progressively more severe. In general, the mass media behave as though their role is to prevent the peoples of the world from joining hands and working to change the world and to save it from thermonuclear and environmental catastrophes. The television viewer sits slumped in a chair, passive, isolated, disempowered and stupefied. The future of the world hangs in the balance, the fate of children and grandchildren hang in the balance, but the television viewer feels no impulse to work actively to change the world or to save it. The Roman emperors gave their people bread and circuses to numb them into political inactivity. The modern mass media seem to be playing a similar role.

The dilemma of freedom and responsibility

One is faced with a dilemma, because on the one hand artistic freedom is desirable and censorship undesirable, but on the other hand some degree of responsibility ought to be exercised by the mass media because of their enormous influence in creating norms and values.

Even today, there exists some degree of self-restraint on the part of the entertainment industry. There is a self-imposed code according to which incitement to racial prejudice is not allowed. Today, when a figure of authority, for example a judge, is shown in a film or on a television program, the judge is likely to be a member of a minority group.

To do justice to the mass media, one also has to say that in recent years they have made efforts to educate the public about global warming and other environmental problems. Furthermore, today's heroes and heroines are not shown with cigarettes hanging from their lips. In fact we are a little shocked to see old Humphrey Bogart films where scenes of smoking are constantly on the screen. If the mass media can accept the degree of responsibility needed to delegitimize racism, to delegitimize unnecessary CO₂ emissions, and to delegitimize smoking, can they not also delegitimize nuclear weapons? One can hope for future restraint in the depiction of violence and war, and in the depiction of international conflicts. One can hope for future support for cross-cultural understanding.

Of course we cannot say to the entertainment industry, "From now on you must not show anything but David Attenborough and the life of Gandhi". However, it would be enormously helpful if every film or broadcast or computer game could be evaluated not only for its popularity and artistic merit, but also in terms of the good or harm that it does

in the task of building a stable and peaceful future world. Of course, there must be entertainment and escapism - but there should also be insight. This must be made available for people who care about the fate of the world. At present it is not available.

Some years ago, when CNN was still owned by Ted Turner, the network introduced a global weather forecast. This feature is still continued by CNN even though its new owners are much less idealistic than Ted Turner. Furthermore, the BBC has also adopted the global weather forecast. When we see a map of the world with temperatures and storms, we receive much more information than we need to decide whether to take an umbrella with us tomorrow. For planning picnics, it is not necessary for us to know that in Beijing it will be warm and slightly overcast. Ted Turner was aware of this, and we are aware of it, but all of us realize that the global weather forecast is a simple and beautiful means for creating global consciousness.

A United Nations television channel?

Why doesn't the United Nations have its own global television network? Such a network could produce an unbiased version of the news. It could broadcast documentary programs on global problems. It could produce programs showing viewers the music, art and literature of other cultures than their own. It could broadcast programs on the history of ideas, in which the contributions of many societies were adequately recognized. At New Year, when people are in the mood to think of the past and the future, the Secretary General of the United Nations could broadcast a "State of the World" message, summarizing the events of the past year and looking forward to the new year, with its problems, and

with his recommendations for their solution. A United Nations television network would at least give viewers a choice between programs supporting militarism and consumerism, and programs supporting a global culture of peace and sustainability. At present they have little choice.

Responsibility

Whose responsibility is it to save the world by changing it? Whose responsibility is it to replace our anachronistic social, political and economic institutions by new institutions that will harmonize with the realities of the new world that modern science has created? If you ask politicians they say it is not their responsibility. They cannot act without popular support if they want to be re-elected. If you ask ordinary people they say it is not their responsibility. What can one person do? If you ask journalists, they say that if they ever reported the news in a way that did not please their employers, they would lose their jobs. But in reality, perhaps all three actors - politicians, ordinary people, and journalists - have a responsibility to be more courageous and far-sighted, and to act together. No one acting alone can achieve the changes that we so desperately need; but all of us together, joining hands, can do it.

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EUROPE NEEDS TO BE INDEPENDENT

Legacies from the First and Second World Wars and the Cold War

In both World War I and World War II, participation by the United States brought victory to the Allies. In the years that followed 1945, the Marshall Plan helped Europe to recover. During the Cold War period that followed, many people in Europe saw NATO, and a close alliance with the United States, as means for preventing a takeover by the Soviet Union.

However, whatever debt of gratitude Europe may owe to the United States for its past help, we must now ask whether the time has not now arrived for Europe to be independent. Just as the US once declared it is independence from England, Europe must now declare its independence from the United States.

The loss of democracy in the United States

Recent revelations by Edward Snowden, Wikileaks and other whistle-blowers have made it clear that the United States has suffered a decay of its political institutions. The US can hardly be called a democracy today, since it seems to be ruled by an extremely wealthy oligarchy rather than by its people. In fact, the people of the US do not really know what their government is doing because the activities of the CIA, the NSA, Secret Service, Homeland Security the FBI, and many other agencies are masked in secrecy. A country where the people do not know what their government is doing, and

where the people have no control over their government's actions, cannot be said to be a democracy.

The history of this huge secret side of the US government goes back to the Cold War period, during which both sides engaged in both covert and military interference with the internal affairs of smaller countries. The Soviet Union and China also intervened in the internal affairs of many countries, for example in Korea in 1950-53, Hungary in 1956, Czechoslovakia in 1968, and so on; very long list.

Meanwhile the US interfered, militarily or covertly, in the internal affairs of a large number of nations: China, 1945-49; Italy, 1947-48; Greece, 1947-49; Philippines, 1946-53; South Korea, 1945-53; Albania, 1949-53; Germany, 1950s; Iran, 1953; Guatemala, 1953-1990s; Middle East, 1956-58; Indonesia, 1957-58; British Guiana/Guyana, 1953-64; Vietnam, 1950-73; Cambodia, 1955-73; The Congo/Zaire, 1960-65; Brazil, 1961-64; Dominican Republic, 1963-66; Cuba, 1959-present; Indonesia, 1965; Chile, 1964-73; Greece, 1964-74; East Timor, 1975-present; Nicaragua, 1978-89; Grenada, 1979-84; Libya, 1981-89; Panama, 1989; Iraq, 1990-present; Afghanistan 1979-92; El Salvador, 1980-92; Haiti, 1987-94; Yugoslavia, 1999; and Afghanistan, 2001-present, Syria, 2013-present. Egypt, 2013-present, Venezuela, 2013-present. None of these interventions, from either side, can be justified, since people have a right to live under governments of their own choosing, regardless of whether those governments are optimal.¹¹

With the fall of the Soviet Union, intoxication with the idea of the United States as the sole superpower expressed itself in the form of contempt for international law and the United Nations, and especially in the declarations of the

¹¹<http://www.informationclearinghouse.info/article3249.htm>
<http://www.informationclearinghouse.info/article29129.htm>

“Project for a New American Century”, which many people have compared to Hitler’s “Mein Kampf”.

NATO

Former UN Assistant Secretary General Hans Christof von Sponeck used the following words to express his opinion that NATO now violates the UN Charter and international law: “In the 1949 North Atlantic Treaty, the Charter of the United Nations was declared to be NATO’s legally binding framework. However, the United-Nations monopoly of the use of force, especially as specified in Article 51 of the Charter, was no longer accepted according to the 1999 NATO doctrine. NATO’s territorial scope, until then limited to the Euro-Atlantic region, was expanded by its members to include the whole world”

One might say that in recent years, participation in NATO has made European countries accomplices in US efforts to achieve global hegemony by means of military force, in violation of the UN Charter and international law.

Article 2 of the UN Charter requires that “All members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state.” This requirement is somewhat qualified by Article 51, which says that “Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security.”

Thus, in general, war is illegal under the UN Charter. Self-defense against an armed attack is permitted, but only

for a limited time, until the Security Council has had time to act. The United Nations Charter does not permit the threat or use of force in preemptive wars, or to produce regime changes, or for so-called democratization, or for the domination of regions that are rich in oil. NATO must not be a party to the threat or use of force for such illegal purposes, but instead must support the authority of the United Nations Charter, and the fundamental authority of international law.

US tactical nuclear weapons in Europe

At present, NATO's nuclear weapons policies violate both the spirit and the text of the Nuclear Nonproliferation Treaty in several respects: Today there are an estimated 200 US nuclear weapons still in Europe. The air forces of the nations in which they are based are regularly trained to deliver the US weapons. This "nuclear sharing", as it is called, violates Articles I and II of the NPT, which forbid the transfer of nuclear weapons to non-nuclear-weapon states. It has been argued that the NPT would no longer be in force if a crisis arose, but there is nothing in the NPT saying that the treaty would not hold under all circumstances.

Article VI of the NPT requires states possessing nuclear weapon to get rid of them within a reasonable period of time. This article is violated by fact that NATO policy is guided by a Strategic Concept, which visualizes the continued use of nuclear weapons in the foreseeable future.

The principle of no-first-use of nuclear weapons has been an extremely important safeguard over the years, but it is violated by present NATO policy, which permits the first-use of nuclear weapons in a wide variety of circumstances.

NSA spying on European leaders

The massive illegal collection of private data by the National Security Agency has produced worldwide anger. The targeting of European leaders has included the famous bugging of Angela Merkel's cellphone.

In the words of former Assistant Secretary of the Treasury Paul Craig Roberts, "Obamas US Trade Representative, who has been negotiating secret trade agreements in Europe and Asia that give US corporations immunity to the laws of all countries that sign the agreements, has threatened WTO penalties if Europe's communications network excludes the US companies that serve as spies for NSA. Washington in all its arrogance has told its most necessary allies that if you dont let us spy on you, we will use WTO to penalize you."

What will the future bring?

For many years, the US dollar has acted as a global currency. However, we can already see moves away from the "petrodollar". When China, India, Russia, Iran and Brazil begin non-dollar trading, the value of the dollar will fall drastically, and US political and economic power will fall with it. This is just one more reason why European independence is desirable. But the most important reasons why we should wish for European independence are ethical ones: Europe must not be the close ally (or puppet?) of the world's greatest purveyor of violence and war.

THE LONG-TERM FUTURE

Looking at the distant future simplifies some issues

It is notoriously difficult to make correct predictions about the distant future. In modern human society, the break-neck speed of scientific discovery and technological innovation makes long-term predictions especially difficult.

Nevertheless, I believe that the distant future of the balance or unbalance between humankind and nature has a great importance. Certainly, if we look far enough ahead, it will be beyond our own lifetimes. But I feel that we should think not only of our own children, and of their children and grandchildren, but also about the fate of all future human generations; and not only about humans, but also about what will happen to all the animals and plants and microbes with which we share our existence.

Looking at the very distant future simplifies some issues. For example, one can argue about the size of reserves of coal, oil and metals, but it is certain that in the very long run, such non-renewable resources will become extremely rare and extremely expensive.

Viewed on a time scale of many thousands of years rather than tens or hundreds, global population growth and fossil fuel use appear in a very clear and dramatic perspective. Forty thousand years ago, at the time when human cultural development began to accelerate, there were at most only 4-5 million or so members of our species on the earth. They lived as hunter-gatherers, and were not conspicuously different from other animals. Then, suddenly, a series of cultural achievements allowed humans to increase enormously in numbers and to populate all parts of the earth.

The invention of agriculture was followed by the inventions of writing, paper, and printing. Knowledge, giving humans mastery over the natural world, began to accumulate with astonishing rapidity. New advances in technique allowed further growth in population.

Plotted on an evolutionary timescale, human population growth appears as an extraordinarily abrupt upward surge. On the same time scale, a graph of fossil fuel use is a tall, narrow spike, rising from zero to a high value, and then falling to nothing again, all in the space of a few centuries. When they are plotted together, the rise of fossil fuel use and the explosive growth of human population are seen to be simultaneous. We can infer that fossil fuel use has been one of the causes of the explosive upsurge of global population.

One can calculate from the size of coal, oil and natural gas reserves that the era of fossil fuel use will end within a few hundred years. In fact, because of the threat of dangerous climate change, the fossil fuel era must end much earlier than that. Must human population also fall abruptly?

Since the time of Adam Smith, industrial society has thundered forward under the banner of unrestricted economic growth that Smith was the first to raise. Today, however, as we approach limits to growth imposed by the exhaustion of non-renewable resources and by the finite carrying capacity of the global environment, we should perhaps listen also to the warning voice of Malthus. He pointed out that throughout almost all of human history, the growth of population has been held in check by strong forces. These are sometimes preventative checks, such as late marriage, moral restraint or contraception (which he called “vice”); but when the preventative checks fail, the grim Malthusian forces, famine, disease and war, come into play. Malthus considered the ultimate source of this suffering to be “the

laws of nature and the passions of mankind". The laws of nature limit the food supply, while the passions of mankind drive humans to reproduce above the population level that can be supported.

The successes of science and technology have allowed dramatic growth of both population and economic activity during the last few centuries, but the limits to both types of growth are rapidly approaching. It is therefore relevant to ask what level of global population and what level of economic activity can be comfortably sustained in the distant future.

A stable future world must necessarily be a war-free world, since weapons are likely to become even more destructive in the future than they are today. A world war fought with such weapons would destroy civilization. Thus our descendants will also be faced with the great task of abolishing the institution of war. They will not only need to stabilize and eventually reduce global population and economic activity; they will also need to develop political and ethical maturity to match their scientific progress.

Before cultural evolution began to revolutionize the lifestyle of our species, the "passions of mankind" were undoubtedly necessary for the survival of our remote ancestors. However, the rapid and constantly accelerating rate of cultural evolution has changed the conditions of human life beyond recognition during the last forty thousand years.

Genetically we are very similar to our hunter-gatherer ancestors, but their world has been replaced by a world of quantum theory, space travel, gene splicing and information technology. Thus human emotions, which have remained relatively unchanged, are often inappropriate for our present way of life. In the future, the problem of anachronistic emotions is certain to become even more acute.

If we carefully examine cultural evolution, we can see that it has two parts, one of which changes more quickly than the other. The extremely rapidly-moving part is science and technology. Our political and social institutions change more slowly, although their progress is still very rapid compared with genetic change. Because of the different rates of change of these two facets of cultural evolution, our political and social institutions often fail to harmonize with the innovations of science and technology. For example, in a world of thermonuclear weapons, the absolutely sovereign nation-state has become a dangerous anachronism, yet it persists because of institutional inertia. It takes quite a bit of time for laws, constitutions, schoolbooks, thought-patterns and political structures to adjust to new realities. In the meantime, technology roars ahead, with a rate of change so great that it threatens to shake society to pieces.

Thus modern human society experiences two types of tensions, both of which will probably become more acute in the future: Firstly, tensions produced by the fact that our emotions do not harmonize with our present way of life. Secondly, tensions produced by the disharmony between our technology and our social and political institutions.

Economic shortsightedness

The self-imposed shortsightedness of economists and politicians would be laughable if it were not so tragic. Although ordinary people can easily see that it is a logical impossibility, the doctrine of endlessly continued economic growth is a holy dogma in circles of power. Endlessly continued economic growth on a finite planet is a fiction that can only be made plausible by refusing to look more than a few decades into the future. Economists say: "We are practical people.

The distant future does not concern us.” Meanwhile, one suspects that politicians do not look much beyond the next election.

However, the long-term future is extremely important because of our responsibility to future generations. What does it mean to continue a modest 3 percent rate of industrial growth for several centuries? It means that after 4 centuries the economy will have grown by a factor of 136,424. For this to happen, a hundred thousand times as much energy would have to be generated. The impossibility of endlessly-continued growth is still more clear if we think of what will happen after 8 centuries. If it grows by 3 percent each year, the economy will then have grown by a factor of 186 million. Are we to imagine 186 million times as much steel being produced?

Of course, human culture can continue to develop. Life can become better, even though the amount of material goods produced in the distant future will certainly be restricted by ecological constraints. This does not mean that life cannot become happier and better, but only that happiness must not depend on an endlessly increasing supply of material possessions.

Why is the financial and political establishment so wedded to the concept of endlessly continued growth that it is led to defy simple logic and to voluntarily restrict its vision of the future to a few decades? The answer has to do with our present system of fractional reserve banking. Under this system, only a small fraction of the money that banks receive as deposits is kept by them. The remainder is lent out at interest. Often the banks lend out even more money than has been deposited. The banks are, in effect, printing their own money. Control of the money supply is in their hands, rather than in the hands of the government, and any profit

from increase of the total amount of money in circulation goes to the banks, rather than being used to supply social services.

As long as the economy is growing, this system is unjust, but not catastrophic. However, when growth falters, the system crashes in flames. Depositors then ask the banks for their money; but it is not there. It has been lent out. We saw this situation in 2008, when banks that were “too big to fail” were saved by governments at the taxpayer’s expense.

I have been heaping insults onto the economists, but I must now mention a few exceptions, individuals who have had the courage to speak out against the insane cult of endlessly continued growth. Among them are Frederik Soddy, Nicholas Georgescu-Roegen, Herman E. Daly, Aurelio Pecci and Thorkil Kristensen.

Frederik Soddy and Nicholas Georgescu-Roegen introduced the concept of entropy into economics. They visualized the economy as the digestive system of society. It “eats” resources, and derives from them the strength to drive the machinery of society. Later, it excretes the resources in a degraded form. Obviously this is not a circular process, since the degraded resources cannot simply be “eaten” again. For example, fossil fuels, once burned, cannot be burned again. Since only cyclic processes are sustainable, only renewable energy is sustainable. Furthermore, cyclic processes can use only materials that are renewable, like natural fibers. Today these ideas are very ably advocated by Georgescu-Roegen’s student, Prof. Herman E. Daly.

In 1968 Aurelio Pecci, Thorkil Kristensen, and a few other farsighted economists, industrialists and scientists, founded the Club of Rome, an organization which describes itself as “a group of world citizens, sharing a common concern for the future of humanity”. One of the first acts of the

Club of Rome was to commission a study of future resources availability that was published in 1972 under the title "Limits to Growth". It predicts that many resources, such as metals and fossil fuels, will be exhausted by the middle of the 21st century, that pollution will increase markedly, and that industrial production and population will begin to decline. The book was greeted with anger and disbelief by the community of economists, and these emotions surface today whenever it is mentioned. Nevertheless it was translated into many languages, and 30 million copies were sold.

"Limits to Growth" has been criticized because of inexactness in predicting precisely when various resources will be essentially exhausted. But in the long-term perspective, it hardly matters exactly when these events will occur. It only matters that non-renewable resources will be exhausted at some point. Not only will industrial growth then become impossible: industry will contract. Our present growth-based economic system will fail, and we will be faced with the task of constructing a system which can function in the new circumstances, and which can deliver a happy and secure life to the people who are alive at that time.

Naturally, in a contracting economy, unemployment will become a problem. At the same time there will be a need to build the infrastructure of sustainability, for example the infrastructure of renewable energy, reforestation and soil conservation. Governments must give a high priority to employing everyone who wishes to work. The tasks will be there. Workers can be shifted from producing luxuries to tasks needed to achieve sustainability. But free market forces cannot achieve this. It can only be achieved through the active intervention of truly democratic governments. Thus the rebuilding of our economic system will require the rebuilding of democratic governments.

Threats to the global environment

One of the most tragic aspects of our present growth-obsessed economic system is that it is rapidly destroying the earth's environment. Our governments give much higher priority to economic growth than to the prevention of dangerous climate change. But if urgent steps are not taken within the next decade or so to reduce emissions of CO_2 , there is a danger that the earth will reach a tipping point, beyond which human actions will have no effect because run-away global warming will be produced by feedback loops, i.e. self-driven processes, which are capable increasing exponentially.

Of these feedback loops, by far the most dangerous in the long-term perspective involves the methane hydrate crystals which exist in enormous quantities on the floors of oceans. When the temperature is low enough, and the pressure high enough, methane combines with water to form solid crystals called hydrates or clathrates.

If ocean temperatures are raised, the crystals become unstable, and methane, which a powerful greenhouse gas, bubbles to the surface. This leads to higher temperatures, and more methane is released. Once started, the process can continue in a vicious circle.

The worrying thing is the amount of carbon in the methane hydrate crystals on the ocean floors: between 3,000 and 11,000 gigatons of carbon. To get an idea of how large an amount of carbon this is, we can compare it with the total CO_2 emissions since 1751, only 337 gigatons. If a methane hydrate feedback loop starts in earnest, we will be faced with one of the big extinction events of geological history, perhaps comparable to the Permian-Triassic extinction event, in which methane is thought to have been involved. The prevention of such a catastrophe must be given the very highest priority

by our governments. We must remember that the fate of all life on earth is at stake.¹²

The danger of nuclear war in the long-term future

We said above that a number of issues become clearer in the long-term perspective. The danger of nuclear war is one of these issues. If we look at the distant future, it is very clear that if nuclear weapons are not completely eliminated, human civilization will not survive.

There are very many cases on record in which the world has come very close to a catastrophic nuclear war. One such case was the Cuban Missile Crisis. Robert McNamara, who was the US Secretary of Defense at the time of the crisis, had this to say about how close the world came to a catastrophic nuclear war: “I want to say, and this is very important: at the end we lucked out. It was luck that prevented nuclear war. We came that close to nuclear war at the end. Rational individuals: Kennedy was rational; Khrushchev was rational; Castro was rational. Rational individuals came that close to total destruction of their societies. And that danger exists today.”

Incidents in which global disaster is avoided by a hairs breadth are constantly occurring. For example, on the night of 26 September, 1983, Lt. Col. Stanislav Petrov, a young software engineer, was on duty at a surveillance center near Moscow. Suddenly the screen in front of him turned bright red. An alarm went off. Its enormous piercing sound filled the room. A second alarm followed, and then a third, fourth

¹²<https://www.youtube.com/watch?v=AjZaFjXfLec>
<https://www.youtube.com/watch?v=m6pFDu7ILV4>
<https://www.youtube.com/watch?v=MVwmi7HCmSI>

and fifth, until the noise was deafening. The computer showed that the Americans had launched a strike against Russia.

Petrov's orders were to pass the information up the chain of command to Secretary General Yuri Andropov. Within minutes, a nuclear counterattack would be launched. However, because of certain inconsistent features of the alarm, Petrov disobeyed orders and reported it as a computer error, which indeed it was. Most of us probably owe our lives to his brave and coolheaded decision and his knowledge of software systems. The narrowness of this escape is compounded by the fact that Petrov was on duty only because of the illness of another officer with less knowledge of software, who would have accepted the alarm as real.

A number of prominent political and military figures (many of whom have ample knowledge of the system of deterrence, having been part of it) have expressed concern about the danger of accidental nuclear war. Colin S. Gray, Chairman, National Institute for Public Policy, expressed this concern as follows: "The problem, indeed the enduring problem, is that we are resting our future upon a nuclear deterrence system concerning which we cannot tolerate even a single malfunction". Bruce G. Blair (Brookings Institute) has remarked that "It is obvious that the rushed nature of the process, from warning to decision to action, risks causing a catastrophic mistake... This system is an accident waiting to happen."

As the number of nuclear weapon states grows larger, there is an increasing chance that a revolution will occur in one of them, putting nuclear weapons into the hands of terrorist groups or organized criminals. Today, for example, Pakistan's less-than-stable government might be overthrown, and Pakistan's nuclear weapons might end in the hands of terrorists. The weapons might then be used to destroy one

of the world's large coastal cities, having been brought into the port by one of numerous container ships that dock every day, a number far too large to be monitored exhaustively. Such an event might trigger a large-scale nuclear conflagration.

Recent research has shown that a large-scale nuclear war would be an ecological catastrophe of enormous proportions, producing world-wide famine through its impact on global agriculture, and making large areas of the world permanently uninhabitable through long-lived radioactive contamination.

How do these dangers look in the long-term perspective? Suppose that each year there is a certain finite chance of a nuclear catastrophe, let us say 1 percent. Then in a century the chance of a disaster will be 100 percent, and in two centuries, 200 percent, in three centuries, 300 percent, and so on. Over many centuries, the chance that a disaster will take place will become so large as to be a certainty. Thus by looking at the long-term future, we can see that if nuclear weapons are not entirely eliminated, civilization will not survive.

In his acceptance speech for the 1995 Nobel Peace Prize, Sir Joseph Rotblat pointed out that in order for the world to be entirely rid of the danger of nuclear weapons, the institution of war must itself be eliminated. The reason for this, he explained, is that the knowledge of how to make nuclear weapons can never be lost. Even if these weapons were entirely eliminated from the world, they could be reconstructed during a major war.

We can carry this argument a little farther, and say that the long-term survival of human civilization and the biosphere require effective governance at the global level, since this will be needed for the elimination of the institution of war. The sooner these steps are taken, the greater the chance of human survival, since elimination of the institution of war



Figure 21: *Professor Sir Joseph Rotblat at the Nobel Peace Prize Ceremony in Oslo in 1995. In his acceptance speech he pointed out that, in the long run, the elimination of nuclear weapons will require elimination of the institution of war. Source: Norwegian Nobel Institute*

would free vast quantities of money which could be used for the solution of social, economic and environmental problems.

GEOLOGICAL EXTINCTION EVENTS AND RUNAWAY CLIMATE CHANGE

The melting of Arctic sea ice is taking place far more rapidly than was predicted by IPCC reports. David Wasdell, Director of the Apollo-Gaia Project, points out that the observed melting has been so rapid that within less than five years, the Arctic will be free of sea ice at the end of each summer. It will, of course continue to refreeze during the winters, but the thickness and extent of the winter ice will diminish.¹³

It has also been observed that both the Greenland ice cap and the Antarctic ice shelves are melting much more rapidly than was predicted by the IPCC. Complete melting of both the Greenland ice cap and the Antarctic sea ice would raise ocean levels by 14 meters. It is hard to predict how fast this will take place, but certainly within 1-3 centuries.

Most worrying, however, is the threat that without an all-out effort by both developed and developing nations to immediately curb the release of greenhouse gases, climate change will reach a tipping point where feed-back loops will have taken over, and where it will then be beyond the power of human action to prevent exponentially accelerating warming.

By far the most dangerous of these feedback loops involves methane hydrates or clathrates. When organic matter is carried into the oceans by rivers, it decays to form methane. The methane then combines with water to form

¹³<https://www.youtube.com/watch?v=MVwmi7HCmSI>
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hydrate crystals, which are stable at the temperatures and pressures which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface. Methane is a greenhouse gas which is 70 times as potent as CO_2 .

The worrying thing about the methane hydrate deposits on ocean floors is the enormous amount of carbon involved: roughly 10,000 gigatons. To put this huge amount into perspective, we can remember that the total amount of carbon in world CO_2 emissions since 1751 has only been 337 gigatons.

A runaway, exponentially increasing, feedback loop involving methane hydrates could lead to one of the great geological extinction events that have periodically wiped out most of the animals and plants then living. This must be avoided at all costs.

The worst consequences of runaway climate change will not occur within our own lifetimes. However, we have a duty to all future human generations, and to the plants and animals with which we share our existence, to give them a future world in which they can survive.

PREVENTING A HUMAN-INITIATED 6TH GEOLOGICAL EXTINCTION EVENT

Geologists studying the strata of rocks have observed 5 major extinction events. These are moments in geological time when most of the organisms then living suddenly became extinct. The largest of these was the Permian-Triassic extinction event, which occurred 252 million years ago. In this event, 96 percent of all marine species were wiped out, as well as 70 percent of all terrestrial vertebrates.

In 2012, the World Bank issued a report warning that without quick action to curb CO₂ emissions, global warming is likely to reach 4 degrees C during the 21st century. This is dangerously close to the temperature which initiated the Permian-Triassic extinction event: 6 degrees C above normal.¹⁴

The Permian-Triassic thermal maximum seems to have been triggered by global warming and CO₂ release from massive volcanic eruptions in a region of northern Russia known as the Siberian Traps. The amount of greenhouse gases produced by these eruptions is comparable to the amount emitted by human activities today.¹⁵

¹⁴<http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>

¹⁵<https://www.youtube.com/watch?v=sRGVTK-AAvw>
<https://www.youtube.com/watch?v=MVwmi7HCmSI>
<https://www.youtube.com/watch?v=AjZaFjXfLec>
<https://www.youtube.com/watch?v=m6pFDu7lLV4>

Scientists believe that once the temperature passed 6 degrees C above normal, a feedback loop was initiated in which methane hydrate crystals on the ocean floors melted, releasing methane, a potent greenhouse gas. The more methane released the more methane hydrate crystals were destabilized, raising the temperature still further, releasing more methane gas, and so on in a vicious circle. This feedback loop raised the global temperature to 15 degrees C above normal, causing the Permian-Triassic mass extinction.

No reputable doctor who diagnoses cancer would keep this knowledge from the patient. The reaction of the patient may be to reject the diagnosis and get another doctor, but no matter. It is very important that the threatened person should hear the diagnosis, because, with treatment, there is hope of a cure.

Similarly, the scientific community, when aware of a grave danger to our species and the biosphere, has a duty to bring this knowledge to the attention of as broad a public as possible, even at the risk of unpopularity. The size of the threatened catastrophe is so immense as to dwarf all other considerations. All possible efforts must be made to avoid it.

Consider what may be lost if a 6th mass extinction event occurs, caused by our own actions: It is possible that a few humans may survive in mountainous regions such as the Himalayas, but this will be a population of millions rather than billions. If an event comparable to the Permian-Triassic thermal maximum occurs, the family trees of virtually all of the people, animals and plants alive today will end in nothing.

The great and complex edifice of human civilization is a treasure whose value is almost above expression; and this may be lost unless we give up many of our present enjoyments. Each living organism, each animal or plant, is product of three billion years of evolution, and a miracle of har-

mony and complexity; and most of these will perish if we persist in our folly and greed.

Let us, for once, look beyond present pleasures, and acknowledge our duty to preserve a future world in which all forms of life can survive.

OUR DUTY TO FUTURE GENERATIONS

Many traditional agricultural societies have an ethical code that requires them to preserve the fertility of the land for future generations. This recognition of a duty towards the distant future is in strong contrast to the shortsightedness of modern economists. For example, John Maynard Keynes has been quoted as saying "In the long run, we will all be dead", meaning that we need not look that far ahead. By contrast, members of traditional societies recognize that their duties extend far into the distant future, since their descendants will still be alive.

Here is an ethical principle of the Native Americans: "Treat the earth well. It was not given to you by your parents. It was loaned to you by your children." They also say: "We must protect the forests for our children, grandchildren, and children yet to be born. We must protect the forests for those who cannot speak for themselves, such as the birds, animals, fish and trees."

In his book, "The Land of the Spotted Eagle", the Lakota chief Luther Standing Bear (ca. 1834-1908) wrote: "The Lakota was a true lover of Nature. He loved the earth and all things of the earth... From Waken Tanka (the Great Spirit) there came a great unifying life force that flowered in and through all things: the flowers of the plains, blowing winds, rocks, trees, birds, animals, and was the same force that had been breathed into the first man. Thus all things were kindred and were brought together by the same Great Mystery."

In some parts of Africa, a man who plans to cut down a tree offers a prayer of apology, telling the tree why necessity has forced him to harm it. This preindustrial attitude is something from which industrialized countries could learn. In industrial societies, land “belongs” to someone, and the owner has the “right” to ruin the land or to kill the communities of creatures living on it, if this happens to give some economic advantage, in much the same way that a Roman slave-owner was thought to have the “right” to kill his slaves. Preindustrial societies have a much less rapacious and much more custodial attitude towards the land and towards its non-human inhabitants.

On April 22, 2010, the World People’s Conference on Climate Change and the Rights of Mother Earth in Cochabamba, Bolivia, adopted a Universal Declaration of the Rights of Mother Earth.¹⁶ Contrast this expression of the deep ethical convictions of the world’s people with the cynical, money-centered results of various intergovernmental conferences on climate change!

Our economic system is built on the premise that individuals act out of self-interest, and as things are today, they do so with a vengeance. There is no place in the system for thoughts about the environment and the long-term future. All that matters is the bottom line. The machine moves on relentlessly, exhausting non-renewable resources, turning fertile land into deserts, driving animal species into extinction, felling the last of the world’s tropical rainforests, pumping greenhouse gasses into the atmosphere, and sponsoring TV programs that deny the reality of climate change, or other programs that extol the concept of never-ending industrial growth. But the economists, bankers, bribed politicians and corporation chiefs who destroy the earth today, are

¹⁶<http://therightsofnature.org/universal-declaration/>

destroying the future for their own children, grandchildren and great-grandchildren. Does it make sense for them to saw off the branch on which they, like all of us, are sitting?

Recently an extremely grave danger to the long-term future of human civilization and the biosphere has become clear. The latest observations show that Arctic sea ice is melting far faster than was predicted by the IPCC. It now seems likely that the September Arctic sea ice will vanish by as early as 2016 or 2017. It will, of course, refreeze in the winters, but its average total mass will continue to rapidly decrease.

The rapid and non-linear vanishing of Arctic sea ice is due to a feedback loop involving albedo, i.e the high reflectivity of white ice compared with dark sea water which absorbs most of the radiation that falls onto it. As Arctic sea ice disappears more radiation is absorbed, the Arctic temperature rises still further, still more ice melts, and so on in a vicious circle.

At present Arctic temperatures are roughly 4 degrees C higher than preindustrial levels, and this has led to increasingly rapid melting of the Greenland ice cap. It is now observed that during the summers, lakes of melted water form on the surface of Greenland's inland ice. These lakes feed rivers that run for some distance along the surface of the ice cap, but which ultimately fall through fissures to the bottom of the sheet, where they lubricate its flow. Through this mechanism, the Greenland ice cap is flowing more quickly and calving into massive icebergs much more rapidly than climate scientists expected.

Complete melting of the Greenland ice cap would raise ocean levels by 7 meters. Antarctic sea ice is also breaking up much more rapidly than expected. When it is totally gone, the disappearance of Antarctic sea ice would add another 7

meters to ocean levels, making a total of 14 meters. It is hard to predict how soon this will happen, but certainly within 1-3 centuries.

However, by far the most worrying threat to our long-term future comes from the danger of an out-of-control and exponentially accelerating feedback loop involving methane hydrates. When rivers carry organic matter into the ocean, it decays, forming methane, a powerful greenhouse gas. At the temperatures and pressures currently prevailing on ocean floors, the methane combines with water molecules to form stable crystals called methane hydrates. The amount of carbon stored in methane hydrates is immense: roughly 10,000 gigatons. By comparison, the amount of carbon emitted by human activities since preindustrial times is only 337 gigatons.

Geologists have observed that life on earth has experienced 5 major extinction events, the largest of which was the Permian-Triassic event, when 96 percent of all marine species and 70 percent of all terrestrial vertebrates disappeared from the fossil record. Predictions based on current CO₂ emission rates predict that early in the 22nd century, global temperature increases will have reached 6 degrees C, the temperature that is thought to have initiated the Permian-Triassic extinction event. These dangers are eloquently discussed in a short, important and clear video prepared by Thom Hartmann and his coworkers. It is available on www.lasthours.org

Must there be a human-initiated 6th geological extinction event? Is it inevitable that the long-term future will witness the disappearance of human civilization and most of the plants and animals that are alive today? No! Absolutely not! It is only inevitable if we persist in our greed and folly. It is only inevitable if we continue to value money more than nature. It is only inevitable if we are afraid to question

the authority of corrupt politicians. It is only inevitable if we fail to cooperate globally, and if we fail to develop a new economic system with both a social conscience and an ecological conscience.

We are living today in a time of acute crisis. We need to act with a sense of urgency never before experienced. We need to have great courage to meet an unprecedented challenge. We need to fulfil our duty to future generations

THE ILLEGALITY OF NATO

Violation of the UN Charter and the Nuremberg Principles

In recent years, participation in NATO has made European countries accomplices in US efforts to achieve global hegemony by means of military force, in violation of international law, and especially in violation of the UN Charter, the Nuremberg Principles.

Former UN Assistant Secretary General Hans Christof von Sponeck used the following words to express his opinion that NATO now violates the UN Charter and international law: "In the 1949 North Atlantic Treaty, the Charter of the United Nations was declared to be NATO's legally binding framework. However, the United-Nations monopoly of the use of force, especially as specified in Article 51 of the Charter, was no longer accepted according to the 1999 NATO doctrine. NATO's territorial scope, until then limited to the Euro-Atlantic region, was expanded by its members to include the whole world"

Article 2 of the UN Charter requires that "All members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state." This requirement is somewhat qualified by Article 51, which says that "Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security."

Thus, in general, war is illegal under the UN Charter. Self-defense against an armed attack is permitted, but only

for a limited time, until the Security Council has had time to act. The United Nations Charter does not permit the threat or use of force in preemptive wars, or to produce regime changes, or for so-called “democratization”, or for the domination of regions that are rich in oil. NATO must not be a party to the threat or use of force for such illegal purposes.

In 1946, the United Nations General Assembly unanimously affirmed “the principles of international law recognized by the Charter of the Nuremberg Tribunal and the judgment of the Tribunal”. The General Assembly also established an International Law Commission to formalize the Nuremberg Principles. The result was a list that included Principles VI and VII, which are particularly important in the context of the illegality of NATO:

Principle VI: The crimes hereinafter set out are punishable as crimes under international law: a Crimes against peace: (I) Planning, preparation, initiation or waging of a war of aggression or a war in violation of international treaties, agreements or assurances; (ii) Participation in a common plan or conspiracy for accomplishment of any of the acts mentioned under (I).

b War crimes: Violations of the laws and customs of war which include, but are not limited to, murder, ill treatment of prisoners of war or persons on the seas, killing of hostages, plunder of public or private property, wanton destructions of cities, towns or villages, or devastation not justified by military necessity

c. Crimes against humanity: Atrocities and offenses, including but not limited to murder, extermination, deportation, imprisonment, torture, rape or other inhumane acts committed against any civilian population, or persecutions on political, racial or religious grounds, whether or not in violation of the laws of the country where perpetrated

Principle VII: Complicity in the commission of a crime against the peace, a war crime or a crime against humanity as set forth in Principle VI as a crime against international law.

Robert H. Jackson, who was the chief United States prosecutor at the Nuremberg trials, said that “To initiate a war of aggression is therefore not only an international crime, it is the supreme international crime, differing from other war crimes in that it contains within itself the accumulated evil of the whole.”

Violation of the Nuclear Nonproliferation Treaty

At present, NATO’s nuclear weapons policies violate both the spirit and the text of the Nuclear Nonproliferation Treaty in several respects: Today there are an estimated 200 US nuclear weapons still in Europe. The air forces of the nations in which they are based are regularly trained to deliver the US weapons. This nuclear sharing, as it is called, violates Articles I and II of the NPT, which forbid the transfer of nuclear weapons to non-nuclear-weapon states. It has been argued that the NPT would no longer be in force if a crisis arose, but there is nothing in the NPT saying that the treaty would not hold under all circumstances.

Article VI of the NPT requires states possessing nuclear weapon to get rid of them within a reasonable period of time. This article is violated by fact that NATO policy is guided by a Strategic Concept, which visualizes the continued use of nuclear weapons in the foreseeable future.

The principle of no-first-use of nuclear weapons has been

an extremely important safeguard over the years, but it is violated by present NATO policy, which permits the first-use of nuclear weapons in a wide variety of circumstances.

Must Europe really be dragged into a potentially catastrophic war with Russia?

At present the United States government is trying to force the European members of NATO to participate in aggressive operations in connection with the coup which it carried out in Ukraine. Europe must refuse¹⁷

The hubris, and reckless irresponsibility of the US government in risking a catastrophic war with Russia is almost beyond belief, but the intervention in Ukraine is only one in a long series of US interventions:

During the period from 1945 to the present, the US interfered, militarily or covertly, in the internal affairs of a large number of nations: China, 1945-49; Italy, 1947-48; Greece, 1947-49; Philippines, 1946-53; South Korea, 1945-53; Albania, 1949-53; Germany, 1950s; Iran, 1953; Guatemala, 1953-1990s; Middle East, 1956-58; Indonesia, 1957-58; British Guiana, 1953-64; Vietnam, 1950-73; Cambodia, 1955-73; The Congo/Zaire, 1960-65; Brazil, 1961-64; Dominican Republic, 1963-66; Cuba, 1959-present; Indonesia, 1965; Chile, 1964-73; Greece, 1964-74; East Timor, 1975-present; Nicaragua, 1978-89; Grenada, 1979-84; Libya, 1981-89; Panama, 1989; Iraq, 1990-present; Afghanistan 1979-92; El Salvador, 1980-92; Haiti, 1987-94; Yugoslavia, 1999; and Afghanistan, 2001-present, Syria, 2013-present. Egypt, 2013-present.

Most of these interventions were explained to the American people as being necessary to combat communism (or

¹⁷<https://www.transcend.org/tms/2014/04/natos-aggression-against-russia-and-the-danger-of-war-in-europe/>

more recently, terrorism), but an underlying motive was undoubtedly the desire of the ruling oligarchy to put in place governments and laws that would be favorable to the economic interests of the US and its allies. Also, the military-industrial complex needs justification for the incredibly bloated military budgets that drain desperately needed resources from social and environmental projects.

Do the people of Europe really want to participate in the madness of aggression against Russia? Of course not! What about European leaders? Why don't they follow the will of the people and free Europe from bondage to the United States? Have our leaders been bribed? Or have they been blackmailed through personal secrets, discovered by the long arm of NSA spying?

THE URGENT NEED FOR RENEWABLE ENERGY

The transition to 100% renewable energy must take place within about a century because fossil fuels will become too rare and expensive to burn. But scientists warn that if the transition does not happen much faster than that, there is a danger that we may reach a tipping point beyond which feedback loops could take over and produce a catastrophic increase in global temperature.

Geological extinction events and runaway climate change

The melting of Arctic sea ice is taking place far more rapidly than was predicted by IPCC reports. David Wasdell, Director of the Apollo-Gaia Project, points out that the observed melting has been so rapid that within less than five years, the Arctic will be free of sea ice at the end of each summer. It will, of course continue to refreeze during the winters, but the thickness and extent of the winter ice will diminish.

It has also been observed that both the Greenland ice cap and the Antarctic ice shelves are melting much more rapidly than was predicted by the IPCC. Complete melting of both the Greenland ice cap and the Antarctic sea ice would raise ocean levels by 14 meters. It is hard to predict how fast this will take place, but certainly within 1-3 centuries.

Most worrying, however, is the threat that without an all-out effort by both developed and developing nations to immediately curb the release of greenhouse gases, climate change will reach a tipping point where feed-back loops will have taken over, and where it will then be beyond the power

of human action to prevent exponentially accelerating warming.

By far the most dangerous of these feedback loops involves methane hydrates or clathrates. When organic matter is carried into the oceans by rivers, it decays to form methane. The methane then combines with water to form hydrate crystals, which are stable at the temperatures and pressures which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface. Methane is a greenhouse gas which is much more potent than CO_2 .

The worrying thing about the methane hydrate deposits on ocean floors is the enormous amount of carbon involved: roughly 10,000 gigatons. To put this huge amount into perspective, we can remember that the total amount of carbon in world CO_2 emissions since 1751 has only been 337 gigatons.

A runaway, exponentially increasing, feedback loop involving methane hydrates could lead to one of the great geological extinction events that have periodically wiped out most of the animals and plants then living. This must be avoided at all costs.¹⁸

The worst consequences of runaway climate change will not occur within our own lifetimes. However, we have a duty to all future human generations, and to the plants and animals with which we share our existence, to give them a future world in which they can survive.

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Preventing a human-initiated 6th geological extinction event

Geologists studying the strata of rocks have observed 5 major extinction events. These are moments in geological time when most of the organisms then living suddenly became extinct. The largest of these was the Permian-Triassic extinction event, which occurred 252 million years ago. In this event, 96 percent of all marine species were wiped out, as well as 70 percent of all terrestrial vertebrates.

In 2012, the World Bank issued a report warning that without quick action to curb CO₂ emissions, global warming is likely to reach 4 degrees C during the 21st century. This is dangerously close to the temperature which initiated the Permian-Triassic extinction event: 6 degrees C above normal.¹⁹

The Permian-Triassic thermal maximum seems to have been triggered by global warming and CO₂ release from massive volcanic eruptions in a region of northern Russia known as the Siberian Traps. The amount of greenhouse gases produced by these eruptions is comparable to the amount emitted by human activities today.

Scientists believe that once the temperature passed 6 degrees C above normal, a feedback loop was initiated in which methane hydrate crystals on the ocean floors melted, releasing methane, a potent greenhouse gas. The more methane released the more methane hydrate crystals were destabilized, raising the temperature still further, releasing more methane gas, and so on in a vicious circle. This feedback loop raised the global temperature to 15 degrees C above

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normal, causing the Permian-Triassic mass extinction.²⁰

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Consider what may be lost if a 6th mass extinction event occurs, caused by our own actions: It is possible that a few humans may survive in mountainous regions such as the Himalayas, but this will be a population of millions rather than billions. If an event comparable to the Permian-Triassic thermal maximum occurs, the family trees of virtually all of the people, animals and plants alive today will end in nothing.

The great and complex edifice of human civilization is a treasure whose value is almost above expression; and this may be lost unless we give up many of our present enjoyments. Each living organism, each animal or plant, is product of three billion years of evolution, and a miracle of harmony and complexity; and most of these will perish if we persist in our folly and greed.

Let us, for once, look beyond present pleasures, and acknowledge our duty to preserve a future world in which all forms of life can survive.

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<https://www.youtube.com/watch?v=m6pFDu7lLV4>

Is a shift to 100% renewable energy possible?

One answer to the question of whether a shift to 100 percent renewable energy is possible is that it has to happen during this century because fossil fuels are running out. Within a century or so they will be gone in the sense that they will be much too expensive to be burned. Therefore a shift to 100 % renewable energy has to happen within about a hundred years. The vitally important point is that if the shift does not happen quickly, if we do not leave most of our fossil fuels in the ground instead of burning them, we risk a climatic disaster of enormous proportions, perhaps comparable to the Permian-Triassic thermal maximum, during which 70% of terrestrial vertebrates and 93% of marine species became extinct. Thus the shift must happen, and will happen. But we must work with dedication, and a sense of urgency, to make it happen soon.

What are the forms of renewable energy?

The main forms of renewable energy now in use are wind power; hydropower; solar energy; biomass; biofuel; geothermal energy; and marine energy. In addition, there are a number of new technologies under development, such as artificial photosynthesis, cellulosic ethanol, and hydrogenation of CO₂.

The average global rate of use of primary energy is roughly 2 kilowatts per person. In North America, the rate is 12 kilowatts per capita, while in Europe, the figure is 6 kilowatts. In Bangladesh, it is only 0.2 kilowatts . This wide variation implies that considerable energy savings are possible, through changes in lifestyle, and through energy efficiency.

Solar energy

Biomass, wind energy, hydropower and wave power derive their energy indirectly from the sun, but in addition, various methods are available for utilizing the power of sunlight directly. These include photovoltaic panels, solar designs in architecture, solar systems for heating water and cooking, concentrating photovoltaic systems, and solar thermal power plants.

Solar photovoltaic cells are thin coated wafers of a semi-conducting material (usually silicon). The coatings on the two sides are respectively charge donors and charge acceptors. Cells of this type are capable of trapping solar energy and converting it into direct-current electricity. The electricity generated in this way can be used directly (as it is, for example, in pocket calculators) or it can be fed into a general power grid. Alternatively it can be used to split water into hydrogen and oxygen. The gases can then be compressed and stored, or exported for later use in fuel cells. In the future, we may see solar photovoltaic arrays in sun-rich desert areas producing hydrogen as an export product.

The cost of manufacturing photovoltaic cells is currently falling at the rate of 3%-5% per year. The cost in 2006 was \$4.50 per peak Watt. Usually photovoltaic panels are warranted for a life of 20 years, but they are commonly still operational after 30 years or more. The cost of photovoltaic electricity is today 2-5 times the cost of electricity generated from fossil fuels, but photovoltaic costs are falling rapidly, while the costs of fossil fuels are rising equally rapidly.

Concentrating photovoltaic systems are able to lower costs still further by combining silicon solar cells with reflectors that concentrate the sun's rays. The most inexpensive type of concentrating reflector consists of a flat piece of aluminum-



Figure 22: *Limanskaya Solar Power Station in the southwestern region of Ukraine.* [CC BY-SA 3.0], *Wikimedia Commons*

covered plastic material bent into a curved shape along one of its dimensions, forming a trough-shaped surface. (Something like this shape results when we hold a piece of paper at the top and bottom with our two hands, allowing the center to sag.) The axis of the reflector can be oriented so that it points towards the North Star. A photovoltaic array placed along the focal line will then receive concentrated sunlight throughout the day.

Photovoltaic efficiency is defined as the ratio of the electrical power produced by a cell to the solar power striking its surface. For commercially available cells today, this ratio is between 9% and 14%. If we assume 5 hours of bright sunlight per day, this means that a photocell in a desert area near to the equator (where 1 kW/m^2 of peak solar power reaches the earth's surface) can produce electrical energy at the average rate of $20\text{--}30 \text{ W}_e/\text{m}^2$, the average being taken over an entire day and night. (The subscript e means “in the form of electricity”. Energy in the form of heat is denoted by the

subscript t , meaning “thermal”.) Thus the potential power per unit area for photovoltaic systems is far greater than for biomass. However, the mix of renewable energy sources most suitable for a particular country depends on many factors.

Wind energy

Wind parks in favorable locations, using modern wind turbines, are able to generate $10 \text{ MW}_e/\text{km}^2$ or $10 \text{ W}_e/\text{m}^2$. Often wind farms are placed in offshore locations. When they are on land, the area between the turbines can be utilized for other purposes, for example for pasturage. For a country like Denmark, with good wind potential but cloudy skies, wind turbines can be expected to play a more important future role than photovoltaics. Denmark is already a world leader both in manufacturing and in using wind turbines. The use of wind power is currently growing at the rate of 38% per year. In the United States, it is the fastest-growing form of electricity generation.

The location of wind parks is important, since the energy obtainable from wind is proportional to the cube of the wind velocity. We can understand this cubic relationship by remembering that the kinetic energy of a moving object is proportional to the square of its velocity multiplied by the mass. Since the mass of air moving past a wind turbine is proportional to the wind velocity, the result is the cubic relationship just mentioned.

Before the decision is made to locate a wind park in a particular place, the wind velocity is usually carefully measured and recorded over an entire year. For locations on land, mountain passes are often very favorable locations, since wind velocities increase with altitude, and since the wind is concentrated in the passes by the mountain barrier.

Other favorable locations include shorelines and offshore locations on sand bars. This is because onshore winds result when warm air rising from land heated by the sun is replaced by cool marine air. Depending on the season, the situation may be reversed at night, and an offshore wind may be produced if the water is warmer than the land.

The cost of wind-generated electrical power is currently lower than the cost of electricity generated by burning fossil fuels. The “energy payback ratio” of a power installation is defined as the ratio of the energy produced by the installation over its lifetime, divided by the energy required to manufacture, construct, operate and decommission the installation. For wind turbines, this ratio is 17-39, compared with 11 for coal-burning plants. The construction energy of a wind turbine is usually paid back within three months.

Biomass

Biomass is defined as any energy source based on biological materials produced by photosynthesis - for example wood, sugar beets, rapeseed oil, crop wastes, dung, urban organic wastes, processed sewage, etc. Using biomass for energy does not result in the net emission of CO_2 , since the CO_2 released by burning the material had previously been absorbed from the atmosphere during photosynthesis. If the biological material had decayed instead of being burned, it would have released the same amount of CO_2 as in the burning process.

Miscanthus is a grassy plant found in Asia and Africa. Some forms will also grow in Northern Europe, and it is being considered as an energy crop in the United Kingdom. *Miscanthus* can produce up to 18 dry tonnes per hectare-year, and it has the great advantage that it can be cultivated using ordinary farm machinery. The woody stems are very

suitable for burning, since their water content is low (20-30%).

Jatropha is a fast-growing woody shrub about 4 feet in height, whose seeds can be used to produce diesel oil at the cost of about \$43 per barrel. The advantage of *Jatropha* is that it is a hardy plant, requiring very little fertilizer and water. It has a life of roughly 50 years, and can grow on wasteland that is unsuitable for other crops. The Indian State Railway has planted 7.5 million *Jatropha* shrubs beside its right of way. The oil harvested from these plants is used to fuel the trains.

For some southerly countries, honge oil, derived from the plant *Pongamia pinnata* may prove to be a promising source of biomass energy. Studies conducted by Dr. Udishi Shrinivasa at the Indian Institute of Sciences in Bangalore indicate that honge oil can be produced at the cost of \$150 per ton. This price is quite competitive when compared with other potential fuel oils.

Recent studies have also focused on a species of algae that has an oil content of up to 50%. Algae can be grown in desert areas, where cloud cover is minimal. Farm waste and excess CO₂ from factories can be used to speed the growth of the algae.

It is possible that in the future, scientists will be able to create new species of algae that use the sun's energy to generate hydrogen gas. If this proves to be possible, the hydrogen gas may then be used to generate electricity in fuel cells, as will be discussed below in the section on hydrogen technology. Promising research along this line is already in progress at the University of California, Berkeley.

Biogas is defined as the mixture of gases produced by the anaerobic digestion of organic matter. This gas, which is rich in methane (CH₄), is produced in swamps and landfills, and

in the treatment of organic wastes from farms and cities. The use of biogas as a fuel is important not only because it is a valuable energy source, but also because methane is a potent greenhouse gas, which should not be allowed to reach the atmosphere. Biogas produced from farm wastes can be used locally on the farm, for cooking and heating, etc. When biogas has been sufficiently cleaned so that it can be distributed in a pipeline, it is known as “renewable natural gas”. It may then be distributed in the natural gas grid, or it can be compressed and used in internal combustion engines. Renewable natural gas can also be used in fuel cells, as will be discussed below in the section on Hydrogen Technology.

Biofuels are often classified according to their generation. Those that can be used alternatively as food are called first-generation biofuels. By contrast, biofuels of the second generation are those that make use of crop residues or other cellulose-rich materials. Cellulose molecules are long chains of sugars, and by breaking the inter-sugar bonds in the chain using enzymes or other methods, the sugars can be freed for use in fermentation. In this way lignocellulosic ethanol is produced. The oil-producing and hydrogen-producing algae mentioned above are examples of third-generation biofuels. We should notice that growing biofuels locally (even first-generation ones) may be of great benefit to smallholders in developing countries, since they can achieve local energy self-reliance in this way.

Geothermal energy

The ultimate source of geothermal energy is the decay of radioactive nuclei in the interior of the earth. Because of the heat produced by this radioactive decay, the temperature of the earth’s core is 4300 degrees C. The inner core is com-

posed of solid iron, while the outer core consists of molten iron and sulfur compounds. Above the core is the mantle, which consists of a viscous liquid containing compounds of magnesium, iron, aluminum, silicon and oxygen. The temperature of the mantle gradually decreases from 3700 degrees C near the core to 1000 degrees C near the crust. The crust of the earth consists of relatively light solid rocks and it varies in thickness from 5 to 70 km.

The outward flow of heat from radioactive decay produces convection currents in the interior of the earth. These convection currents, interacting with the earth's rotation, produce patterns of flow similar to the trade winds of the atmosphere. One result of the currents of molten conducting material in the interior of the earth is the earth's magnetic field. The crust is divided into large sections called "tectonic plates", and the currents of molten material in the interior of the earth also drag the plates into collision with each other. At the boundaries, where the plates collide or split apart, volcanic activity occurs. Volcanic regions near the tectonic plate boundaries are the best sites for collection of geothermal energy.

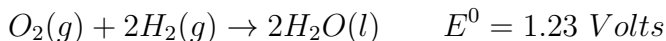
The entire Pacific Ocean is ringed by regions of volcanic and earthquake activity, the so-called Ring of Fire. This ring extends from Tierra del Fuego at the southernmost tip of South America, northward along the western coasts of both South America and North America to Alaska. The ring then crosses the Pacific at the line formed by the Aleutian Islands, and it reaches the Kamchatka Peninsula in Russia. From there it extends southward along the Kuril Island chain and across Japan to the Philippine Islands, Indonesia and New Zealand. Many of the islands of the Pacific are volcanic in nature. Another important region of volcanic activity extends northward along the Rift Valley of Africa to Turkey,

Greece and Italy. In the Central Atlantic region, two tectonic plates are splitting apart, thus producing the volcanic activity of Iceland. All of these regions are very favorable for the collection of geothermal power.

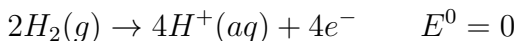
Hydrogen fuel cells

Electrolysis of water to produce hydrogen gas has been proposed as a method for energy storage in a future renewable energy system. For example, it might be used to store energy generated by photovoltaics in desert areas of the world. Compressed hydrogen gas could then be transported to other regions and used in fuel cells. Electrolysis of water and storage of hydrogen could also be used to solve the problem of intermittency associated with wind energy or solar energy.

Fuel cells allow us to convert the energy of chemical reactions directly into electrical power. In hydrogen fuel cells, for example, the exact reverse of the electrolysis of water takes place. Hydrogen reacts with oxygen, and produces electricity and water, the reaction being

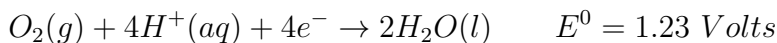


The arrangement of the a hydrogen fuel cell is such that the hydrogen cannot react directly with the oxygen, releasing heat. Instead, two half reactions take place, one at each electrode, as was just mentioned in connection with the electrolysis of water. In a hydrogen fuel cell, hydrogen gas produces electrons and hydrogen H^+ ions at one of the electrodes.



The electrons flow through the external circuit to the oxygen electrode, while the hydrogen ions complete the circuit

by flowing through the interior of the cell (from which the hydrogen and oxygen molecules are excluded by semipermeable membranes) to the oxygen electrode. Here the electrons react with oxygen molecules and H^+ ions to form water.



In this process, a large part of the chemical energy of the reaction becomes available as electrical power.

The theoretical maximum efficiency of a heat engine operating between a cold reservoir at temperature T_C and a hot reservoir at T_H is $1 - T_C/T_H$, where the temperatures are expressed on the Kelvin scale. Since fuel cells are not heat engines, their theoretical maximum efficiency is not limited in this way. Thus it can be much more efficient to generate electricity by reacting hydrogen and oxygen in a fuel cell than it would be to burn the hydrogen in a heat engine and then use the power of the engine to drive a generator.

Hydrogen technologies are still at an experimental stage. Furthermore, they do not offer us a source of renewable energy, but only means for storage, transportation and utilization of energy derived from other sources. Nevertheless, it seems likely that hydrogen technologies will have great importance in the future.

Economic and political considerations

In our present situation, a rapid shift to renewable energy could present the world with many benefits. Ecological constraints and depletion of natural resources mean that industrial growth will very soon no longer be possible. Thus we will be threatened with economic recession and unemployment. A rapid shift to renewable energy could provide the

needed jobs to replace lost jobs in (for example) automobile production. Renewable energy is becoming competitive with fossil fuels, and thus it represents a huge investment opportunity.

On the other hand, fossil fuel companies have a vested interest in monetizing the assets that they own, as Thom Hartmann points out in the video mentioned at the start of this essay. Institute Professor Noam Chomsky of MIT also explains this difficulty very well.²¹

These considerations point to a fight that will have to be fought by the people of the world who are concerned about the long-term future of human civilization and the biosphere, against the vested interests of our oligarchic rulers. This fight will require wide public discussion of the dangers of runaway climate change. But at present, our corporate-controlled mass media refuse to touch the subject.

Our duty to future generations

Many traditional agricultural societies have an ethical code that requires them to preserve the fertility of the land for future generations. This recognition of a duty towards the distant future is in strong contrast to the shortsightedness of modern economists. For example, John Maynard Keynes has been quoted as saying “In the long run, we will all be dead”, meaning that we need not look that far ahead. By contrast, members of traditional societies recognize that their duties extend far into the distant future, since their descendants will still be alive.

Here is an ethical principle of the Native Americans: “Treat the earth well. It was not given to you by your parents. It was loaned to you by your children.” They also say:

²¹<http://www.youtube.com/watch?v=NCAsxphZoxE>

“We must protect the forests for our children, grandchildren, and children yet to be born. We must protect the forests for those who cannot speak for themselves, such as the birds, animals, fish and trees.”

In some parts of Africa, a man who plans to cut down a tree offers a prayer of apology, telling the tree why necessity has forced him to harm it. This preindustrial attitude is something from which industrialized countries could learn. In industrial societies, land “belongs” to someone, and the owner has the “right” to ruin the land or to kill the communities of creatures living on it, if this happens to give some economic advantage, in much the same way that a Roman slave-owner was thought to have the “right” to kill his slaves. Preindustrial societies have a much less rapacious and much more custodial attitude towards the land and towards its non-human inhabitants.

On April 22, 2010, the World People’s Conference on Climate Change and the Rights of Mother Earth in Cochabamba, Bolivia, adopted a Universal Declaration of the Rights of Mother Earth.²² Contrast this expression of the deep ethical convictions of the world’s people with the cynical, money-centered results of various intergovernmental conferences on climate change!

Our economic system is built on the premise that individuals act out of self-interest, and as things are today, they do so with a vengeance. There is no place in the system for thoughts about the environment and the long-term future. All that matters is the bottom line. The machine moves on relentlessly, exhausting non-renewable resources, turning fertile land into deserts, driving animal species into extinction, felling the last of the world’s tropical rainforests, pumping greenhouse gasses into the atmosphere, and spon-

²²<http://therightsofnature.org/universal-declaration/>

soring TV programs that deny the reality of climate change, or other programs that extol the concept of never-ending industrial growth. But the economists, bankers, bribed politicians and corporation chiefs who destroy the earth today, are destroying the future for their own children, grandchildren and great-grandchildren. Does it make sense for them to saw off the branch on which they, like all of us, are sitting?

Must there be a human-initiated 6th geological extinction event? Is it inevitable that the long-term future will witness the disappearance of human civilization and most of the plants and animals that are alive today? No! Absolutely not! It is only inevitable if we persist in our greed and folly. It is only inevitable if we continue to value money more than nature. It is only inevitable if we are afraid to question the authority of corrupt politicians. It is only inevitable if we fail to cooperate globally, and if we fail to develop a new economic system with both a social conscience and an ecological conscience.

We are living today in a time of acute crisis. We need to act with a sense of urgency never before experienced. We need to have great courage to meet an unprecedented challenge. We need to fulfil our duty to future generations