

# SEARCHING FOR TRUTH

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# Contents

<b>1</b>	<b>WHAT IS SCIENCE?</b>	<b>13</b>
1.1	What is science? . . . . .	13
1.2	The blindness of science . . . . .	16
1.3	Is there a conflict between science and religion? . . . . .	18
1.4	Complementarity . . . . .	25
1.5	Right hand, left hand . . . . .	25
1.6	How are science and religion related to war? . . . . .	28
<b>2</b>	<b>TRIBALISM</b>	<b>31</b>
2.1	Ethology . . . . .	31
2.2	Population genetics . . . . .	36
2.3	Hope for the future . . . . .	38
2.4	Religion and ethnic identity . . . . .	38
2.5	Tribal markings; ethnicity; pseudospeciation . . . . .	39
2.6	Searching for human nature . . . . .	43
2.7	The evolution of cooperation . . . . .	48
<b>3</b>	<b>TRIBALISM, NATIONALISM AND GENOCIDES</b>	<b>67</b>
3.1	From tribalism to nationalism . . . . .	67
3.2	Lessons from the First World War . . . . .	68
3.3	The devil's dynamo . . . . .	70
3.4	Militarism's hostages . . . . .	75
3.5	Killing civilians . . . . .	78
3.6	Some examples of genocide . . . . .	80
3.7	Nuclear warfare as genocide . . . . .	82
3.8	What is to be done? . . . . .	83
<b>4</b>	<b>THE SOCIAL RESPONSIBILITY OF SCIENTISTS</b>	<b>85</b>
4.1	Modern war would be impossible without their help . . . . .	85
4.2	The threat of nuclear war . . . . .	87
4.3	Atoms for peace? . . . . .	95
4.4	An accident waiting to happen . . . . .	100
4.5	Nuclear weapons are criminal! Every war is a crime! . . . . .	105

4.6	The task before us . . . . .	105
4.7	Organizations working for the abolition of nuclear weapons . . . . .	109
4.8	The Nuremberg Principles and individual responsibility . . . . .	112
<b>5</b>	<b>SCIENCE FICTION?</b>	<b>123</b>
5.1	Is “science fiction” self-contradictory? . . . . .	123
5.2	Mary Shelley’s <i>Frankenstein</i> . . . . .	124
5.3	Jules Verne . . . . .	127
5.4	H.G. Wells . . . . .	129
5.5	George Orwell . . . . .	131
5.6	Aldous Huxley . . . . .	137
5.7	A comparison between Orwell and Huxley . . . . .	141
5.8	How well did they predict civilization’s 21st century crisis? . . . . .	142
<b>6</b>	<b>CLIMATE CHANGE DENIAL</b>	<b>151</b>
6.1	Adam Smith’s invisible hand is at our throats . . . . .	151
6.2	Limits to growth and climate change . . . . .	156
6.3	Exponential growth . . . . .	159
6.4	The case for economic reform . . . . .	161
6.5	A human-initiated 6th geological extinction event . . . . .	163
6.6	Our duty to future generations . . . . .	165
6.7	The urgent need for renewable energy . . . . .	167
6.8	The United Nations Climate Summit . . . . .	178
6.9	Climate change means lifestyle change . . . . .	179
6.10	Will a disaster wake us up? . . . . .	181
6.11	Paris, India and coal . . . . .	182
6.12	Paris and the long-term future . . . . .	185
6.13	Climate change denial . . . . .	188
6.14	The fossil fuel industry’s denial campaign . . . . .	188
6.15	Showing unsustainable lifestyles in mass media . . . . .	191
6.16	Humanity betrayed by the mass media . . . . .	191
<b>7</b>	<b>THE MEDIA SABOTAGE PROGRESSIVE POLITICS</b>	<b>197</b>
7.1	Restoring Democracy in the United States . . . . .	197
7.2	Europe needs to be independent . . . . .	198
7.3	Secrecy and democracy are incompatable . . . . .	201
7.4	Democracy and freedom of information . . . . .	205
7.5	Racism, colonialism and exceptionalism . . . . .	206
7.6	The agony of Iraq . . . . .	207
7.7	Attacks on Iran, past and present . . . . .	212
7.8	Some contributions of Islamic culture . . . . .	214
7.9	Politeness in multi-ethnic societies . . . . .	216
7.10	The 2016 US presidential election . . . . .	217

7.11 Sabotaging Jeremy Corbyn . . . . .	228
<b>8 THE MASS MEDIA HAVE BETRAYED US</b>	<b>233</b>
8.1 The media are part of our educational system . . . . .	233
8.2 Humanity betrayed by the mass media . . . . .	238
8.3 The propaganda model of the mass media . . . . .	240
8.4 Institutional and cultural inertia . . . . .	240
8.5 Are we being driven like cattle? . . . . .	247
8.6 Ted Turner: “My Beef With Big Media” . . . . .	251
8.7 Truth versus power . . . . .	252
<b>9 TRUTH-TELLERS WHO BECAME MARTYRS</b>	<b>259</b>
9.1 Gordiano Bruno . . . . .	259
9.2 Galileo Galilei . . . . .	261
9.3 Mordechi Vanuno . . . . .	270
9.4 Edward Snowden . . . . .	272
9.5 Julian Assange . . . . .	277
9.6 Secrecy versus democracy . . . . .	278
9.7 Protecting whistleblowers . . . . .	280
<b>10 THE ALTERNATIVE MEDIA</b>	<b>285</b>
10.1 A few outstanding voices . . . . .	285
10.2 The Eqbal Ahmed Centre For Public Education . . . . .	300
10.3 The Danish Peace Academy . . . . .	304
10.4 List of progressive media websites . . . . .	306
<b>11 REFORMED TEACHING OF HISTORY</b>	<b>325</b>
11.1 The need for a new global ethic . . . . .	328
11.2 Some peace education initiatives in Denmark . . . . .	329
11.3 Culture, education and human solidarity . . . . .	337
11.4 History from the perspective of ordinary people . . . . .	341
<b>12 NON-VIOLENT RESISTANCE</b>	<b>355</b>
12.1 From tribalism to universal brotherhood . . . . .	355
12.2 Tolstoy . . . . .	357
12.3 Gandhi . . . . .	361
12.4 Martin Luther King, Jr. . . . .	366
12.5 The court of world public opinion . . . . .	368
12.6 Non-Violence . . . . .	369
12.7 We can unilaterally stop being nasty . . . . .	374
12.8 The fragility of our complex civilization . . . . .	375

<b>A</b>	<b>9/11: WHAT IS THE TRUTH?</b>	<b>379</b>
A.1	Is it a question of truth, or of identity? . . . . .	379
A.2	<i>Beyond Misinformation</i> . . . . .	385
A.3	<i>9/11 Unmasked</i> . . . . .	386
A.4	The arrogance of power . . . . .	388
A.5	Terrorism: a pseudothreat . . . . .	389
<b>B</b>	<b>THE STRUGGLE FOR INTERNET NUTRALITY</b>	<b>393</b>
<b>C</b>	<b>HAROLD PINTER'S NOBEL LECTURE</b>	<b>399</b>
<b>D</b>	<b>UNDERSTATEMENT OF EXISTENTIAL CLIMATE RISK</b>	<b>409</b>
D.1	Introduction . . . . .	409
D.2	Existential Risk to Human Civilization . . . . .	412
<b>E</b>	<b>NOAM CHOMSKY'S LECTURE</b>	<b>415</b>

## Introduction

This book is about our search for truth. How can we distinguish truth from falsehood in a world where government-controlled and corporation-controlled mass media use distractions, omissions, lies and propaganda to manipulate us?

### The superficiality of today's television

Social critic Neil Postman contrasted the futures predicted in Nineteen Eighty-Four and Brave New World in the foreword of his 1985 book "Amusing Ourselves to Death". He wrote:

"What Orwell feared were those who would ban books. What Huxley feared was that there would be no reason to ban a book, for there would be no one who wanted to read one. Orwell feared those who would deprive us of information. Huxley feared those who would give us so much that we would be reduced to passivity and egotism. Orwell feared that the truth would be concealed from us. Huxley feared the truth would be drowned in a sea of irrelevance. Orwell feared we would become a captive culture. Huxley feared we would become a trivial culture, preoccupied with some equivalent of the feelies, the orgy porgy, and the centrifugal bumblepuppy. As Huxley remarked in Brave New World Revisited, the civil libertarians and rationalists who are ever on the alert to oppose tyranny 'failed to take into account man's almost infinite appetite for distractions.' In 1984, Huxley added, people are controlled by inflicting pain. In Brave New World, they are controlled by inflicting pleasure. In short, Orwell feared that our fear will ruin us. Huxley feared that our desire will ruin us.

Niel Postman's book, "Amusing Ourselves To Death; or Public Discourse in an Age of Show Business" (1985), had its origins at the Frankfurt Book Fair, where Postman was invited to join a panel discussing George Orwell's "Nineteen Eighty-Four". Postman said that our present situation was better predicted by Huxley's "Brave New World". Today, he maintained it is not fear that bars us from truth. Instead, truth is drowned in distractions and the pursuit of pleasure, by the public's addiction to amusement.

Postman sees television as the modern equivalent of Huxley's pleasure-inducing drug, soma, and he maintains that that television, as a medium, is intrinsically superficial and unable to discuss serious issues. Looking at television as it is today, one must agree with him.

## **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.

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

### **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. 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.

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 mass 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 sit-coms 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 100 or so 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 war 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.

## Our duty to future generations

The future of human civilization is endangered both by the threat of thermonuclear war and by the threat of catastrophic climate change. It is not only humans that are threatened, but also the other organisms with which we share the gift of life. We must also consider the threat of a global famine of extremely large proportions, when the end of the fossil fuel era, combined with the effects of climate change, reduce our ability to support a growing population.

We live at a critical moment of history. Our duty to future generations is clear: We must achieve a steady-state economic system. We must restore democracy in our own countries when it has been replaced by oligarchy. We must decrease economic inequality both between nations and within nations. We must break the power of corporate greed. We must leave fossil fuels in the ground. We must stabilize and ultimately reduce the global population. We must eliminate the institution of war; and we must develop new ethics to match our advanced technology, ethics in which narrow selfishness, short-sightedness and nationalism will be replaced by loyalty to humanity as a whole, combined with respect for nature.

We give our children loving care, but it makes no sense do so and at the same time to neglect to do all that is within our power to ensure that they and their descendants will inherit an earth in which they can survive. We also have a responsibility to all the other living organisms with which we share the gift of life.

Inaction is not an option. We have to act with courage and dedication, even if the odds are against success, because the stakes are so high.

The mass media could mobilize us to action, but they have failed in their duty.

Our educational system could also wake us up and make us act, but it too has failed us. The battle to save the earth from human greed and folly has to be fought in the alternative media.

The alternative media, and all who work with them deserve both our gratitude and our financial support. They alone, can correct the distorted and incomplete picture of the world that we obtain from the mass media. They alone can show us the path to a future in which our children, grandchildren, and all future generations can survive.

## **Re-use of previous publications**

This book makes use of articles that I have previously written on our search for truth, but most of the material is new.

# Chapter 1

## WHAT IS SCIENCE?

### 1.1 What is science?

In his autobiography, Charles Darwin says that “science consists in arranging facts in such a way that general conclusions may be drawn from them”. In other words, scientists try to find patterns in our observations of nature. These patterns stand temporarily as “laws of nature”, until exceptions are found. Very often it is possible to use such patterns or laws to make accurate predictions about the future, and when this is possible, it strengthens the credibility of the pattern that was used to make the predictions. Thus the test of a law of nature is its usefulness in making predictions about the future; and scientists find it hardly worthwhile to talk about assertions from which no predictions can be made.

When exceptions to natural laws are found, they are of extreme importance, and great efforts must be made to clarify the situation: If an exception to a natural law is found to be genuine, it means that the law must be modified, and this is the way scientific progress is made; hence the extreme importance of exceptions, and the massive attention which is given to them by scientists.

We seem to live in a universe in which the behavior of matter and energy is predictable. For example, if you put a coin into a box and shut the lid, you can say with some confidence, “The coin is inside the box”, even though you cannot see the coin. From this assertion, many predictions follow: You can predict that if you shake the box, the coin will rattle. The box will be slightly heavier than before because of the presence of the coin. An X-ray photograph would reveal the coin. If you open the box again, the coin will still be there, and so on. It would be hard to live in a world where this degree of predictability did not hold.

Besides predictability, the universe in which we live seems to have another remarkable characteristic: The most general and fundamental laws of nature that have been discovered have great simplicity and mathematical beauty. Pythagoras and his followers were the first to discover that “mathematics is the language of nature”.

Pythagoras, who lived from 582 B.C. to 497 B.C., is one of the most important and interesting figures in the history of European culture. It is hard to decide whether he was

a religious leader or a scientist. He was a leader and reformer of the Orphic religion of ancient Greece, and he was the first to maintain that mathematics is the key to the understanding of nature. In the Pythagorean view of nature, mathematical harmony governs the fundamental laws of the universe. In the Pythagorean ethic, the highest vocation is that of the philosopher, and the aim of philosophy is to understand nature through the discovery of the mathematical relationships which govern the universe.

Today, much of what Pythagoras hoped to achieve in mathematics has been attained. For example, quantum theory has shown that the inner structure of an atom is governed by mathematical relationships closely analogous to those governing the harmonics of a lyre string. We have indeed found mathematical harmony in the fundamental laws of nature; but one can ask whether philosophy has brought harmony to human relations, as Pythagoras would have hoped!

As examples of the simplicity and beauty of the fundamental laws of nature, we can think of Maxwell's equations for electromagnetic fields, or Schrödinger's non-relativistic wave equation for electrons, or Dirac's relativistic wave equation. All of them require mathematical language to be properly expressed, and all have great mathematical beauty. In fact, P.A.M Dirac, whose relativistic wave equation was just mentioned, wrote a famous paper in the *Canadian Journal of Physics*, where he maintained that the beauty of fundamental physical laws can be taken as a fact of nature, and therefore we can find new laws by following our sense of mathematical beauty. Apparently this method of research worked for him!

Furthermore, all of the fundamental laws of nature that have until now been discovered, fit together in a self-consistent way. Therefore, when something new is discovered, the first reaction of the scientific community is to see how the new discovery is related to the entire existing body of knowledge. If no relationship can be found, then either the new discovery is suspect or else it is of enormous importance. In any case, no one rests until the situation is clarified.

Modern astronomy has shown the Universe to be almost unimaginably large. Wikipedia states that: "The size of the Universe is unknown; it may be infinite. The region visible from Earth (the observable universe) is a sphere with a radius of about 46 billion light years, based on where the expansion of space has taken the most distant objects observed. For comparison, the diameter of a typical galaxy is 30,000 light-years, and the typical distance between two neighboring galaxies is 3 million light-years. As an example, the Milky Way Galaxy is roughly 100,000 light years in diameter, and the nearest sister galaxy to the Milky Way, the Andromeda Galaxy, is located roughly 2.5 million light years away. There are probably more than 100 billion ( $10^{11}$ ) galaxies in the observable Universe. Typical galaxies range from dwarfs with as few as ten million ( $10^7$ ) stars up to giants with one trillion ( $10^{12}$ ) stars, all orbiting the galaxy's center of mass. A 2010 study by astronomers estimated that the observable Universe contains 300 sextillion ( $3 \times 10^{23}$ ) stars."

Among this incredibly vast number of stars it is believed that there are innumerable stars that have planets similar to the Earth and hence able to support life. We also now know that given conditions that are favorable to life, it will almost certainly develop and evolve. The Earth seems to be only of extremely minor importance on the scale

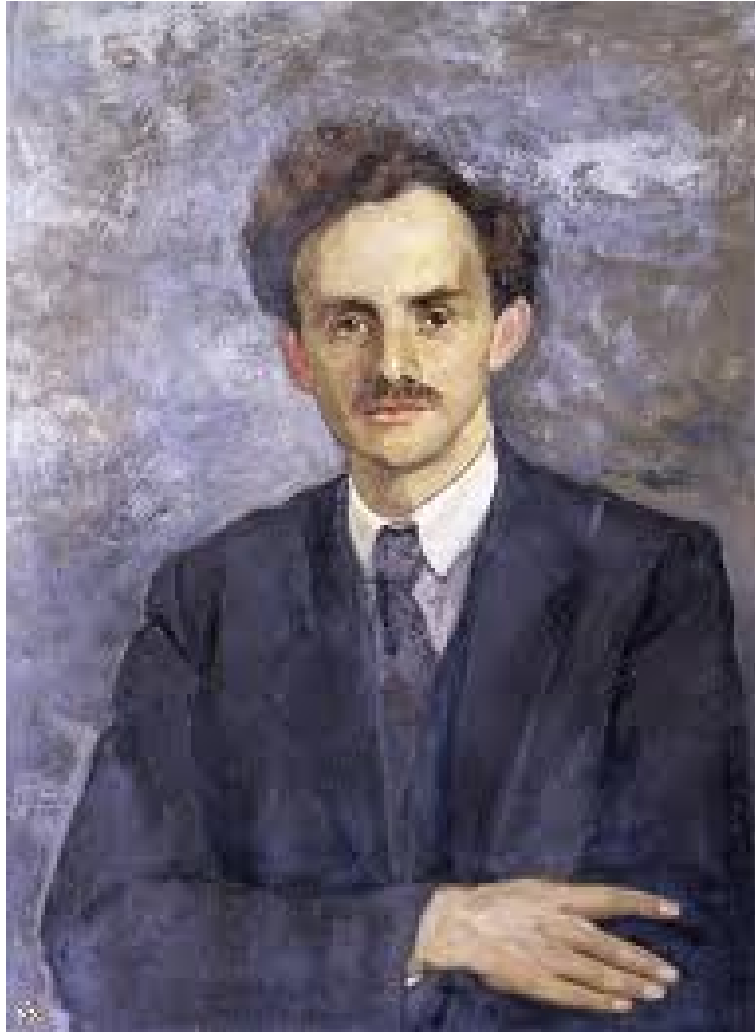


Figure 1.1: Paul Adrian Maurice Dirac (1902-1984), discoverer of the relativistic wave equation that holds for electrons and other spin- $\frac{1}{2}$  particles. He maintained that since mathematical beauty is a characteristic of the most fundamental physical laws, we can find new ones by following our sense of mathematical beauty.

of the Universe. Given these facts, and given that the fundamental laws of nature are mathematical, I find it difficult to believe that the entire Universe and the laws that govern it were arranged for the benefit of humans, especially since humans have only existed for a brief instant on the time-scale of the Universe. If asked where the Universe came from and why, the scientist must answer with honesty, "I don't know".

## 1.2 The blindness of science

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 Huxley's *Brave New World*. Fermi perhaps used his scientific preoccupations as an escape from the worrying political problems of the '30's and '40's.

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





Figure 1.2: **The blindness of science:** Enormous concentration of attention on a small fragment of reality blinds the researcher to the larger whole.

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.

### **1.3 Is there a conflict between science and religion?**

Is there a conflict between science and religion? This is a frequently-asked question, and many different answers have been given. My own opinion is that there are two aspects to religion - ethics and cosmology. I think that when we talk about cosmology, there is often a conflict between science and religion. But with respect to ethics, there is very little room for conflict because science has almost nothing to say about ethics.

Why do I say “almost nothing” instead of “nothing”? 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.

But let us turn to religious ethics. Not only do they not conflict with science, but there is also a general 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 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 it. The Prophet said: “As you would have people do to you, do to them; and what you



Figure 1.3: A painting illustrating the Parable of the Good Samaritan

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)

The principle of reciprocity is an ancient one in human history, and it is thus embedded in our emotions. It is an important part of human nature. Reciprocity is the basis of non-market economies, and also the basis of social interactions between family members, friends and colleagues. In hunter-gatherer societies, it is customary to share food among all the members of the group. "Today I receive food from you, and tomorrow you will receive food from me." Similarly, among friends in modern society, no payment is made for hospitality, but it is expected that sooner or later the hospitality will be returned.

According to Wikipedia "Reciprocity in Social Psychology refers to responding to a positive action with another positive action, rewarding kind actions. As a social construct, reciprocity means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model; conversely, in response to hostile actions they are frequently much more nasty and even brutal." As Wikipedia points out, reciprocity can also be negative, as in the case of escalatory cycles of revenge and counter-revenge.

The Buddhist concept of karma has great value in human relations. The word "karma" means simply "action". In Buddhism, one believes that actions return to the actor. Good actions will be returned, and bad actions will also be returned. This is obviously true in social relationships. If we behave with kindness and generosity to our neighbors, they will return our kindness. Conversely, a harmful act may lead to vicious circles of revenge and counter revenge, such as those we see today in the Middle East and elsewhere. These vicious circles can only be broken by returning good for evil.

However the concept of karma has a broader and more abstract validity beyond the direct return of actions to the actor. When we perform a good action, we increase the total amount of good karma in the world. If all people similarly behave well, the the world as a whole will become more pleasant and more safe. Human nature seems to have a built-in recognition of this fact, and we are rewarded by inner happiness when we perform good and kind actions. In his wonderful book, "Ancient Wisdom, Modern World", the Dalai Lama says that good actions lead to happiness and bad actions to unhappiness even if our neighbors do not return these actions. Inner peace, he tells us, is incompatible with bad karma and can be achieved only through good karma, i.e. good actions.

In Buddhist philosophy, the concept of Karma, action and reaction, also extends to our relationship with nature. Both Hindu and Buddhist traditions emphasize the unity of all life on earth. Hindus regard killing an animal as a sin, and many try to avoid accidentally stepping on insects as they walk.

The Hindu and Buddhist picture of the relatedness of all life on earth has been confirmed by modern biological science. We now know that all living organisms have the same fundamental biochemistry, based on DNA, RNA, proteins and polysaccharides, and we know that our own human genomes are more similar to than different from the genomes of our close relations in the animal world.

The peoples of the industrialized nations urgently need to acquire a non-anthropocentric element in their ethics, similar to reverence for all life found in the Hindu and Buddhist

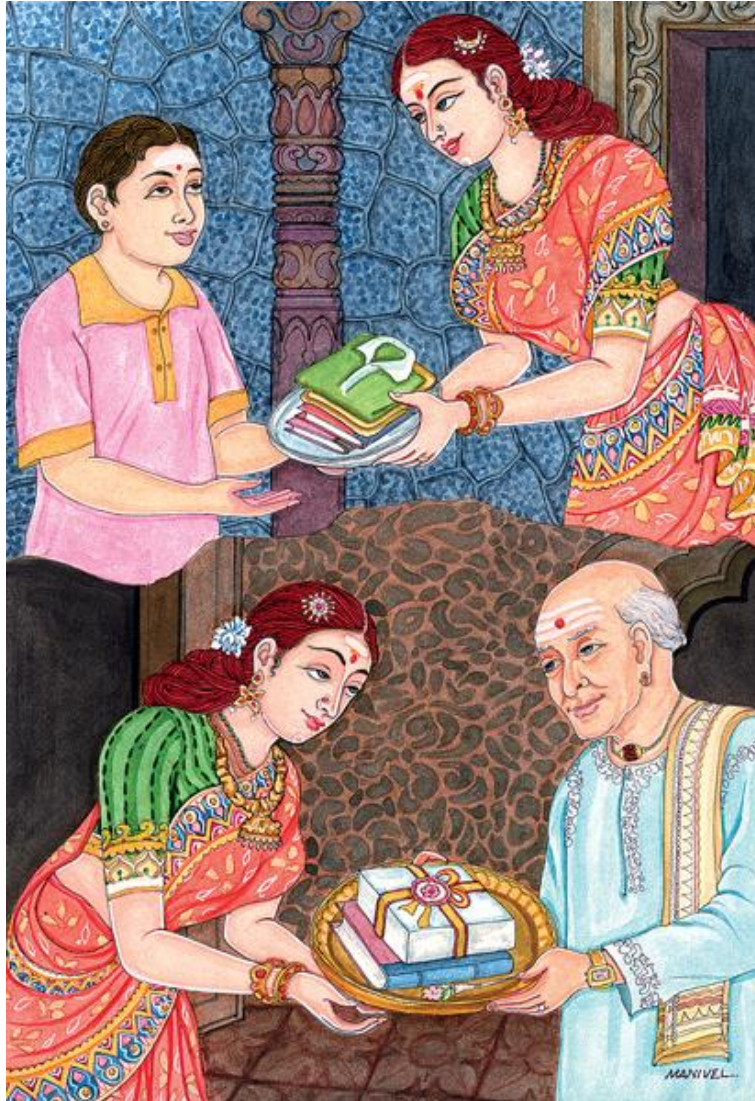


Figure 1.4: This painting illustrates the concept of karma. A lady gives books and clothing to a poor student. Later she receives a gift from a neighbor. There may sometimes be a direct causal connection between such events, but often they are connected only by the fact that each act of kindness makes the world a better place. (Himalayan Academy Publications, Kapaa, Kauai, Hawaii.)

traditions, as well as in the teachings of Saint Francis of Assisi and Albert Schweitzer. We need to learn to value other species for their own sakes, and not because we expect to use them for our own economic goals.

Today a few societies still follow a way of life similar to that of our hunter-gatherer ancestors. Anthropologists are able to obtain a vivid picture of the past by studying these societies. Often the religious ethics of the hunter-gatherers emphasizes the importance of harmony with nature. For example, respect for nature appears in the tribal traditions of Native Americans. The attitude towards nature of the Sioux can be seen from the following quotations from “Land of the Spotted Eagle” by the Lakota (Western Sioux) chief, Standing Bear (ca. 1834-1908):

“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.”

“Kinship with all creatures of the earth, sky, and water was a real and active principle. For the animal and bird world there existed a brotherly feeling that kept the Lakota safe among them. And so close did some of the Lakota come to their feathered and furred friends that in true brotherhood they spoke a common tongue.”

“The animal had rights, the right of man’s protection, the right to live, the right to multiply, the right to freedom, and the right to man’s indebtedness, and in recognition of these rights the Lakota never enslaved the animal, and spared all life that was not needed for food and clothing.”

“This concept of life was humanizing and gave to the Lakota an abiding love. It filled his being with the joy and mystery of things; it gave him reverence for all life; it made a place for all things in the scheme of existence with equal importance to all. The Lakota could despise no creature, for all were one blood, made by the same hand, and filled with the essence of the Great Mystery.”

A similar attitude towards nature can be found in traditional Inuit cultures, and 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 the industrialized North could learn. In industrial societies, land “belongs” to some one 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 slaveowner 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.

We have received many gifts from modern technology, but if we are to build a happy, sustainable and war-free world we must combine our new scientific techniques with humanity’s ancient wisdom.



Figure 1.5: Chief Luther Standing Bear, author of “Land of the Spotted Eagle” and many other books.



## 1.4 Complementarity

Can two contradictory statements both be true? The physicist Niels Bohr thought that this could happen, and he called such an occurrence “complementarity”. I think that I understand what Niels Bohr meant: Whenever we make a statement about the real world we are making a model which is simpler than what it is supposed to represent. Therefore every statement must to some extent be false because it is an oversimplification. In fact, a model of the world is an abstraction, and it is possible to make two conflicting abstractions, starting with the same real object.

If you say, “The eye is like a camera”, you are making an abstraction by concentrating on the way that the eye works and the way that a camera works. Both use a lens to form an image. If you say “The eye is like a small onion”, you are again making an abstraction, but this time concentrating the size and texture of the eye. It is somewhat round, elastic and damp. If you drop it on a stone floor, it will bounce rather than breaking. Both these abstractions have a certain degree of truth, although they are contradictory.

Similarly, science and religion are both abstractions, and both oversimplify the real world, which is much more complex than either of them. Which abstraction we should use depends on the problem that we wish to discuss. If we are talking about atomic spectra, then Schrödinger and Dirac should be our guides. But if the lecture is on how to achieve peace in the world, I would far rather hear it from Mahatma Gandhi than from either Schrödinger or Dirac.

## 1.5 Right hand, left hand

I vividly remember a speech made by His Holiness Pope John Paul II on the relationship between science and religion. I think that it was in 1981 or 1982. I was in Rome, attending a conference on quantum theory applied to chemistry. One of the topics at the conference was research on drugs that could be used for treating cancer. Because of this humanitarian aspect of the conference, the Italian professor who organized it succeeded in arranging for the participants to have an audience with the Pope, the day after Easter.

On Easter day itself I was walking through Rome, and I happened to meet some Swedish friends. They told me that they were about to join a march protesting against nuclear weapons. They would march through Rome, carrying antinuclear banners, and end at the Vatican in time to hear the Pope’s Easter address. I joined the march with my Swedish friends, and when we arrived at St. Peter’s Cathedral the entire square was full people, packed tightly, shoulder to shoulder so that one could almost not move. The atmosphere was a festive one, and our antinuclear banners were matched by religious banners carried by others in the throng. I had never seen such a large crowd in my life, but it was a happy crowd.

After a while the doors of the Vatican were opened, and the Pope came out onto the terrace accompanied by the College of Cardinals. He began to address us in Latin. We were so far away that we would not have been able to see or hear him, had it not been



Figure 1.6: **His Holiness Pope John Paul II**

for loudspeakers and two large screens showing his image, with subtitles in Italian and in English.

At the end of the Pope's address to the crowd, the Cardinals went into the Vatican and the doors were ceremonially closed, but the Pope himself walked down the steps of the terrace and into the crowd, where he mingled with everyone, shook hands with as many as he could, and talked with as many as he could. This showed remarkable courage, since he had only recently recovered from almost-fatal gunshot wounds at the hands of a would-be assassin.

On the appointed day for our audience, which was the day after Easter, we ascended the stairway to the audience chambers at the top of the Vatican, passing the impressive and colorful Swiss Guards on the way, and also passing beautiful tapestries that covered the walls.

The Pope was very busy because of his obligations to the many pilgrims who had come to Rome to celebrate Easter. We were told that it would be at least an hour before the Pope

could address us. During that time we were free to wander about the audience chamber and to look at the tapestries. We would know when the Pope was about to arrive, because the lights would become brighter for the sake of the television, and because we would hear a choir singing. Then we should take our seats and wait for the Pope's arrival.

It happened just as we had been told. After an hour or so, the lights went up and we heard the choir singing. We took our seats, and a few minutes later the Pope arrived. As he began to speak with us he gave the impression of an energetic and physically strong person, with an extremely modest, attractive and charismatic personality.

The Pope spoke in English, both to us, and to a much larger public, since his address was televised. He talked about the relationship between science and religion, mentioning that one of the topics to which our conference had been devoted was the treatment of cancer. He said that science had done very much to improve human health and comfort. Science and technology have given us the material goods of our modern world. However, Pope John Paul told us, material goods are not enough to ensure happiness. It is possible to be very well off from a material standpoint, but at the same time, very miserable. He said that for happiness, we also need ethics and wisdom - the traditional wisdom of humanity. By "the traditional wisdom of humanity", I think that he meant the wisdom that is preserved in the world's religions, but he did not specifically mention religion.

When he had finished talking, the Pope came down to the floor of the audience chamber and shook hands with us. All through his speech a baby had been crying, and the Pope, who was undoubtedly used to such disturbances, made a point of kissing the baby. He shook my hand too. There was a Polish professor named Włodzimierz Kolos with our group, and when the Pope came to the place where Kolos was standing, he stood and talked with the professor for about two minutes.

I was curious about what the Pope and Kolos had been saying to each other, but I did not have a chance to ask on that occasion. However, a year or so later I met Prof. Kolos at another conference, and I asked him. He replied, "I don't remember. I see the Pope so often that I don't remember what we said on that particular occasion."

I was astonished, and I asked Kolos to explain. He told me that when Pope John Paul took his summer vacations, he lived in a large villa near to Rome. He had the custom of inviting philosophers, theologians and scientists (many of them Polish) to visit him there for informal discussions. They always sat around a large table and talked about subjects like the relationship between science and religion. On those occasions, the Pope did not wear his robes of office, but only ordinary clothing. Every session ended with a discussion of the current situation in Poland.

Due to the Pope's efforts, the situation in Poland improved, and he also helped to make a reconciliation between science and the Catholic Church. I regard it as a great privilege to have seen his courage at Easter, and to have heard him speak. He is very justly regarded as one of the greatest Popes of all time.

I also had the privilege of hearing His Holiness the 14th Dalai Lama of Tibet speak on the same topic, the relationship between science and religion. The Dalai Lama was visiting Denmark, and I was invited to a lecture by him, arranged by the Danish-Tibetan Society.

The lecture took place at a very large hall called Forum, and such was the interest in his talk that the hall was completely filled. There were many flowers to greet the Dalai Lama, and many yellow-robed monks to assist him. When he began to talk, he gave the same impression as Pope John Paul II had done - energy and physical strength, combined with modesty and an attractive and charismatic personality.

Unfortunately, the acoustics of the hall were terrible, and it was difficult to hear what he said. The problem was made worse by his special accent as he spoke in English. Nevertheless, I managed to understand quite a bit of what he said.

The Dalai Lama told us that we need two hands for our tasks in life, the right hand and the left hand. Without both hands, we cannot cope properly with the problems of life. These two hands, both of which we need, are science and ethics. It was essentially the same message as that of Pope John Paul. The two hands are different, but both are needed.

## 1.6 How are science and religion related to war?

What is the relationship between science, religion and war? We mentioned that the world's major religions have at their core the principle of universal human brotherhood, which, if practiced, would be enough to make war impossible. However, the principle of loving and forgiving one's enemies is rarely practiced.

Many wars have been fought in the name of religion. We can think, for example, of the Crusades, or the Islamic conquests in the Middle East, North Africa and Spain, or the wars between Catholics and Protestants in Europe, or the brutal treatment of the native populations of Central and South America in the name of religion. The list by no means stops there.

What about science and technology? How are they related to war? As we start the 21st century and the new millennium, our scientific and technological civilization seems to be entering a period of crisis. Today, for the first time in history, science has given to humans the possibility of a life of comfort, free from hunger and cold, and free from the constant threat of infectious disease. At the same time, science has given us the power to destroy civilization through thermonuclear war, as well as the power to make our planet uninhabitable through pollution and overpopulation. The question of which of these alternatives we choose is a matter of life or death to ourselves and our children.

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



Figure 1.7: Three-stage (fission-fusion-fission) bombs may be made enormously powerful at little extra cost, since the last stage uses ordinary unenriched uranium. A 58 megaton bomb was exploded by the Soviet Union in 1961. It was roughly 5,000 times as powerful as the nuclear weapons that destroyed Hiroshima and Nagasaki. At present the total explosive power of the nuclear weapons in the world is approximately half a million times the power of the Hiroshima-Nagasaki bombs, enough to destroy human civilization and much of the biosphere.

of building new international political structures, which will be in harmony with modern technology. At the same time, we must develop a new global ethic, which will replace our narrow loyalties by loyalty to humanity as a whole.

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 insured if we are able to abolish the institution of war.

### Suggestions for further reading

1. Q. Wright, "A Study of War", Chicago University Press, (1965).
2. M. Kahnert et al., editors, "Children and War", Peace Union of Finland, (1983).
3. N.A. Guenther, "Children and the Threat of Nuclear War: An Annotated Bibliography", Compubibs, New York, New York, (1985).
4. D.V. Babst et al, "Accidental Nuclear War: The Growing Peril", Dundas, Ontario, Peace Research Institute, (1984).
5. J. Schear, editor, "Nuclear Weapons Proliferation and Nuclear Risk", Gower, London, (1984).
6. E. Chivian et al., editors, (International Physicians for the Prevention of Nuclear War), "Last Aid: The Medical Dimensions of Nuclear War", W.H. Freeman, San Francisco, (1982).
7. H. Mahler, "World Health is Indivisible", World Health Organization, Geneva, (1978).
8. E. Kamenka, editor, "Nationalism", Edward Arnold, London, (1976).
9. Elie Kedourie, "Nationalism in Asia and Africa", Frank Cass and Company Ltd., London, (1970).
10. S. Freud, "Warum Krieg? Das Bild vom Fiend", Arbeitsgem. Friedenspedagogik, (1983).
11. R. Levine and D.T. Campbell, "Ethnocentrism: Theories of Conflict, Ethnic Attitudes and Group Behavior", Wiley, New York, (1972).
12. R.A. Hinde, "Biological Basis of Human Social Behavior", McGraw-Hill, (1977).
13. R.A. Hinde, "Towards Understanding Human Relationships", Academic Press, London, (1979).
14. C. Zahn-Waxler, "Altruism and Aggression: Biological and Social Origins", Cambridge University Press, (1986).
15. R. Axelrod, "The Evolution of Cooperation", Basic Books, New York, (1984).
16. Arthur Koestler, "The Urge to Self-Destruction", in "The Place of Values in a World of Facts", A. Tiselius and S. Nielsson editors, Wiley, New York, (1970).
17. Edith Wynner, "World Federal Government in Maximum Terms: Proposals for United Nations Charter Revision", Fedonat Press, Afton New York, (1954).

# Chapter 2

## TRIBALISM

### 2.1 Ethology

In the long run, because of the terrible weapons that have already been produced through the misuse of science, and because of the even more terrible weapons that are likely to be invented in the future, the only way in which we can ensure the survival of civilization is to abolish the institution of war. But is this possible? Or are the emotions that make war possible so much a part of human nature that we cannot stop humans from fighting any more than we can stop cats and dogs from fighting? Can biological science throw any light on the problem of why our supposedly rational species seems intent on choosing war, pain and death instead of peace, happiness and life? To answer this question, we need to turn to the science of ethology - the study of inherited emotional tendencies and behavior patterns in animals and humans.

In *The Origin of Species*, Charles Darwin devoted a chapter to the evolution of instincts, and he later published a separate book on *The Expression of the Emotions in Man and Animals*. Because of these pioneering studies, Darwin is considered to be the founder of ethology.

The study of inherited behavior patterns in animals (and humans) was continued in the 20th century by such researchers as Karl von Frisch (1886-1982), Nikolaas Tinbergen (1907-1988), and Konrad Lorenz (1903-1989), three scientists who shared a Nobel Prize in Medicine and Physiology in 1973.

The third of the 1973 prizewinners, Konrad Lorenz, is controversial, but at the same time very interesting in the context of studies of the causes of war and discussions of how war may be avoided. As a young boy, he was very fond of animals, and his tolerant parents allowed him to build up a large menagerie in their house in Altenberg, Austria. Even as a child, he became an expert on waterfowl behavior, and he discovered the phenomenon of imprinting. He was given a one day old duckling, and found, to his intense joy, that it transferred its following response to his person. As Lorenz discovered, young waterfowl have a short period immediately after being hatched, when they identify as their “mother” whomever they see first. In later life, Lorenz continued his studies of imprinting, and there

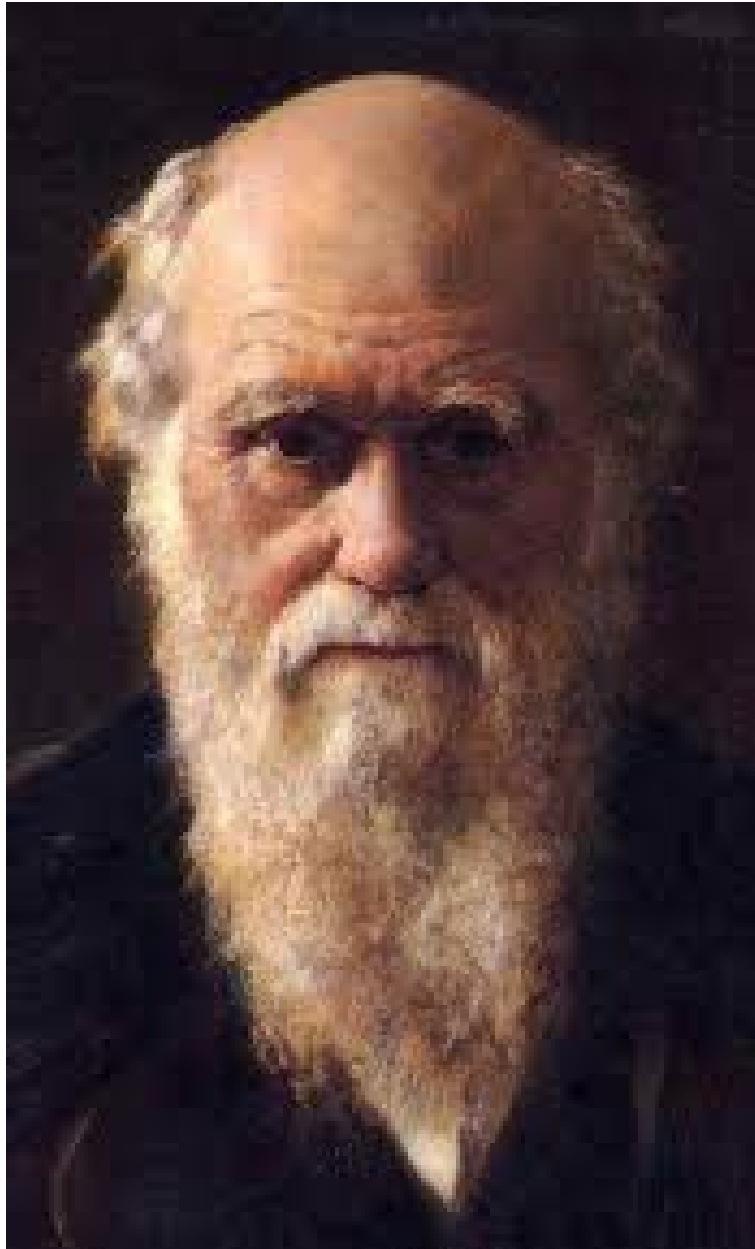


Figure 2.1: Because of Charles Darwin's book "The Expression of Emotions in Man and Animals", he is considered to be the founder of the field of Ethology, the study of inherited behavior patterns.





Figure 2.2: Nikolaas Tinbergen (1907-1988) on the left, with Konrad Lorenz (1903-1989). Together with Karl von Frisch (1886-1982) they shared the 1973 Nobel Prize in Physiology and Medicine for their pioneering work in Ethology.



Figure 2.3: Konrad Lorenz with geese who consider him to be their mother.

exists a touching photograph of him, with his white beard, standing waist-deep in a pond, surrounded by an adoring group of goslings who believe him to be their mother. Lorenz also studied bonding behavior in waterfowl.

It is, however, for his controversial book *On Aggression* that Konrad Lorenz is best known. In this book, Lorenz makes a distinction between intergroup aggression and intragroup aggression. Among animals, he points out, rank-determining fights are seldom fatal. Thus, for example, the fights that determine leadership within a wolf pack end when the loser makes a gesture of submission. By contrast, fights between groups of animals are often fights to the death, examples being wars between ant colonies, or of bees against intruders, or the defense of a rat pack against strange rats.

Many animals, humans included, seem willing to kill or be killed in defense of the communities to which they belong. Lorenz calls this behavioral tendency a “communal defense response”. He points out that the “holy shiver” - the tingling of the spine that humans experience when performing a heroic act in defense of their communities - is related to the prehuman reflex for raising the hair on the back of an animal as it confronts an enemy - a reflex that makes the animal seem larger than it really is.

In his book *On Aggression*, Konrad Lorenz gives the following description of the emotions of a hero preparing to risk his life for the sake of the group:

“In reality, militant enthusiasm is a specialized form of communal aggression, clearly distinct from and yet functionally related to the more primitive forms of individual aggression. Every man of normally strong emotions knows, from his own experience, the subjective phenomena that go hand in hand with the response of militant enthusiasm. A shiver runs down the back and, as more exact observation shows, along the outside of both arms. One soars elated, above all the ties of everyday life, one is ready to abandon all for the call of what, in the moment of this specific emotion, seems to be a sacred duty. All obstacles in its path become unimportant; the instinctive inhibitions against hurting or killing one’s fellows lose, unfortunately, much of their power. Rational considerations, criticisms, and all reasonable arguments against the behavior dictated by militant enthusiasm are silenced by an amazing reversal of all values, making them appear not only untenable, but base and dishonorable.

Men may enjoy the feeling of absolute righteousness even while they commit atrocities. Conceptual thought and moral responsibility are at their lowest ebb. As the Ukrainian proverb says: ‘When the banner is unfurled, all reason is in the trumpet’.”

“The subjective experiences just described are correlated with the following objectively demonstrable phenomena. The tone of the striated musculature is raised, the carriage is stiffened, the arms are raised from the sides and slightly rotated inward, so that the elbows point outward. The head is proudly raised, the chin stuck out, and the facial muscles mime the ‘hero face’ familiar from the films. On the back and along the outer surface of the arms, the hair stands on end. This is the objectively observed aspect of the shiver!”

“Anybody who has ever seen the corresponding behavior of the male chimpanzee defending his band or family with self-sacrificing courage will doubt the purely spiritual character of human enthusiasm. The chimp, too, sticks out his chin, stiffens his body, and raises his elbows; his hair stands on end, producing a terrifying magnification of his body

contours as seen from the front. The inward rotation of the arms obviously has the purpose of turning the longest-haired side outward to enhance the effect. The whole combination of body attitude and hair-raising constitutes a bluff. This is also seen when a cat humps its back, and is calculated to make the animal appear bigger and more dangerous than it really is. Our shiver, which in German poetry is called a ‘heiliger Schauer’, a ‘holy’ shiver, turns out to be the vestige of a prehuman vegetative response for making a fur bristle which we no longer have. To the humble seeker for biological truth, there cannot be the slightest doubt that human militant enthusiasm evolved out of a communal defense response of our prehuman ancestor.”

Lorenz goes on to say, “An impartial visitor from another planet, looking at man as he is today - in his hand the atom bomb, the product of his intelligence - in his heart the aggression drive, inherited from his anthropoid ancestors, which the same intelligence cannot control - such a visitor would not give mankind much chance of survival.”

In an essay entitled *The Urge to Self-Destruction*<sup>1</sup>, Arthur Koestler says:

“Even a cursory glance at history should convince one that individual crimes, committed for selfish motives, play a quite insignificant role in the human tragedy compared with the numbers massacred in unselfish love of one’s tribe, nation, dynasty, church or ideology... Wars are not fought for personal gain, but out of loyalty and devotion to king, country or cause...”

“We have seen on the screen the radiant love of the Führer on the faces of the Hitler Youth... They are transfixed with love, like monks in ecstasy on religious paintings. The sound of the nation’s anthem, the sight of its proud flag, makes you feel part of a wonderfully loving community. The fanatic is prepared to lay down his life for the object of his worship, as the lover is prepared to die for his idol. He is, alas, also prepared to kill anybody who represents a supposed threat to the idol.” The emotion described here by Koestler is the same as the communal defense mechanism (“militant enthusiasm”) described in biological terms by Lorenz.

Generations of schoolboys have learned the Latin motto: “Dulce et decorum est pro patria mori” - it is both sweet and noble to die for one’s country. Even in today’s world, death in battle in defense of country and religion is still praised by nationalists. However, because of the development of weapons of mass destruction, both nationalism and narrow patriotism have become dangerous anachronisms.

In thinking of violence and war, we must be extremely careful not to confuse the behavioral patterns that lead to wife-beating or bar-room brawls with those that lead to episodes like the trench warfare of the First World War, or to the nuclear bombing of Hiroshima and Nagasaki. The first type of aggression is similar to the rank-determining fights of animals, while the second is more akin to the team-spirit exhibited by a football side. Heroic behavior in defense of one’s community has been praised throughout the ages, but the tendency to such behavior has now become a threat to the survival of civilization, since tribalism makes war possible, and war with thermonuclear weapons threatens civilization

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<sup>1</sup>in *The Place of Value in a World of Facts*, A. Tiselius and S. Nielsson editors, Wiley, New York, (1970)

with catastrophe.

Warfare involves not only a high degree of aggression, but also an extremely high degree of altruism. Soldiers kill, but they also sacrifice their own lives. Thus patriotism and duty are as essential to war as the willingness to kill. As Arthur Koestler points out, “Wars are not fought for personal gain, but out of loyalty and devotion to king, country or cause...”

Tribalism involves passionate attachment to one’s own group, self-sacrifice for the sake of the group, willingness both to die and to kill if necessary to defend the group from its enemies, and belief that in case of a conflict, one’s own group is always in the right.

## 2.2 Population genetics

If we examine altruism and aggression in humans, we notice that members of our species exhibit great altruism towards their own children. Kindness towards close relatives is also characteristic of human behavior, and the closer the biological relationship is between two humans, the greater is the altruism they tend to show towards each other. This profile of altruism is easy to explain on the basis of Darwinian natural selection since two closely related individuals share many genes and, if they cooperate, the genes will be more effectively propagated.

To explain from an evolutionary point of view the communal defense mechanism discussed by Lorenz - the willingness of humans to kill and be killed in defense of their communities - we have only to imagine that our ancestors lived in small tribes and that marriage was likely to take place within a tribe rather than across tribal boundaries. Under these circumstances, each tribe would tend to consist of genetically similar individuals. The tribe itself, rather than the individual, would be the unit on which the evolutionary forces of natural selection would act. The idea of group selection in evolution was proposed in the 1930’s by J.B.S. Haldane and R.A. Fisher, and more recently it has been discussed by W.D. Hamilton and E.O. Wilson.

According to the group selection model, a tribe whose members showed altruism towards each other would be more likely to survive than a tribe whose members cooperated less effectively. Since several tribes might be in competition for the same territory, intertribal aggression might, under some circumstances, increase the chances for survival of one’s own tribe. Thus, on the basis of the group selection model, one would expect humans to be kind and cooperative towards members of their own group, but at the same time to sometimes exhibit aggression towards members of other groups, especially in conflicts over territory. One would also expect intergroup conflicts to be most severe in cases where the boundaries between groups are sharpest - where marriage is forbidden across the boundaries.



Figure 2.4: Sir Ronald Aylmer Fischer (1890-1962). Together with J.B.S Haldane he pioneered the theory of population genetics. Recent contributions to this theory have been made by W.D. Hamilton and E.O. Wilson.

## 2.3 Hope for the future

Although humans originally lived in small, genetically homogeneous tribes, the social and political groups of the modern world are much larger, and are often multiracial and multiethnic.

There are a number of large countries that are remarkable for their diversity, for example Brazil, Argentina and the United States. Nevertheless it has been possible to establish social cohesion and group identity within each of these enormous nations. India and China too, are mosaics of diverse peoples, but nevertheless, they function as coherent societies. Thus we see that group identity is a social construction, in which artificial “tribal markings” define the boundaries of the group. These tribal markings will be discussed in more detail below.

One gains hope for the future by observing how it has been possible to produce both internal peace and social cohesion over very large areas of the globe - areas that contain extremely diverse populations. The difference between making large, ethnically diverse countries function as coherent sociopolitical units and making the entire world function as a unit is not very great.

Since group identity is a social construction, it is not an impossible goal to think of enlarging the already-large groups of the modern world to include all of humanity.

On our small but beautiful earth, made small by technology, made beautiful by nature, there is room for one group only: the all-inclusive family of humankind.

## 2.4 Religion and ethnic identity

An acceleration of human cultural development seems to have begun approximately 70,000 years ago. The first art objects date from that period, as do migrations that ultimately took modern man across the Bering Strait to the western hemisphere. A land bridge extending from Siberia to Alaska is thought to have been formed approximately 70,000 years ago, disappearing again roughly 10,000 years before the present. Cultural and genetic studies indicate that migrations from Asia to North America took place during this period. Shamanism,<sup>2</sup> which is found both in Asia and the new world, as well as among the Sami (Lapps) of northern Scandinavia, is an example of the cultural links between the hunting societies of these regions.

Before the acceleration of human cultural development just mentioned, genetic change and cultural change went hand in hand, but during the last 70,000 years, the constantly accelerating rate of information-accumulation and cultural evolution has increasingly out-distanced the rate of genetic change in humans. Genetically we are almost identical with our hunter-gatherer ancestors of 70,000 years ago, but cultural evolution has changed our way of life beyond recognition.

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<sup>2</sup>A shaman is a special member of a hunting society who, while in a trance, is thought to be able pass between the upper world, the present world, and the lower world, to cure illnesses, and to insure the success of a hunt.

Humans are capable of cultural evolution because it is so easy to overwrite and modify our instinctive behavior patterns with learned behavior. Within the animal kingdom, humans are undoubtedly the champions in this respect. No other species is so good at learning as we are. During the early stages of cultural evolution, the tendency of humans to be religious may have facilitated the overwriting of instinctive behavior with the culture of the tribe. Since religions, like languages, are closely associated with particular cultures, they serve as marks of ethnic identity.

## 2.5 Tribal markings; ethnicity; pseudospeciation

In biology, a species is defined to be a group of mutually fertile organisms. Thus all humans form a single species, since mixed marriages between all known races will produce children, and subsequent generations in mixed marriages are also fertile. However, although there is never a biological barrier to marriages across ethnic and racial boundaries, there are often very severe cultural barriers.

Irenäus Eibl-Eibesfeldt, a student of Konrad Lorenz, introduced the word *pseudospeciation* to denote cases where cultural barriers between two groups of humans are so strongly marked that marriages across the boundary are difficult and infrequent. In such cases, he pointed out, the two groups function as though they were separate species, although from a biological standpoint this is nonsense. When two such groups are competing for the same land, the same water, the same resources, and the same jobs, the conflicts between them can become very bitter indeed. Each group regards the other as being “not truly human”.

In his book *The Biology of War and Peace*, Eibl-Eibesfeldt discusses the “tribal markings” used by groups of humans to underline their own identity and to clearly mark the boundary between themselves and other groups. One of the illustrations in the book shows the marks left by ritual scarification on the faces of the members of certain African tribes. These scars would be hard to counterfeit, and they help to establish and strengthen tribal identity. Seeing a photograph of the marks left by ritual scarification on the faces of African tribesmen, it is impossible not to be reminded of the dueling scars that Prussian army officers once used to distinguish their caste from outsiders.

Surveying the human scene, one can find endless examples of signs that mark the bearer as a member of a particular group - signs that can be thought of as “tribal markings”: tattoos; piercing; bones through the nose or ears; elongated necks or ears; filed teeth; Chinese binding of feet; circumcision, both male and female; unique hair styles; decorations of the tongue, nose, or naval; peculiarities of dress, fashions, veils, chadors, and headdresses; caste markings in India; use or nonuse of perfumes; codes of honor and value systems; traditions of hospitality and manners; peculiarities of diet (certain foods forbidden, others preferred); giving traditional names to children; knowledge of dances and songs; knowledge of recipes; knowledge of common stories, literature, myths, poetry or common history; festivals, ceremonies, and rituals; burial customs, treatment of the dead and ancestor worship; methods of building and decorating homes; games and sports peculiar to a culture;



Figure 2.5: Scars help to establish tribal identity

relationship to animals, knowledge of horses and ability to ride; nonrational systems of belief. Even a baseball hat worn backwards or the professed ability to enjoy atonal music can mark a person as a member of a special “tribe”. Undoubtedly there many people in New York who would never think of marrying someone who could not appreciate the the paintings of Jasper Johns, and many in London who would consider anyone had not read all the books of Virginia Wolfe to be entirely outside the bounds of civilization.

By far the most important mark of ethnic identity is language, and within a particular language, dialect and accent. If the only purpose of language were communication, it would be logical for the people of a small country like Denmark to stop speaking Danish and go over to a more universally-understood international language such as English. However, language has another function in addition to communication: It is also a mark of identity. It establishes the boundary of the group.

Within a particular language, dialects and accents mark the boundaries of subgroups. For example, in England, great social significance is attached to accents and diction, a tendency that George Bernard Shaw satirized in his play, *Pygmalion*, which later gained greater fame as the musical comedy, *My Fair Lady*. This being the case, we can ask why all citizens of England do not follow the example of Eliza Doolittle in Shaw’s play, and improve their social positions by acquiring Oxford accents. However, to do so would be to run the risk of being laughed at by one’s peers and regarded as a traitor to one’s own local community and friends. School children everywhere can be very cruel to any child





Figure 2.6: An example of the dueling scars that Prussian army officers once used to distinguish their caste from outsiders.

who does not fit into the local pattern. At Eton, an Oxford accent is compulsory; but in a Yorkshire school, a child with an Oxford accent would suffer for it.

Next after language, the most important “tribal marking” is religion. As mentioned above, it seems probable that in the early history of our hunter-gatherer ancestors, religion evolved as a mechanism for perpetuating tribal traditions and culture. Like language, and like the innate facial expressions studied by Darwin, religion is a universal characteristic of all human societies. All known races and cultures practice some sort of religion. Thus a tendency to be religious seems to be built into human nature, or at any rate, the needs that religion satisfies seem to be a part of our inherited makeup. Otherwise, religion would not be so universal as it is.

Religion is often strongly associated with ethnicity and nationalism, that is to say, it is associated with the demarcation of a particular group of people by its culture or race. For example, the Jewish religion is associated with Zionism and with Jewish nationalism. Similarly Islam is strongly associated with Arab nationalism. Christianity too has played an important role in many aggressive wars, for example in the Crusades, in the European conquest of the New World, in European colonial conquests in Africa and Asia, and in the wars between Catholics and Protestants within Europe. We shall see in a later chapter how the originators of the German nationalist movement (the precursors of the Nazis), used quasi-religious psychological methods.

Human history seems to be saturated with blood. It would be impossible to enumerate the conflicts with which the story of humankind is stained. Many of the atrocities of history have involved what Irenäus Eibl-Eibesfeldt called “pseudospeciation”, that is to say, they were committed in conflicts involving groups between which sharply marked cultural barriers have made intermarriage difficult and infrequent. Examples include the present conflict between Israelis and Palestinians; “racial cleansing” in Kosovo; the devastating wars between Catholics and Protestants in Europe; the Lebanese civil war; genocide committed against Jews and Gypsies during World War II; recent genocide in Rwanda; current intertribal massacres in the Ituri Province of Congo; use of poison gas against Kurdish civilians by Saddam Hussein’s regime in Iraq; the massacre of Armenians by Turks; massacres of Hindus by Muslims and of Muslims by Hindus in post-independence India; massacres of Native Americans by white conquerors and settlers in all parts of the New World; and massacres committed during the Crusades. The list seems almost endless.

Religion often contributes to conflicts by sharpening the boundaries between ethnic groups and by making marriage across those boundaries difficult and infrequent. However, this negative role is balanced by a positive one, whenever religion is the source of ethical principles, especially the principle of universal human brotherhood.

The religious leaders of today’s world have the opportunity to contribute importantly to the solution of the problem of war. They have the opportunity to powerfully support the concept of universal human brotherhood, to build bridges between religious groups, to make intermarriage across ethnic boundaries easier, and to soften the distinctions between communities. Our political leaders have the duty to move away from nationalism and militarism. If they fail to do this, they will have failed humankind at a time of great danger and crisis.

## 2.6 Searching for human nature

### A drop of good sense in a sea of emotion

Today, human greed and folly are destroying the global environment. As if this were not enough, there is a great threat to civilization and the biosphere from an all-destroying thermonuclear war. Both of these severe existential threats are due to faults our inherited emotional nature.

From the standpoint of evolutionary theory, this is a paradox. As a species, we are well on the road to committing collective suicide, driven by the flaws in human nature. But isn't natural selection supposed to produce traits that lead to survival? Today, our emotions are not leading us towards survival, but instead driving us towards extinction. What is the reason for this paradox?

Our emotions have an extremely long evolutionary history. However, with the rapid advance of human cultural evolution, our ancestors began to live together in progressively larger groups, and in these new societies, our inherited emotional nature was often inappropriate. What once was a survival trait became a sin which needed to be suppressed by morality and law. Today we live in a world that is entirely different from the one into which our species was born. We face the problems of the 21st century: exploding populations, vanishing resources, and the twin threats of catastrophic climate change and thermonuclear war. We face these severe problems with our poor cave-man's brain, with an emotional nature that has not changed much since our ancestors lived in small tribes, competing for territory on the grasslands of Africa.

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. Mohammed 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.

Most of the widely practiced religions of today contain the principle of universal human brotherhood. This is contained, for example, in Christianity, in the Sermon on the Mount and in the Parable of the Good Samaritan. The Sermon on the Mount tells us that we must love our neighbor as much as we love ourselves. When asked "But who is my neighbor?", Jesus replied with the Parable of the Good Samaritan, which says that our neighbor may belong to a different ethnic group than ourselves, or may be separated from us by geographical distance. Nevertheless, he is still our neighbor and he still deserves our love and assistance. To this, Christianity adds that we must love and forgive our enemy, and do good to those who persecute us, a principle that would make war impossible if it were only followed. Not only in Christianity, but also in Hinduism, Buddhism, and Islam, the principles of compassion and universal human brotherhood hold a high place.



Figure 2.7: An illustration from Darwin's book, "The Expression of Emotions in Man and Animals". Here a cat raises its back and fur when confronting an enemy to make itself seem larger and more dangerous. This reflex was later discussed by the ethologist Konrad Lorenz.



Figure 2.8: **Professor E.O. Wilson of Harvard is famous for his books on Sociobiology.**



Figure 2.9: **Professor Richard Dawkins of Oxford, controversial author of “The Selfish Gene” and many other books. He has contributed much to the debate on relationships between science, religion, aggression and altruism.**

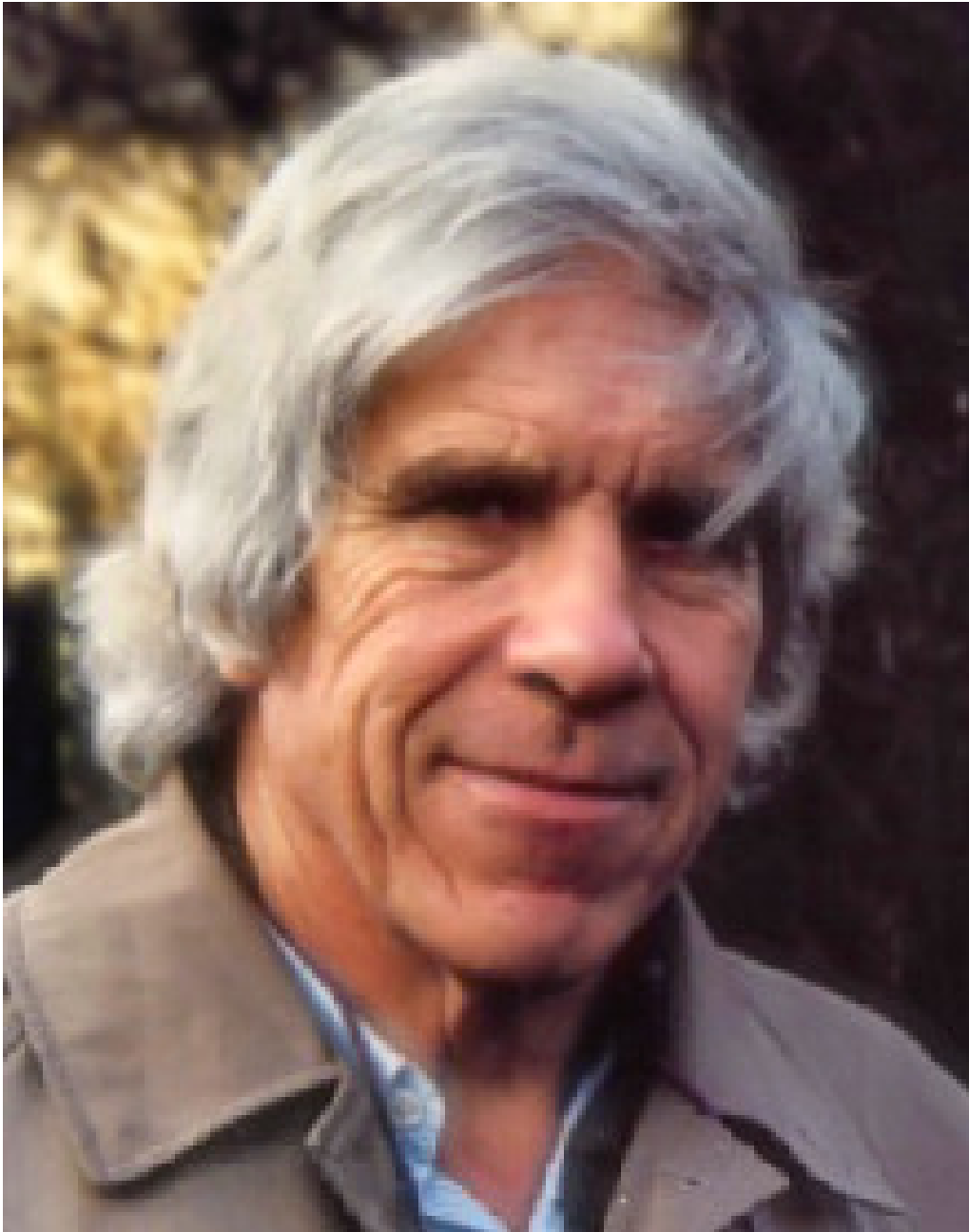


Figure 2.10: **William Donald Hamilton** was a Royal Society Research Professor at Oxford University until his death in 2000. He contributed importantly to our understanding of altruism from the standpoint of genetics.

## 2.7 The evolution of cooperation

The success of humans as a species is due to our genius for cooperation. Cultural evolution, a new form of evolution, in which information is passed between generations in the form of linguistic symbols rather than genetically, has been the key to human success. Cultural evolution depends on the sharing of knowledge, and humans have developed remarkable linguistic and cooperative abilities.

At the same time, human nature also has a darker side, inherited from our ancestors who were hunter-gatherers, living in small genetically homogeneous tribes, competing for territory, on the grasslands of Africa. The pattern of intra-tribal altruism and inter-tribal aggression, which humans have inherited from their remote ancestors, has been explained by the theories of population genetics and group selection put forward in the 1930's by R.A. Fisher and J.B.S Haldane, and discussed more recently by W.D. Hamilton and E.O. Wilson. In this picture, the tribe itself, rather than the individual, is the unit on which evolutionary forces acted.

We will now try to show that symbiosis and cooperation have been responsible for all of the great upward steps in evolution, including the development of the first prokaryotic cells, the first eukaryotes, the first multi-cellular organisms, and the first cooperative groups of multicellular organisms. The views of T.H. Huxley, who stressed competition as an evolutionary force, will be contrasted with the ideas of Charles Darwin, Peter Kropotkin and Lynn Margulis and others, who fully understood the importance of symbiosis and cooperation in evolution.

### The explosion of human 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.

Every species changes gradually through genetic evolution; but with humans, cultural evolution has rushed ahead with such a speed that it has completely outstripped the slow rate of genetic change. Genetically we are quite similar to 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 (as Malthus put it, the "passions of mankind") are not completely adapted to our new way of life. They still reflect the way of life of our hunter-gatherer ancestors.

Within rapidly-moving cultural evolution, we can observe that technical change now moves with such astonishing rapidity that neither social institutions, nor political struc-



tures, nor education, nor public opinion can keep pace. The lightning-like pace of technical progress has made many of our ideas and institutions obsolete. For example, the absolutely-sovereign nation-state and the institution of war have both become dangerous anachronisms in an era of instantaneous communication, global interdependence and all-destroying weapons.

In many respects, human 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 threatens 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.

## Tribal emotions and nationalism

In discussing conflicts, we must be very careful to distinguish between two distinct types of aggression exhibited by both humans and animals. The first is intra-group aggression, which is often seen in rank-determining struggles, for example when two wolves fight for pack leadership, or when males fight for the privilege of mating with females. Another, completely different, type of aggression is seen when a group is threatened by outsiders. Most animals, including humans, then exhibit a communal defense response - self-sacrificing and heroic combat against whatever is perceived to be an external threat. It is this second type of aggression that makes war possible.

Arthur Koestler has described inter-group aggression in an essay entitled *The Urge to Self-Destruction*<sup>3</sup>, where he writes: “Even a cursory glance at history should convince one that individual crimes, committed for selfish motives, play a quite insignificant role in the human tragedy compared with the numbers massacred in unselfish love of one’s tribe, nation, dynasty, church or ideology... Wars are not fought for personal gain, but out of loyalty and devotion to king, country or cause...”

“We have seen on the screen the radiant love of the Führer on the faces of the Hitler Youth... They are transfixed with love, like monks in ecstasy on religious paintings. The sound of the nation’s anthem, the sight of its proud flag, makes you feel part of a wonderfully loving community. The fanatic is prepared to lay down his life for the object of his worship, as the lover is prepared to die for his idol. He is, alas, also prepared to kill anybody who represents a supposed threat to the idol.”

Members of tribe-like groups are bound together by strong bonds of altruism and loyalty. Echos of these bonds can be seen in present-day family groups, in team sports, in the fellowship of religious congregations, and in the bonds that link soldiers to their army comrades and to their nation.

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<sup>3</sup>in *The Place of Value in a World of Facts*, A. Tiselius and S. Nielsson editors, Wiley, New York, (1970)

Warfare involves not only a high degree of aggression, but also an extremely high degree of altruism. Soldiers kill, but they also sacrifice their own lives. Thus patriotism and duty are as essential to war as the willingness to kill.

Tribalism involves passionate attachment to one's own group, self-sacrifice for the sake of the group, willingness both to die and to kill if necessary to defend the group from its enemies, and belief that in case of a conflict, one's own group is always in the right. Unfortunately these emotions make war possible; and today a Third World War might lead to the destruction of civilization.

## **Fisher, Haldane and Hamilton**

The idea of group selection in evolution was proposed in the 1930's by J.B.S. Haldane and R.A. Fisher, and more recently it has been discussed by W.D. Hamilton.

If we examine altruism and aggression in humans, we notice that members of our species exhibit great altruism towards their own children. Kindness towards close relatives is also characteristic of human behavior, and the closer the biological relationship is between two humans, the greater is the altruism they tend to show towards each other. This profile of altruism is easy to explain on the basis of Darwinian natural selection since two closely related individuals share many genes and, if they cooperate, the genes will be more effectively propagated.

To explain from an evolutionary point of view the communal defense mechanism - the willingness of humans to kill and be killed in defense of their communities - we have only to imagine that our ancestors lived in small tribes and that marriage was likely to take place within a tribe rather than across tribal boundaries. Under these circumstances, each tribe would tend to consist of genetically similar individuals. The tribe itself, rather than the individual, would be the unit on which the evolutionary forces of natural selection would act.

According to the group selection model, a tribe whose members showed altruism towards each other would be more likely to survive than a tribe whose members cooperated less effectively. Since several tribes might be in competition for the same territory, successful aggression against a neighboring group could increase the chances for survival of one's own tribe. Thus, on the basis of the group selection model, one would expect humans to be kind and cooperative towards members of their own group, but at the same time to sometimes exhibit aggression towards members of other groups, especially in conflicts over territory. One would also expect intergroup conflicts to be most severe in cases where the boundaries between groups are sharpest - where marriage is forbidden across the boundaries.

## **The social insects**

The social insects, ants, bees, wasps and termites, exhibit nearly perfect altruism towards members of their own group. This extreme form of altruism towards near relations (kin altruism) is closely connected with the peculiar method of reproduction of the social insects.

The workers are sterile or nearly sterile, while the queen is the only reproductive female. The result of this special method of reproduction is that very nearly perfect altruism is possible within a hive or nest, since genetic changes favoring antisocial behavior would be detrimental to the hive or nest as a whole. The hive or nest can, in some sense, be regarded as a superorganism, with the individuals cooperating totally in much the same way that cells cooperate within a multicellular organism. The social insects exhibit aggression towards members of their own species from other hives or nests, and can be said to engage in wars. Interestingly a similar method of reproduction, associated with extreme intra-group altruism has evolved among mammals, but is represented by only two species: the naked mole rat and Damaraland mole rat.

### **From Thomas Huxley to Lynn Margulis and symbiosis**

Charles Darwin (1809-1882) was acutely aware of close and mutually beneficial relationships between organisms. For example, in his work on the fertilization of flowers, he studied the ways in which insects and plants can become exquisitely adapted to each other's needs.

On the other hand Thomas Henry Huxley (1825-1895), although he was a strong supporter of Darwin, saw competition as the main mechanism of evolution. In his essay *Struggle for Existence and its Bearing Upon Man* Huxley wrote: "From the point of view of the moralist, the animal world is about on the same level as a gladiators' show. The creatures are fairly well treated and set to fight; hereby the strongest, the swiftest, and the cunningest live to fight another day. The spectator has no need to turn his thumbs down, as no quarter is granted."

Prince Peter Kropotkin (1842-1921) argued strongly against Huxley's point of view in his book *Mutual Aid; A Factor of Evolution*. "If we ask Nature", Kropotkin wrote, "who are the fittest: those who are continually at war with each other, or those who support one another?", we at once see that those animals that acquire habits of mutual aid are undoubtedly the fittest. They have more chances to survive, and they attain, in their respective classes, the highest development of intelligence and bodily organization."

Today, the insights of modern biology show that although competition plays an important role, most of the great upward steps in evolution have involved cooperation. The biologist Lynn Margulis (1938-2011) has been one of the pioneers of the modern viewpoint which recognizes symbiosis as a central mechanism in evolution.

### **One-celled organisms seen as examples of cooperation**

The first small bacterial cells (prokaryotic cells) can be thought of as cooperative communities in which autocatalytic molecules thrived better together than they had previously done separately.

The next great upward step in evolution, the development of large and complex (eukaryotic) cells, also involved cooperation: Many of their components, for example mitochondria (small granular structures that are needed for respiration) and chloroplasts (the



Figure 2.11: Thomas Henry Huxley (1825-1895), caricatured in *Vanity Fair*. Huxley was a strong supporter of Darwin, but he placed much more emphasis on competition in evolution than Darwin did. In fact, Darwin himself was strongly aware of the great role that cooperation plays.



Figure 2.12: The biologist Lynn Margulis argued strongly that eukaryotic cells should be regarded as cooperative communities of simpler organisms that once lived independently. At first she was almost alone in this view, but today it is generally accepted. Most of the great upward steps in evolution have involved cooperation.

photosynthetic units of higher plants) are believed to have begun their existence as free-living prokaryotic cells. They now have become components of complex cells, cooperating biochemically with the other subcellular structures. Both mitochondria and chloroplasts possess their own DNA, which shows that they were once free-living bacteria-like organisms, but they have survived better in a cooperative relationship.

## **Cooperation between cells; multicellular organisms**

Multicellular organisms evolved from cooperative communities of eukaryotic cells. Some insights into how this happened can be gained from examples which are just on the borderline between the multicellular organisms and single-celled ones. The cooperative behavior of a genus of unicellular eukaryotes called slime molds is particularly interesting because it gives us a glimpse of how multicellular organisms may have originated. The name of the slime molds is misleading, since they are not fungi, but are similar to amoebae.

Under ordinary circumstances, the individual cells wander about independently searching for food, which they draw into their interiors and digest. However, when food is scarce, they send out a chemical signal of distress. (Researchers have analyzed the molecule which expresses slime mold unhappiness, and they have found it to be cyclic adenosine monophosphate.) At this signal, the cells congregate and the mass of cells begins to crawl, leaving a slimy trail. As it crawls, the community of cells gradually develops into a tall stalk, surmounted by a sphere - the "fruiting body". Inside the sphere, spores are produced by a sexual process. If a small animal, for example a mouse, passes by, the spores may adhere to its coat; and in this way they may be transported to another part of the forest where food is more plentiful.

Slime molds represent a sort of missing link between unicellular and multicellular organisms. Normally the cells behave as individualists, wandering about independently, but when challenged by a shortage of food, the slime mold cells join together into an entity which closely resembles a multicellular organism.

The cells even seem to exhibit altruism, since those forming the stalk have little chance of survival, and yet they are willing to perform their duty, holding up the sphere at the top so that the spores will survive and carry the genes of the community into the future.

Multicellular organisms often live in a symbiotic relationship with other species. For example, in both animals and humans, bacteria are essential for the digestion of food. Fungi on the roots of plants aid their absorption of water and nutrients. Communities of bacteria and other organisms living in the soil are essential for the recycling of nutrients. Insects are essential to many plants for pollination.

## **Cooperation in groups of animals and human groups**

The social behavior of groups of animals, flocks of birds and communities of social insects involves cooperation as well as rudimentary forms of language. Various forms of language, including chemical signals, postures and vocal signals, are important tools for orchestrating cooperative behavior.

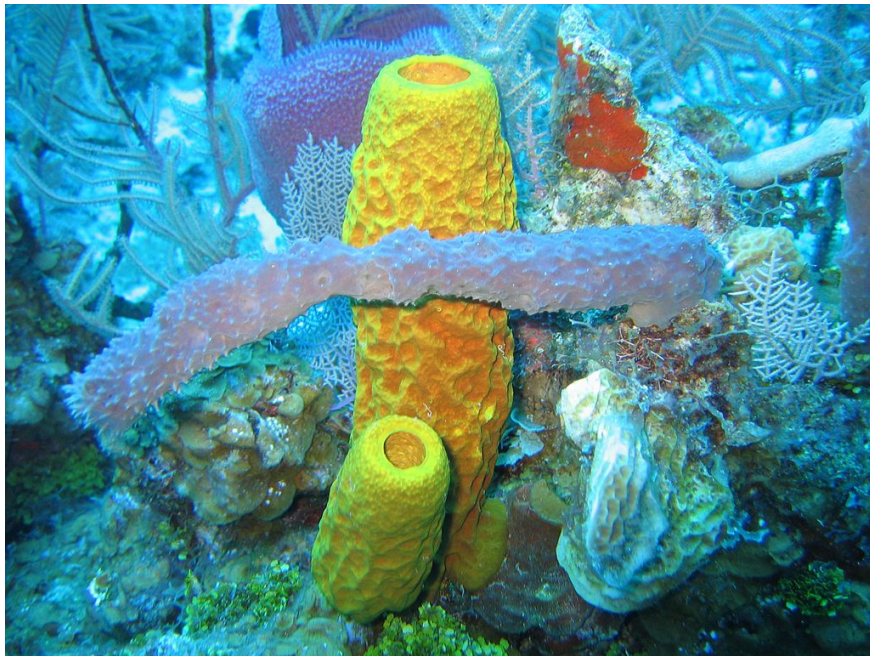


Figure 2.13: A photo showing several types of sponges. Sponges and slime molds are on the borderline between single celled organisms and multicellular ones. The single cells of these species can live independently, but they can also function as members of a cooperating colony. (Public domain)

The highly developed language of humans made possible an entirely new form of evolution. In cultural evolution (as opposed to genetic evolution), information is passed between generations not in the form of a genetic code, but in the form of linguistic symbols. With the invention of writing, and later the invention of printing, the speed of human cultural evolution greatly increased. Cooperation is central to this new form of evolution. Cultural advances can be shared by all humans.

### **Trading in primitive societies**

Although primitive societies engaged in frequent wars, they also cooperated through trade. Peter Watson, an English historian of ideas, believes that long-distance trade took place as early as 150,000 before the present. There is evidence that extensive trade in obsidian and flint took place during the stone age. Evidence for wide ranging prehistoric obsidian and flint trading networks has been found in North America. Ancient burial sites in Southeast Asia show that there too, prehistoric trading took place across very large distances. Analysis of jade jewelry from the Philippines, Thailand, Malayasia and Viet Nam shows that the jade originated in Taiwan.

The invention of writing was prompted by the necessities of trade. In prehistoric Mesopotamia, clay tokens marked with simple symbols were used for accounting as early as 8,000 BC. Often these tokens were kept in clay jars, and symbols on the outside of the jars indicated the contents. About 3,500 BC, the use of such tokens and markings led to the development of pictographic writing in Mesopotamia, and this was soon followed by the cuneiform script, still using soft clay as a medium. The clay tablets were later dried and baked to ensure permanency. The invention of writing led to a great acceleration of human cultural evolution. Since ideas could now be exchanged and preserved with great ease through writing, new advances in technique could be shared by an ever larger cooperating community of humans. Our species became more and more successful as its genius for cooperation developed.

### **Gracilization and decreasing sexual dimorphism**

Early ancestors of modern humans had a relatively heavy (robust) bone structure in relation to their height. This robust bone structure seems to have been favored by frequent combat. During their evolution, modern humans became less robust and more gracile. In other words, their skeletons became lighter in relation to their height. Simultaneously the height and weight of males became less different from the height and weight of females. These trends are generally interpreted as indicating that combat became less important as present-day humans evolved.

### **Ethics and growth of the social unit**

Early religions tended to be centered on particular tribes, and the ethics associated with them were usually tribal in nature. However, the more cosmopolitan societies that began



to form after the Neolithic agricultural revolution required a more universal code of ethics. It is interesting to notice that many of the great ethical teachers of human history, for example Moses, Socrates, Plato, Aristotle, Lao Tzu, Confucius, Buddha, and Jesus, lived at the time when the change to larger social units was taking place. Tribalism was no longer appropriate. A wider ethic was needed.

Today the size of the social unit is again being enlarged, this time enlarged to include the entire world. Narrow loyalties have become inappropriate and there is an urgent need for a new ethic - a global ethic. Loyalty to one's nation needs to be supplemented by a higher loyalty to humanity as a whole.

### **Interdependence in modern human society**

All of the great upward steps in the evolution of life on earth have involved cooperation: Prokaryotes, the first living cells, can be thought of as cooperative communities of autocatalysts; large, complex eukaryote cells are now believed to have evolved as cooperative communities of prokaryotes; multicellular organisms are cooperative communities of eukaryotes; multicellular organisms cooperate to form societies; and different species cooperate to form ecosystems. Indeed, James Lovelock has pointed out that the earth as a whole is a complex interacting system that can be regarded as a huge organism.

The enormous success of humans as a species is due to their genius for cooperation. The success of humans is a success of cultural evolution, a new form of evolution in which information is passed between generations, not in the form of DNA sequences but in the form of speech, writing, printing and finally electronic signals. Cultural evolution is built on cooperation, and has reached great heights of success as the cooperating community has become larger and larger, ultimately including the entire world.

Without large-scale cooperation, modern science would never have evolved. It developed as a consequence of the invention of printing, which allowed painfully gained detailed knowledge to be widely shared. Science derives its great power from concentration. Attention and resources are brought to bear on a limited problem until all aspects of it are understood. It would make no sense to proceed in this way if knowledge were not permanent, and if the results of scientific research were not widely shared. But today the printed word and the electronic word spread the results of research freely to the entire world. The whole human community is the repository of shared knowledge.

The achievements of modern society are achievements of cooperation. We can fly, but no one builds an airplane alone. We can cure diseases, but only through the cooperative efforts of researchers, doctors and medicinal firms. We can photograph and understand distant galaxies, but the ability to do so is built on the efforts of many cooperating individuals.

An isolated sponge cell can survive, but an isolated human could hardly do so. Like an isolated bee, a human would quickly die without the support of the community. The comfort and well-being that we experience depends on far-away friendly hands and minds, since trade is global, and the exchange of ideas is also global.

Finally, we should be conscious of our cooperative relationships with other species. We could not live without the bacteria that help us to digest our food. We could not

live without the complex communities of organisms in the soil that convert dead plant matter into fertile topsoil. We could not live without plants at the base of the food chain, but plants require pollination, and pollination frequently requires insects. An intricate cooperative network of inter-species relationships is necessary for human life, and indeed necessary for all life. Competition plays a role in evolution, but the role of cooperation is greater.

## Two sides of human nature

Looking at human nature, both from the standpoint of evolution and from that of everyday experience, we see the two faces of Janus; one face shines radiantly; the other is dark and menacing. Two souls occupy the human breast, one warm and friendly, the other murderous. Humans have developed a genius for cooperation, the basis for culture and civilization; but they are also capable of genocide; they were capable of massacres during the Crusades, capable of genocidal wars against the Amerinds, capable of the Holocaust, of Hiroshima, of the killing-fields of Cambodia, of Rwanda, and of Darfur

As an example of the two sides of human nature, we can think of Scandinavia. The Vikings were once feared throughout Europe. The Book of Common Prayer in England contains the phrase “Protect us from the fury of the Northmen!”. Today the same people are so peaceful and law-abiding that they can be taken as an example for how we would like a future world to look. Human nature has the possibility for both kinds of behavior depending on the circumstances. This being so, there are strong reasons to enlist the help of education and religion to make the bright side of human nature win over the dark side. Today, the mass media are an important component of education, and thus the mass media have a great responsibility for encouraging the cooperative and constructive side of human nature rather than the dark and destructive side.

## Some concluding remarks

We started this chapter by saying that human nature is an evolutionary paradox because natural selection is supposed to produce traits that lead to survival, but today our emotions are driving humanity towards destruction. The explanation for this paradox is the enormous and constantly accelerating speed of cultural evolution, especially scientific and technological advances. Genetic evolution is completely unable to keep up with this astonishing rate of change, which might be called an information explosion. Fortunately, human behavior is very malleable, and we can hope that it will be possible to adapt to the rapidly changing conditions of life if proper use is made of our almost miraculous modern communications technologies.

## Suggestions for further reading

1. P.J. Bowler, *Evolution: The History of an Idea*, University of California Press, (1989).
2. D.J. Futuyma, *Evolutionary Biology*, Sinauer Associates, Sunderland Mass., (1986).

3. B. Glass, O. Temkin, and W.L. Strauss, eds., *Forerunners of Darwin: 1745-1859*, Johns Hopkins Press, Baltimore, (1959).
4. R. Milner, *The Encyclopedia of Evolution*, an Owl Book, Henry Holt and Company, New York, (1990).
5. T.A. Appel, *The Cuvier-Geoffroy Debate: French Biology in the Decades before Darwin*, Oxford University Press, (1987).
6. P.J. Bowler, *Fossils and Progress: Paleontology and the Idea of Progressive Evolution in the Nineteenth Century*, Science History Publications, New York, (1976).
7. P. Corsi, *The Age of Lamarck: Evolutionary Theories in France, 1790-1834*, University of California Press, Berkeley, (1988).
8. M. McNeil, *Under the Banner of Science: Erasmus Darwin and his Age*, Manchester University Press, Manchester, (1987).
9. L.G. Wilson, *Sir Charles Lyell's Scientific Journals on the Species Question*, Yale University Press, New Haven, (1970).
10. A.B. Adams, *Eternal Quest: The Story of the Great Naturalists*, G.P. Putnam's Sons, New York, (1969).
11. A.S. Packard, *Lamarck, the Founder of Evolution: His Life and Work*, Longmans, Green, and Co., New York, (1901).
12. C. Darwin, *An historical sketch of the progress of opinion on the Origin of Species, previously to the publication of this work*, Appended to third and later editions of *On the Origin of Species*, (1861).
13. L. Eiseley, *Darwin's Century: Evolution and the Men who Discovered It*, Doubleday, New York, (1958).
14. H.F. Osborne, *From the Greeks to Darwin: The Development of the Evolution Idea Through Twenty-Four Centuries*, Charles Scribner and Sons, New York, (1929).
15. Sir Julian Huxley and H.B.D. Kettlewell, *Charles Darwin and his World*, Thames and Hudson, London (1965).
16. Allan Moorehead, *Darwin and the Beagle*, Penguin Books Ltd. (1971).
17. Francis Darwin (editor), *The Autobiography of Charles Darwin and Selected Letters*, Dover, New York (1958).
18. Charles Darwin, *The Voyage of the Beagle*, J.M. Dent and Sons Ltd., London (1975).
19. Charles Darwin, *The Origin of Species*, Collier MacMillan, London (1974).
20. Charles Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
21. Ruth Moore, *Evolution*, Time-Life Books (1962).
22. L. Barber, *The Heyday of Natural History: 1820-1870*, Doubleday and Co., Garden City, New York, (1980).
23. A. Desmond, *Huxley*, Addison Wesley, Reading, Mass., (1994).
24. R. Owen, (P.R. Sloan editor), *The Hunterian Lectures in Comparative Anatomy, May-June, 1837*, University of Chicago Press, (1992).
25. C. Nichols, *Darwinism and the social sciences*, Phil. Soc. Scient. **4**, 255-277 (1974).
26. M. Ruse, *The Darwinian Revolution*, University of Chicago Press, (1979).
27. A. Desmond and J. Moore, *Darwin*, Penguin Books, (1992).

28. R. Dawkins, *The Extended Phenotype*, Oxford University Press, (1982).
29. R. Dawkins, *The Blind Watchmaker*, W.W. Norton, (1987).
30. R. Dawkins, *River out of Eden: A Darwinian View of Life*, Harper Collins, (1995).
31. R. Dawkins, *Climbing Mount Improbable*, W.W. Norton, (1996).
32. S.J. Gould, *Ever Since Darwin*, W.W. Norton, (1977).
33. R.G.B. Reid, *Evolutionary Theory: The Unfinished Synthesis*, Croom Helm, (1985).
34. M. Ho and P.T. Saunders, editors, *Beyond Neo-Darwinism: An Introduction to a New Evolutionary Paradigm*, Academic Press, London, (1984).
35. J. Maynard Smith, *Did Darwin Get it Right? Essays on Games, Sex and Evolution*, Chapman and Hall, (1989).
36. E. Sober, *The Nature of Selection: Evolutionary Theory in Philosophical Focus*, University of Chicago Press, (1984).
37. B.K. Hall, *Evolutionary Developmental Biology*, Chapman and Hall, London, (1992).
38. J. Thompson, *Interaction and Coevolution*, Wiley and Sons, (1982).
39. R.A. Fisher, *The Genetical Theory of Natural Selection*, Clarendon, Oxford, (1930).
40. J.B.S. Haldane, *Population genetics*, *New Biology* **18**, 34-51, (1955).
41. N. Tinbergen, *The Study of Instinct*, Oxford University Press, (1951).
42. N. Tinbergen, *The Herring Gull's World*, Collins, London, (1953).
43. N. Tinbergen, *Social Behavior in Animals*, Methuen, London, (1953).
44. N. Tinbergen, *Curious Naturalists*, Country Life, London, (1958).
45. N. Tinbergen, *The Animal in its World: Explorations of an Ethologist*, Allan and Unwin, London, (1973).
46. K. Lorenz, *On the evolution of behavior*, *Scientific American*, December, (1958).
47. K. Lorenz, *Evolution and Modification of Behavior* Harvard University Press, Cambridge, MA, (1961).
48. K. Lorenz, *Studies in Animal and Human Behavior. I and II.*, Harvard University Press, (1970) and (1971).
49. P.H. Klopfer and J.P. Hailman, *An Introduction to Animal Behavior: Ethology's First Century*, Prentice-Hall, New Jersey, (1969).
50. J. Jaynes, *The historical origins of "Ethology" and "Comparative Psychology"*, *Anim. Behav.* **17**, 601-606 (1969).
51. W.H. Thorpe, *The Origin and Rise of Ethology: The Science of the Natural Behavior of Animals*, Heinemann, London, (1979).
52. R.A. Hinde, *Animal Behavior: A Synthesis of Ethological and Comparative Psychology*, McGraw-Hill, New York, (1970).
53. J.H. Crook, editor, *Social Behavior in Birds and Mammals*, Academic Press, London, (1970).
54. P. Ekman, editor, *Darwin and Facial Expression*, Academic Press, New York, (1973).
55. P. Ekman, W.V. Friesen and P. Ekworth, *Emotions in the Human Face*, Pergamon, New York, (1972).
56. N. Blurton Jones, editor, *Ethological Studies of Child Behavior*, Cambridge University Press, (1975).

57. M. von Cranach, editor, *Methods of Inference from Animals to Human Behavior*, Chicago/Mouton, Haag, (1976); Aldine, Paris, (1976).
58. K. Lorenz, *On Aggression*, Bantem Books, (1977).
59. I. Eibl-Eibesfeldt, *Ethology, The Biology of Behavior*, Holt, Rinehart and Winston, New York, (1975).
60. I. Eibl-Eibesfeldt and F.K. Salter, editors, *Indoctrinability, Ideology, and Warfare: Evolutionary Perspectives*, Berghahn Books, (1998).
61. I. Eibl-Eibesfeldt, *Human Ethology*, Walter De Gruyter Inc., (1989).
62. I. Eibl-Eibesfeldt, *Love and Hate*, Walter De Gruyter Inc., (1996).
63. J. Bowlby, *By ethology out of psychoanalysis: An experiment in interbreeding*, *Animal Behavior*, **28**, 649-656 (1980).
64. B.B. Beck, *Animal Tool Behavior*, Garland STPM Press, New York, (1980).
65. R. Axelrod, *The Evolution of Cooperation*, Basic Books, New York, (1984).
66. J.D. Carthy and F.L. Ebling, *The Natural History of Aggression*, Academic Press, New York, (1964)
67. D.L. Cheney and R.M. Seyfarth, *How Monkeys See the World: Inside the Mind of Another Species*, University of Chicago Press, (1990).
68. F. De Waal, *Chimpanzee Politics*, Cape, London, (1982).
69. M. Edmunds, *Defense in Animals*, Longman, London, (1974).
70. R.D. Estes, *The Behavior Guide to African Mammals*, University of California Press, Los Angeles, (1991).
71. R.F. Ewer, *Ethology of Mammals*, Logos Press, London, (1968).
72. E. Morgan, *The Scars of Evolution*, Oxford University Press, (1990).
73. W.D. Hamilton, *The genetical theory of social behavior. I and II*, *J. Theor. Biol.* **7**, 1-52 (1964).
74. R. Dawkins, *The Selfish Gene*, Oxford University Press, (1989).
75. R.W. Sussman, *The Biological Basis of Human Behavior*, Prentice Hall, Englewood Cliffs, (1997).
76. Irenäus Eibl-Eibesfeldt, *The Biology of Peace and War*, Thames and Hudson, New York (1979).
77. R.A. Hinde, *Biological Bases of Human Social Behavior*, McGraw-Hill, New York (1977).
78. R.A. Hinde, *Towards Understanding Relationships*, Academic Press, London (1979).
79. Albert Szent-Györgyi, *The Crazy Ape*, Philosophical Library, New York (1970).
80. E.O. Wilson, *Sociobiology*, Harvard University Press (1975).
81. C. Zhan-Waxler, *Altruism and Aggression: Biological and Social Origins*, Cambridge University Press (1986).
82. D.R. Griffin, *Animal Mind - Human Mind*, Dahlem Konferenzen 1982, Springer, Berlin, (1982).
83. R. Dart, *The predatory transition from ape to man*, *International Anthropological and Linguistic Review*, **1**, (1953).
84. S. Savage-Rumbaugh, R. Lewin, et al., *Kanzi: The Ape at the Brink of the Human Mind*, John Wiley and Sons, New York, (1996).

85. R. Dunbar, *Grooming, Gossip, and the Evolution of Language*, Harvard University Press, (1998).
86. M.E. Bitterman, *The evolution of intelligence*, Scientific American, January, (1965).
87. R. Fox, *In the beginning: Aspects of hominid behavioral evolution*, Man, **NS 2**, 415-433 (1967).
88. M.S. Gazzaniga, *The split brain in man*, Scientific American, **217**, 24-29 (1967).
89. D. Kimura, *The asymmetry of the human brain*, Scientific American, **228**, 70-78 (1973).
90. R.G. Klein, *Anatomy, behavior, and modern human origins*, Journal of World Prehistory, **9 (2)**, 167-198 (1995).
91. N.G. Jablonski and L.C. Aiello, editors, *The Origin and Diversification of Language*, Wattis Symposium Series in Anthropology. Memoirs of the California Academy of Sciences, No. 24, The California Academy of Sciences, San Francisco, (1998).
92. S. Pinker, *The Language Instinct: How the Mind Creates Language*, Harper-Collins Publishers, New York, (1995).
93. J.H. Barkow, L. Cosmides and J. Tooby, editors, *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, Oxford University Press, (1995).
94. D.R. Begun, C.V. Ward and M.D. Rose, *Function, Phylogeny and Fossils: Miocene Hominid Evolution and Adaptations*, Plenum Press, New York, (1997).
95. R.W. Byrne and A.W. Whitten, *Machiavellian Intelligence: Social Expertise and the Evolution of Intellect in Monkeys, Apes and Humans*, Cambridge University Press, (1988),
96. V.P. Clark, P.A. Escholz and A.F. Rosa, editors, *Language: Readings in Language and Culture*, St Martin's Press, New York, (1997).
97. T.W. Deacon, *The Symbolic Species: The Co-evolution of Language and the Brain*, W.W. Norton and Company, New York, (1997).
98. C. Gamble, *Timewalkers: The Prehistory of Global Colonization*, Harvard University Press, (1994).
99. K.R. Gibson and T. Ingold, editors, *Tools, Language and Cognition in Human Evolution*, Cambridge University Press, (1993).
100. P. Mellers, *The Emergence of Modern Humans: An Archaeological Perspective*, Edinburgh University Press, (1990).
101. P. Mellers, *The Neanderthal Legacy: An Archaeological Perspective of Western Europe*, Princeton University Press, (1996).
102. S. Mithen, *The Prehistory of the Mind*, Thames and Hudson, London, (1996).
103. D. Haraway, *Signs of dominance: from a physiology to a cybernetics of primate biology*, C.R. Carpenter, 1939-1970, Studies in History of Biology, **6**, 129-219 (1983).
104. D. Johanson and M. Edey, *Lucy: The Beginnings of Humankind*, Simon and Schuster, New York, (1981).
105. B. Kurtén, *Our Earliest Ancestors*, Columbia University Press, New York, (1992).
106. R.E. Leakey and R. Lewin, *Origins Reconsidered*, Doubleday, New York, (1992).
107. P. Lieberman, *The Biology and Evolution of Language*, Harvard University Press, (1984).

108. J.D. Wall and M. Przeworski, *When did the human population size start increasing?*, *Genetics*, **155**, 1865-1874 (2000).
109. L. Aiello and C. Dean, *An Introduction to Human Evolutionary Anatomy*, Academic Press, London, (1990).
110. F. Ikawa-Smith, ed., *Early Paleolithic in South and East Asia*, Mouton, The Hague, (1978).
111. R.R. Baker, *Migration: Paths Through Space and Time*, Hodder and Stoughton, London, (1982).
112. P. Bellwood, *Prehistory of the Indo-Malaysian Archipelago*, Academic Press, Sidney, (1985).
113. P.J. Bowler, *Theories of Human Evolution: A Century of Debate, 1884-1944*, Basil Blackwell, Oxford, (1986).
114. G. Isaac and M. McCown, eds., *Human Origins: Louis Leaky and the East African Evidence*, Benjamin, Menlo Park, (1976).
115. F.J. Brown, R. Leaky, and A. Walker, *Early Homo erectus skeleton from west Lake Turkana, Kenya*, *Nature*, **316**, 788-92, (1985).
116. K.W. Butzer, *Archeology as Human Ecology*, Cambridge University Press, (1982).
117. A.T. Chamberlain and B.A. Wood, *Early hominid phylogeny*, *Journal of Human Evolution*, **16**, 119-33, (1987).
118. P. Mellars and C. Stringer, eds., *The Human Revolution: Behavioural and Biological Perspectives in the Origins of Modern Humans*, Edinburgh University Press, (1989).
119. G.C. Conroy, *Primate Evolution*, W.W. Norton, New York, (1990).
120. R.I.M. Dunbar, *Primate Social Systems*, Croom Helm, London, (1988).
121. B. Fagan, *The Great Journey: The Peopling of Ancient America*, Thames and Hudson, London, (1987).
122. R.A. Foley, ed., *Hominid Evolution and Community Ecology*, Academic Press, New York, (1984).
123. S.R. Binford and L.R. Binford, *Stone tools and human behavior*, *Scientific American*, **220**, 70-84, (1969).
124. G. Klein, *The Human Career, Human Biological and Cultural Origins*, University of Chicago Press, (1989).
125. B.F. Skinner and N. Chomsky, *Verbal behavior*, *Language*, **35** 26-58 (1959).
126. D. Bickerton, *The Roots of Language*, Karoma, Ann Arbor, Mich., (1981).
127. E. Lenneberg in *The Structure of Language: Readings in the Philosophy of Language*, J.A. Fodor and J.A. Katz editors, Prentice-Hall, Englewood Cliffs N.J., (1964).
128. S. Pinker, *Talk of genetics and visa versa*, *Nature*, **413**, 465-466, (2001).
129. S. Pinker, *Words and rules in the human brain*, *Nature*, **387**, 547-548, (1997).
130. M. Ruhelen, *The Origin of Language*, Wiley, New York, (1994).
131. C.B. Stringer and R. McKie, *African Exodus: The Origins of Modern Humanity*, Johnathan Cape, London (1996).
132. R.W. Sussman, *The Biological Basis of Human Behavior*, Prentice Hall, Englewood Cliffs, (1997).
133. D.P. Barash *Sociobiology and Behavior*, Elsevier, New York, (1977).

134. J.D. Carthy and F.J. Eblin, eds., *The Natural History of Aggression*, Academic Press, New York, (1964).
135. N.A. Chagnon and W. Irons, eds., *Evolutionary Biology and Human Social Behavior, an Anthropological Perspective*, Duxbury Press, N. Scituate, MA, (1979).
136. E. Danielson, *Vold, en Ond Arv?*, Gyldendal, Copenhagen, (1929).
137. M.R. Davie, *The Evolution of War*, Yale University Press, New Haven, CT, (1929).
138. T. Dobzhanski, *Mankind Evolving*, Yale University Press, New Haven, CT, (1962).
139. I. Eibl-Eibesfeldt, *Der Vorprogrammiert Mensch*, Molden, Vienna, (1973).
140. I. Eibl-Eibesfeldt, *Ethology, the Biology of Behavior*, Holt, Rinehart and Winston, New York, (1975).
141. I. Eibl-Eibesfeldt, *Liebe und Hass*, Molden, Vienna, (1973).
142. R.L. Holloway, *Primate Aggression: Territoriality and Xenophobia*, Academic Press, New York, (1974).
143. P. Kitcher, *Vaulting Ambition: Sociobiology and the Quest for Human Nature*, MIT Press, Cambridge, MA, (1985).
144. S.L.W. Mellen, *The Evolution of Love*, Freeman, Oxford, (1981).
145. A. Roe and G.G. Simpson, *Behavior and Evolution*, Yale University Press, New Haven, CT, (1958).
146. N.J. Smelser, *The Theory of Collective Behavior*, Free Press, New York, (1963).
147. R. Trivers, *Social Evolution*, Benjamin/Cummings, Menlo Park, CA, (1985).
148. W. Weiser, *Konrad Lorenz und seine Kritiker*, Piper, Munich, (1976).
149. W. Wickler, *Biologie der 10 Gebote*, Piper, Munich, (1971).
150. E.O. Wilson, *Sociobiology*, Harvard University Press (1975).
151. E.O. Wilson, *On Human Nature*, Bantam Books, New York, (1979).
152. C. Zahn-Waxler, *Altruism and Aggression: Biological and Social Origins*, Cambridge University Press, (1986).
153. J. Galtung, *A structural theory of aggression*, Journal of Peace Research, **1**, 95-119, (1964).
154. G.E. Kang, *Exogamy and peace relations of social units: A cross-cultural test*, Ethology, **18**, 85-99, (1979).
155. A. Montagu, *Man and Aggression*, Oxford University Press, New York, (1968).
156. W.A. Nesbitt, *Human Nature and War*, State Education Department of New York, Albany, (1973).
157. W. Suttles, *Subhuman and human fighting*, Anthropologica, **3**, 148-163, (1961).
158. V. Vale and Andrea Juno, editors, *Modern Primitives: An Investigation of Contemporary Adornment and Ritual*, San Francisco Re/Search, (1990).
159. R.A. Hinde, editor, *The Institution of War*, Cambridge University Press, (1991).
160. R.A. Hinde, *Individuals, Relationships and Culture: Links Between Ethology and the Social Sciences*, Cambridge University Press, (1987).
161. R.A. Hinde, *Ethology: Its Nature and Relationship With Other Sciences*
162. R.A. Hinde, *Animal Behaviour: A Synthesis of Ethology and Comparative Psychology*
163. R.A. Hinde, *Non-Verbal Communication*, Cambridge University Press, (1972).



164. R.A. Hinde, *Why Gods Persist: A Scientific Approach to Religion*, Routledge, London, (1999).
165. P.P.G. Bateson and R.A. Hinde, editors, *Growing Points in Ethology: Based on a Conference Sponsored by St. John's College and King's College, Cambridge*, Cambridge University Press, (1976).
166. R.A. Hinde, A.-N. Perret-Clermont and J. Stevenson-Hinde, editors, *Social Relationships and Cognitive Development*, Clarendon, Oxford, (1985).
167. R.A. Hinde and J. Stevenson-Hinde, editors, *Relationships Within Families: Mutual Influences*, Clarendon Press, Oxford, (1988).
168. P. Bateson, editor, *The Development and Integration of Behaviour: Essays in Honour of Robert Hinde*, Cambridge University Press, (1991).
169. C. Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
170. P. Kropotkin, *Mutual Aid, A Factor in Evolution*, Walter Heinemann, London, (1902).
171. R.A. Fischer, *The Genetical Theory of Natural Selection*, Clarendon, Oxford, (1930).
172. J.B.S. Haldane, *Population genetics*, *New Biology* **18**, 34-51, (1955).
173. L. Margulis, *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis*, The MIT Press, (1991).
174. L. Margulis, *Symbiosis in Cell Evolution: Microbial Communities in the Archean and Proterozoic Eons*, W.H. Freeman, (1992).
175. N. Tinbergen, *The Study of Instinct*, Oxford University Press, (1951).
176. I. Eibl-Eibesfeldt, *The Biology of Peace and War*, Thames and Hudson, New York (1979).
177. E.O. Wilson, *On Human Nature*, Bantam Books, New York, (1979).
178. R.A. Hinde, *Biological Bases of Human Social Behavior*, McGraw-Hill, New York (1977).
179. R.A. Hinde, *Individuals, Relationships and Culture: Links Between Ethology and the Social Sciences*, Cambridge University Press, (1987).
180. W.M. Senner, editor, *The Origins of Writing*, University of Nebraska Press, Lincoln and London, (1989).



## Chapter 3

# TRIBALISM, NATIONALISM AND GENOCIDES

### 3.1 From tribalism to nationalism

70,000 years ago, our hunter-gatherer ancestors lived in tribes. Loyalty to the tribe was natural for our ancestors, as was collective work on tribal projects. Today, at the start of the 21st century, we live in nation-states to which we feel emotions of loyalty very similar to the tribal emotions of our ancestors.

The enlargement of the fundamental political and social unit has been made necessary and possible by improved transportation and communication, and by changes in the techniques of warfare. In Europe, for example, the introduction of canons in warfare made it possible to destroy castles, and thus the power of central monarchs was increased at the expense of feudal barons. At the same time, improved roads made merchants wish to trade freely over larger areas. Printing allowed larger groups of people to read the same books and newspapers, and thus to experience the same emotions. Therefore the size of the geographical unit over which it was possible to establish social and political cohesion became enlarged.

The tragedy of our present situation is that the same forces that made the nation-state replace the tribe as the fundamental political and social unit have continued to operate with constantly-increasing intensity. For this reason, the totally sovereign nation-state has become a dangerous anachronism. Although the world now functions as a single unit because of modern technology, its political structure is based on fragments, on absolutely-sovereign nation states - large compared to tribes, but too small for present-day technology, since they do not include all of mankind. Gross injustices mar today's global economic interdependence, and because of the development of thermonuclear weapons, the continued existence of civilization is threatened by the anarchy that exists today at the international level.

## 3.2 Lessons from the First World War

We have recently marked the 100th anniversary of the outbreak of the First World War. It is important for society to look back at this catastrophic event, which still casts a dark shadow over the future of human civilization. We must learn the bitter lessons which it has to teach us, in order to avoid a repetition of the disaster.

As we have seen, 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.

Hearing Beethoven's 9th Symphony, with Schiller's words, most of us experience a feeling that resembles patriotism, but is broader: "All men are brothers!" Not just some, but all. The choral movement of the symphony is like a national anthem of humanity. All humans are brothers and sisters! All! All nations and races have contributed to the great monument of human civilization. It is a treasure that we all hold in common. We must join hands and work together for our common future. 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.

Secondly, 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.

Israel's Prime Minister, Benjamin Netanyahu has frequently stated that, with or without US backing, Israel intends to bomb Iran, an act that would be not only criminal but also insane. Why criminal? Because it would violate both the UN Charter and the Nuremberg Principles. Why insane? Because the Middle East is already a deeply troubled region, and a military attack on Iran could escalate uncontrollably into a general war in the Middle East. Perhaps it could even escalate into World War III. Netanyahu has told the people of Israel that the attack would involve only about 500 Israeli deaths and that it would be over in a month. One is reminded of Kaiser Wilhelm's words to his departing troops: "You will be home before the leaves are off the trees!"

In general, aggressive interventions, in 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 man’s 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 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. Threats are needed to justify the diversion of such enormous quantities of money from urgently needed social projects into the bottomless pit of war.

### **3.3 The devil's dynamo**

#### **Why is the military-industrial complex sometimes called "The Devil's Dynamo"?**

The military-industrial complex involves a circular flow of money. The money flows like the electrical current in a dynamo, driving a diabolical machine. Money from immensely rich corporate oligarchs buys the votes of politicians and the propaganda of the mainstream media. Numbed by the propaganda, citizens allow the politicians to vote for obscenely bloated military budgets, which further enrich the corporate oligarchs, and the circular flow continues.

#### **The Industrial Revolution and Colonialism**

The devil's dynamo of today has led to a modern version of colonialism and empire. It is therefore interesting to look at the first global era of colonialism: In the 18th and 19th centuries, the continually accelerating development of science and science-based industry began to affect the whole world. As the factories of Europe poured out cheap manufactured goods, a change took place in the patterns of world trade: Before the Industrial Revolution, trade routes to Asia had brought Asian spices, textiles and luxury goods to Europe. For example, cotton cloth and fine textiles, woven in India, were imported to England. With the invention of spinning and weaving machines, the trade was reversed. Cheap cotton cloth, manufactured in England, began to be sold in India, and the Indian textile industry withered, just as the hand-loom industry in England itself had done a century before.

The rapid development of technology in the west also opened an enormous gap in military strength between the industrialized nations and the rest of the world. Taking advantage of their superior weaponry, the advanced industrial nations rapidly carved the remainder of the world into colonies, which acted as sources of raw materials and food, and as markets for manufactured goods. Throughout the American continent, the native Indian population had proved vulnerable to European diseases, such as smallpox, and large numbers of them had died. The remaining Indians were driven westward by streams of immigrants arriving from Europe.

The sometimes genocidal wars waged by industrial nations against the inhabitants of Asia, Africa and the Western Hemisphere often involved almost unimaginable cruelty. We can think, for example of the atrocities committed by the army of Leopold II in Belgian Congo, where more than ten million people were killed out of a total population of 20 million. (In Leopold's Congo human hands became a sort of currency. This was because the men in Leopold's army were ordered to cut off the hands of their victims to prove that they had not wasted bullets.) We can also think of distribution of smallpox-infected

blankets to the Amerinds, or the unbelievable treachery and cruelty of Conquistadors in Central America and South South America.

Often the industrialized nations made their will felt by means of naval bombardments: In 1854, Commodore Perry forced Japan to accept foreign traders by threatening to bombard Tokyo. In 1856, British warships bombarded Canton in China to punish acts of violence against Europeans living in the city. In 1864, a force of European and American warships bombarded Choshu in Japan, causing a revolution. In 1882, Alexandria was bombarded, and in 1896, Zanzibar.

Much that was beautiful and valuable was lost, as mature traditional cultures collapsed, overcome by the power and temptations of modern industrial civilization. For the Europeans and Americans of the late 19th century and early 20th century, progress was a religion, and imperialism was its crusade.

Between 1800 and 1875, the percentage of the earth's surface under European rule increased from 35% to 67%. In the period between 1875 and 1914, there was a new wave of colonial expansion, and the fraction of the earth's surface under the domination of colonial powers (Europe, the United States and Japan) increased to 85%, if former colonies are included.

The unequal (and unfair) contest between the industrialized countries, armed with modern weapons, and the traditional cultures with their much more primitive arms, was summarized by the English poet Hilaire Belloc in a sardonic couplet: "Whatever happens, we have got The Maxim gun, and they have not."

The Maxim gun was one of the world's first automatic machine guns. It was invented in the United States in 1884 by Hiram S. Maxim. The explorer and colonialist Henry Morton Stanley (1841-1904) was extremely enthusiastic about Maxim's machine gun, and during a visit to the inventor he tried firing it, demonstrating that it really could fire 600 rounds per minute. Stanley commented that the machine gun would be "a valuable tool in helping civilization to overcome barbarism".

During the period between 1880 and 1914, British industrial and colonial dominance began to be challenged. Industrialism had spread from Britain to Belgium, Germany and the United States, and, to a lesser extent, to France, Italy, Russia and Japan. By 1914, Germany was producing twice as much steel as Britain, and the United States was producing four times as much. . New techniques in weaponry were introduced, and a naval armaments race began among the major industrial powers. The English found that their old navy was obsolete, and they had to rebuild. Thus, the period of colonial expansion between 1880 and 1914 was filled with tensions, as the industrial powers raced to arm themselves in competition with each other, and raced to seize as much as possible of the rest of the world.

The English economist and Fabian, John Atkinson Hobson (1858-1940), offered a famous explanation of the colonial era in his book "Imperialism: A Study" (1902). According to Hobson, the basic problem that led to colonial expansion was an excessively unequal distribution of incomes in the industrialized countries. The result of this unequal distribution was that neither the rich nor the poor could buy back the total output of their society. The incomes of the poor were insufficient, and rich were too few in number. The rich had



Figure 3.1: **The English economist and Fabian, John Atkinson Hobson (1858-1940), offered a famous explanation of the colonial era in his book “Imperialism: A Study” (1902). Source: [www.snipview.com](http://www.snipview.com)**

finite needs, and tended to reinvest their money. As Hobson pointed out, reinvestment in new factories only made the situation worse by increasing output.

Hobson had been sent as a reporter by the Manchester Guardian to cover the Second Boer War. His experiences had convinced him that colonial wars have an economic motive. Such wars are fought, he believed, to facilitate investment of the excess money of the rich in African or Asian plantations and mines, and to make possible the overseas sale of excess manufactured goods. Hobson believed imperialism to be immoral, since it entails suffering both among colonial peoples and among the poor of the industrial nations. The cure that he recommended was a more equal distribution of incomes in the manufacturing countries.

## Outlawing war

Industrial and colonial rivalry contributed to the outbreak of the First World War, to which the Second World War can be seen as a sequel. The Second World War was terrible enough to make world leaders resolve to end the institution of war once and for all, and the United Nations was set up for this purpose. 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.”

The Nuremberg principles, which were used in the trial of Nazi leaders after World War II, explicitly outlawed “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).”

With the founding of the United Nations at the end of the Second World War, a system of international law was set up to replace the rule of military force. Law is a mechanism for equality. Under law, the weak and the powerful are in principle equal. The basic purpose of the United Nations is to make war illegal, and if war is illegal, the powerful and weak are on equal footing, much to the chagrin of the powerful. How can one can one



construct or maintain an empire if war is not allowed? It is only natural that powerful nations should be opposed to international law, since it is a curb on their power. However, despite opposition, the United Nations was quite successful in ending the original era of colonialism, perhaps because of the balance of power between East and West during the Cold War. One by one, former colonies regained their independence. But it was not to last. The original era of colonialism was soon replaced by neocolonialism and by “The American Empire”.

### **The military-industrial complex**

The two world wars of the 20th Century involved a complete reordering of the economies of the belligerent countries, and a dangerous modern phenomenon was created - the military-industrial complex.

In his farewell address (January 17, 1961) US President Dwight David Eisenhower warned of the dangers of the war-based economy that World War II had forced his nation to build: “...We have been compelled to create an armaments industry of vast proportions”, Eisenhower said, “...Now this conjunction of an immense military establishment and a large arms industry is new in American experience. The total influence - economic, political, even spiritual - is felt in every city, every state house, every office in the federal government. ...We must not fail to comprehend its grave implications. Our toil, resources and livelihood are all involved; so is the very structure of our society. ... We must stand 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. We must never let the weight of this combination endanger our democratic processes. We should take nothing for granted.”

This farsighted speech by Eisenhower deserves to be studied by everyone who is concerned about the future of human civilization and the biosphere. As the retiring president pointed out, the military-industrial complex is a threat both to peace and to democracy. It is not unique to the United States but exists in many countries. The world today spends roughly 1.7 trillion (i.e. 1.7 million million) US dollars each year on armaments. It is obvious that very many people make their living from war, and therefore it is correct to speak of war as a social, political and economic institution. The military-industrial complex is one of the main reasons why war persists, although everyone realizes that war is the cause of much of the suffering of humanity.

### **The “New American Century”**

The military-industrial complex needs enemies. Without them it would wither. Thus at the end of the Second World War, this vast power complex was faced with a crisis, but it was saved by the discovery of a new enemy: communism. The United States emerged from the two global wars as the world's dominant industrial power, taking over the position that Britain had held during the 19th century. The economies of its rivals had been destroyed by the two wars, but no fighting had taken place on American soil. Because of its unique

position as the only large country whose economy was completely intact in 1945, the United States found itself suddenly thrust, into the center of the world's political stage.

The new role as "leader of the free world" was accepted by the United States with a certain amount of nervousness. America's previous attitude had been isolationism, a wish to be "free from the wars and quarrels of Europe". After the Second World War, however, this was replaced by a much more active international role. Perhaps the new US interest in the rest of the world reflected the country's powerful and rapidly growing industrial economy and its need for raw materials and markets (the classical motive for empires). Publicly, however, it was the threat of Communism that was presented to American voters as the justification for interference in the internal affairs of other countries. (Today, after the end of the Cold War, it has become necessary to find another respectable motivation that can be used to justify foreign intervention, and the "Crusade Against Communism" has now been replaced by the "War on Terror".)

Despite the fact that initiating a war is a violation of the United Nations Charter and the Nuremberg Principles, the United States now maintains roughly 1000 military bases in 150 countries, According to Iraklis Tsavdaridis, Secretary of the World Peace Council, "The establishment of US bases should not of course be seen simply in terms of direct military ends. They are always used to promote the economic and political goals of US capitalism. For example, US corporations and the US government have been eager for some time to build a secure corridor for US controlled oil and natural gas pipelines from the Caspian Sea in Central Asia through Afghanistan and Pakistan to the Arabian Sea. This region has more than 6 percent of the world's proven oil reserves, and almost 40 percent of its gas reserves. The war in Afghanistan and the creation of US military bases in Central Asia are viewed as a key opportunity to make such pipelines a reality."

Since World War II, the United States has interfered either militarily or covertly in the internal affairs of 38 countries. Of these interventions, the Vietnam War, the bombing of Cambodia and Laos, and the invasions of Iraq and Afghanistan were particularly terrible, resulting in many millions of dead, maimed or displaced people, most of them civilians.

When the Cold War ended with the collapse of the Soviet Union, a Washington-based think tank called "Project for a New American Century" maintained that a strategic moment had arrived: The United States was now the sole superpower, and it ought to use military force to dominate and reshape the rest of the world. Many PNAC members occupied key positions in the administration of George W. Bush. These included Dick Cheney, I. Lewis Libby, Donald Rumsfeld, Paul Wolfowitz, Eliot Abrams, John Bolton and Richard Perle.

The idea that the United States can and should achieve global hegemony through military force seems to motivate US policy today. The goal of controlling the world's supply of scarce resources seems to be almost forgotten. Today, the motive seems to be power for the sake of power; domination for the sake of domination. But of course, the military-industrial complex does not care so deeply about resources. All that it needs to be enriched is perpetual war.

Today, the US government is taking actions that seem almost insane, risking a nuclear

war with Russia and simultaneously alienating China. In the long run, such hubris cannot succeed. Overspending on war will lead to economic collapse. Ironically the military sells itself as the protector of the security of the population, but it does no such thing. On the contrary, it threatens to kill hundreds of millions of ordinary people in a nuclear war.

### 3.4 Militarism's hostages

Do our "Defense Departments" really defend us? Absolutely not! Their very title is a lie. The military-industrial complex sells itself by claiming to defend civilians. It justifies vast and crippling budgets by this claim; but it is a fraud. For the military-industrial complex, the only goal is money and power. Civilians like ourselves are just hostages. We are expendable. We are pawns in the power game, the money game.

Nations possessing nuclear weapons threaten each other with "Mutually Assured Destruction", which has the very appropriate acronym MAD. What does this mean? Does it mean that civilians are being protected? Not at all. Instead they are threatened with complete destruction. Civilians here play the role of hostages in the power games of their leaders.

A thermonuclear war today would be not only genocidal but also omnicidal. It would kill people of all ages, babies, children, young people, mothers, fathers and grandparents, without any regard whatever for guilt or innocence. Such a war would be the ultimate ecological catastrophe, destroying not only human civilization but also 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.

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.

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. It's enormous piercing sound filled the room. A second alarm followed, and then a third, fourth 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.

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.

Recently the United States has made provocative moves that seriously risk starting a war with Russia that might develop into a nuclear war. These include a proposed transfer of heavy weapons to Baltic states on Russia's border, as well as sending a fleet of warships to the Black sea.<sup>1</sup>

At the same time, the United States is making aggressive moves in an attempt to

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<sup>1</sup> <http://www.countercurrents.org/roberts200615.htm>  
<http://www.informationclearinghouse.info/article42162.htm>  
<http://www.countercurrents.org/zuesse160615.htm>  
<http://dissidentvoice.org/2015/06/ukraine-and-the-apocalyptic-risk-of-propagandized-ignorance/>  
<http://www.informationclearinghouse.info/article42140.htm>  
<http://www.informationclearinghouse.info/article42147.htm>  
<http://human-wrongs-watch.net/2015/06/14/us-and-russia-playing-nuclear-chicken-with-each-other/>

“contain China”.<sup>2</sup>

Thus Washington's power-holders are threatening war with both Russia and China. The effect of these colossally misguided US actions has been to firmly unite China and Russia. In fact the BRICS countries, with their vast resources, are now moving away from using the dollar as a reserve currency for international trade. The probable effect will be the collapse of the already-strained US economy, and as a consequence, the fall of the US Empire.

What can be the reason for these actions, which seem to border on insanity? One reason can be found in the power-drunk thinking of the “Project for a New American Century”, one of whose members was US Under Secretary of Defense for Policy, Paul Wolfowitz.

The Wolfowitz Doctrine states that “Our first objective is to prevent the re-emergence of a new rival, either on the territory of the former Soviet Union or elsewhere, that poses a threat on the order of that posed formerly by the Soviet Union. This is a dominant consideration underlying the new regional defense strategy and requires that we endeavor to prevent any hostile power from dominating a region whose resources would, under consolidated control, be sufficient to generate global power.”

In other words, the Wolfowitz Doctrine is a declaration that the United States intends to control the entire world through military power. No thought is given to the protection of civilian populations, either in the United States or elsewhere. Civilians are mere hostages in the power game.

The money game is important too. A great driving force behind militarism is the almost unimaginably enormous river of money that buys the votes of politicians and the propaganda of the mainstream media. Numbed by the propaganda, citizens allow the politicians to vote for obscenely bloated military budgets, which further enrich the corporate oligarchs, and the circular flow continues.

As long as tensions are maintained; as long as there is a threat of war, the military-industrial complex gets the money for which it lusts, and the politicians and journalists get their blood money. The safety of civilians plays no role in the money game. We are just hostages.

There is a danger that our world, with all the beauty and value that it contains, will be destroyed by this cynical game for power and money, in which civilians are militarism's hostages. Will we let this happen?

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<sup>2</sup> <http://www.commondreams.org/news/2015/05/26/threat-inevitable-war-looms-between-us-and-china-over-pacific-island-row>  
<http://www.informationclearinghouse.info/article42171.htm>  
<http://www.informationclearinghouse.info/article42176.htm>

## 3.5 Killing civilians

### The Geneva Conventions

In Protocol I of the Geneva Conventions, Articles 51 and 54 outlaw indiscriminate attacks on civilian populations, and destruction of food, water, and other materials needed for survival. Indiscriminate attacks include directly attacking civilian (non-military) targets, but also using technology such as biological weapons, nuclear weapons and land mines, whose scope of destruction cannot be limited. A total war that does not distinguish between civilian and military targets is considered a war crime.

### Targeting civilians

Throughout history, military forces have frequently committed the crime of deliberately targeting civilian populations. An early example of this was the bombardment of neutral Copenhagen by British forces, which took place, without a declaration of war, from 2-5 September, 1807. The object of the bombardment was to terrorize the citizens of the city, so that they would persuade their government to surrender the Danish-Norwegian fleet to the British. Besides exploding shells, incendiary rockets were used, and about a third of the city was destroyed. In England, news of the bombardment was greeted with mixed reactions. Canning wrote that “Nothing ever was more brilliant, more salutary or more effectual than the success [at Copenhagen]”, but Lord Erskine condemned it by saying “if hell did not exist before, Providence would create it now to punish the ministers for that damnable measure.”

Another instance of targeting of civilians was the 1937 Fascist and Nazi destruction of Guernica, made famous by Picasso’s painting. A report described the event as follows: “Guernica, the most ancient town of the Basques and the centre of their cultural tradition, was completely destroyed yesterday afternoon by insurgent air raiders. The bombardment of this open town far behind the lines occupied precisely three hours and a quarter, during which a powerful fleet of aeroplanes consisting of three types [of] Junkers and Heinkel bombers, did not cease unloading on the town bombs weighing from 1,000 lbs. downwards and, it is calculated, more than 3,000 two-pounder aluminum incendiary projectiles. The fighters, meanwhile, plunged low from above the centre of the town to machine-gun those of the civilian population who had taken refuge in the fields”

The Nanking Massacre was an episode of mass murder, mass rape and looting committed by Japanese troops against civilians and unarmed prisoners of war in Nanking (Nanjing), during the Second Sino-Japanese War. The massacre occurred during a six-week period starting on December 13, 1937, the day that the city surrendered to the Japanese. The International Tribunal of the Far East estimated in 1948 that over 200,000 people were killed in this incident. Neither pregnant women, babies, young girls, nor old people were spared.

On the 25th of September, 1939, Hitler’s air force began a series of intense attacks on Warsaw. Civilian areas of the city, hospitals and fleeing refugees all were targeted. On the

14th of May, 1940, Rotterdam was also devastated. The German Luftwaffe also carried out massive air attacks on targets in Britain.

Although they were not the first to start it, by the end of the war, the United States and Britain were bombing civilian populations on a far greater scale than Japan and Germany had ever done. We can think of the terrible fire bombings of Hamburg, Kassel, Pforzheim, Mainz, Dresden and Berlin, as well as Tokyo, Kobe, Yokohama, and the nuclear destruction of Hiroshima and Nagasaki. General Curtis LeMay, under whose command many of the attacks on Japanese civilians were carried out, said later: "I suppose that if [we] had lost the war, I would have been tried as a war criminal."

Among the most savage recent attacks on civilians were those that occurred during the Vietnam War. Besides conventional high explosives, chemical weapons were used, including the notorious Agent Orange. This was a defoliant which not only lastingly damaged the ecology of Vietnam, but also had terrible effects on the health of the civilian population.

According to Wikipedia, "The government of Vietnam says that 4 million of its citizens were exposed to Agent Orange, and as many as 3 million have suffered illnesses because of it; these figures include the children of people who were exposed....Children in the areas where Agent Orange was used have been affected, and have multiple health problems, including cleft palate, mental disabilities, hernias and extra fingers and toes. In the 1970's high levels of dioxin were found in the breast milk of South-Vietnamese women, and in the blood of US military personnel who had served in Vietnam."

During the Vietnam war, the effect of conventional high-explosive bombs was also enormous. According to a study by Edward Miguel and Gerard Roland of the University of California, "The United States Air Force dropped in Indochina, from 1964 to August 15, 1973, a total of 6,162,000 tons of bombs [in Indochina]...This tonnage far exceeded that expended in World War II."

Of this enormous quantity, more than 2 million tons of bombs were dropped on the tiny country of Laos, making it, per capita, the most heavily bombed nation in history. The bombings were part of the U.S. Secret War in Laos to support the Royal Lao Government against the Pathet Lao and to interdict traffic along the Ho Chi Minh Trail. The bombings destroyed many villages and displaced hundreds of thousands of Lao civilians during the nine-year period. Up to a third of the bombs did not explode, leaving Laos contaminated with vast quantities of unexploded ordnance.<sup>3</sup>

Genocides must also be included if we are to have a complete picture of the way in which governments attack civilian populations. These include the mass murder of Jews, Poles and Gypsies by the Nazis during World War II, Armenian Genocide, the genocides in Rwanda and Darfur, the genocidal treatment of Palestinians by Israel, and many many other cases.<sup>4</sup>

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<sup>3</sup><http://legaciesofwar.org/about-laos/secret-war-laos/>

<sup>4</sup> <http://www.presstv.com/detail/2014/07/11/370869/gaza-genocide-and-criminal-rogue-israel/>

## Do our “Defense Departments” really defend us?

What is the point of this long and gruesome list of crimes committed by military forces against civilians? What I am trying to show, is that the very name, “Department of Defense” is a fraud. The military-industrial complex sells itself by claiming to defend civilians. It justifies vast and crippling budgets by the same claim. But it is a lie. Soldiers do not “guard us while we sleep” as Kipling believed. What the military establishments of the world give us is war, and in modern war, most of the victims are civilians. What the generals, arms manufacturers and politicians are really defending is their own power, and their own profits. Civilians are just hostages. They are expendable.

We can see this most clearly if we think of nuclear war. Nations threaten each other with “Mutually Assured Destruction”, which has the very appropriate acronym MAD. What does this mean? Does it mean that civilians are being protected? Not at all. Instead they are threatened with complete destruction. Civilians here play the role of hostages in the power games of their leaders.

If a thermonuclear war occurs it will be the end of human civilization and much of the biosphere. This will definitely happen in the future unless the world rids itself of nuclear weapons since, in the long run, the finite chance of accidental nuclear war happening due to a technical or human failure during a given year will gradually build up into a certainty of disaster. Nevertheless, our leaders stubbornly hold onto their nuclear toys, which seem to give them a sense of god-like power.

Civilians must stop being passive hostages. Civil society must make its will felt. Where democracy has decayed, it must be restored. If our leaders continue to enthusiastically support the institution of war, if they continue to cling to nuclear weapons, then let us have new leaders!

## 3.6 Some examples of genocide

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<sup>5</sup>

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

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<sup>5</sup><https://www.transcend.org/tms/2018/09/convention-on-the-prevention-and-punishment-of-the-crime-of-genocide-3/>  
<https://www.transcend.org/tms/2018/09/is-genocide-a-controversial-international-crime-2/>  
<https://www.transcend.org/tms/2018/09/human-rights-humanitarian-law-genocide-2/>  
<https://www.transcend.org/tms/2018/09/map-the-risk-of-genocide-around-the-world-2/>  
<https://www.transcend.org/tms/2018/09/the-nightmare-awaiting-rohingya-returnees/>  
<https://www.transcend.org/tms/2018/09/u-n-investigators-renew-call-for-myanmar-military-officials-to-face-genocide-charges/>



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 Darwin’s 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 guerilla 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.

### 3.7 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 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.

On our small but beautiful earth - made small by technology, made beautiful by nature - there is room for one group only: the all-inclusive family of humankind.

### 3.8 What is to be done?

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.

In the long run, the survival of human civilization can only be ensured by abolition of the institution of war.

#### Suggestions for further reading

1. J.H. Bodley, *Cultural Anthropology: Tribes, States, and the Global System*, 3rd ed., Mayfield, Mountain View, CA, (2000).
2. K. Raaflaub and N. Rosenstein, eds., *War and Society in the Ancient and Medieval Worlds*, Harvard University Press and Center for Hellenic Studies, (1999).
3. Elie Kedourie, *Nationalism*, Hutchison University Library, Third Edition, (1966).
4. Eugene Kamenka, editor, *Nationalism*, Edward Arnold Ltd., London, (1976).
5. Elie Kedourie, editor, *Nationalism in Asia and Africa*, New American Library, (1970).
6. G. Allport, *The Nature of Prejudice*, Doubleday Anchor Books, New York, (1958).
7. I.A. Berg and B.M. Bass, eds., *Conformity and Deviation*, Harper and Row, New York, (1961).
8. W. Buchanan and H. Cantril, *How Nations See Each Other*, University of Illinois Press, Urbana, IL, (1953).
9. H.C.J. Duijker and N.H. Frijda, *National Character and National Stereotypes*, North-Holland Publishing Co., Amsterdam, (1960).

10. S. Freud, *Warum Krieg? Das Bild vom Feind*, Arbeitsgem. Friedenspädagogik, (1983).
11. S. Freud, *Why War?*, in *The Basic Writings of Sigmund Freud*, A.A. Brill, ed., Modern Library, (1995).
12. S. Freud, *Civilization, War and Death. Psycho-analytical Epitomes No. 4*, Hogarth Press, London, (1953).
13. S. Keen, *Faces of the Enemy: Reflections of the Hostile Imagination*, Harper and Row, San Francisco, (1986).
14. W.E. Lampert, *Children's Views of Foreign Peoples*, Appleton-Century-Crofts, New York, (1967).
15. R.A. Levine and D.T. Campbell, *Ethnocentrism: Theories of Theories of Conflict, Ethnic Attitudes and Group Behavior*, Wiley, New York, (1972).
16. V.D. Volken, *Cyprus: War and Adaption: A Psychoanalytical History of Two Ethnic Groups in Conflict*, University Press of Virginia, Charlottesville, VA, (1979).
17. L. Durrell, *Bitter Lemons* (nationalism in the Cyprus conflicts), Faber and Faber, London, (1957).
18. N. Choucri and R. North, *Nations in Conflict: National Growth and International Violence*, W.H. Freeman, San Francisco, (1975).
19. R. Cohen, *Warfare and State Formation*, in *Warfare, Culture and the Environment*, B. Ferguson, ed., Academic Press, Orlando, (1984).
20. A. Giddens, *The Nation-State and Violence: Volume Two of a Contemporary Critique of Historical Materialism*, University of California, Berkeley, CA, (1985).
21. M. Haas, *Social Change and National Aggressiveness, 1900-1960*, in *Quantitative International Politics*, J.D. Singer, ed., Free Press, New York, (1968).
22. W. Schwartzwaller, *The Unknown Hitler*, Berkeley Books, (1990).
23. Francis King, *Satan and the Swastika*, Mayflower, St. Albans, (1976).
24. J.M. Angebert, *The Occult and the Third Reich*, New York, (1974).
25. J.H. Brennan, *Occult Reich*, New York, (1974).
26. N. Goodrick-Clarke, *The Occult Roots of Nazism*, Aquarium Press, Wellingborough, (1985).
27. T. Ravenscroft, *The Spear of Destiny*, Putnam's, New York, (1974).
28. D. Sklar, *The Nazis and the Occult*, Dorset Press, New York, (1977).
29. W. Schirer, *The Rise and Fall of the Third Reich*, Crest Books, New York, (1962).

## Chapter 4

# THE SOCIAL RESPONSIBILITY OF SCIENTISTS

### 4.1 Modern war would be impossible without their help

Scientists and engineers need to be aware of the fact that without their active cooperation, modern warfare would be impossible. Furthermore, the misused achievements of science and engineering have made war prohibitively dangerous. Together with catastrophic climate change thermonuclear war threatens both human civilization and the biosphere. Thus scientists and engineers have an enormous responsibility: They must not contribute in any way to the development, or use, or threat of use of weapons.

The US Student Pugwash Group has proposed the following pledge, to be taken by graduating science and engineering students.<sup>1</sup> The oath is analogous to the one taken by graduating medical students:

**“I promise to work for a better world, where science and technology are used in socially responsible ways. I will not use my education for any purpose intended to harm human beings or the environment. Throughout my career, I will consider the ethical implications of my work before I take action. While the demands placed upon me may be great, I sign this declaration because I recognize that individual responsibility is the first step on the path to peace.”**

In an ideal world, the United Nations would be given the very much increased financial report commensurate with its importance. This would allow its agencies, such as the World Food Organization, the World Health Organization and UNESCO to function effectively. UNESCO could then become the patron of science and engineering, and young men and women graduating in these fields could find socially beneficial jobs, rather than jobs that facilitate the production of weapons.

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<sup>1</sup><http://web.cs.ucdavis.edu/~rogaway/classes/188/materials/pledges.pdf>

## Science, ethics and politics

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 Huxley’s *Brave New World*. Fermi perhaps used his scientific preoccupations as an escape from the worrying political problems of the '30's and '40's.

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 robot’s 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.”

## **4.2 The threat of nuclear war**

As bad as conventional arms and conventional weapons may be, it is the possibility of a catastrophic nuclear war that poses the greatest threat to humanity. There are today roughly 16,000 nuclear warheads in the world. The total explosive power of the warheads



Figure 4.1: **The 15 megaton explosion detonated by the United States at Bikini Atoll in 1954 produced lasting biological damage to humans and animals living on the distant Marshall Islands. Today, half a century later, the islanders still experience radiation sickness in the form of leukemia and birth defects. Source: [www.theguardian.com](http://www.theguardian.com)**

that exist or that could be made on short notice is approximately equal to 500,000 Hiroshima bombs.

To multiply the tragedy of Hiroshima by a factor of half a million makes an enormous difference, not only quantitatively, but also qualitatively. Those who have studied the question believe that a nuclear catastrophe today would inflict irreversible damage on our civilization, genetic pool and environment.

Thermonuclear weapons consist of an inner core where the fission of uranium-235 or plutonium takes place. The fission reaction in the core is able to start a fusion reaction in the next layer, which contains isotopes of hydrogen. It is possible to add a casing of ordinary uranium outside the hydrogen layer, and under the extreme conditions produced by the fusion reaction, this ordinary uranium can undergo fission. In this way, a fission-fusion-fission bomb of almost limitless power can be produced.

For a victim of severe radiation exposure, the symptoms during the first week are nausea, vomiting, fever, apathy, delirium, diarrhoea, oropharyngeal lesions and leukopenia. Death occurs during the first or second week.

We can perhaps be helped to imagine what a nuclear catastrophe means in human terms by reading the words of a young university professor, who was 2,500 meters from the hypocenter at the time of the bombing of Hiroshima: “Everything I saw made a deep impression: a park nearby covered with dead bodies... very badly injured people evacuated in my direction... Perhaps most impressive were girls, very young girls, not only with their clothes torn off, but their skin peeled off as well. ... My immediate thought was that this was like the hell I had always read about. ... I had never seen anything which resembled it before, but I thought that should there be a hell, this was it.”

One argument that has been used in favor of nuclear weapons is that no sane political





Figure 4.2: A nuclear war would be an ecological disaster, making large portions of the world permanently uninhabitable because of long-lasting radioactivity. Chernobyl radiation map 1996 30km zone by CIA Factbook. Licensed under CC BY-SA 2.5 via Wikimedia Commons.

leader would employ them. However, the concept of deterrence ignores the possibility of war by accident or miscalculation, a danger that has been increased by nuclear proliferation and by the use of computers with very quick reaction times to control weapons systems.

Recent nuclear power plant accidents remind us that accidents frequently happen through human and technical failure, even for systems which are considered to be very “safe.” We must also remember the time scale of the problem. To assure the future of humanity, nuclear catastrophe must be avoided year after year and decade after decade. In the long run, the safety of civilization cannot be achieved except by the abolition of nuclear weapons, and ultimately the abolition of the institution of war.

In 1985, International Physicians for the Prevention of Nuclear War received the Nobel Peace Prize. IPPNW had been founded in 1980 by six physicians, three from the Soviet Union and three from the United States. Today, the organization has wide membership among the world’s physicians. Professor Bernard Lowen of the Harvard School of Public Health, one of the founders of IPPNW, said in a recent speech:

“...No public health hazard ever faced by humankind equals the threat of nuclear war.



Figure 4.3: **Sculpture depicting Saint George slaying the dragon. The dragon is created from fragments of Soviet SS-20 and United States Pershing nuclear missiles. UN Photo/Milton Grant**

Never before has man possessed the destructive resources to make this planet uninhabitable... Modern medicine has nothing to offer, not even a token benefit, in the event of nuclear war..."

"We are but transient passengers on this planet Earth. It does not belong to us. We are not free to doom generations yet unborn. We are not at liberty to erase humanity's past or dim its future. Social systems do not endure for eternity. Only life can lay claim to uninterrupted continuity. This continuity is sacred."

The danger of a catastrophic nuclear war casts a dark shadow over the future of our species. It also casts a very black shadow over the future of the global environment. The environmental consequences of a massive exchange of nuclear weapons have been treated in a number of studies by meteorologists and other experts from both East and West. They predict that a large-scale use of nuclear weapons would result in fire storms with very high winds and high temperatures, which would burn a large proportion of the wild land fuels in the affected nations. The resulting smoke and dust would block out sunlight for a period of many months, at first only in the northern hemisphere but later also in the southern hemisphere.

Temperatures in many places would fall far below freezing, and much of the earth's plant life would be killed. Animals and humans would then die of starvation. The nuclear winter effect was first discovered as a result of the Mariner 9 spacecraft exploration of Mars in 1971. The spacecraft arrived in the middle of an enormous dust-storm on Mars, and measured a large temperature drop at the surface of the planet, accompanied by a heating of the upper atmosphere. These measurements allowed scientists to check their theoretical models for predicting the effect of dust and other pollutants distributed in planetary atmospheres.

Using experience gained from the studies of Mars, R.P. Turco, O.B. Toon, T. Ackerman, J.B. Pollack and C. Sagan made a computer study of the climatic effects of the smoke and dust that would result from a large-scale nuclear war. This early research project is

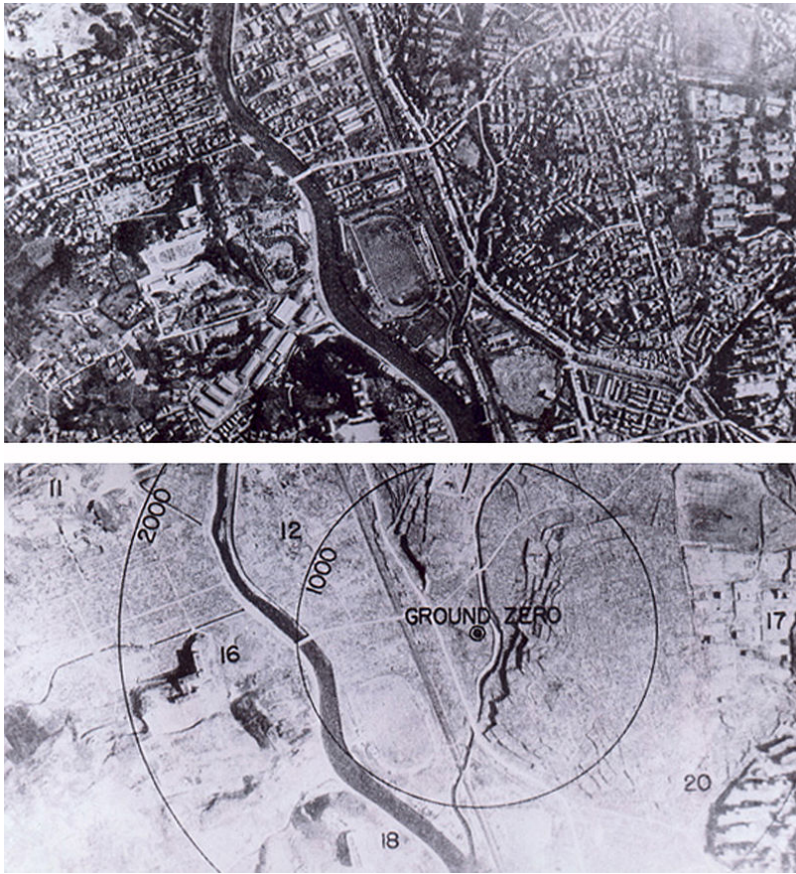


Figure 4.4: Nagasaki before and after the nuclear bombing, Public domain

sometimes called the TTAPS Study, after the initials of the authors.

In April 1983, a special meeting was held in Cambridge, Massachusetts, where the results of the TTAPS Study and other independent studies of the nuclear winter effect were discussed by more than 100 experts. Their conclusions were presented at a forum in Washington, D.C., the following December, under the chairmanship of U.S. Senators Kennedy and Hatfield. The numerous independent studies of the nuclear winter effect all agreed of the following main predictions:

High-yield nuclear weapons exploded near the earth's surface would put large amounts of dust into the upper atmosphere. Nuclear weapons exploded over cities, forests, oilfields and refineries would produce fire storms of the type experienced in Dresden and Hamburg after incendiary bombings during the Second World War. The combination of high-altitude dust and lower altitude soot would prevent sunlight from reaching the earth's surface, and the degree of obscuration would be extremely high for a wide range of scenarios.

A baseline scenario used by the TTAPS study assumes a 5,000-megaton nuclear exchange, but the threshold for triggering the nuclear winter effect is believed to be much lower than that. After such an exchange, the screening effect of pollutants in the atmosphere might be so great that, in the northern and middle latitudes, the sunlight reaching the earth would be only 1% of ordinary sunlight on a clear day, and this effect would persist for many months. As a result, the upper layers in the atmosphere might rise in temperature by as much as 100 °C, while the surface temperatures would fall, perhaps by as much as 50 °C.

The temperature inversion produced in this way would lead to superstability, a condition in which the normal mixing of atmospheric layers is suppressed. The hydrological cycle (which normally takes moist air from the oceans to a higher and cooler level, where the moisture condenses as rain) would be strongly suppressed. Severe droughts would thus take place over continental land masses. The normal cleansing action of rain would be absent in the atmosphere, an effect which would prolong the nuclear winter.

In the northern hemisphere, forests would die because of lack of sunlight, extreme cold, and drought. Although the temperature drop in the southern hemisphere would be less severe, it might still be sufficient to kill a large portion of the tropical forests, which normally help to renew the earth's oxygen.

The oxygen content of the atmosphere would then fall dangerously, while the concentration of carbon dioxide and oxides of nitrogen produced by firestorms would remain high. The oxides of nitrogen would ultimately diffuse to the upper atmosphere, where they would destroy the ozone layer.

Thus, even when the sunlight returned after an absence of many months, it would be sunlight containing a large proportion of the ultraviolet frequencies which are normally absorbed by the ozone in the stratosphere, and therefore a type of light dangerous to life. Finally, after being so severely disturbed, there is no guarantee that the global climate would return to its normal equilibrium.

Even a nuclear war below the threshold of nuclear winter might have climatic effects very damaging to human life. Professor Paul Ehrlich, of Stanford University, has expressed this in the following words:

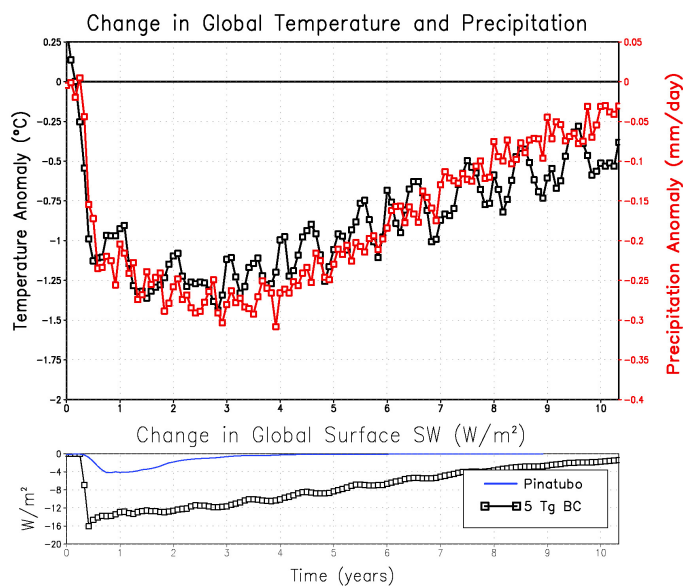


Figure 4.5: **Predicted changes in global temperature, precipitation and surface illumination over a ten-year period after a nuclear war. (Standard 5Tg case)**  
**Source: Alan Robock, Rutgers University**

“...A smaller war, which set off fewer fires and put less dust into the atmosphere, could easily depress temperatures enough to essentially cancel grain production in the northern hemisphere. That in itself would be the greatest catastrophe ever delivered upon Homo Sapiens, just that one thing, not worrying about prompt effects. Thus even below the threshold, one cannot think of survival of a nuclear war as just being able to stand up after the bomb has gone off.”<sup>2</sup>

<sup>2</sup><http://www.voanews.com/content/pope-francis-calls-for-nuclear-weapons-ban/2909357.html>  
<http://www.cadmusjournal.org/article/issue-4/flaws-concept-nuclear-deterrence>  
<http://www.countercurrents.org/avery300713.htm>  
<https://www.wagingpeace.org/author/john-avery/>  
<http://www.commondreams.org/news/2015/08/06/70-years-after-bombing-hiroshima-calls-abolish-nuclear-weapons>  
<http://www.informationclearinghouse.info/article42488.htm>  
<http://www.informationclearinghouse.info/article42492.htm>  
<http://www.commondreams.org/views/2015/08/06/hiroshima-and-nagasaki-remembering-power>  
<http://human-wrongs-watch.net/2015/07/22/israel-iran-and-the-nuclear-non-proliferation-treaty/>  
<http://human-wrongs-watch.net/2015/06/25/militarisms-hostages/>  
<http://human-wrongs-watch.net/2015/05/24/the-path-to-zero-dialogues-on-nuclear-dangers-by-richard-falk-and-david-krieger/>  
<http://human-wrongs-watch.net/2015/03/30/europe-must-not-be-forced-into-a-nuclear-war-with-russia/>  
<http://www.truth-out.org/opinion/item/32073-the-us-should-eliminate-its-nuclear-arsenal-not-modernize-it>

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.

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<http://www.cadmusjournal.org/article/issue-4/flaws-concept-nuclear-deterrance>

<http://www.cadmusjournal.org/article/issue-6/arms-trade-treaty-opens-new-possibilities-u>

<http://eruditio.worldacademy.org/issue-6/article/remember-your-humanity>

<http://www.informationclearinghouse.info/article42568.htm>

<https://firstlook.org/theintercept/2014/09/23/nobel-peace-prize-fact-day-syria-7th-country-bombed-obama/>

<http://www.informationclearinghouse.info/article42577.htm>

<http://www.informationclearinghouse.info/article42580.htm>

<http://human-wrongs-watch.net/2015/08/06/us-unleashing-of-atomic-weapons-against-civilian-populations-was-a-criminal-act-of-the-first-order/>

<http://human-wrongs-watch.net/2015/08/06/hiroshima-and-nagasaki-remembering-the-power-of-peace/>

<http://human-wrongs-watch.net/2015/08/04/atomic-bombing-hear-the-story-setsuko-thurlow/>

<http://human-wrongs-watch.net/2015/08/04/atomic-bombing-hear-the-story-yasuaki-yamashita/>

<http://human-wrongs-watch.net/2015/08/03/why-nuclear-weapons/>

### 4.3 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”<sup>3</sup> pointed out that “...NRC and DOE could not account for the current location and disposition of U.S. HEU 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. HEU 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 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 Wasserman<sup>4</sup>, 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.

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<sup>3</sup><http://www.examiner.com/article/nuclear-security-u-s-fails-to-protect-its-nuclear-materials-overseas>

<sup>4</sup><http://www.commondreams.org/view/2014/02/03-3>



Figure 4.6: Map of radiation levels in 1996 around Chernobyl. CIA Factbook, [CC BY-SA 4.0], Wikimedia Commons.



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 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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: “Nu-

clear 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.

## 4.4 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 accidentally 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.

## The Nuclear Weapons Convention <sup>5</sup>

On July 7, 2017, a treaty banning nuclear weapons was adopted by an overwhelming majority at the United Nations General Assembly. Although opposed by all of the nuclear weapon states, the treaty is a great achievement. Article I states that each state party undertakes never under any circumstances to

- Develop, test, produce, manufacture, otherwise acquire, possess, or stockpile nuclear weapons or other nuclear explosive devices.
- Transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices, directly or indirectly.
- Receive the transfer of or control over nuclear weapons or other nuclear explosive devices directly or indirectly.
- Use or threaten to use nuclear weapons or other nuclear explosive devices.

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<sup>5</sup><https://www.un.org/disarmament/ptnw/>  
<http://www.abolition2000.org/en/>

- Assist, encourage, or induce, in any way, anyone to engage in any activity prohibited to a state party.

## **ICAN receives the 2017 Nobel Peace Prize**

The International Campaign to Abolish Nuclear Weapons, abbreviated ICAN, is a coalition of 468 NGO's in 101 countries. The purpose of ICAN is to change the focus in the disarmament debate to “the the humanitarian threat posed by nuclear weapons, drawing attention to their unique destructive capacity, their catastrophic health and environmental consequences, their indiscriminate targeting, the debilitating impact of a detonation on medical infrastructure and relief measures, and the long-lasting effects of radiation on the surrounding area.”

ICAN was founded in 2007 by the International Physicians for the Prevention of Nuclear War, an organization which itself received a Nobel Peace Prize in 1985. IPPNW was inspired by the success of the campaign that achieved the Ottawa Treaty in 1997, a treaty which banned antipersonnel land-mines against bitter opposition from the worst offenders. Thus, from the start. ICAN envisioned a treaty passed and without the participation or signatures of the nuclear weapons states. ICAN believed that such a treaty would have the great value of unambiguously underlining the illegality, immorality and omnicidal nature of nuclear weapons. Nuclear weapons states would eventually be forced to yield to the will of the vast majority of humankind.

On July 7, 2017, the Treaty on the Prohibition of Nuclear Weapons was adopted by an overwhelming majority, 122 to 1, by the United Nations General Assembly. The adoption of the treaty, a milestone in humanity's efforts to rid itself of nuclear insanity, was to a large extent due to the efforts of ICAN's participating organizations.

On December 10, 2017 ICAN's efforts were recognized by the award of the Nobel Peace Prize. Part of the motivation for the award was the fact that the threat of a thermonuclear global catastrophe is higher today than it has been at any time since the Cuban Missile Crisis. Because of the belligerent attitudes and mental instability of Donald Trump and Kim Jong Un, the end of human civilization and much of the biosphere is, in the words of Beatrice Fihn, “only a tantrum away”.



Figure 4.7: From left to right: Berit Reiss-Andersen, Chairman of the Norwegian Nobel Committee, Setsuko Thurlow, an 85-year-old survivor of the 1945 atomic bombing of Hiroshima, and ICAN Executive Director Beatrice Fihn.



Figure 4.8: Celebrating the award.



## 4.5 Nuclear weapons are criminal! Every war is a crime!

War was always madness, always immoral, always the cause of unspeakable suffering, economic waste and widespread destruction, and always a source of poverty, hate, barbarism and endless cycles of revenge and counter-revenge. It has always been a crime for soldiers to kill people, just as it is a crime for murderers in civil society to kill people. No flag has ever been wide enough to cover up atrocities.

But today, the development of all-destroying modern weapons has put war completely beyond the bounds of sanity and elementary humanity.

Today, war is not only insane, but also a violation of international law. Both the United Nations Charter and the Nuremberg Principles make it a crime to launch an aggressive war. According to the Nuremberg Principles, every soldier is responsible for the crimes that he or she commits, even while acting under the orders of a superior officer.

Nuclear weapons are not only insane, immoral and potentially omnicidal, but also criminal under international law. In response to questions put to it by WHO and the UN General Assembly, the International Court of Justice ruled in 1996 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. It left the exceptional case undecided. In addition, the 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 and effective international control.”

Can we not rid ourselves of both nuclear weapons and the institution of war itself? We must act quickly and resolutely before everything that we love in our beautiful world is reduced to radioactive ashes.

## 4.6 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 500,000 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 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. It’s 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 decision 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 one's 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 anyone's 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.



Figure 4.9: A poster made by children in an American school.

## 4.7 Organizations working for the abolition of nuclear weapons

- Abolition 2000, <http://www.abolition2000.org/en/>
- Alliance for Nuclear Accountability, <http://www.ananuclear.org/>
- Campaign for a Nuclear Weapon Free World, <http://www.nuclearweaponsfree.org/>
- International Campaign to Abolish Nuclear Weapons (ICAN), <http://www.icanw.org/>
- International Network of Engineers and Scientists for Global Responsibility (INES), <http://www.inesglobal.com/>
- International Peace Bureau, <http://www.ipb.org/>
- Middle Powers Initiative, <http://www.middlepowers.org/>
- Peace and Planet, <http://www.peaceandplanet.org/>
- World Future Council, <https://www.worldfuturecouncil.org/>
- Basel Peace Office, <http://www.baselpeaceoffice.org/>
- Campaign for Nuclear Disarmament, <https://cnduk.org/>



Figure 4.10: **Dr. David Krieger, founder and president of the Nuclear Age Peace Foundation**

#### 4.7. ORGANIZATIONS WORKING FOR THE ABOLITION OF NUCLEAR WEAPONS111

- Disarmament and Security Centre, <http://disarmsecure.org/>
- Federation of American Scientists, <https://fas.org/>
- Free the Children, <https://www.we.org/>
- Global Security Institute, <https://gsinstitute.org/>
- Ground Zero Center for Nonviolent Action, <http://www.gzcenter.org/>
- Hibakusha Stories, <http://hibakushastories.org/>
- Hiroshima Peace Media Center, <http://www.hiroshimapeacemedia.jp/?lang=en>
- Hiroshima Peace Museum, <http://www.pcf.city.hiroshima.jp/>
- International Association of Lawyers Against Nuclear Arms (IALANA), <https://www.ialana.de/>
- International Network of Engineers and Scientists Against Proliferation (INESAP), <http://www.inesap.org/>
- International Physicians for the Prevention of Nuclear War (IPPNW), <http://www.ippnw.org/>
- Japan Council Against A and H Bombs (Gensuikyō), <https://www.antiatom.org/GSKY/en/>
- Lawyers' Committee on Nuclear Policy, <http://www.lcnp.org/>
- Mayors for Peace, <http://www.mayorsforpeace.org/english/index.html>
- Nagasaki Atomic Bomb Museum,
- Nevada Desert Experience, <http://nevadadesertexperience.org/>
- Nobel Women's Initiative, <https://nobelwomensinitiative.org>
- Nuclear Age Peace Foundation, <https://www.wagingpeace.org/>
- Nuclear Famine, <http://www.nucleardarkness.org/>
- Nuclear Watch New Mexico, <https://nukewatch.org/>
- Nuclear Watch South, <http://www.nonukesyall.org/>
- Parliamentarians for Nuclear Non-Proliferation and Disarmament, <http://pnnd.org/>
- Pax Christi International, <https://www.paxchristi.net/>

- Peace Action, <https://www.peaceaction.org/>
- Peace Action New York State, <https://www.panys.org/>
- Phronesis Lab at Oregon State University, <http://blogs.oregonstate.edu/phronesis/>
- Physicians for Social Responsibility, <https://www.psr.org/>
- Project Ploughshares, <http://ploughshares.ca/>
- Pugwash Conferences on Science and World Affairs, <https://pugwash.org/>
- Reaching Critical Will, <http://www.reachingcriticalwill.org/>
- Pugwash Conferences on Science and World Affairs, <https://pugwash.org/>
- Soka Gakkai International, <https://www.sgi.org/>
- Veterans for Peace, <https://www.veteransforpeace.org/>
- Western States Legal Foundation, <http://www.wslfweb.org/>
- Women’s Action for New Directions, <https://www.wand.org/>
- Women’s International League for Peace and Freedom, <https://wilpf.org/>

## 4.8 The Nuremberg Principles and individual responsibility

At the end of the Second World War, when the full extent of the atrocities that had been committed by the Nazi’s became known, it was decided to prosecute Nazi leaders for crimes against peace, war crimes, and crimes against humanity (such as extermination camps). There was disagreement about how such trials should be held, but after some debate between the Allied countries, it was agreed that 24 Nazi officials and military leaders would be tried by an International Tribunal in Nuremberg, Germany, a former center of Nazi politics. There were originally 24 defendants, but two of them committed suicide. One was presumed dead but was nevertheless tried in absentia. Of the twenty-one remaining defendants, eleven were given the death penalty, eight were sentenced to long prison terms, and three were acquitted. Similar trials also took place in Japan.

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. The reader is invited to compare the crimes listed under Principle VI with events that have been occurring for a number of years in the Middle East and in other parts of the world.



- 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 Court's trials of individuals accused of genocide and war crimes in the former Yugoslavia and elsewhere.

The Principles throw an interesting light onto the status of soldiers. According to the Nuremberg Principles, it is not only the right, but also the duty of individuals to make moral and legal judgments concerning wars in which they are asked to fight. If a soldier participates in an illegal war (and all wars, apart from actions of the UN Security Council, are now illegal) then the soldier is liable to prosecution for violating international law. The fact that he or she was acting under orders is not an excuse. The training of



Figure 4.11: Defendants in their dock at the Nuremberg Trials; Goering, Hess, von Ribbentrop, and Keitel in front row. Public domain, Wikimedia Commons

soldiers is designed to remove the burdens of moral and legal responsibility from a soldier's individual shoulders; but the Nuremberg Principles put these burdens squarely back where they belong - on the shoulders of the individual.

Although only 24 Nazi leaders were held responsible for their crimes at the Nuremberg Trials, Principles IV and VII make it clear that a much larger number of people could have been tried, since "complicity in the commission of a crime against peace, a war crime, or a crime against humanity... is a crime under international law". In other words, all adult citizens are breaking international law if they are complicity in the crimes committed by their governments.

All of us are responsible for what our governments do! I personally would like to extend the principle of individual responsibility still further: - I think that all of us are responsible for working actively, with all our strength, to solve the serious problems that are facing the world today, whether the problems are related to the abolition of war, to the prevention of poverty, the prevention of famine, or to saving the biosphere.

### Suggestions for further reading

1. A. Robock, L. Oman, G. L. Stenchikov, O. B. Toon, C. Bardeen, and R. Turco, *Climatic consequences of regional nuclear conflicts*, Atmospheric Chemistry and Physics, Vol. 7, p. 2003-2012, (2007).
2. M. Mills, O. Toon, R. Turco, D. Kinnison, R. Garcia, *Massive global ozone loss predicted following regional nuclear conflict*, Proceedings of the National Academy of Sciences (USA), vol. 105(14), pp. 5307-12, Apr 8, (2008).
3. O. Toon, A. Robock, and R. Turco, *The Environmental Consequences of Nuclear War*, Physics Today, vol. 61, No. 12, p. 37-42, (2008).
4. R. Turco, O. Toon, T. Ackermann, J. Pollack, and C. Sagan, *Nuclear Winter: Global consequences of multiple nuclear explosions*, Science, Vol. 222, No. 4630, pp. 1283-1292, December (1983).
5. A. Robock, L. Oman, G. Stenchikov, *Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences*, Journal of Geophysical Research - Atmospheres, Vol. 112, No. D13, p. 4 of 14, (2007).
6. I. Helfand, *An Assessment of the Extent of Projected Global Famine Resulting From Limited, Regional Nuclear War*, International Physicians for the Prevention of Nuclear War, Physicians for Social Responsibility, Leeds, MA, (2007).
7. George P. Schultz, William J. Perry, Henry A. Kissinger and Sam Nunn, *A World Free of Nuclear Weapons*, The Wall Street Journal, January 4, 2007, page A15 and January 15, (2008), page A15.
8. Mikhail Gorbachev, *The Nuclear Threat*, The Wall Street Journal, January 30, (2007), page A15.
9. Massimo D'Alema, Gianfranco Fini, Giorgio La Malfa, Arturo Parisi and Francesco Calogero, *For a World Free of Nuclear Weapons*, Corriere Della Sera, July 24, (2008).
10. Hoover Institution, *Reykjavik Revisited; Steps Towards a World Free of Nuclear Weapons*, October, (2007).
11. Douglas Hurd, Malcolm Rifkind, David Owen and George Robertson, *Start Worrying and Learn to Ditch the Bomb*, The Times, June 30, (2008).
12. Des Brown, Secretary of State for Defense, UK, *Laying the Foundations for Multilateral Disarmament*, Geneva Conference on Disarmament, February 5, (2008).
13. Government of Norway, International Conference on *Achieving the Vision of a World Free of Nuclear Weapons*, Oslo, Norway, February 26-27, (2008).
14. Jonas Gahr Støre, Foreign Minister, Norway, *Statement at the Conference on Disarmament*, Geneva, March 4, (2008).
15. Anne-Grete Strøm-Erichsen, Defense Minister, Norway, *Emerging Opportunities for Nuclear Disarmament*, Pugwash Conference, Canada, July 11, (2008).
16. Kevin Rudd, Prime Minister, Australia, *International Commission on Nuclear Non-Proliferation and Disarmament*, Media Release, July 9, (2008).
17. Helmut Schmidt, Richard von Weizsäcker, Egon Bahr and Hans-Dietrich Genscher, *Towards a Nuclear-Free World: a German View*, International Herald Tribune, January 9, (2009).

18. Hans M. Kristensen and Elliot Negin, *Support Growing for Removal of U.S. Nuclear Weapons from Europe*, Common Dreams Newscenter, first posted May 6, (2005).
19. David Krieger, *President-elect Obama and a World Free of Nuclear Weapons*, Nuclear Age Peace Foundation Website, (2008).
20. J.L. Henderson, *Hiroshima*, Longmans (1974).
21. A. Osada, *Children of the A-Bomb, The Testament of Boys and Girls of Hiroshima*, Putnam, New York (1963).
22. M. Hachiya, M.D., *Hiroshima Diary*, The University of North Carolina Press, Chapel Hill, N.C. (1955).
23. M. Yass, *Hiroshima*, G.P. Putnam's Sons, New York (1972).
24. R. Jungk, *Children of the Ashes*, Harcourt, Brace and World (1961).
25. B. Hirschfield, *A Cloud Over Hiroshima*, Baily Brothers and Swinfin Ltd. (1974).
26. J. Hersey, *Hiroshima*, Penguin Books Ltd. (1975).
27. R. Rhodes, *Dark Sun: The Making of the Hydrogen Bomb*, Simon and Schuster, New York, (1995)
28. R. Rhodes, *The Making of the Atomic Bomb*, Simon and Schuster, New York, (1988).
29. D.V. Babst et al., *Accidental Nuclear War: The Growing Peril*, Peace Research Institute, Dundas, Ontario, (1984).
30. S. Britten, *The Invisible Event: An Assessment of the Risk of Accidental or Unauthorized Detonation of Nuclear Weapons and of War by Miscalculation*, Menard Press, London, (1983).
31. M. Dando and P. Rogers, *The Death of Deterrence*, CND Publications, London, (1984).
32. N.F. Dixon, *On the Psychology of Military Incompetence*, Futura, London, (1976).
33. D. Frei and C. Catrina, *Risks of Unintentional Nuclear War*, United Nations, Geneva, (1982).
34. H. L'Etang, *Fit to Lead?*, Heinemann Medical, London, (1980).
35. SPANW, *Nuclear War by Mistake - Inevitable or Preventable?*, Swedish Physicians Against Nuclear War, Lulea, (1985).
36. J. Goldblat, *Nuclear Non-proliferation: The Why and the Wherefore*, (SIPRI Publications), Taylor and Francis, (1985).
37. J. Schear, ed., *Nuclear Weapons Proliferation and Nuclear Risk*, Gower, London, (1984).
38. D.P. Barash and J.E. Lipton, *Stop Nuclear War! A Handbook*, Grove Press, New York, (1982).
39. C.F. Barnaby and G.P. Thomas, eds., *The Nuclear Arms Race: Control or Catastrophe*, Francis Pinter, London, (1982).
40. L.R. Beres, *Apocalypse: Nuclear Catastrophe in World Politics*, Chicago University press, Chicago, IL, (1980).
41. F. Blackaby et al., eds., *No-first-use*, Taylor and Francis, London, (1984).
42. NS, ed., *New Statesman Papers on Destruction and Disarmament* (NS Report No. 3), New Statesman, London, (1981).

43. H. Caldicot, *Missile Envy: The Arms Race and Nuclear War*, William Morrow, New York, (1984).
44. R. Ehrlich, *Waging the Peace: The Technology and Politics of Nuclear Weapons*, State University of New York Press, Albany, NY, (1985).
45. W. Epstein, *The Prevention of Nuclear War: A United Nations Perspective*, Gunn and Hain, Cambridge, MA, (1984).
46. W. Epstein and T. Toyoda, eds., *A New Design for Nuclear Disarmament*, Spokesman, Nottingham, (1975).
47. G.F. Kennan, *The Nuclear Delusion*, Pantheon, New York, (1983).
48. R.J. Lifton and R. Falk, *Indefensible Weapons: The Political and Psychological Case Against Nuclearism*, Basic Books, New York, (1982).
49. J.R. Macy, *Despair and Personal Power in the Nuclear Age*, New Society Publishers, Philadelphia, PA, (1983).
50. A.S. Miller et al., eds., *Nuclear Weapons and Law*, Greenwood Press, Westport, CT, (1984).
51. MIT Coalition on Disarmament, eds., *The Nuclear Almanac: Confronting the Atom in War and Peace*, Addison-Wesley, Reading, MA, (1984).
52. UN, *Nuclear Weapons: Report of the Secretary-General of the United Nations*, United Nations, New York, (1980).
53. IC, *Proceedings of the Conference on Understanding Nuclear War*, Imperial College, London, (1980).
54. B. Russell, *Common Sense and Nuclear Warfare*, Allen and Unwin, London, (1959).
55. F. Barnaby, *The Nuclear Age*, Almqvist and Wiksell, Stockholm, (1974).
56. D. Albright, F. Berkhout and W. Walker, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies*, Oxford University Press, Oxford, (1997).
57. G.T. Allison et al., *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material*, MIT Press, Cambridge MA, (1996).
58. B. Bailin, *The Making of the Indian Atomic Bomb: Science, Secrecy, and the Post-colonial State*, Zed Books, London, (1998).
59. P. Bidawi and A. Vanaik, *South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament*, Oxford University Press, Oxford, (2001).
60. F.A. Boyle, *The Criminality of Nuclear Deterrence: Could the U.S. War on Terrorism Go Nuclear?*, Clarity Press, Atlanta GA, (2002).
61. G. Burns, *The Atomic Papers: A Citizen's Guide to Selected Books and Articles on the Bomb, the Arms Race, Nuclear Power, the Peace Movement, and Related Issues*, Scarecrow Press, Metuchen NJ, (1984).
62. L. Butler, *A Voice of Reason*, The Bulletin of Atomic Scientists, **54**, 58-61, (1998).
63. R. Butler, *Fatal Choice: Nuclear Weapons and the Illusion of Missile Defense*, Westview Press, Boulder CO, (2001).
64. R.P. Carlisle (Ed.), *Encyclopedia of the Atomic Age*, Facts on File, New York, (2001).
65. G.A. Cheney, *Nuclear Proliferation: The Problems and Possibilities*, Franklin Watts, New York, (1999).

66. A. Cohen, *Israel and the Bomb*, Columbia University Press, New York, (1998).
67. S.J. Diehl and J.C. Moltz, *Nuclear Weapons and Nonproliferation: A Reference Handbook*, ABC-Clio Information Services, Santa Barbara CA, (2002).
68. H.A. Feiveson (Ed.), *The Nuclear Turning Point: A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons*, Brookings Institution Press, Washington D.C., (1999).
69. R. Hilsman, *From Nuclear Military Strategy to a World Without War: A History and a Proposal*, Praeger Publishers, Westport, (1999).
70. International Physicians for the Prevention of Nuclear War and The Institute for Energy and Environmental Research *Plutonium: Deadly Gold of the Nuclear Age*, International Physicians Press, Cambridge MA, (1992).
71. R.W. Jones and M.G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998*, The Carnegie Endowment for International Peace, Washington D.C., (1998).
72. R.J. Lifton and R. Falk, *Indefensible Weapons: The Political and Psychological Case Against Nuclearism*, Basic Books, New York, (1982).
73. R.E. Powaski, *March to Armageddon: The United States and the Nuclear Arms Race, 1939 to the Present*, Oxford University Press, (1987).
74. J. Rotblat, J. Steinberger and B. Udgaonkar (Eds.), *A Nuclear-Weapon-Free World: Desirable? Feasible?*, Westview Press, (1993).
75. The United Methodist Council of Bishops, *In Defense of Creation: The Nuclear Crisis and a Just Peace*, Graded Press, Nashville, (1986).
76. U.S. Congress Office of Technology Assessment (Ed.), *Dismantling the Bomb and Managing the Nuclear Materials*, U.S. Government Printing Office, Washington D.C., (1993).
77. S.R. Weart, *Nuclear Fear: A History of Images*, Harvard University Press, (1988).
78. P. Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*, University of North Carolina Press, (1985).
79. C. Perrow, *Normal Accidents: Living With High-Risk Technologies*, Basic Books, (1984).
80. P. Rogers, *The Risk of Nuclear Terrorism in Britain*, Oxford Research Group, Oxford, (2006).
81. MIT, *The Future of Nuclear Power: An Interdisciplinary MIT Study*, <http://web.mit.edu/nuclearpow> (2003).
82. Z. Mian and A. Glaser, *Life in a Nuclear Powered Crowd*, INES Newsletter No. 52, 9-13, April, (2006).
83. K. Bergeron, *Nuclear Weapons: The Death of No Dual-use*, Bulletin of the Atomic Scientists, 15-17, January, (2004).
84. E. Chivian, and others (eds.), *Last Aid: The Medical Dimensions of Nuclear War*, W.H. Freeman, San Fransisco, (1982).
85. Medical Association's Board of Science and Education, *The Medical Effects of Nuclear War*, Wiley, (1983).

86. Kevin Rudd, Prime Minister, Australia, "International Commission on Nuclear Non-Proliferation and Disarmament", Media Release, July 9, 2008.
87. Global Zero, [www.globalzero.org/paris-conference](http://www.globalzero.org/paris-conference)
88. Helmut Schmidt, Richard von Weizäcker, Egon Bahr and Hans-Dietrich Genscher, "Towards a Nuclear-Free World: a German View", International Herald Tribune, January 9, 2009.
89. Hans M. Kristensen and Elliot Negin, "Support Growing for Removal of U.S. Nuclear Weapons from Europe", Common Dreams Newscenter, first posted May 6, 2005.
90. David Krieger, "President-elect Obama and a World Free of Nuclear Weapons", Nuclear Age Peace Foundation Website, 2008.
91. J.L. Henderson, *Hiroshima*, Longmans (1974).
92. A. Osada, *Children of the A-Bomb, The Testament of Boys and Girls of Hiroshima*, Putnam, New York (1963).
93. M. Hachiya, M.D., *Hiroshima Diary*, The University of North Carolina Press, Chapel Hill, N.C. (1955).
94. M. Yass, *Hiroshima*, G.P. Putnam's Sons, New York (1972).
95. R. Jungk, *Children of the Ashes*, Harcourt, Brace and World (1961).
96. B. Hirschfield, *A Cloud Over Hiroshima*, Baily Brothers and Swinfin Ltd. (1974).
97. J. Hersey, *Hiroshima*, Penguin Books Ltd. (1975).
98. R. Rhodes, *Dark Sun: The Making of the Hydrogen Bomb*, Simon and Schuster, New York, (1995)
99. R. Rhodes, *The Making of the Atomic Bomb*, Simon and Schuster, New York, (1988).
100. D.V. Babst et al., *Accidental Nuclear War: The Growing Peril*, Peace Research Institute, Dundas, Ontario, (1984).
101. S. Britten, *The Invisible Event: An Assessment of the Risk of Accidental or Unauthorized Detonation of Nuclear Weapons and of War by Miscalculation*, Menard Press, London, (1983).
102. M. Dando and P. Rogers, *The Death of Deterrence*, CND Publications, London, (1984).
103. N.F. Dixon, *On the Psychology of Military Incompetence*, Futura, London, (1976).
104. D. Frei and C. Catrina, *Risks of Unintentional Nuclear War*, United Nations, Geneva, (1982).
105. H. L'Etang, *Fit to Lead?*, Heinemann Medical, London, (1980).
106. SPANW, *Nuclear War by Mistake - Inevitable or Preventable?*, Swedish Physicians Against Nuclear War, Lulea, (1985).
107. J. Goldblat, *Nuclear Non-proliferation: The Why and the Wherefore*, (SIPRI Publications), Taylor and Francis, (1985).
108. IAEA, *International Safeguards and the Non-proliferation of Nuclear Weapons*, International Atomic Energy Agency, Vienna, (1985).
109. J. Schear, ed., *Nuclear Weapons Proliferation and Nuclear Risk*, Gower, London, (1984).
110. D.P. Barash and J.E. Lipton, *Stop Nuclear War! A Handbook*, Grove Press, New York, (1982).

111. C.F. Barnaby and G.P. Thomas, eds., *The Nuclear Arms Race: Control or Catastrophe*, Francis Pinter, London, (1982).
112. L.R. Beres, *Apocalypse: Nuclear Catastrophe in World Politics*, Chicago University press, Chicago, IL, (1980).
113. F. Blackaby et al., eds., *No-first-use*, Taylor and Francis, London, (1984).
114. NS, ed., *New Statesman Papers on Destruction and Disarmament* (NS Report No. 3), New Statesman, London, (1981).
115. H. Caldicot, *Missile Envy: The Arms Race and Nuclear War*, William Morrow, New York, (1984).
116. R. Ehrlich, *Waging the Peace: The Technology and Politics of Nuclear Weapons*, State University of New York Press, Albany, NY, (1985).
117. W. Epstein, *The Prevention of Nuclear War: A United Nations Perspective*, Gunn and Hain, Cambridge, MA, (1984).
118. W. Epstein and T. Toyoda, eds., *A New Design for Nuclear Disarmament*, Spokesman, Nottingham, (1975).
119. G.F. Kennan, *The Nuclear Delusion*, Pantheon, New York, (1983).
120. R.J. Lifton and R. Falk, *Indefensible Weapons: The Political and Psychological Case Against Nuclearism*, Basic Books, New York, (1982).
121. J.R. Macy, *Despair and Personal Power in the Nuclear Age*, New Society Publishers, Philadelphia, PA, (1983).
122. A.S. Miller et al., eds., *Nuclear Weapons and Law*, Greenwood Press, Westport, CT, (1984).
123. MIT Coalition on Disarmament, eds., *The Nuclear Almanac: Confronting the Atom in War and Peace*, Addison-Wesley, Reading, MA, (1984).
124. UN, *Nuclear Weapons: Report of the Secretary-General of the United Nations*, United Nations, New York, (1980).
125. IC, *Proceedings of the Conference on Understanding Nuclear War*, Imperial College, London, (1980).
126. B. Russell, *Common Sense and Nuclear Warfare*, Allen and Unwin, London, (1959).
127. F. Barnaby, *The Nuclear Age*, Almqvist and Wiksell, Stockholm, (1974).
128. D. Albright, F. Berkhout and W. Walker, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies*, Oxford University Press, Oxford, (1997).
129. G.T. Allison et al., *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material*, MIT Press, Cambridge MA, (1996).
130. B. Bailin, *The Making of the Indian Atomic Bomb: Science, Secrecy, and the Post-colonial State*, Zed Books, London, (1998).
131. G.K. Bertsch and S.R. Grillot, (Eds.), *Arms on the Market: Reducing the Risks of Proliferation in the Former Soviet Union*, Routledge, New York, (1998).
132. P. Bidawi and A. Vanaik, *South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament*, Oxford University Press, Oxford, (2001).
133. F.A. Boyle, *The Criminality of Nuclear Deterrence: Could the U.S. War on Terrorism Go Nuclear?*, Clarity Press, Atlanta GA, (2002).



134. G. Burns, *The Atomic Papers: A Citizen's Guide to Selected Books and Articles on the Bomb, the Arms Race, Nuclear Power, the Peace Movement, and Related Issues*, Scarecrow Press, Metuchen NJ, (1984).
135. L. Butler, *A Voice of Reason*, The Bulletin of Atomic Scientists, **54**, 58-61, (1998).
136. R. Butler, *Fatal Choice: Nuclear Weapons and the Illusion of Missile Defense*, Westview Press, Boulder CO, (2001).
137. R.P. Carlisle (Ed.), *Encyclopedia of the Atomic Age*, Facts on File, New York, (2001).
138. G.A. Cheney, *Nuclear Proliferation: The Problems and Possibilities*, Franklin Watts, New York, (1999).
139. A. Cohen, *Israel and the Bomb*, Columbia University Press, New York, (1998).
140. S.J. Diehl and J.C. Moltz, *Nuclear Weapons and Nonproliferation: A Reference Handbook*, ABC-Clio Information Services, Santa Barbara CA, (2002).
141. H.A. Feiveson (Ed.), *The Nuclear Turning Point: A Blueprint for Deep Cuts and De-alerting of Nuclear Weapons*, Brookings Institution Press, Washington D.C., (1999).
142. R. Hilsman, *From Nuclear Military Strategy to a World Without War: A History and a Proposal*, Praeger Publishers, Westport, (1999).
143. International Physicians for the Prevention of Nuclear War and The Institute for Energy and Environmental Research *Plutonium: Deadly Gold of the Nuclear Age*, International Physicians Press, Cambridge MA, (1992).
144. R.W. Jones and M.G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998*, The Carnegie Endowment for International Peace, Washington D.C., (1998).
145. R.J. Lifton and R. Falk, *Indefensible Weapons: The Political and Psychological Case Against Nuclearism*, Basic Books, New York, (1982).
146. J. Rotblat, J. Steinberger and B. Udgaonkar (Eds.), *A Nuclear-Weapon-Free World: Desirable? Feasible?*, Westview Press, (1993).
147. The United Methodist Council of Bishops, *In Defense of Creation: The Nuclear Crisis and a Just Peace*, Graded Press, Nashville, (1986).
148. U.S. Congress Office of Technology Assessment (Ed.), *Dismantling the Bomb and Managing the Nuclear Materials*, U.S. Government Printing Office, Washington D.C., (1993).
149. S.R. Weart, *Nuclear Fear: A History of Images*, Harvard University Press, (1988).
150. P. Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*, University of North Carolina Press, (1985).
151. A. Makhijani and S. Saleska, *The Nuclear Power Deception: Nuclear Mythology From Electricity 'Too Cheap to Meter' to 'Inherently Safe' Reactors*, Apex Press, (1999).
152. C. Perrow, *Normal Accidents: Living With High-Risk Technologies*, Basic Books, (1984).
153. P. Rogers, *The Risk of Nuclear Terrorism in Britain*, Oxford Research Group, Oxford, (2006).
154. MIT, *The Future of Nuclear Power: An Interdisciplinary MIT Study*, <http://web.mit.edu/nuclearpow> (2003).

155. Z. Mian and A. Glaser, *Life in a Nuclear Powered Crowd*, INES Newsletter No. 52, 9-13, April, (2006).
156. E. Chivian, and others (eds.), *Last Aid: The Medical Dimensions of Nuclear War*, W.H. Freeman, San Francisco, (1982).

# Chapter 5

## SCIENCE FICTION?

### 5.1 Is “science fiction” self-contradictory?

Good fiction ought to contain many elements of truth. The novels of Charles Dickens often show with accuracy the suffering of the poor, and they plead for social reform. The novels of Tolstoy and Dostoevsky also contain many elements of truth about human nature. Even fantasy-filled children’s tales, such as Andersen’s “The Little Mermaid”, or “The Ugly Duckling”, reach our hearts because they are filled with truth.

But what about science fiction? Is it legitimate to mix the two things? After all, the history of science is a history of the struggle to separate truth from myth. Truth is sacred, and science is its guardian and guarantor.

All the members of my family enjoy the British television series, “Dr Who”, but I refuse to watch it, because the plots of the series so blatantly violate the laws of physics. Of course, the series is playful and amusing, but I feel that one must not play with the truth, or amuse oneself with it. Truth is sacred.

On the other hand, I think that it is legitimate to write the type of science fiction which respects the laws of nature but in which imagination is enlisted to tell us something about the human condition or about what the future might be like. Here are a few examples:



## 5.2 Mary Shelley's *Frankenstein*

On 2 May 1816, Percy Bysshe Shelley and his wife Mary left England too, planning never to return. Shelley's financial position had improved following the death of his grandfather in 1815. Shelley and Mary took Mary's half-sister Claire Clairmont with them. She was already pregnant with Lord Byron's child, although probably none of them knew it. They headed for Geneva, hoping to meet Lord Byron there. Claire was anxious to show off her catch to Shelley and the two poets were looking forward to meeting each other. Although Shelley was not yet famous as a writer, Byron had read and admired his work.

Byron had rented a large house called Villa Diodati, near Lake Geneva, and he was staying there with his personal physician, Dr Polidori. Shelley, Mary and Claire found quarters at the nearby Maison Chapuis, and before long the whole Villa Diodati group had settled into a routine of excursions on the lake or walks along the shore, followed by long evenings of conversation at Villa Diodati. Whenever the weather was bad, as it frequently was that summer, Shelley, Mary and Claire spent the night at Diodati instead of returning to Maison Chapuis.

Because of Byron's fame, their movements were followed avidly by scandalized English tourists, who spent hours looking at the party through field-glasses and telescopes. Stories of immorality filtered back to England; and the rumors had some foundation, since Byron had resumed his affair with Claire. He looked down on her, but Claire was very pretty, and, as Byron explained, "I could not exactly play the stoic with a woman who has scrambled eight hundred miles to unphilosophize me".

Byron was writing the third canto of *Childe Harold*, and in the evenings he often read new sections of it to the others. The romantic mood of the poem and the splendor of the distant Alps contributed to the atmosphere of the summer evenings at Diodati.

Byron also retold for his friends the myth of Prometheus Porphyros, which he had translated from Aeschylus at Harrow. In this myth, Prometheus steals the sacred fire of the gods and gives it to mankind. Punished by Zeus, Prometheus is chained forever to a rock in the Caucasus, while an eagle tears out his vitals. A later version of the myth, Prometheus Plasticator, was popular among the Romans, and in this later version, Prometheus creates or recreates mankind by giving life to a figure of clay.

Both Byron and Shelley recognized the symbolic possibilities of the myth. Prometheus had already been used as a symbol of the creative artist but Shelley, with his interest in science, saw that Prometheus could also stand as a symbol for scientific creativity. Benjamin Franklin had recently performed the famous experiment in which he flew a kite during a thunderstorm, thus drawing down lightning and showing it to be identical with electricity. Franklin, Shelley realized, could be thought of as a modern Prometheus, who defied the thunderbolts of Zeus and brought the sacred fire of the gods down from heaven for the use of mankind.

The weather worsened at Diodati, and for many days, heavy rain and lightning confined the party to the villa. To pass the time, they read aloud to each other from a book of German ghost stories. The storm outside and the strange Gothic stories had a strong effect on Shelley's imagination, and one night he rushed out of the room with a cry of terror,

explaining later that he had seen a vision of a woman with eyes instead of breasts.

“We will each write a ghost story”, Byron said, and his idea was adopted with enthusiasm. Dr Polidori began a tale of a skull-headed woman; and both Byron and Shelley began stories too but, being poets, they soon tired of writing prose. Mary was unable to think of an idea sufficiently horrible to produce terror in a reader. Every morning she was asked whether she had found a theme and she was forced to answer sadly that she had not.

Meanwhile, Byron and Shelley continued to talk of the possibilities of the myth of Prometheus, especially as a symbol for scientific creativity. Perhaps, one day, science might achieve the Promethean feat of creating life. Shelley was especially interested in experiments with electricity, such as the discovery by Galvani that an electrical current could cause the legs of a dismembered frog to move.

“Many and long were the conversations between Lord Byron and Shelley”, Mary wrote later. Finally, well past midnight, Mary went to bed; but she was unable to sleep. Images from the conversation, to which she had been an attentive but almost silent listener, passed uncontrollably through her mind. Later, remembering this half-waking dream, she wrote:

“I saw, with shut eyes, but acute mental vision, I saw the pale student of unhallowed arts kneeling beside the thing he had put together. I saw the hideous phantasm of a man stretched out, and then, on the working of some powerful engine, show signs of life, and stir with an uneasy, half vital motion. Frightful must it be; for supremely frightful would be the effect of any human endeavor to mock the stupendous mechanism of the Creator of the world.”

Mary realized that she had found her theme. In fact, Mary Wollstonecraft Shelley, not yet 19 years old, had discovered an enduring symbol for science out of control, science pursued without regard for its social consequences. The next day, encouraged by Shelley, she began to write *Frankenstein, or The Modern Prometheus*,



Figure 5.1: Mary Shelley (1797-1851) was the daughter of Mary Wollstonecraft and William Godwin, and the wife of Percy Bysshe Shelley. In 1816, she and Shelley, together with Lord Byron were staying in a villa near to Lake Geneva. Byron and Shelley had been discussing the myth of Prometheus, and its symbolic possibilities. The weather worsened, and they were forced to stay indoors. Byron proposed that each of them should write a ghost story, but Mary was slow in finding her theme. She went to bed, but was unable to sleep. Images from the discussions of Prometheus passed before her eyes. Later she wrote: “I saw, with shut eyes, but acute mental vision, I saw the pale student of unhallowed arts kneeling beside the thing he had put together. I saw the hideous phantasm of a man stretched out, and then, on the working of some powerful engine, show signs of life, and stir with an uneasy, half vital motion. Frightful must it be; for supremely frightful would be the effect of any human endeavor to mock the stupendous mechanism of the Creator of the world.” Mary had found her theme. The next morning, with Shelley’s encouragement, she began to write her masterpiece, *Frankenstein or The Modern Prometheus*.

## 5.3 Jules Verne

Jules Verne (1828-1905) is sometimes called “the father of science fiction”. His determination to become a writer conflicted with his father’s determination that he should study and practice law. While studying law, Jules Verne wrote scores of plays, poems, travel books and novels. He became friends with many writers, including Alexander Dumas fils.

Verne had a lifelong respect for science, and his books were always carefully researched and accurate, so that scientific laws were never violated. In 1862, he was introduced to Pierre-Jules Hetzel, the publisher of many well-known authors, including Balzac, Georges Sand and Victor Hugo. Hetzel had long planned to launch a high-quality family magazine which would be both entertaining and educational. He saw in Verne’s carefully researched travel books and novels the ideal combination of entertainment and education for which he was aiming.

For his part, Jules Verne was delighted to find such a distinguished and well-known publisher for his work. A collaboration began, during which Verne’s most famous works were serialized in Hetzel’s *Magasin d’Éducation et de Récréation* (Magazine of Education and Recreation) under the general title, *Voyages extraordinaires*. Verne’s research was so careful the the reader could really obtain knowledge of geology, biology, astronomy, paleontology, oceanography and the exotic locations and cultures of world through the adventures. There are 54 novels in the series, and these include “Five Weeks in a Balloon” (1863), “Journey to the Center of the Earth” (1864), “From the Earth to the Moon” (1865), “Twenty Thousand Leagues under the Seas” (1869-70), and “Around the World in Eighty Days” (1873).

In an interview, Jules Verne said, “It is my intention to complete, before my working days are done, a series which shall conclude in story form my whole survey of the world’s surface and the heavens; there are still left corners of the world to which my thoughts have not yet penetrated. As you know, I have dealt with the moon, but a great deal remains to be done, and if health and strength permit me, I hope to finish the task”

In another interview, he said, “My object has been to depict the earth, and not the earth alone, but the universe... And I have tried at the same time to realize a very high ideal of beauty of style. It is said that there can’t be any style in a novel of adventure, but it isn’t true; though I admit it is very much more difficult to write such a novel in a good literary form than the studies of character which are so vogue today.”

Jules Verne became both famous and wealthy through the 54-book series of novels serialized in Hetzel’s magazine. He was able to purchase a small ship, the *Saint Michel*. As his financial situation improved, this was replaced by the larger ship, *Saint Michel II* and finally by the still larger *Saint Michel III*, in which Verne and his family made many voyages.

By 1979, 4752 translations of his works had been published. Thus, with respect to the total number of translations, he is ranked as between Agatha Christie (7236 translations) and Shakespeare (4296 translations).



Figure 5.2: Jules Verne (1828-1905)



## 5.4 H.G. Wells

Wikipedia says of him: “He was prolific in many genres, writing dozens of novels, short stories, and works of social commentary, satire, biography, and autobiography, including even two books on war games. He is now best remembered for his science fiction novels and is often called a ”father of science fiction”, along with Jules Verne and Hugo Gernsback

“During his own lifetime, however, he was most prominent as a forward-looking, even prophetic social critic who devoted his literary talents to the development of a progressive vision on a global scale. A futurist, he wrote a number of utopian works and foresaw the advent of aircraft, tanks, space travel, nuclear weapons, satellite television and something resembling the World Wide Web. His science fiction imagined time travel, alien invasion, invisibility, and biological engineering. Brian Aldiss referred to Wells as the “Shakespeare of science fiction”. His most notable science fiction works include *The Time Machine* (1895), *The Island of Doctor Moreau* (1896), *The Invisible Man* (1897), *The War of the Worlds* (1898) and *The War in the Air* (1907). He was nominated for the Nobel Prize in Literature four times.

“His later works became increasingly political and didactic, and he wrote little science fiction, while he sometimes indicated on official documents that his profession was that of journalist. Novels such as *Kipps* and *The History of Mr Polly*, which describe lower-middle-class life, led to the suggestion that he was a worthy successor to Charles Dickens, but Wells described a range of social strata and even attempted, in *Tono-Bungay* (1909), a diagnosis of English society as a whole.”

The son of a poor family, Wells was at first largely self-educated. However, in 1884, he won a scholarship to the Royal College of Science, which is now part of the Imperial College of Science and Technology. There he studied biology under Sir Julian Huxley. As an alumnus, he helped to found the Royal College Association, of which he became the President in 1909. Today, Imperial College has a Wells Society, where one can hear lectures by such ground-breaking scientists as J.Z. Young and Gray Walter.

H.G. Wells’ social ideas were influenced by the newly founded Fabian Society, which met in the home of the designer William Morris, author of the Utopian book “*News From Nowhere*” and many other books advocating social reform.

In a non-fiction best-selling book entitled “*Anticipations of the Reaction of Mechanical and Scientific Progress upon Human Life and Thought*” (1901), Wells predicted what society would be like in the year 2000. Wikipedia comments: “Anticipating what the world would be like in the year 2000, the book is interesting both for its hits (trains and cars resulting in the dispersion of populations from cities to suburbs; moral restrictions declining as men and women seek greater sexual freedom; the defeat of German militarism, and the existence of a European Union) and its misses (he did not expect successful aircraft before 1950, and averred that ‘my imagination refuses to see any sort of submarine doing anything but suffocate its crew and founder at sea’).

Wells’ best-selling two-volume book “*An Outline of History*” and his popularized “*A Short History of the World*” remain in print today.



Figure 5.3: H.G. Wells (1866-1946)

## 5.5 George Orwell

### A lower-upper middle class family and education

Eric Arthur Blair (1903-1950), better known by his pen name George Orwell, was the great-grandson of Charles Blair, a wealthy country gentleman, and Lady Mary Fane, daughter of the Earl of Westmorland. Over the generations that separated Eric Blair from his great-grandparents, some of the gentility remained but most of the wealth disappeared, and he described his family as being “lower-upper middle class”.

Eric Blair was born in British India where his father was working, but when he was one year old his mother took the family to England. Eric attended a Catholic boarding school called St. Cyprians, where his work in history and his writing won him scholarships to both Wellington and Eton. He attended both schools, because at first there was no place available at Eton.

### *Burmese Days*

While at Eton, Eric Blair paid more attention to extra-curricular activities than to his studies, and his family, who could not afford to send him to university without a scholarship, decided that he would never win one. Instead of attending a university, Eric Blair joined the Imperial Police. He chose Burma, where his maternal grandmother was still living.

After serving several years in Burma in positions of increasing responsibility, Orwell became seriously ill in 1927, and he was allowed to return to England. By this time, he had become disillusioned with colonialism. He now saw it as a system whereby the soldiers held the poor Indian or Burmese citizen down, while the merchant went through his pockets. Orwell described his experiences as a colonial police officer in his book, *Burmese Days*

### *Down and Out in Paris and London (1933)*

After Orwell returned from Burma, he became interested in the lives of very poor people in Europe. While he was on a visit to Paris, all of his money was stolen. He could have written to his guardian in England to ask for help, but instead he decided to find out for himself what it was like to be completely destitute. Returning to London, he later continued his personal experiment with extreme poverty.

After living at the extreme lower edge of society for several years, Orwell described his experiences in *Down and Out in Paris and London*. Orwell’s descriptions are so vivid and his sense of humor so sharp that the book is both riveting and enjoyable to read. Other excellent books by Orwell describing not quite so extreme poverty include *Keep the Aspidistra Flying* (1936), and *The road to Wigan Pier* (1937).

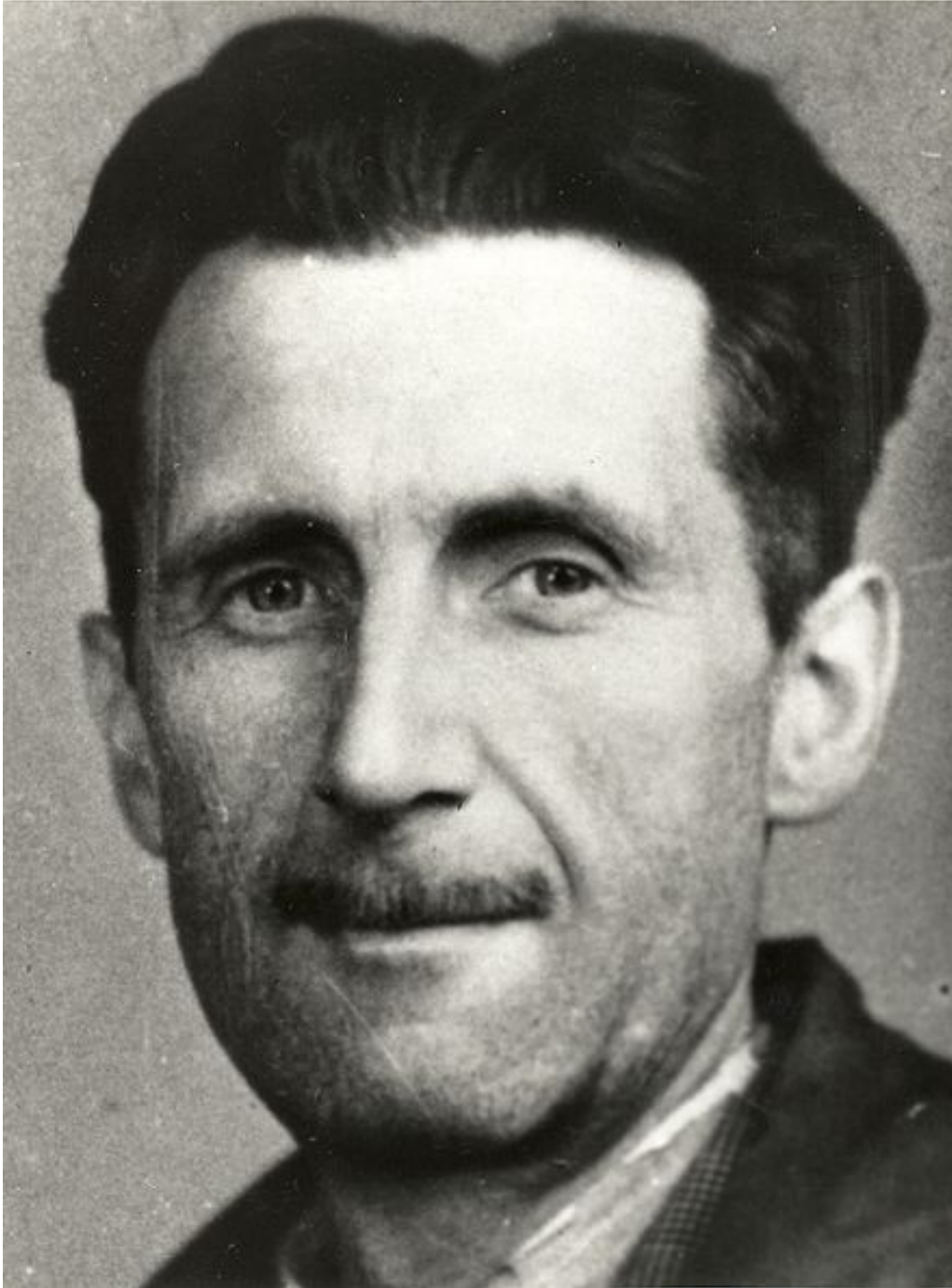


Figure 5.4: George Orwell.

***Homage to Catalonia (1938)***

This book describes Orwell's experiences during the Spanish Civil War. He served as a soldier in the unsuccessful struggle to prevent Franco's fascist army from overthrowing the elected government.

***Animal Farm (1945)***

This brilliant satiric and allegorical novella reflects Orwell's disillusionment with Russia's post-revolutionary government under Stalin. Orwell saw Stalinism as a brutal dictatorship. In his essay *Why I Write* (1946) Orwell says that *Animal Farm* is the first book in which he tried "to fuse political purpose and artistic purpose into one whole".

At the start of *Animal Farm* an old boar called Major (Marx and/or Lenin ?) teaches the animals to sing *Beasts of England* (the *Internationale?*). Orwell describes the tune as being halfway between *La Cucaracha* and *My Darling Clementine*. Here are the words of the song:

*Beasts of England, Beasts of Ireland,  
Beasts of every land and clime,  
Hearken to my joyful tidings  
Of the Golden future time.*

*Soon or late the day is coming,  
Tyrant Man shall be o'erthrown,  
And the fruitful fields of England  
Shall be trod by beasts alone.*

*Rings shall vanish from our noses,  
And the harness from our back,  
Bit and spur shall rust forever,  
Cruel whips no more shall crack.*

*Riches more than mind can picture,  
Wheat and barley, oats and hay,  
Clover, beans, and mangel-wurzels  
Shall be ours upon that day.*

*Bright will shine the fields of England,  
Purer shall its waters be,  
Sweeter yet shall blow its breezes  
On the day that sets us free.*

*For that day we all must labour,*

*Though we die before it break;  
Cows and horses, geese and turkeys,  
All must toil for freedom's sake.*

*Beasts of England, Beasts of Ireland,  
Beasts of every land and clime,  
Hearken well, and spread my tidings  
Of the Golden future time*

After a successful revolution by the animals, Farmer Jones is expelled, and the Seven Principles of Animalism are established, the most important of which is

*All animals are equal.*

The pigs, being (as they say themselves) the most intelligent of the animals, gradually take over the running of the farm. Meetings of all the animals are replaced by meetings of the pigs. The faithful hardworking old horse, Boxer, is sold to the gluemaking knacker in order to buy whisky for the pigs. The first principle of Animalism is replaced by:

*All animals are equal, but some animals are more equal than others.*

Finally, the pigs start to carry whips and to walk on two legs. They become indistinguishable from humans.

Orwell's *Animal Farm*, published at the start of the Cold War, was a great commercial success, and it was translated into many languages.

### ***Nineteen Eighty-Four (1949)***

George Orwell's famous dystopian novel *Nineteen Eighty-Four* (often published as *1984*) has changed the English language and added new words, for example "Orwellian", "doublethink", "thoughtcrime", "Big Brother", "newspeak", "nonperson" and "memory hole". Like *Animal Farm*, it expresses Orwell's deep dislike of Stalin's brutal dictatorship. However, the novel also so aptly describes recent conditions in the United States and elsewhere that today it has hit the top of best-seller lists.

The novel follows the life of Winston Smith, who lives in Airstrip One (formerly known as Great Britain). Airstrip One is part of the superstate Oceania, which is perpetually at war with two other superstates. Pictures of the ruler of Oceania, Big Brother, are everywhere and a cult of personality surrounds him, although he may not even exist.

Surveillance is also everywhere, performed by ubiquitous "telescreens", which both transmit and record. Under huge photographs of the leader of Oceania, there is usually the caption: "Big Brother is watching you". The Thought Police encourage children to report anyone who might be guilty of "thoughtcrimes", including their own parents.

The citizens of Oceania are divided into three classes. The highest and most privileged class is the Inner Party. Next come members of the Outer Party, and finally come the lowest class, the Proletariat, who make up the bulk of the population.

Winston Smith belongs to the Outer Party, and he works in the Ministry of Truth (Minitruth), where his job is to rewrite history so that it will conform to the constantly-changing doctrines of the Inner Party. He changes written records, alters photographs, and converts people who are out of favour to “nonpersons” by destroying every record of their existence. Winston is good at his job, but he gradually comes to detest the whole system. This, of course is a “thoughtcrime”.

Another worker in the Ministry of Truth is Julia, who runs Minitruth’s novel-writing machines. She hands Winston a note telling him that she is in love with him. Winston finds out that Julia shares his detestation of the system, and an affair blossoms between them. They meet in a rented room in a proletarian district where they believe they will be free from surveillance.

Later Winston is approached by O’Brien, a member of the Inner Party who is believed by Winston to be a member of the Brotherhood, a secret society that opposes the Party. Winston and Julia tell O’Brien of their detestation of the whole system. But O’Brien is not a member of the Brotherhood. He is actually a member of the Thought Police. Winston and Julia are arrested and tortured so severely that they finally betray each other.

Winston is tortured again and again. Simultaneously he is brainwashed to such an extent that he becomes a believer in the system, and can be sent back into society. The new, brainwashed Winston believes wholeheartedly in the doctrines of the Party, and he has finally learned to love Big Brother.

During the writing of *Nineteen Eighty-four*, Orwell was very ill with tuberculosis, and he died soon afterwards from the disease.

Here are some quotations from *Nineteen Eighty-four*:

*Now I will tell you the answer to my question. It is this. The Party seeks power entirely for its own sake. We are not interested in the good of others; we are interested solely in power, pure power. What pure power means you will understand presently. We are different from the oligarchies of the past in that we know what we are doing. All the others, even those who resembled ourselves, were cowards and hypocrites. The German Nazis and the Russian Communists came very close to us in their methods, but they never had the courage to recognize their own motives. They pretended, perhaps they even believed, that they had seized power unwillingly and for a limited time, and that just around the corner there lay a paradise where human beings would be free and equal. We are not like that. We know that no one ever seizes power with the intention of relinquishing it. Power is not a means; it is an end. One does not establish a dictatorship in order to safeguard a revolution; one makes the revolution in order to establish the dictatorship. The object of persecution is persecution. The object of torture is torture. The object of power is power. Now you begin to understand me. (from 1984)*

*War is peace. Freedom is slavery. Ignorance is strength.*

### ***Politics and the English Language, and other essays***

George Orwell was a perceptive and prolific essayist, and many of his essays that have been made available by Project Gutenberg<sup>1</sup>

#### **A few things that George Orwell said**

*Actions are held to be good or bad, not on their own merits, but according to who does them. There is almost no kind of outrage -torture, imprisonment without trial, assassination, the bombing of civilians - which does not change its moral color when it is committed by 'our' side. The nationalist not only does not disapprove of atrocities committed by his own side, he has a remarkable capacity for not even hearing about them.*

*The essence of oligarchical rule is not father-to-son inheritance, but the persistence of a certain world-view and a certain way of life ... A ruling group is a ruling group so long as it can nominate its successors... Who wields power is not important, provided that the hierarchical structure remains always the same*

*In a time of deceit telling the truth is a revolutionary act.*

*The creatures outside looked from pig to man, and from man to pig, and from pig to man again; but already it was impossible to say which was which.*

*The most effective way to destroy people is to deny and obliterate their own understanding of their history.*

*If you want a picture of the future, imagine a boot stamping on a human face - forever.*

*Political language is designed to make lies sound truthful and murder respectable, and to give an appearance of solidity to pure wind.*

*But if thought corrupts language, language can also corrupt thought.*

*If liberty means anything at all, it means the right to tell people what they do not want to hear.*

*Doublethink means the power of holding two contradictory beliefs in one's mind simultaneously, and accepting both of them.*

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<sup>1</sup><http://gutenberg.net.au/ebooks03/0300011h.html>



*Until they became conscious they will never rebel, and until after they have rebelled they cannot become conscious.*

*The essence of being human is that one does not seek perfection.*

*Being in a minority, even in a minority of one, did not make you mad. There was truth and there was untruth, and if you clung to the truth even against the whole world, you were not mad.*

*The great enemy of clear language is insincerity.*

*To see what is in front of one's nose requires a constant struggle.*

*Advertising is the rattling of a stick inside a swill bucket.*

*War is a way of shattering to pieces, or pouring into the stratosphere, or sinking in the depths of the sea, materials which might otherwise be used to make the masses too comfortable, and hence, in the long run, too intelligent.*

## 5.6 Aldous Huxley

Aldous Leonard Huxley (1894-1963) was a member of a famous family of biologists. His grandfather was Thomas Henry Huxley (“Darwin’s bulldog”). His brother, Sir Julian Huxley, was an evolutionary biologist, the author of almost 50 books, and the first Director-General of UNESCO. His half-brother, Andrew Huxley, shared a Nobel Prize for his discovery of the mechanism by which nerves transmit signals. Aldous Huxley, who chose a career in literature rather than biology, was nominated seven times for the Nobel Prize in Literature.

Like his brother Julian, Aldous Huxley was the author of almost 50 books, but he is most famous for his dystopian novel “Brave New World”, which he wrote in 1931. Huxley said that the book was initially a reaction to H.G. Wells’ Utopian books, such as “A Modern Utopia” (1905) and “Men Like Gods” (1923). In a letter to an American acquaintance, Huxley wrote that he “had been having a little fun pulling the leg of H.G. Wells... but got caught up in the excitement of my own ideas”.

The theme of “Brave New World” was foreshadowed in Huxley’s novel “Chrome Yellow” (1921), which satirizes life at Gossinton Hall, the estate of Lady Ottoline Morrell, one of the central figures in the famous Bloomsbury Group of writers and artists. Huxley, who was disqualified for military duty because of serious problems with his vision, spent the duration of World War I working as an agricultural labourer on Lady Ottoline’s estate. One of the characters in “Chrome Yellow” describes the future world in the following words:

“Impersonal generation [will] take the place of Nature’s hideous system. In vast state incubators, rows upon rows of gravid bottles will supply the world with the population it requires. The family system will disappear; society, sapped at its very base, will have to find new foundations; and Eros, beautifully and irresponsibly free, will flit like a gay butterfly from flower to flower through a sunlit world.”

This quotation shows that Huxley’s ideas were already taking form in 1921. He wrote “Brave New World” in four months. from May to August 1931, while living in France. Huxley was probably influenced by J.B.S. Haldane’s short book “Daedalus; or, Science and the Future” (1924) where a future society making use of in vitro fertilization is described. He was also influenced by a trip which he made to see Sir Alfred Mond’s hyper-efficient plant for nitrogen fixation, which greatly impressed him. On a trip to America, Huxley read “My Life and Work” by Henry Ford. On the same trip, he was “outraged by the culture of youth, commercial cheeriness and sexual promiscuity, and the inward-looking nature of many Americans”. It seemed to Huxley that Ford’s mass production principles dominated American life.

“Brave New World” takes its title from Marinda’s speech in Shakespeare’s “The Tempest”:

Oh wonder!  
How many goodly creatures are there here!  
How beauteous mankind is! O brave new world  
That has such people in’t!

In French translations, the English title is often replaced by *Le Meilleur des mondes* (The Best of All Worlds), an allusion to Voltaire’s “Candide” which satirizes the optimism of the mathematician and philosopher Gottfried Wilhelm von Leibnitz.

In “Brave New World” Ford everywhere takes the place of God and Jesus. One of the characters. Muphistapha Mond, the Resident Controller of Europe in the World State, is referred to as “his Fordship”. When people are upset, they say “Oh Ford! Ford!”. When relieved, people exclaim, “Thank Ford!” The Arch-Community-Songster of Canterbury replaces the Arch-Bishop of Canterbury, and he presides over services on Our Ford’s Day. The novel itself takes place in the year AF (After Ford) 632, or AD 2540 in our familiar calendar. The Christian cross is replaced with the T (for Ford’s Model T).

In 1931, when Huxley wrote “Brave New World”, economic depression was a great threat, and this is reflected in the novel. In the future society which it visualizes, all other values are sacrificed for the sake of stability. The strong emotions of the pre-Ford era, are replaced by universal continual happiness, sometimes induced by the drug soma, which sends its users into a carefree “soma holiday”, in which they are blissfully free from worries of any kind.

Many of the strong dangerous emotions of the pre-Ford viviperpus era, are associated with family life, but in the brave new world of the future, these are non-existent because there no families. Everyone belongs to everyone. Babies are not born, they are decanted. Embryos are produced by in-vitro fertilization in vast hatcheries, where they are also



Figure 5.5: Aldous Huxley (1894-1963).

conditioned and predestined for a particular role in society.

One of the main characters in the novel is the D.H.C., the Director of Hatcheries and Conditioning. Another main character is Bernard Marx, who is a high-caste alpha-plus, but nevertheless a misfit, because he is not tall. People suspect that alcohol may have been accidentally added to his blood-surrogate when he was an embryo. Bernard works as a sleep-learning specialist at the Central London Hatchery and Conditioning Centre, and he is very good at his job. Also working at the same centre is Lenina Crowne, a young, beautiful and popular fetus technician.

The main events of the novel take place when Bernard invites Lenina to go with him to the Malpais Reservation in New Mexico, where savages are allowed to live viviperously so that they can be studied. After some hesitation (because Bernard is such a strange person) Lenina accepts. She is completely disgusted by the dirt and squalor of Malpais, but nevertheless both she and Bernard find the savages of the reservation fascinating. Even more fascinating is their discovery among the native population, of a much-decayed fat old white woman, who turns out to be the lost wife of the Director of Hatcheries and Conditioning. She disappeared when she and the D.H.C. visited Malpais many years previously. Linda, despite faithfully performing her Malthusian Drill, had become pregnant and given birth to a boy, John. Realizing the hold which this will give him over the sometimes-hostile D.H.C., Bernard invites Linda and John to go with them back to civilized London; and they accept.

As a result, Bernard becomes (temporarily) a celebrity. Everyone, even the Arch-Community-Songster, wants to see the Savage (John). His curious behavior, for example asceticism and self-flagilation, excite enormous interest. At first John is available for viewing, but soon he becomes disgusted by what he sees of "civilization" and refuses to attend Bernard's parties. As a result, Bernard's celebrity status disappears overnight.

The Savage (John) is very handsome, and Lenina falls in love with him. He is also in love with her, but John has formed his ideas of romance from native American practices and from Shakespeare's dramas. Taught to read by Linda, he had discovered the book containing *Romeo and Juliet* and other now-banned pre-Fordian dramas in an old box at Malpais, and these formed his ideas of what love should be like. When Lenina offers her naked body to John, he denounces her as a strumpet, and violently rejects her.

Meanwhile, John's mother Linda becomes terminally ill. Totally drugged by soma, she is moved to the Park Lane Hospital for the Dying, a place where children are brought to enjoy the spectacle of people dying. This re-enforces the children's conditioning, which makes them accept dying as a joyful event. John rushes to see Linda, but his behavior at the hospital is outrageous. Not only does he show grief, but he also uses the word "mother", which in the brave new civilized world is the worst imaginable obscenity. To make matters still worse, attacks the Bokinofskified (cloned) group of identical twins who have assembled to enjoy Linda's death.

News that John is at the hospital and that he has gone mad reaches Bernard and the gifted writer, Helmholtz Watson, Bernard's only true friend. They rush to the hospital, to find John quoting passages from Shakespeare, and these words are recognized by Helmholtz as the eloquence for which he has been searching. He joins John in attacking the group of

cloned identical twins.

The result of this episode is that John, Helmholtz and Bernard are arrested and brought before Mustapha Mond, the highly intelligent and urbane Resident World Controller for Western Europe. Mond is so intelligent that he completely understands the motivations of John, Bernard and Helmholtz, and far from condemning their actions, he sympathizes with them.

Mond patiently explains to them the principles and philosophy behind the brave new “civilized” world. It would have been possible, he says, to produce a population consisting entirely of highly intelligent alphas, but such a society would not be stable, because there would be a struggle among the alphas to avoid menial work. It was better to produce a society with classes, alphas, betas, gammas, deltas and finally semi-moron epsilons, each with abilities suited to the work which they are predestined to perform, and each happy to be what they are. In order to achieve social stability, Mond explains, culture must be sacrificed, including high art, music, literature and science. These are replaced by Feelies (cinema with tactile and scent effects), scent organs, synthetic music, and expensive equipment-using games like Centrifugal Bumblepuppy, Electromagnetic Golf and Elevator Squash Racquets. Authors from the past, the Greek philosophers, Pascal, Shakespeare and so on must be banned.

Although sympathetic and understanding, Mond judges John, Bernard and Helmholtz to be dangerous to social stability. He exiles Bernard and Helmholtz to live on islands, but explains that this is really a reward, rather than a punishment, because other exiles whom they will meet on the islands are the most interesting men and women in the world.

John is allowed to remain in England in an isolated tower, far from any city. But even here he cannot escape the the curiosity of crowds of people who throng to observe the curious behavior of the Savage. Finally he can stand it no more, and he commits suicide.

## 5.7 A comparison between Orwell and Huxley

Social critic Neil Postman contrasted the worlds of Nineteen Eighty-Four and Brave New World in the foreword of his 1985 book *Amusing Ourselves to Death*. He writes:

“What Orwell feared were those who would ban books. What Huxley feared was that there would be no reason to ban a book, for there would be no one who wanted to read one. Orwell feared those who would deprive us of information. Huxley feared those who would give us so much that we would be reduced to passivity and egotism. Orwell feared that the truth would be concealed from us. Huxley feared the truth would be drowned in a sea of irrelevance. Orwell feared we would become a captive culture. Huxley feared we would become a trivial culture, preoccupied with some equivalent of the feelies, the orgy porgy, and the centrifugal bumblepuppy. As Huxley remarked in *Brave New World Revisited*, the civil libertarians and rationalists who are ever on the alert to oppose tyranny ‘failed to take into account man’s almost infinite appetite for distractions.’ In 1984, Orwell added, people are controlled by inflicting pain. In *Brave New World*, they are controlled by inflicting pleasure. In short, Orwell feared that our fear will ruin us. Huxley feared that

our desire will ruin us.

Niel Postman's book, "Amusing Ourselves To Death; or Public Discourse in an Age of Show Business" (1985), had its origins at the Frankfurt Book Fair, where Postman was invited to join a panel discussing George Orwell's "Nineteen Eighty-Four". Postman said that our present situation was better predicted by Huxley's "Brave New World". Today, he maintained it is not fear that bars us from truth. Instead, truth is drowned in distractions and the pursuit of pleasure, by the public's addiction to amusement.

Postman sees television as the modern equivalent of Huxley's pleasure-inducing drug, soma, and he maintains that that television, as a medium, is intrinsically superficial and unable to discuss serious issues. Looking at television as it is today, one must agree with him.

## 5.8 How well did they predict civilization's 21st century crisis?

Here are some of the serious linked problems which human civilization is facing today:

- **THREATS TO THE ENVIRONMENT:** The global environment is being destroyed by excessive consumption in the industrialized countries, combined with rapid population growth in developing nations. Climate change threatens to melt glaciers and polar ice. Complete melting of Greenland's inland ice would result in a 7 meter rise in sea level. Complete melting of the Antarctic ice cap would produce an additional 5 meters of rise.
- **GROWING POPULATION, VANISHING RESOURCES:** The fossil fuel era is ending. By 2050, oil and natural gas will be prohibitively expensive. They will no longer be used as fuels, but will be reserved as feedstocks for chemical synthesis. Within a hundred years, the same will be true of coal. The reserve indices for many metals are between 10 and 100 years. Reserve indices are defined as the size of the known reserves of metals divided by the current annual rates of production.
- **THE GLOBAL FOOD CRISIS:** It is predicted that by 2050, the world's population of humans will reach 9 billion. This is just the moment when the oil and natural gas, on which modern energy-intensive agriculture depend, will become so expensive that they will no longer be used as fuels. Climate change may also contribute to a global food crisis. Melting of Himalayan glaciers threatens the summer water supplies of both India and China. Rising sea levels threaten to inundate low-lying agricultural land, and aridity produced by climate overdrawn, and water tables are falling. Topsoil is also being lost. These elements combine to produce a threat of widespread famine by the middle of the 21st century, involving billions of people rather than millions.

## 5.8. HOW WELL DID THEY PREDICT CIVILIZATION'S 21ST CENTURY CRISIS?143

- **INTOLERABLE ECONOMIC INEQUALITY:** Today 2.7 billion people live on less than \$2 a day - 1.1 billion on less than \$1 per day. 18 million of our fellow humans die each year from poverty-related causes. Meanwhile, obesity is becoming a serious health problem in the rich part of the world. In 2006, 1.1 billion people lacked safe drinking water, and waterborne diseases killed an estimated 1.8 million people. The developing countries are also the scene of a resurgence of other infectious diseases, such as malaria, drug-resistant tuberculosis and HIV/AIDS. Economic inequality, both within nations and between nations, also undermines democracy. Powerful oligarchies control many governments.
- **THE THREAT OF NUCLEAR WAR:** Despite the end of the Cold War, the threat of a nuclear catastrophe remains severe. During the Cold War, the number and power of nuclear weapons reached insane heights - 50,000 nuclear weapons with a total explosive power equivalent to roughly a million Hiroshima bombs. Expressed differently, the total explosive power was equivalent to 20 billion tons of TNT, 4 tons for each person on earth. Today the total number of these weapons has been cut approximately in half, but there are still enough to destroy human civilization many times over. The danger of accidental nuclear war remains severe, since many nuclear missiles are on hair-trigger alert, ready to be fired within minutes of a warning being received. Continued over a long period of time, the threat of accident will grow to a near certainty. Meanwhile, the number of nations possessing nuclear weapons is growing, and there is a danger that if an unstable government is overthrown (for example, Pakistan's), the country's nuclear weapons will fall into the hands of sub-national groups. Against nuclear terrorism there is no effective defense.
- **THE MILITARY-INDUSTRIAL COMPLEX:** In 2008, world military budgets reached a total of 1.47 trillion dollars (i.e. 1.47 million million dollars). This amount of money is almost too large to be imagined. The fact that it is being spent means that many people are making a living from the institution of war. Wealthy and powerful lobbies from the military-industrial complex are able to influence mass media and governments. Thus the institution of war persists, although we know very well that it is a threat to civilization and that it responsible for much of the suffering that humans experience.
- **LIMITS TO GROWTH:** A "healthy" economic growth rate of 4% per year corresponds to an increase by a factor of 50 in a century, by a factor of 2,500 in two centuries and 125,000 in three centuries. No one can maintain that resource-using, waste-producing economic activities can continue to grow except by refusing to look more than a certain distance into the future. It seems likely that the boundaries for economic growth will be reached by the middle of the 21st century. (Culture can of course continue to grow.) We face a difficult period of transition from an economy that depends on growth for its health to a new economic system: steady-state economics.

How well did Mary Shelly, Jules Verne, H.G. Wells, George Orwell and Aldous Huxley predict these current dangers to human civilization and the biosphere?

Mary Shelley, George Orwell and Aldous Huxley all foresaw that science and technology might not always be beneficial to society. “Frankenstein” depicts the dangers of science out of control. In both “Nineteen Eighty-Four” and “Brave New World”, technology is used to enforce conformity.

Remarkably, H.G. Wells’ 1913 novel, “The World Set Free”, predicts the development of an enormously powerful bomb using uranium. He correctly concluded that such a bomb would make war prohibitively dangerous, and that only an effective world government could make the world safe again. But this is not the situation today. We do not have a world government with the powers needed to make the world safe; and we have the much more powerful thermonuclear bombs, possessed by many nations, and the constant threat that human civilization and much of the biosphere will be destroyed in a thermonuclear war, started by technical or human failure, or by the insanity of a person in power.

One thing which all the authors seem to have missed completely is the relationship between industrial society and fossil fuels. The Industrial Revolution marked the start of massive human use of fossil fuels. The stored energy from several hundred million years of plant growth began to be used at roughly a million times the rate at which it had been formed. The effect on human society was like that of a narcotic. There was a euphoric (and totally unsustainable) surge of growth of both population and industrial production. Meanwhile, the carbon released into the atmosphere from the burning of fossil fuels began to duplicate the conditions which led to the 5 geologically-observed mass extinctions, during each of which more than half of all living species disappeared forever.

In Huxley’s “Brave New World”, the availability of fossil fuels and other resources is not considered at all. In fact the use of resources is encouraged by such slogans as “Ending is better than mending”. Energy-using helicopters are universally used for transportation. Games, such as Centrifugal Bumblepuppy, require much energy use. We should remember, however that Huxley’s novel is a satire on Fordian society, and that Ford and his contemporaries did not worry about the end of the fossil fuel era or about catastrophic climate change. As a criticism of folly, the novel is certainly valid.

## Suggestions for further reading

1. P.R. Ehrlich and A.H. Ehrlich, *One With Nineveh: Politics, Consumption and the Human Future*, Island Press, (2004).
2. D.H. Meadows, D.L. Meadows, J. Randers, and W.W. Behrens III, *The Limits to Growth: A Report for the Club of Rome’s Project on the Predicament of Mankind*, Universe Books, New York, (1972).
3. D.H. Meadows et al., *Beyond the Limits. Confronting Global Collapse and Envisioning a Sustainable Future*, Chelsea Green Publishing, Post Mills, Vermont, (1992).
4. D.H. Meadows, J. Randers and D.L. Meadows, *Limits to Growth: the 30-Year Update*, Chelsea Green Publishing, White River Jct., VT 05001, (2004).
5. A. Peccei and D. Ikeda, *Before it is Too Late*, Kodansha International, Tokyo, (1984).



5.8. HOW WELL DID THEY PREDICT CIVILIZATION'S 21ST CENTURY CRISIS?145

6. V.K. Smith, ed., *Scarcity and Growth Reconsidered*, Johns Hopkins University Press, Baltimore, (1979).
7. British Petroleum, *BP Statistical Review of World Energy*, (published yearly).
8. R. Costanza, ed., *Ecological Economics: The Science and Management of Sustainability*, Columbia University Press, New York, (1991).
9. J. Darmstadter, *A Global Energy Perspective*, Sustainable Development Issue Backgrounder, Resources for the Future, (2002).
10. D.C. Hall and J.V. Hall, *Concepts and Measures of Natural Resource Scarcity*, *Journal of Environmental Economics and Management*, **11**, 363-379, (1984).
11. M.K. Hubbert, *Energy Resources*, in *Resources and Man: A Study and Recommendations*, Committee on Resources and Man, National Academy of Sciences, National Research Council, W.H. Freeman, San Francisco, (1969).
12. J.A. Krautkraemer, *Nonrenewable Resource Scarcity*, *Journal of Economic Literature*, bf 36, 2065-2107, (1998).
13. C.J. Cleveland, *Physical and Economic Aspects of Natural Resource Scarcity: The Cost of Oil Supply in the Lower 48 United States 1936-1987*, *Resources and Energy* **13**, 163-188, (1991).
14. C.J. Cleveland, *Yield Per Effort for Additions to Crude Oil Reserves in the Lower 48 States, 1946-1989*, *American Association of Petroleum Geologists Bulletin*, **76**, 948-958, (1992).
15. M.K. Hubbert, *Technique of Prediction as Applied to the Production of Oil and Gas*, in *NBS Special Publication 631*, US Department of Commerce, National Bureau of Standards, (1982).
16. L.F. Ivanhoe, *Oil Discovery Indices and Projected Discoveries*, *Oil and Gas Journal*, **11**, 19, (1984).
17. L.F. Ivanhoe, *Future Crude Oil Supplies and Prices*, *Oil and Gas Journal*, July 25, 111-112, (1988).
18. L.F. Ivanhoe, *Updated Hubbert Curves Analyze World Oil Supply*, *World Oil*, November, 91-94, (1996).
19. L.F. Ivanhoe, *Get Ready for Another Oil Shock!*, *The Futurist*, January-February, 20-23, (1997).
20. Energy Information Administration, *International Energy Outlook, 2001*, US Department of Energy, (2001).
21. Energy Information Administration, *Caspian Sea Region*, US Department of Energy, (2001).
22. National Energy Policy Development Group, *National Energy Policy*, The White House, (2004). (<http://www.whitehouse.gov/energy/>)
23. IEA, *CO2 from Fuel Combustion Fact-Sheet*, International Energy Agency, (2005).
24. H. Youguo, *China's Coal Demand Outlook for 2020 and Analysis of Coal Supply Capacity*, International Energy Agency, (2003).
25. R.H. Williams, *Advanced Energy Supply Technologies*, in *World Energy Assessment: Energy and the Challenge of Sustainability*, UNDP, (2000).

26. H. Lehmann, *Energy Rich Japan*, Institute for Sustainable Solutions and Innovations, Aachen, (2003).
27. W.V. Chandler, *Materials Recycling: The Virtue of Necessity*, Worldwatch Paper 56, Worldwatch Institute, Washington D.C, (1983).
28. W.C. Clark and others, *Managing Planet Earth*, Special Issue, *Scientific American*, September, (1989).
29. B. Commoner, *The Closing Circle: Nature, Man and Technology*, Bantam Books, New York, (1972).
30. J.R. Frisch, *Energy 2000-2020: World Prospects and Regional Stresses*, World Energy Conference, Graham and Trotman, (1983).
31. J. Holdren and P. Herrera, *Energy*, Sierra Club Books, New York, (1971).
32. National Academy of Sciences, *Energy and Climate*, NAS, Washington D.C., (1977).
33. W. Ophuls, *Ecology and the Politics of Scarcity*, W.H. Freeman, San Francisco, (1977).
34. C. Pollock, *Mining Urban Wastes: The Potential for Recycling*, Worldwatch Paper 76, Worldwatch Institute, Washington D.C., (1987).
35. World Resources Institute, *World Resources*, Oxford University Press, New York, (published annually).
36. World Resources Institute, *World Resources 2000-2001: People and Ecosystems: The Fraying Web of Life*, WRI, Washington D.C., (2000).
37. J.E. Young, John E., *Mining the Earth*, Worldwatch Paper 109, Worldwatch Institute, Washington D.C., (1992).
38. J.R. Craig, D.J. Vaughan and B.J. Skinner, *Resources of the Earth: Origin, Use and Environmental Impact, Third Edition*, Prentice Hall, (2001).
39. W. Youngquist, *Geodesinies: The Inevitable Control of Earth Resources Over Nations and Individuals*, National Book Company, Portland Oregon, (1997).
40. M. Tanzer, *The Race for Resources. Continuing Struggles Over Minerals and Fuels*, Monthly Review Press, New York, (1980).
41. C.B. Reed, *Fuels, Minerals and Human Survival*, Ann Arbor Science Publishers Inc., Ann Arbor Michigan, (1975).
42. M.K. Hubbert, *Energy Resources*, in *Resources and Man: A Study and Recommendations*, Committee on Resources and Man, National Academy of Sciences, National Research Council, W.H. Freeman, San Francisco, (1969).
43. J.A. Krautkraemer, *Nonrenewable Resource Scarcity*, *Journal of Economic Literature*, bf 36, 2065-2107, (1998).
44. C.J. Cleveland, *Physical and Economic Aspects of Natural Resource Scarcity: The Cost of Oil Supply in the Lower 48 United States 1936-1987*, *Resources and Energy* **13**, 163-188, (1991).
45. C.J. Cleveland, *Yield Per Effort for Additions to Crude Oil Reserves in the Lower 48 States, 1946-1989*, *American Association of Petroleum Geologists Bulletin*, **76**, 948-958, (1992).

5.8. HOW WELL DID THEY PREDICT CIVILIZATION'S 21ST CENTURY CRISIS?147

46. M.K. Hubbert, *Technique of Prediction as Applied to the Production of Oil and Gas*, in *NBS Special Publication 631*, US Department of Commerce, National Bureau of Standards, (1982).
47. Energy Information Administration, *International Energy Outlook, 2001*, US Department of Energy, (2001).
48. Energy Information Administration, *Caspian Sea Region*, US Department of Energy, (2001).
49. National Energy Policy Development Group, *National Energy Policy*, The White House, (2004). (<http://www.whitehouse.gov/energy/>)
50. M. Klare, *Bush-Cheney Energy Strategy: Procuring the Rest of the World's Oil*, Foreign Policy in Focus, (Interhemispheric Resource Center/Institute for Policy Studies/SEEN), Washington DC and Silver City NM, January, (2004).
51. IEA, *CO2 from Fuel Combustion Fact-Sheet*, International Energy Agency, (2005).
52. H. Youguo, *China's Coal Demand Outlook for 2020 and Analysis of Coal Supply Capacity*, International Energy Agency, (2003).
53. R.H. Williams, *Advanced Energy Supply Technologies*, in *World Energy Assessment: Energy and the Challenge of Sustainability*, UNDP, (2000).
54. H. Lehmann, *Energy Rich Japan*, Institute for Sustainable Solutions and Innovations, Aachen, (2003).
55. W.V. Chandler, *Materials Recycling: The Virtue of Necessity*, Worldwatch Paper 56, Worldwatch Institute, Washington D.C, (1983).
56. J.R. Frisch, *Energy 2000-2020: World Prospects and Regional Stresses*, World Energy Conference, Graham and Trotman, (1983).
57. J. Gever, R. Kaufmann, D. Skole and C. Vorosmarty, *Beyond Oil: The Threat to Food and Fuel in the Coming Decades*, Ballinger, Cambridge MA, (1986).
58. J. Holdren and P. Herrera, *Energy*, Sierra Club Books, New York, (1971).
59. National Academy of Sciences, *Energy and Climate*, NAS, Washington D.C., (1977).
60. W. Ophuls, *Ecology and the Politics of Scarcity*, W.H. Freeman, San Francisco, (1977).
61. P.B. Smith, J.D. Schilling and A.P. Haines, *Introduction and Summary*, in *Draft Report of the Pugwash Study Group: The World at the Crossroads*, Berlin, (1992).
62. World Resources Institute, *World Resources*, Oxford University Press, New York, (published annually).
63. J.R. Craig, D.J. Vaughan and B.J. Skinner, *Resources of the Earth: Origin, Use and Environmental Impact, Third Edition*, Prentice Hall, (2001).
64. W. Youngquist, *Geodesinies: The Inevitable Control of Earth Resources Over Nations and Individuals*, National Book Company, Portland Oregon, (1997).
65. M. Tanzer, *The Race for Resources. Continuing Struggles Over Minerals and Fuels*, Monthly Review Press, New York, (1980).
66. C.B. Reed, *Fuels, Minerals and Human Survival*, Ann Arbor Science Publishers Inc., Ann Arbor Michigan, (1975).
67. A.A. Bartlett, *Forgotten Fundamentals of the Energy Crisis*, American Journal of Physics, **46**, 876-888, (1978).

68. N. Gall, *We are Living Off Our Capital*, Forbes, September, (1986).
69. P. Dasgupta, *Population, Resources and Poverty*, *Ambio*, **21**, 95-101, (1992).
70. L.R. Brown, *Who Will Feed China?*, W.W. Norton, New York, (1995).
71. L.R. Brown, et al., *Saving the Planet. How to Shape and Environmentally Sustainable Global Economy*, W.W. Norton, New York, (1991).
72. L.R. Brown, *Postmodern Malthus: Are There Too Many of Us to Survive?*, The Washington Post, July 18, (1993).
73. L.R. Brown and H. Kane, *Full House. Reassessing the Earth's Population Carrying Capacity*, W.W. Norton, New York, (1991).
74. L.R. Brown, *Seeds of Change*, Praeger Publishers, New York, (1970).
75. L.R. Brown, *The Worldwide Loss of Cropland*, Worldwatch Paper 24, Worldwatch Institute, Washington, D.C., (1978).
76. L.R. Brown, and J.L. Jacobson, *Our Demographically Divided World*, Worldwatch Paper 74, Worldwatch Institute, Washington D.C., (1986).
77. L.R. Brown, and J.L. Jacobson, *The Future of Urbanization: Facing the Ecological and Economic Constraints*, Worldwatch Paper 77, Worldwatch Institute, Washington D.C., (1987).
78. L.R. Brown, and others, *State of the World*, W.W. Norton, New York, (published annually).
79. H. Brown, *The Human Future Revisited. The World Predicament and Possible Solutions*, W.W. Norton, New York, (1978).
80. H. Hanson, N.E. Borlaug and N.E. Anderson, *Wheat in the Third World*, Westview Press, Boulder, Colorado, (1982).
81. A. Dil, ed., *Norman Borlaug and World Hunger*, Bookservice International, San Diego/Islamabad/Lahore, (1997).
82. N.E. Borlaug, *The Green Revolution Revisited and the Road Ahead*, Norwegian Nobel Institute, Oslo, Norway, (2000).
83. N.E. Borlaug, *Ending World Hunger. The Promise of Biotechnology and the Threat of Antiscience Zealotry*, *Plant Physiology*, **124**, 487-490, (2000).
84. M. Giampietro and D. Pimental, *The Tightening Conflict: Population, Energy Use and the Ecology of Agriculture*, in *Negative Population Forum*, L. Grant ed., Negative Population Growth, Inc., Teaneck, N.J., (1993).
85. H.W. Kendall and D. Pimental, *Constraints on the Expansion of the Global Food Supply*, *Ambio*, **23**, 198-2005, (1994).
86. D. Pimental et al., *Natural Resources and Optimum Human Population*, *Population and Environment*, **15**, 347-369, (1994).
87. D. Pimental et al., *Environmental and Economic Costs of Soil Erosion and Conservation Benefits*, *Science*, **267**, 1117-1123, (1995).
88. D. Pimental et al., *Natural Resources and Optimum Human Population*, *Population and Environment*, **15**, 347-369, (1994).
89. D. Pimental and M. Pimental, *Food Energy and Society*, University Press of Colorado, Niwot, Colorado, (1996).

5.8. HOW WELL DID THEY PREDICT CIVILIZATION'S 21ST CENTURY CRISIS?149

90. D. Pimental et al., *Environmental and Economic Costs of Soil Erosion and Conservation Benefits*, *Science*, **267**, 1117-1123, (1995).
91. RS and NAS, *The Royal Society and the National Academy of Sciences on Population Growth and Sustainability*, *Population and Development Review*, **18**, 375-378, (1992).
92. A.M. Altieri, *Agroecology: The Science of Sustainable Agriculture*, Westview Press, Boulder, Colorado, (1995).
93. G. Conway, *The Doubly Green Revolution*, Cornell University Press, (1997).
94. J. Dreze and A. Sen, *Hunger and Public Action*, Oxford University Press, (1991).
95. G. Bridger, and M. de Soissons, *Famine in Retreat?*, Dent, London, (1970).
96. W. Brandt, *World Armament and World Hunger: A Call for Action*, Victor Gollanz Ltd., London, (1982).
97. A.K.M.A. Chowdhury and L.C. Chen, *The Dynamics of Contemporary Famine*, Ford Foundation, Dacca, Pakistan, (1977)
98. J. Shepard, *The Politics of Starvation*, Carnegie Endowment for International Peace, Washington D.C., (1975).
99. M.E. Clark, *Ariadne's Thread: The Search for New Modes of Thinking*, St. Martin's Press, New York, (1989).
100. J.-C. Chesnais, *The Demographic Transition*, Oxford, (1992).
101. C.M. Cipola, *The Economic History of World Population*, Penguin Books Ltd., (1974).
102. E. Draper, *Birth Control in the Modern World*, Penguin Books, Ltd., (1972).
103. Draper Fund Report No. 15, *Towards Smaller Families: The Crucial Role of the Private Sector*, Population Crisis Committee, 1120 Nineteenth Street, N.W., Washington D.C. 20036, (1986).
104. E. Eckholm, *Losing Ground: Environmental Stress and World Food Prospects*, W.W. Norton, New York, (1975).
105. E. Havemann, *Birth Control*, Time-Life Books, (1967).
106. J. Jacobsen, *Promoting Population Stabilization: Incentives for Small Families*, Worldwatch Paper 54, Worldwatch Institute, Washington D.C., (1983).
107. N. Keyfitz, *Applied Mathematical Demography*, Wiley, New York, (1977).
108. W. Latz (ed.), *Future Demographic Trends*, Academic Press, New York, (1979).
109. World Bank, *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*, Washington D.C., (1986).
110. J.E. Cohen, *How Many People Can the Earth Support?*, W.W. Norton, New York, (1995).
111. J. Amos, *Climate Food Crisis to Deepen*, BBC News (5 September, 2005).
112. J. Vidal and T. Ratford, *One in Six Countries Facing Food Shortage*, *The Guardian*, (30 June, 2005).
113. J. Mann, *Biting the Environment that Feeds Us*, *The Washington Post*, July 29, 1994.
114. G.R. Lucas, Jr., and T.W. Ogletree, (editors), *Lifeboat Ethics. The Moral Dilemmas of World Hunger*, Harper and Row, New York.
115. J.L. Jacobson, *Gender Bias: Roadblock to Sustainable Development*, Worldwatch Paper 110, Worldwatch Institute, Washington D.C., (1992).

116. J. Gever, R. Kaufmann, D. Skole and C. Vorosmarty, *Beyond Oil: The Threat to Food and Fuel in the Coming Decades*, Ballinger, Cambridge MA, (1986).
117. M. ul Haq, *The Poverty Curtain: Choices for the Third World*, Columbia University Pres, New York, (1976).
118. H. Le Bras, *La Planète au Village*, Datar, Paris, (1993).
119. E. Mayr, *Population, Species and Evolution*, Harvard University Press, Cambridge, (1970).

# Chapter 6

## CLIMATE CHANGE DENIAL

### 6.1 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 traditional 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



Figure 6.1: **Our greed-based economic system is driving us towards disaster.**

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 worlds climate scientists have warned. The world has recently passed a dangerous landmark in atmospheric CO<sub>2</sub> 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.

## **6.2 Limits to growth and climate change**

Classical economists like Smith and Ricardo pictured the world as largely empty of human activities. According to the "empty-world" picture of economics, the limiting factors in the

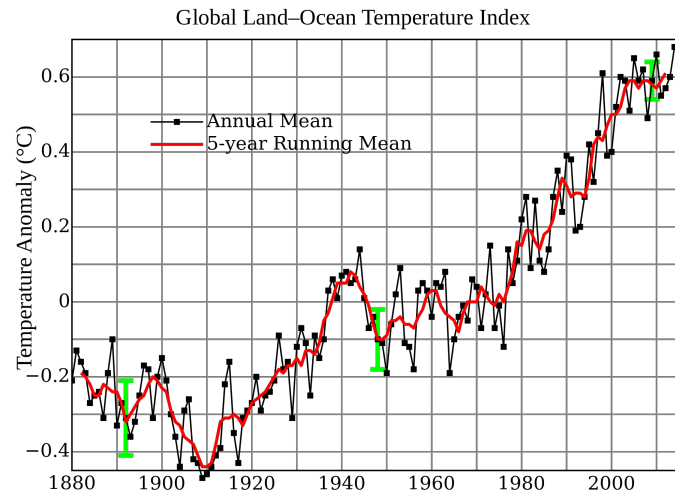


Figure 6.2: Unless the release of greenhouse gases into the atmosphere is stopped, we will soon reach a tipping point after which feedback loops beyond our control will cause catastrophic climate change. Source wikipedia.org

production of food and goods are shortages of capital and labor. The land, forests, fossil fuels, minerals, oceans filled with fish, and other natural resources upon which human labor and capital operate, are assumed to be present in such large quantities that they are not limiting factors. In this picture, there is no naturally-determined upper limit to the total size of the human economy. It can continue to grow as long as new capital is accumulated, as long as new labor is provided by population growth, and as long as new technology replaces labor by automation.

Biology, on the other hand, presents us with a very different picture. Biologists remind us that if any species, including our own, makes demands on its environment which exceed the environment's carrying capacity, the result is a catastrophic collapse both of the environment and of the population which it supports. Only demands which are within the carrying capacity are sustainable. For example, there is a limit to regenerative powers of a forest. It is possible to continue to cut trees in excess of this limit, but only at the cost of a loss of forest size, and ultimately the collapse and degradation of the forest. Similarly, cattle populations may for some time exceed the carrying capacity of grasslands, but the ultimate penalty for overgrazing will be degradation or desertification of the land. Thus, in biology, the concept of the carrying capacity of an environment is extremely important; but in economic theory this concept has not yet been given the weight that it deserves.

There is much evidence to indicate that the total size of the human economy is rapidly approaching the absolute limits imposed by the carrying capacity of the global environment. For example, biologists estimate that between 10,000 and 50,000 species are being driven into extinction each year as the earth's rainforests are destroyed.

The burning of fossil fuels and the burning of tropical rain forests have released so much carbon dioxide that the atmospheric concentration of this greenhouse gas has increased from a preindustrial value of 260 ppm to its present value: 400 ppm. Most scientists agree

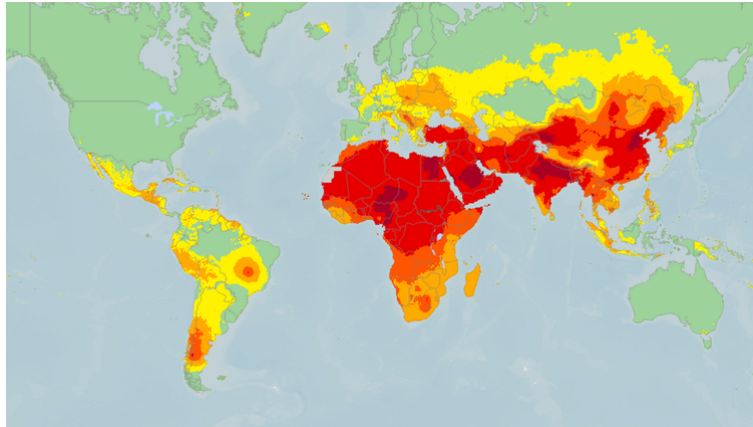


Figure 6.3: **Air pollution has become a significant cause of death in both Asia and Africa.**

that unless steps are taken to halt the burning of rain forests and to reduce the use of fossil fuels, the earth's temperature will steadily rise during the coming centuries. This gradual long-term climate change will threaten future agricultural output by changing patterns of rainfall. Furthermore, the total melting of the Arctic and Antarctic icecaps, combined with the thermal expansion of the oceans, threatens to produce a sea level rise of up to 12 meters. Although these are slow, long-term effects, we owe it to future generations to take steps now to halt global warming.

## The dogma of growth

According to Adam Smith, the free market is the dynamo of economic growth. The true entrepreneur does not indulge in luxuries for himself and his family, but reinvests his profits, with the result that his business or factory grows larger, producing still more profits, which he again reinvests, and so on. This is indeed the formula for exponential economic growth.

Economists (with a few notable exceptions such as Aurelio Pecci and Herman Daly) have long behaved as though growth were synonymous with economic health. If the gross national product of a country increases steadily by 4 percent per year, most economists express approval and say that the economy is healthy. If the economy could be made to grow still faster (they maintain), it would be still more healthy. If the growth rate should fall, economic illness would be diagnosed.

However, it is obvious that on a finite Earth, neither population growth nor resource-using and pollution-generating economic growth can continue indefinitely. A "healthy" economic growth rate of 4 percent per year corresponds to an increase by a factor of 50 in a century. (The reader is invited to calculate the factor of increase in five centuries. The answer is 312,500,000!) No one can maintain that this type of growth is sustainable except by refusing to look more than a short distance into the future. Sooner or later (perhaps surprisingly soon) an entirely new form of economics will be needed - not the

empty-world economics of Adam Smith, but what might be called “full-world economics”, or “steady-state economics”.

Although indefinitely continued industrial growth on a finite earth is a logical impossibility, growth is nevertheless the most sacred dogma of both economists and politicians, perhaps because of our fractional reserve banking system, which collapses unless there is growth. Anyone who challenges this dogma is treated as a heretic. For example, Professor Tim Jackson recently wrote an excellent book, “Prosperity Without Growth: Economics for a Finite Planet”, which challenged the concept of unlimited growth. He suffered for his heresy, although he was not actually burned at the stake: The Sustainable Development Commission (of which Jackson was the Economics Commissioner) was abolished by the British government.

If the world continues on the path of unlimited industrial growth, any chance of preventing catastrophic climate change will be lost.

## 6.3 Exponential growth

Exponential growth of any quantity with time has some remarkable characteristics, which we ought to try to understand better, since this understanding will help us to predict the future. The knowledge will also show us the tasks which history has given to our generation. We must perform these tasks with urgency in order to create a future in which our descendants will be able to survive.

If any quantity, for example population, industrial production or indebtedness, is growing at the rate of 3% per year, it will double in 23.1 years; if it is growing at the rate of 4% per year, the doubling time is 17.3 years. For a 5% growth rate, the doubling time is 13.9 years, if the growth rate is 7% (the rate of economic growth that China’s leaders hope to maintain), the doubling time is only 9.9 years. If you want to find out the doubling time for any exponentially growing quantity, just divide 69.3 years by the growth rate in percent.

Looking at the long-term future, we can calculate that any quantity increasing at the modest rate of 3% per year will grow by a factor of 20.1 in a century. This implies that in four centuries, whatever is growing at 3% will have increased by a factor of 163,000. These facts make it completely clear that long-continued economic growth on a finite planet is a logical absurdity. Yet economists and governments have an almost religious belief in perpetual economic growth. They can only maintain this belief by refusing to look more than a short distance into the future.

Exponential decay of any quantity follows similar but inverse rules. For example, if the chance of a thermonuclear war will be initiated by accident or miscalculation or malice is 3% in any given year, the chance that the human race will survive for more than four centuries under these conditions is only 1 in 163,000, i.e. 0.000625 percent. Clearly, in the long run, if we do not completely rid ourselves of nuclear weapons, our species will have little hope of survival.

Besides nuclear war, the other great threat to the survival of the human species and the

biosphere is catastrophic climate change. 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, such as the albedo effect and the methane hydrate feedback loop, could take over and produce an out-of-control and fatal increase in global temperature.

In 2012, the World Bank issued a report warning that without quick action to curb CO<sub>2</sub> 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. During 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.<sup>1</sup>

Is a quick transition to 100% renewable energy technically possible? The remarkable characteristics of exponential growth can give us hope that it can indeed be done, provided that we make the necessary effort.

The Earth Policy Institute recently reported that “Between 2008 and 2013, as solar panel prices dropped by roughly two thirds, the PV installed worldwide skyrocketed from 16,000 to 139,000 megawatts... In its January 2014 solar outlook report, Deutsche Bank projected that 46,000 megawatts would be added to global PV capacity in 2014 and that new installations would jump to a record 56,000 megawatts in 2015.”

An analysis of the data given by the Earth Policy Institute shows that global installed photovoltaic capacity is now increasing by 27.8% per year. Because of the remarkable properties of exponential growth, we can predict that by 2034, the world’s installed PV capacity will have reached 47.7 terawatts, more than twice today’s global consumption of all forms of energy (provided, of course, that the present rate of growth is maintained).

We can see from this analysis, and from data presented by Lester Brown and his coauthors Janet Larsen, Mathew Roney and Emily Adams, in their recent book “The Great Transition”, that the urgently-needed replacement of fossil fuels by renewable energy is technically achievable. But it also requires political will. For example the present rapid rate of growth of global PV capacity was initiated by the German government’s enlightened financial policies. Government measures helping renewables are vital. At present, governments give billions in direct and indirect support of fossil fuel giants, which in turn sponsor massive advertising campaign to convince the public that anthropogenic climate change is not real. Our task, for the sake of future generations, is to provide the political will needed for the great transition.<sup>2</sup>

For the sake of future generations, let us also work with dedication for the great transition to a world without nuclear weapons, a world without war, and a world with an economic system that does not depend on growth.

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<sup>1</sup> <http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>

<sup>2</sup> <http://www.earth-policy.org/books/tgt>  
<http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>



## 6.4 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-reinforcing.

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 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 main-spring 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.

## 6.5 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 CO<sub>2</sub> 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.<sup>3</sup>

The Permian-Triassic thermal maximum seems to have been triggered by global warming and CO<sub>2</sub> 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.<sup>4</sup>

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 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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<sup>3</sup> <http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>

<sup>4</sup> <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=m6pFDu7ILV4>

## 6.6 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.<sup>5</sup> 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

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<sup>5</sup> <http://therightsofnature.org/universal-declaration/>

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 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 CO<sub>2</sub> 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](http://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

## 6.7 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<sub>2</sub>.

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<sub>2</sub> 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.<sup>6</sup>

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 CO<sub>2</sub> 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.<sup>7</sup>

The Permian-Triassic thermal maximum seems to have been triggered by global warming and CO<sub>2</sub> 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 normal, causing the Permian-Triassic mass extinction.<sup>8</sup>

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

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<sup>6</sup><https://www.youtube.com/watch?v=MVwmi7HCmSI>  
<https://www.youtube.com/watch?v=AjZaFjXfLec>  
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<https://www.youtube.com/watch?v=m6pFDu7ILV4>



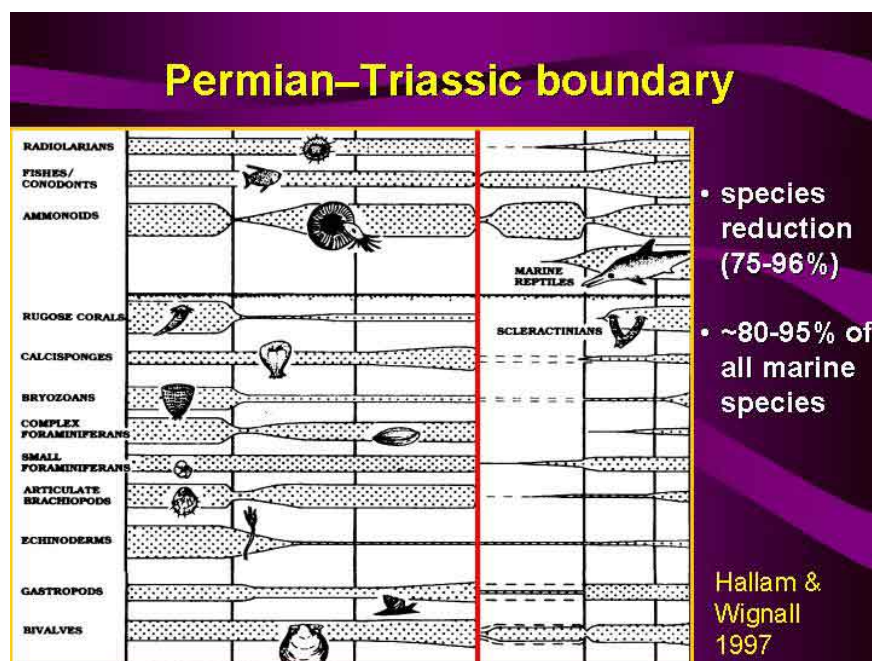


Figure 6.4: Loss of species caused by the Permian-Triassic extinction event. Unless quick steps are taken to lower our greenhouse gas emissions, we may cause a similar extinction event, which will threaten the survival of our own species. Source: Australian Frontiers of Science, [www.sciencearchive.org.au](http://www.sciencearchive.org.au)

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 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.

### **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, cellulostic ethanol, and hydrogenation of CO<sub>2</sub>.

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.



Figure 6.5: **Limanskaya Solar Power Station in the south-western region of Ukraine.** [CC BY-SA 3.0], Wikimedia Commons

## 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 semiconducting 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-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



Figure 6.6: A solar thermal power plant. Arrays of heliostatic reflectors concentrate the sun's rays onto molten salt in the tower. The plant produces electricity at night because the salt remains hot.

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  $1 \text{ kW/m}^2$  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



Figure 6.7: Rows of wind turbines.

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<sub>2</sub>, since the CO<sub>2</sub> 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<sub>2</sub> 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 CO<sub>2</sub> 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 (CH<sub>4</sub>), 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 composed 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.

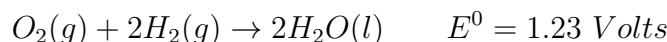
The entire Pacific Ocean is ringed by regions of volcanic and earthquake activity, the so-called Ring of Fire. This ring extends from Tierra del Fuego at the southernmost tip of South America, northward along the western coasts of both South America and North America to Alaska. The ring then crosses 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

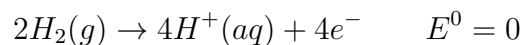
Electrolysis of water to produce hydrogen gas has been proposed as a method for energy storage in a future renewable energy system. For example, it might be used to store energy generated by photovoltaics in desert areas of the world. Compressed hydrogen gas could then be transported to other regions 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.

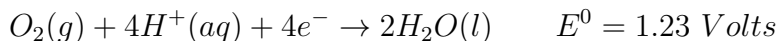
Fuel cells allow us to convert the energy of chemical reactions directly into electrical power. In hydrogen fuel cells, for example, the exact reverse of the electrolysis of water takes place. Hydrogen reacts with oxygen, and produces electricity and water, the reaction being



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.<sup>9</sup>

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.

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<sup>9</sup> <http://www.youtube.com/watch?v=NCAsxphZoxE>

<sup>10</sup> <http://therightsofnature.org/universal-declaration/>

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 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

## 6.8 The United Nations Climate Summit

On Tuesday, the 23rd of September, 2014, Leonardo de Capriao made a really excellent speech to the United Nations Climate Summit in New York. Despite the extremely high quality and genuine conviction of his speech, de Caprio failed to mention the terrible long-term threat which the world faces from the methane-hydrate feedback loop, which threatens to produce a human-induced 6th geological extinction event comparable to the Permian-Triassic thermal maximum.<sup>11</sup> Leonardo de Caprio's failure to mention it in his otherwise excellent UN speech is surprising, since he and his family were closely involved with the production of the video.

Delegates at the United Nations Climate Summit were shown images of the inspiring and heartfelt People's Climate March, which took place on Sunday, September 21st. The organizers of the march had expected 100,000 participants. In fact, more than 400,000 people came, and the march was unique in its artistic brilliance and its ethnic diversity. It was one of 2,600 events in 170 nations. The slogan of the march in New York was "To change everything, we need everyone", and in fact everyone came!<sup>12</sup> The United Nations Climate Summit was certainly a success. Much was achieved And yet, much was missing from the results<sup>13</sup>

<sup>11</sup> <https://www.youtube.com/watch?v=sRGVTK-AAvw>  
<http://eruditio.worldacademy.org/author/john-scales-avery>

<sup>12</sup> <https://www.youtube.com/watch?v=h5YaqcPEUNc>

<sup>13</sup> <http://mashable.com/2014/09/24/united-nations-climate-summit-takeaways/>  
<http://mashable.com/2014/09/23/un-climate-summit-country-promises-map/>  
<tp://www.breitbart.com/Big-Peace/2014/09/23/UN-Demands-Stricter-CO2-Enforcement-But-Exempts-China>

However, China and India are now the world's two largest emitters of CO<sub>2</sub>, and they did not make firm commitments to abandon the burning of coal. In fact, these two countries will suffer greatly from climate change, perhaps already in the near future. The present floods in Kashmir are a warning of what is to come. Summer temperatures in India may soon become so high that people without air conditioning will be unable to survive. In both China and India, summer water supplies will be threatened by the melting of Himalayan glaciers.

Throughout the world, people of all countries need to act with urgency to switch to an economy that aims at sustainability rather than endless consumption and growth, an economy based on renewable energy rather than fossil fuels, an economy devoted to life rather than to profits.

## 6.9 Climate change means lifestyle change

Scientists are unanimous in warning us that unless we very rapidly reduce CO<sub>2</sub> emissions, we risk passing a tipping point beyond which we will be powerless to prevent uncontrollable global warming. We risk a human-produced extinction event comparable to the Permian-Triassic thermal maximum, during which 96 percent of marine species and 70 percent of terrestrial vertebrates became extinct.<sup>14</sup>

The excellent videos of Thom Hartmann and his co-workers tell us very clearly a fact of which the scientific community is very conscious, but which the mass media refuse to discuss. The fact is this:

Arctic seas are warming very rapidly, and they will soon be free of ice in the summers. The warming of Arctic seas and tundra threatens to release vast quantities of methane into the atmosphere by melting methane hydrates. This in turn threatens to warm the remainder of the world so much that methane hydrates in all offshore deposits will be destabilized. If this happens, the result will be a major extinction event, which will threaten not only human civilization, but also much of the biosphere.<sup>15</sup>

The worrying thing about the threat of an out-of-control methane hydrate feedback loop is that the quantity of methane hydrates is so vast. There are roughly 10,000 gigatons. of these ice-like crystals on ocean floors, an amount of carbon greater than all of the world's deposits of fossil fuels. Methane hydrates or clathrates are stable at ordinary temperatures, but if oceans warm, they will melt, releasing the potent greenhouse gas methane.

It is not so surprising that our mass media do not give us a correct picture of these grave dangers to the future of our earth. The mainstream media are owned by oligarchic

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<http://www.asianews.it/news-en/>

[China-and-India-snob-climate-summit-at-the-United-Nations-32232.html](http://www.asianews.it/news-en/China-and-India-snob-climate-summit-at-the-United-Nations-32232.html)

<sup>14</sup> <https://www.youtube.com/watch?v=k4LL1B3JfnY>

<https://www.youtube.com/watch?v=vZO2WQ-qK5c>

<sup>15</sup> <https://www.youtube.com/watch?v=m6pFDu7ILV4>

<https://www.youtube.com/watch?v=a9PshoYtoxo>

<https://www.youtube.com/watch?v=c3XpF1MvC8s>

financial interests, including large coal and oil companies, which are desperately anxious cash in on their huge holdings of fossil fuels.

Despite silence and misinformation in the mass media, the general public is becoming, to some extent, aware of the grave dangers posed by out-of-control climate change. However, this does not seem to affect people's behavior. Professor Michael Klare discussed this strange split between awareness and behavior in a recent article:<sup>16</sup>

"Considering all the talk about global warming, peak oil, carbon divestment, and renewable energy", Prof. Klare writes, "you'd think that oil consumption in the United States would be on a downward path. By now, we should certainly be witnessing real progress toward a post-petroleum economy. As it happens, the opposite is occurring. U.S. oil consumption is on an upward trajectory, climbing by 400,000 barrels per day in 2013 alone, and, if current trends persist, it should rise again both this year and next."

"In other words, oil is back. Big time. Signs of its resurgence abound. Despite what you may think, Americans, on average, are driving more miles every day, not fewer, filling ever more fuel tanks with ever more gasoline, and evidently feeling ever less bad about it. The stigma of buying new gas-guzzling SUVs, for instance, seems to have vanished; according to CNN Money, nearly one out of three vehicles sold today is an SUV. As a result of all this, America's demand for oil grew more than China's in 2013, the first time that's happened since 1999."

There is a second reason why the mainstream media conspire to reassure their readers and viewers that it is fine to continue their usual lifestyles: This second reason is the fear of precipitating an economic recession. Such a recession is due to occur soon in the United States because of US overspending on war, using money borrowed from China, and because the petrodollar is threatened by BRICS agreements. However, the short-term profit motive ensures that the slave-like media continue to make us believe that all is well, and that economic growth can continue forever.

Undeniably, an economic recession will be extremely painful, but sooner or later it will certainly occur. On a finite planet, endlessly continued economic growth is a logical impossibility. Furthermore, it is exactly that growth which threatens to produce a 6th mass extinction event.

If we wish to save the long-term future of our beautiful earth for future generations of humans, and for the animals and plants with which we share the earth today, we must not only urgently develop all forms of renewable energy, but also we must quickly change our lifestyles. Renewables, such as wind power and solar cells are producing a rapidly increasing fraction of our energy needs, but this fraction is still very small, only 19 percent in 2014.

What then must we do? We must develop a new economic system which will aim at long-run sustainability. Within such a system, the problem of unemployment can be addressed by shifting jobs to the task of building renewable energy infrastructure. Secondly, we must recognize that our usual lifestyles cannot be continued. We must limit our consumption to necessities; and we must travel only when absolutely necessary. If we do not

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<sup>16</sup> <http://www.countercurrents.org/klare040914.htm>

make these changes, we will have lost the struggle for the future.

## 6.10 Will a disaster wake us up?

### Disaster!

In a 2011 interview in *The Guardian*, Sir David Attenborough was asked: “What will it take to wake people up about climate change?”. He replied “Disaster. It’s a terrible thing to say, isn’t it? And even disaster doesn’t always do it. I mean, goodness me, there have been disasters in North America, with hurricanes, and one thing and another, and floods; and still a lot of people would deny it, and say it’s nothing to do with climate change. Well it visibly has to do with climate change!”<sup>17</sup>

The disasters continue: In recent weeks the drought has deepened in the southwestern part of the United States, and it has reached completely unprecedented severity.<sup>18</sup> The drought will have consequences, not only for the United States, but also for people throughout the world who are dependent on exports of grain grown in that region. The pumping of water from the Ogallala Aquifer has traditionally been used to supply irrigation water to the region, but over the years, the aquifer has been seriously overdrawn, and soon it will be useless.<sup>19</sup>

Throughout the world, water shortages produced by a combination of climate change and falling water tables threaten the food security of large portions of the world’s population. At the same time, in other regions, climate change will produce more and more disastrous floods.

But are these disasters enough to wake us up to the grave dangers of runaway climate change? Or are we so addicted to the use of fossil fuels that we cannot give them up?

Is there a difference in the attitudes of ordinary people and those of corporate-controlled governments? It is certain that the fossil fuel giants are determined to convert their coal, oil and gas holdings into cash. But ordinary citizens are more responsible, as was shown by the massive popular demonstrations at COP 15 in 2009.

UN Secretary General Ban Ki-moon has invited heads of state and governments to a 2014 Climate Summit, which will take place in New York on 23 September, 2014. Many thousands of ordinary people plan to march in New York on that day, to show their concern for the future of our planet, and to demonstrate how much they desire to give future generations of humans, animals and plants a world in which survival will be possible.

In order to prevent a tipping point, after which human efforts to prevent drastic temperature increases will become ineffective, it may be necessary for ordinary people to replace their oligarchic governments with true democracies.

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<sup>17</sup> <http://www.theguardian.com/environment/video/2012/oct/25/david-attenborough-climate-change-video>

<sup>18</sup> <http://droughtmonitor.unl.edu/>

<sup>19</sup> <http://www.countercurrents.org/cc170714.htm>  
<http://www.informationclearinghouse.info/article39077.htm>

## 6.11 Paris, India and coal

The MIT Technology Review recently published an important article entitled “India’s Energy Crisis”.<sup>20</sup>

The article makes alarming reading in view of the world’s urgent need to make a very rapid transition from fossil fuels to 100% renewable energy. We must make this change quickly in order to avoid a tipping point beyond which catastrophic climate change will be unavoidable.<sup>21</sup>

The MIT article states that “Since he took power in May, 2014, Prime Minister Narendra Modi has made universal access to electricity a key part of his administration’s ambitions. At the same time, he has pledged to help lead international efforts to limit climate change. Among other plans, he has promised to increase India’s total power generating capacity to 175 gigawatts, including 100 gigawatts of solar, by 2022. (That’s about the total power generation of Germany.)”

However India plans to expand its industrial economy, and to do this, it is planning to very much increase its domestic production and use of coal. The MIT article continues, pointing out that

“Such growth would easily swamp efforts elsewhere in the world to curtail carbon emissions, dooming any chance to head off the dire effects of global climate change. (Overall, the world will need to reduce its current annual emissions of 40 billion tons by 40 to 70 percent between now and 2050.) By 2050, India will have roughly 20 percent of the world’s population. If those people rely heavily on fossil fuels such as coal to expand the economy and raise their living standards to the level people in the rich world have enjoyed for the last 50 years, the result will be a climate catastrophe regardless of anything the United States or even China does to decrease its emissions. Reversing these trends will require radical transformations in two main areas: how India produces electricity, and how it distributes it.”

The Indian Minister of Power, Piyush Goyal, is an enthusiastic supporter of renewable energy expansion, but he also supports, with equal enthusiasm, the large-scale expansion of domestic coal production in India.

Meanwhile, the consequences of global warming are being felt by the people of India. For example, last May, a heat wave killed over 1,400 people and melted asphalt streets.<sup>22</sup>

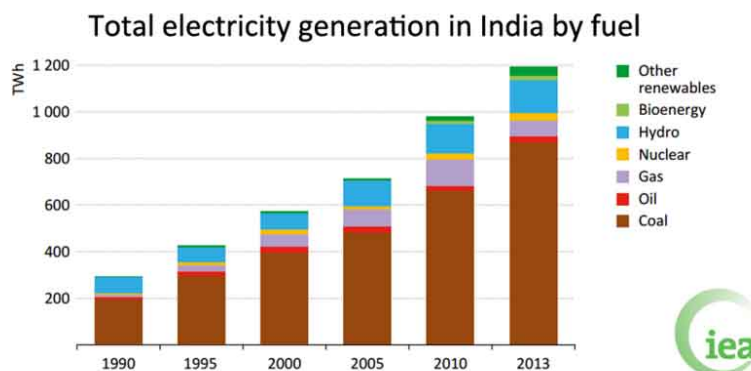
Have India’s economic planners really thought about the long-term future? Have they considered the fact that drastic climate change could make India completely uninhabitable? sectionParis: We need system change!

WE NEED SYSTEM CHANGE, NOT CLIMATE CHANGE! Civil society, excluded from the COP21 conference by the French government, carried banners with this slogan

<sup>20</sup><http://www.technologyreview.com/featuredstory/542091/indias-energy-crisis/>

<sup>21</sup><https://www.youtube.com/watch?v=2bRrg96UtMc>  
<https://www.youtube.com/watch?v=MVwmi7HCmSI>  
<https://www.youtube.com/watch?v=AjZaFjXfLec>  
<https://www.youtube.com/watch?v=MVwmi7HCmSI>

<sup>22</sup><https://www.rt.com/news/262641-india-heat-wave-killed/>



on the streets of Paris. They did so in defiance of tear-gas-using black-clad police. System change has been the motto for climate marches throughout the world. Our entire system is leading us towards disaster, and this includes both economic and governmental establishments. To save human civilization, the biosphere and the future, the people of the world must take matters into their own hands and change the system.<sup>23</sup>

Our present situation is this: The future looks extremely dark because of human folly, especially the long-term future. The greatest threats are catastrophic climate change and thermonuclear war, but a large-scale global famine also has to be considered. All these threats are linked.

Inaction is not an option. We have to act with courage and dedication, even if the odds are against success, because the stakes are so high. The mass media could mobilize us to

<sup>23</sup><http://www.commondreams.org/views/2015/12/11/we-are-out-time-we-need-leap>  
<http://www.thenation.com/article/naomi-klein-sane-climate-policies-are-being-undermined-by-corporate-friendly-trade-deals/>  
<http://www.commondreams.org/news/2015/12/08/liberte-not-just-word-klein-corbyn-call-mass-protest-cop21>  
<http://www.truth-out.org/news/item/33982-the-cops-of-cop21-arrests-at-the-paris-climate-talks>  
<http://www.truth-out.org/news/item/33961-climate-change-justice>  
<http://www.countercurrents.org/avery280914.htm>



action, but they have failed in their duty. Our educational system could also wake us up and make us act, but it too has failed us. The battle to save the earth from human greed and folly has to be fought through non-violent action on the streets and in the alternative media.

We need a new economic system, a new society, a new social contract, a new way of life. Here are the great tasks that history has given to our generation: We must achieve a steady-state economic system. We must restore democracy. We must decrease economic inequality. We must break the power of corporate greed. We must leave fossil fuels in the ground. We must stabilize and ultimately reduce the global population. We must eliminate the institution of war. And finally, we must develop a more mature ethical system to match our new technology.<sup>24</sup>

What are the links between the problems facing us? There is a link between climate change and war. We need to leave fossil fuels in the ground if we are to avoid catastrophic climate change. But nevertheless, the struggle for the world's last remaining oil and gas resources motivated the invasion of Iraq, and it now motivates the war in Syria. Both of these brutal wars have caused an almost indescribable amount of suffering.<sup>25</sup>

ISIS runs on oil, and the unconditional support of Saudi Arabia by the West is due to greed for oil. Furthermore, military establishments are among the largest users of oil, and the largest greenhouse gas emitters. Finally, the nearly 2 trillion dollars that the world now spends on armaments and war could be used instead to speed the urgently needed transition to 100% renewable energy, and to help less-developed countries to face the consequences of climate change.

There are reasons for hope. Both solar energy and wind energy are growing at a phenomenal rate, and the transition to 100% renewable energy could be achieved within

<sup>24</sup><http://www.fredsakademiet.dk/library/need.pdf>

<sup>25</sup><http://www.truth-out.org/opinion/item/33991-end-war-ming-we-need-system-change-not-climate-change>



a very few decades if this growth is maintained. But a level playing field is needed. At present fossil fuel corporations receive half a trillion dollars each year in subsidies. Nuclear power generation is also highly subsidized (and also closely linked to the danger of nuclear war). If these subsidies were abolished, or better yet, used to encourage renewable energy development, the renewables could win simply by being cheaper.<sup>26</sup>

We can also take inspiration from Pope Francis, whose humanitarian vision links the various problems facing us. Pope Francis also shows us what we can do to save the future, and to give both economics and government a social and ecological conscience.

None of us asked to be born in a time of crisis, but history has given great tasks to our generation. We must rise to meet the crisis. We must not fail in our duty to save the gifts of life and civilization that past generations have bequeathed to us. We must not fail in our duty future generations.

## 6.12 Paris and the long-term future

We give our children loving care, but it makes no sense do so and at the same time to neglect to do all that is within our power to ensure that they and their descendants will inherit an earth in which they can survive. We also have a responsibility to all the other living organisms with which we share the gift of life.

Human emotional nature is such that we respond urgently to immediate temptations or dangers, while long-term considerations are pushed into the background. Thus the temptations of immediate profit or advantage motivate politicians and the executives of fossil fuel corporations; and the temptations of continued overconsumption and luxury blind the general public. Public fears of terrorism have been magnified by our perfidious mass media to such an extent that the equally perfidious French Government has been able to use this fear as an excuse to exclude democracy and proper care for the long-term future from the Paris Climate Conference.

However, our generation has an urgent duty to think of the distant future. The ultimate fate of human civilization and the biosphere is in our hands. What we really have to fear, for the sake of our children and grandchildren and their descendants, is reaching a tipping point, beyond which uncontrollable feedback loops will make catastrophic climate change inevitable despite all human efforts to prevent it.

A feedback loop is a self-re-enforcing cycle. The more it goes on, the stronger it becomes. An example of how such a feedback loop could drive climate change and make it uncontrollable is the albedo effect: When sunlight falls on sea ice in the Arctic or Antarctic, most of it is reflected by the white surface of the snow-covered ice. But when sunlight falls

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<sup>26</sup><http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>  
<http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>  
<https://www.youtube.com/watch?v=AjZaFjXfLec>  
<https://www.youtube.com/watch?v=m6pFDu7ILV4>  
<https://www.youtube.com/watch?v=MVwmi7HCmSI>  
<http://therightsofnature.org/universal-declaration/>

on dark sea water, it is almost totally absorbed. This cycle is self-re-enforcing because warming the water reduces the ice cover. This is happening today, especially in the Arctic, and we have to stop it.

Another dangerous feedback loop involves the evaporation of sea water, which itself is a greenhouse gas. However, if we think of the long-term future, by far the most dangerous feedback loop is that which involves the melting of methane hydrate crystals, releasing the extremely powerful greenhouse gas methane into the atmosphere. Discussion of this highly dangerous feedback loop seems to be almost completely banned by our mass media.

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<sub>2</sub>.

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<sub>2</sub> emissions since 1751 has only been 337 gigatons.<sup>27</sup>

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.

We can also fear a catastrophic future famine, produced by a combination of climate change, population growth and the end of fossil-fuel-dependent high-yield modern agriculture.<sup>28</sup>

These very real and very large long-term disasters are looming on our horizon, but small short-term considerations blind us, so that we do not take the needed action. But what is at stake is the future of everyone's children and grandchildren and their progeny, your future family tree and mine, also the families of Francois Hollande and the executives of Exxon. They should think carefully about the consequences of making our beautiful world completely uninhabitable.



Figure 6.8: Is this the person to whom we ought to entrust the future of our planet? When elected, Donald Trump not only pulled the United States out of the Paris Agreement; he also sabotaged the Environmental Protection Agency to such an extent that the carefully collected facts on climate change that the agency had accumulated had to be secretly saved by scientists to prevent their destruction by the Trump administration. Furthermore, Donald Trump's administration not only subsidizes giant coal corporations. It also has sabotages renewable energy initiatives in the United States.

## 6.13 Climate change denial

In a recent article, climate expert Dr. Andrew Glickson wrote: “The train has left the station and global heating is advancing toward +2 and then toward +4 degrees Celsius, as projected by the IPCC and in the words of Joachim Hans Schellnhuber, Germany’s chief climate scientist, signifies the breakdown of civilization. Largely ignored or watered down by much of the mainstream media, betrayed by most political parties, including those who used to regard climate change as “the greatest moral issue of our time”, the population continues to be distracted by bread and circuses. Nowadays even some of the Greens appear to consider plastic bags and the tampon tax as greater vote winners than the demise of the biosphere.”

Why did Professor Noam Chomsky call the US Republican Party “The most dangerous organization in the history of the world”? In the primary that preceded the 2016 presidential election, every single Republican candidate with a chance of being nominated was a climate change denier. All received amazingly generous checks from giant fossil fuel organizations. When elected, Donald Trump not only pulled the United States out of the Paris Agreement; he also sabotaged the Environmental Protection Agency to such an extent that the carefully collected facts on climate change that the agency had accumulated had to be secretly saved by scientists to prevent their destruction by the Trump administration. Furthermore, Donald Trump not only subsidizes giant coal corporations. He also has sabotages renewable energy initiatives in the United States.

## 6.14 The fossil fuel industry’s denial campaign

The Wikipedia article on climate change denial describes it with the following words: “Although scientific opinion on climate change is that human activity is extremely likely to be the primary driver of climate change, the politics of global warming have been affected by climate change denial, hindering efforts to prevent climate change and adapt to the warming climate. Those promoting denial commonly use rhetorical tactics to give the appearance of a scientific controversy where there is none.”

It is not surprising that the fossil fuel industry supports, on a vast scale, politicians and mass media that deny the reality of climate change. The amounts of money at stake are vast. If catastrophic climate change is to be avoided, coal, oil and natural gas “assets” worth trillions of dollars must be left in the ground. Giant fossil fuel corporations are desperately attempting to turn these “assets’ into cash.

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<sup>27</sup><https://www.youtube.com/watch?v=2bRrg96UtMc>  
<https://www.youtube.com/watch?v=MVwmi7HCmSI>  
<https://www.youtube.com/watch?v=AjZaFjXfLec>  
<https://www.youtube.com/watch?v=MVwmi7HCmSI>

<sup>28</sup><http://human-wrongs-watch.net/2015/08/19/the-need-for-a-new-economic-system-part-vii-gleadoval-food-crisis/>

According to a recent article published in “The Daily Kos”<sup>29</sup>, companies like Shell and Exxon, knew, as early as the 1970s, how their combustible products were contributing to irreversible warming of the planet, became public knowledge over the last few years.

A series of painstakingly researched articles<sup>30</sup> published in 2015 by the Pulitzer-prize winning Inside Climate News revealed an industry totally aware and informed for decades about the inevitable warming certain to occur as more and more carbon dioxide from the burning of fossil fuels was released into the atmosphere.

The article states that “In fact, the oil industry, and Exxon in particular, had the best climate models available, superior to those relied on by scientific community.<sup>31</sup> And armed with the foreknowledge developed through those models, Exxon and the other oil companies planned and executed an elaborate, cynical long term strategy: to invest hundreds of millions of dollars in a comprehensive propaganda effort designed to raise doubts about the existence and cause of climate change, a phenomenon they well knew was irrefutable, based on their own research. By 2016 the industry’s lobbying to discredit the science of climate change had surpassed two billion dollars.

“Meanwhile, as newly discovered documents reported in The Guardian<sup>32</sup> attest, the same companies were preparing projections of what type of world they would be leaving for the rest of humanity. In the 1980s, oil companies like Exxon and Shell carried out internal assessments of the carbon dioxide released by fossil fuels, and forecast the planetary consequences of these emissions. In 1982, for example, Exxon predicted that by about 2060, CO<sub>2</sub> levels would reach around 560 parts per million - double the preindustrial level - and that this would push the planet’s average temperatures up by about 2°C over then-current levels (and even more compared to pre-industrial levels).”<sup>33</sup>

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<sup>29</sup>[www.dailykos.com/stories/2018/9/23/1797888/-The-Oil-Companies-not-only-knew-fossil-fuels-caused-climate-change-they-knew-how-bad-it-would-get?detail=emaildkre](http://www.dailykos.com/stories/2018/9/23/1797888/-The-Oil-Companies-not-only-knew-fossil-fuels-caused-climate-change-they-knew-how-bad-it-would-get?detail=emaildkre)

<sup>30</sup><https://insideclimatenews.org/news/15092015/Exxons-own-research-confirmed-fossil-fuels-role-in-global-warming>

<sup>31</sup><https://insideclimatenews.org/news/18092015/exxon-confirmed-global-warming-consensus-in-1982-with-in-house-climate-models>

<sup>32</sup><https://www.theguardian.com/environment/climate-consensus-97-per-cent/2018/sep/19/shell-and-exxons-secret-1980s-climate-change-warnings>

<sup>33</sup>See also <https://truthout.org/articles/self-immolation-as-the-world-burns-an-earth-day-report/>  
<https://countercurrents.org/2018/04/29/the-methane-time-bomb-and-the-future-of-the-biosphere/>  
<https://countercurrents.org/2018/08/07/hothouse-earth-evidence-for-ademise-of-the-planetary-life-support-system/>

<https://www.independent.co.uk/environment/global-warming-temperature-rise-climate-change-end-century-science-a8095591.html>

<http://www.lifeworth.com/deepadaptation.pdf>

<https://www.independent.co.uk/news/business/news/bp-shell-oil-global-warming-5-degree-paris-climate-agreement-fossil-fuels-temperature-rise-a8022511.html>

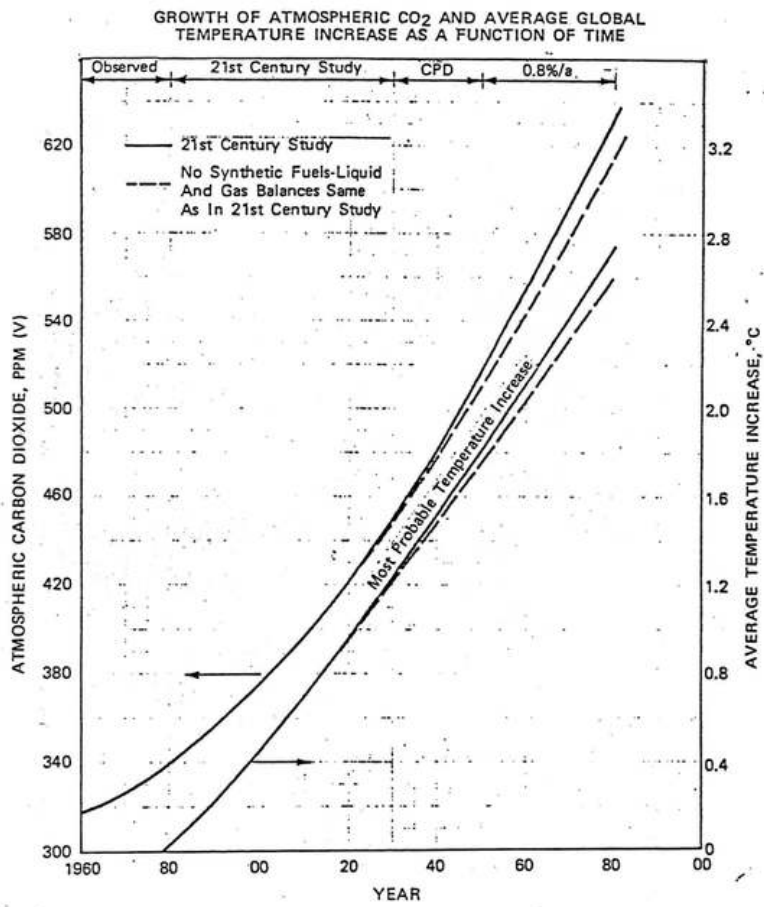


Figure 6.9: Exxon's 1982 internal projections of the future increase in carbon dioxide levels.

## 6.15 Showing unsustainable lifestyles in mass media

Television and other mass media contribute indirectly to climate change denial by showing unsustainable lifestyles. Television dramas show the ubiquitous use of gasoline-powered automobiles and highways crowded with them. just as though their did not exist an urgent need to transform our transportation systems. Motor racing is shown. A program called “Top Gear” tells viewers about the desirability of various automobiles. In general, cyclists are not shown. In television dramas, the protagonists fly to various parts of the world. The need for small local self-sustaining communities is not shown.

Advertisements in the mass media urge us to consume more, to fly, to purchase large houses, and to buy gasoline-driven automobiles, just as though such behavior ought to be the norm. Such norms are leading us towards environmental disaster.

## 6.16 Humanity betrayed by the mass media

The predicament of humanity today has been called “a race between education and catastrophe”: How do the media fulfil 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 the ecological catastrophes that threaten our planet because of unrestricted growth of population and industries? No, they give us sit-coms and soap operas. Do they give us unbiased news? No, they give us news that has been edited to conform with the interests of powerful lobbys. Do they present us with the urgent need to leave fossil fuels in the ground? No, they do not, because this would offend the powerholders. Do they tell of the danger of passing tipping points after which human efforts to prevent catastrophic climate change will be useless? 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 95 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 war, environmental catastrophes and threatened global famine. 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 hangs 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 most dangerous idea that the mass media peddle to a betrayed world is the there is no emergency, no crisis of civilization. Everything is fundamentally normal. We can continue to behave more or less as we always have behaved. We can continue to extract

and use fossil fuels, continue to fly to vacations in foreign countries, and continue to rely on our trusted and most loved friend, the private automobile. But this is a lie. They are lying to us because no one wants to shoot Santa Claus. No one wants to undermine “consumer confidence”.

The true situation is that the future looks extremely dark, especially the long-term future, because of human greed and folly. The greatest threats are catastrophic climate change and thermonuclear war, but a large-scale global famine also has to be considered.

We give our children loving care, but it makes no sense do so and at the same time to neglect to do all that is within our power to ensure that they and their descendants will inherit an earth in which they can survive. We also have a responsibility to all the other living organisms with which we share the gift of life.

Inaction is not an option. We have to act with courage and dedication, even if the odds are against success, because the stakes are so high. No one is exempt from this duty. Every singly person on earth has the duty to work with dedication and courage to save the future.

None of us asked to be born at a time of crisis. But we have been born at such a time, and history has given us an enormous responsibility. If we do not work with courage and dedication to save our beautiful world for future generations, all the treasures that past generations have given us will be lost.

What are the great tasks that history has given to us? If true democracy has decayed into oligarchy in our own countries, democracy must be restored. Global population must be stabilized, and in the long run, reduced. Nuclear weapons must be completely abolished. The institution of war must be abolished by turning the United Nations into a federation. Our consumption of fossil fuels must quickly end, through changes in lifestyle, and through an all-out effort to rapidly develop renewable energy.

Soldiers in war are asked to give their lives for their countries. We, who are opposed to war, must be equally willing to devote our lives to a cause - the cause of saving civilization - the cause of saving the the biosphere - the cause of saving the future.

## Suggestions for further reading

1. Ehrlich P-R (1995) *The scale of the human enterprise and biodiversity loss*, in *Extinction Rates*, eds Lawton JH, May RM (Oxford Univ Press, Oxford, UK), pp 214-226.
2. Dirzo R, et al. (2014) *Defaunation in the Anthropocene*. *Science* **345**:401-406.
3. Young HS, McCauley DJ, Galletti M, Dirzo R (2016) *Patterns, causes, and consequences of Anthropocene defaunation*. *Annu Rev Ecol Evol Syst* **47**:433-458.
4. World Wide Fund for Nature (2016) *Living Planet Report 2016. Risk and resilience in a new era*. (WWF International, Gland, Switzerland), 2017.
5. Maxwell SL, Fuller RA, Brooks TM, Watson JEM (2016) *Biodiversity: The ravages of guns, nets and bulldozers*. *Nature* **536**:143-145.
6. Laliberte AS, Ripple WJ (2004) *Range contractions of North American carnivores and ungulates*. *BioScience* **54**:123-138.



7. Worm B, Tittensor DP (2011) *Range contraction in large pelagic predators*. Proc Natl Acad Sci USA **108**:11942-11947.
8. Ripple WJ, et al. (2014) *Status and ecological effects of the world's largest carnivores*. Science **343**:1241484.
9. Barnosky AD, et al. (2011) *Has the Earth's sixth mass extinction already arrived?* Nature **471**:51-57.
10. Ceballos G, Garcia A, Ehrlich PR (2010) *The sixth extinction crisis: Loss of animal populations and species*. J. Cosmology **8**:1821-1831.
11. Ceballos G, et al. (2015) *Accelerated modern human-induced species losses: Entering the sixth mass extinction*. Sci Adv **1**:e1400253.
12. Wake DB, Vredenburg VT (2008) *Colloquium paper: Are we in the midst of the sixth mass extinction? A view from the world of amphibians*. Proc Natl Acad Sci USA **105**:11466-11473.
13. McCallum ML (2015) *Vertebrate biodiversity losses point to a sixth mass extinction*. Biol Conserv **24**:2497-2519.
14. Pimm SL, et al. (2014) *The biodiversity of species and their rates of extinction, distribution, and protection*. Science **344**:1246752.
15. McCauley DJ, et al. (2015) *Marine defaunation: Animal loss in the global ocean*. Science **347**:1255641.
16. Collen B, Böhm M, Kemp R, Baillie J (2012) *Spineless: Status and Trends of the World's Invertebrates* (Zoological Society of London, London). Red List
17. Daily G (1997) *Nature's Services: Societal Dependence on Natural Ecosystems*. (Island Press, Covello, CA).
18. Naeem S, Duffy JE, Zavaleta E (2012) *The functions of biological diversity in an age of extinction*. Science **336**:1401-1406.
19. Estes JA, et al. (2011) *Trophic downgrading of planet Earth*. Science **333**:301-306.
20. Brosi BJ, Briggs HM (2013) *Single pollinator species losses reduce floral fidelity and plant reproductive function*. Proc Natl Acad Sci USA **110**:13044-13048.
21. Briggs JC (2014) *Global biodiversity gain is concurrent with decreasing population sizes*. Biodiver J **5**:447-452.
22. Hooper DU, et al. (2012) *A global synthesis reveals biRed List diversity loss as a major driver of ecosystem change*. Nature **486**:105-108.
23. Ehrlich PR (2014) *The case against de-extinction: It's a fascinating but dumb idea*. Yale Environment 360 (Yale University, New Haven, CT). Available at [bit.ly/1gAIuJF](http://bit.ly/1gAIuJF). Accessed JunStudies 10, 2017.
24. Hobbs RJ, Mooney HA (1998) *Broadening the extinction debate: Population deletions and additions in California and Western Australia*. Conserv Biol **12**:271-283. Studies
25. Hughes JB, Daily GC, Ehrlich PR (1997) *Population diversity: Its extent and extinction*. Science **278**:689-692.
26. Ceballos G, Ehrlich PR (2002) *Mammal population losses and the extinction crisis*. Science **296**:904-907.
27. Gaston KJ, Fuller RA (2008) *Commonness, population depletion and conservation biology*. Trends Ecol Evol **23**:14-19.

28. International Union of Conservation of Nature (2015) *The IUCN Red List of Threatened Species, Version 2015.2* (IUCN, 2015). Available at [www.iucnredlist.org](http://www.iucnredlist.org). Accessed February 10, 2016. Revised January 10, 2017.
29. Durant SM, et al. (2017) *The global decline of cheetah *Acinonyx jubatus* and what it means for conservation*. Proc Natl Acad Sci USA **114**:528-533.
30. Henschel P, et al. (2014) *The lion in West Africa is critically endangered*. PLoS One **9**:e83500.
31. Challender D, et al. (2016) *On scaling up pangolin conservation*. Traffic Bulletin **28**: 19-21.
32. Fennessy J, et al. (2016) *Multi-locus analyses reveal four giraffe species instead of one*. Curr Biol **26**:2543-2549.
33. Butchart S, Dunn E (2003) *Using the IUCN Red List criteria to assess species with declining populations*. Conserv Biol **17**:1200-1202.
34. Gaston K, Blackburn T (2008) *Pattern and Process in Macroecology* (Blackwell Publishing, Hoboken, NJ). Red List
35. Thomas JA (2016) ECOLOGY. *Butterfly communities under threat*. Science **353**:216-218.
36. Régnier C, et al. (2015) *Mass extinction in poorly known taxa*. Proc Natl Acad Sci USA **112**:7761-7766.25.
37. Hughes JB, Daily GC, Ehrlich PR (1997) *Population diversity: Its extent and extinction*. Science **278**:689-692.
38. Ceballos G, Ehrlich PR (2002) *Mammal population losses and the extinction crisis*. Science **296**:904-907.
39. Cardinale BJ, et al. (2012) *Biodiversity loss and its impact on humanity*. Nature **486**: 59-67.
40. Hurlbert AH, Jetz W (2007) *Species richness, hotspots, and the scale dependence of range maps in ecology and conservation*. Proc Natl Acad Sci USA **104**:13384-13389.
41. Peterson AT, Navarro-Sigüenza AG, Gordillo A (2016) *Assumption- versus data-based approaches to summarizing species' ranges*. Conserv Biol, 10.1111/cobi.12801.
42. Martínez-Ramos M, Ortíz-Rodríguez I, Pinero D, Dirzo R, Sarukhán J (2016) *Humans disrupt ecological processes within tropical rainforest reserves*. Proc Natl Acad Sci USA **113**:5323-5328.
43. Camargo-Sanabria AA, Mendoza E, Guevara R, Martínez-Ramos M, Dirzo R (2015) *Experimental defaunation of terrestrial mammalian herbivores alters tropical rainforest understory diversity*. Proc Biol Sci **282**:20142580.
44. Petipas RH, Brody AK (2014) *Termites and ungulates affect arbuscular mycorrhizal richness and infectivity in a semiarid savanna*. Botany **92**:233-240.
45. Wardle DA, et al. (2004) *Ecological linkages between aboveground and belowground biota*. Science **304**:1629-1633.
46. Ceballos G, Ehrlich AH, Ehrlich PR (2015) *The Annihilation of Nature: Human Extinction of Birds and Mammals*, (Johns Hopkins Univ Press, Baltimore).
47. Knoll AH (2015) *Life on a Young Planet: The First Three Billion Years of Evolution on Earth*, (Princeton Univ Press, Princeton, NJ).

48. Barnosky AD, et al. (2014) *Introducing the scientific consensus on maintaining humanity's life support systems in the 21st century: Information for policy makers*. *The Anthropocene Review* **1**:78-109.
49. Ceballos G, Ehrlich PR, Soberón J, Salazar I, Fay JP (2005) *Global mammal conservation: What must we manage?* *Science* **309**:603-607.
50. Brown IL, Ehrlich PR (1980) *Population biology of the checkerspot butterfly, *Euphydryas chalcedona* structure of the Jasper Ridge colony*. *Oecologia* **47**:239-251.
51. Environmental Systems Research Institute (2011) *Release 10. Documentation Manual*, (Environmental Systems Research Institute, Redlands, CA).
52. Balling, R. C. 1988. *The climate impact of Sonoran vegetation discontinuity*. *Climate Change* **13**: 99-109.
53. Balling, R. C. 1991. *Impact of desertification on regional and global warming*. *Bulletin of the American Meteorological Society* **72**: 232-234.
54. Barigozzi, C. (ed.). 1986. *The Origin and Domestication of Cultivated Plants*. Amsterdam: Elsevier.
55. Botkin, D. B. 1989. *Science and the global environment*. In: D. B. Botkin et al., **Global Change**. New York: Academic Press, pp. 1-14.
56. Bryson, R. 1972. *Climate modification by air pollution*. In: N. Polunin (ed.), *The Environmental Future*. London: Macmillan, pp. 133-174.
57. Dregne, H. E., M. Kassas, and B. Rozanov. 1991. *A new assessment of the world status of desertification*. *Desertification Control Bulletin*, no. **20**: 6-18.
58. FAO (Food and Agriculture Organization). 1991. *Protection of land resources: Deforestation* UNCED Prepcomm., 2nd session, Doc. A/CONF. 15/PC/27.
59. Hare, F. K. and L. A. J. Ogallo. 1993. *Climate Variation, Drought and Desertification*. WMO-No. 653. Geneva: WMO.
60. Houghton, J. T., B. A. Callander, and S. K. Varney (eds.). 1992. *Climate Change 1992. The Supplementary Report to the IPCC Scientific Assessment*. (Cambridge: Cambridge University Press.
61. Hulme, M. and M. Kelly. 1993. *Exploring the links between desertification and climate change*. *Environment* **35(6)**: 5-11, 39-45.
62. Jackson, R. D. and S. B. Idso. 1975. *Surface albedo and desertification*. *Science* **189**: 1012-1013.
63. Matthews, E. 1983. *Global vegetation and land use: New high-resolution databases for climatic studies*. *Journal of Climate and Meteorology* **22**: 474-487.
64. Schlesinger, W. H., et al. 1990. *Biological feedback in global desertification*. *Science* **247**: 1043-1048.
65. Turner, B. L., et al. 1990. *Two types of global environmental changes: Definitional and special-scale issues in their human dimensions*. *Global Environmental Change* **1**: 14-22.
66. UNESCO. 1960. *Medicinal plants of arid zones*. *Arid Zone Research* **13**.
67. Vavilov, N. I. 1949. *The Origin, Variation, Immunity and Breeding of Cultivated Plants*. Waltham, Mass.: Chronica Botanical

68. T. Jackson, "Prosperity Without Growth: Economics for a Finite Planet", Earthscan, London, (2009).
69. A. Gore, "An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It", Rodale Books, New York, (2006).
70. P.R. Ehrlich and A.H. Ehrlich, "One With Nineveh: Politics, Consumption and the Human Future", Island Press, (2004).
71. N. Stern et al., "The Stern Review", (2006).
72. S. Connor, "Global Warming Past Point of No Return", The Independent, (116 September, 2005).
73. J. Patz et al., "Impact of Regional Climate Change on Human Health", Nature, (17 November, 2005).
74. L.R. Brown, "World on the Edge", W.W. Norton, New York, (2011)

# Chapter 7

## THE MEDIA SABOTAGE PROGRESSIVE POLITICS

### 7.1 Restoring Democracy in the United States

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. The situation in many other countries is very similar.

But as Occupy Wall Street tells us, this need not be so. After all we, the ordinary people, who long for reform, are an overwhelming majority. We are the 99 percent, and if we choose to exert ourselves, we have the power to change the system. The problem is that, having voted, we tend to lapse into several years of political inactivity, convinced that we are powerless. But nothing could be more false than our sense of powerlessness, and nothing could be more dangerous to true democracy. Voting is only a small part of our duty. We must also maintain constant political activity to ensure that those whom we have placed in office actually serve the will and the needs of the people. This means creating our own media, if the mass media are slaves to the power elite. It means constant activity, meetings, demonstrations, exhibitions, videos produced for U-tube, and whatever other means we can invent to constantly hold before the public and the government a vision of what is right.

When President Obama was elected for a second term, the majority of the world's peoples heaved a huge sigh of relief. Disaster had been avoided. But the newly re-elected President is faced with a House of Representatives controlled by the Republicans, and with a Senate which hardly differs from the House on most issues. Both the House and the Senate are powerfully influenced by lobbies, representing, for example, the interests of Wall

Street, the fossil fuel industry and the military-industrial complex. Therefore they take no action to regulate the banks, or to cut grossly bloated military budgets, or to address the vital issue of climate change. Instead they plan to cut social services for a population that already is in great distress.

## **7.2 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.<sup>1</sup>

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 “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

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<sup>1</sup> <http://www.informationclearinghouse.info/article3249.htm>  
<http://www.informationclearinghouse.info/article29129.htm>

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, “Obama’s 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 don’t let us spy on you, we will use WTO to penalize you.”

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## **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.

## **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 refuse<sup>2</sup>

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 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?

### **7.3 Secrecy and democracy are incompatible**

It is obvious, almost by definition, that excessive governmental secrecy and true democracy are incompatible. If the people of a country have no idea what their government is doing, they cannot possibly have the influence on decisions that the word "democracy" implies.

#### **Dark government**

Governmental secrecy is not something new. Secret diplomacy contributed to the outbreak of World War I, and the secret Sykes-Picot agreement later contributed to the bitterness of conflicts in the Middle East. However, in recent years, governmental secrecy has grown enormously.

The revelations of Edward Snowden and others have shown that the number of people involved in secret operations of the United States government is now as large as

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<sup>2</sup><https://www.transcend.org/tms/2014/04/natos-aggression-against-russia-and-the-danger-of-war-in-europe/>

the entire population of Norway: roughly 5 million. The influence of this dark side of government has become so great that no president is able to resist it.

In a recent article, John Chuckman remarked that “The CIA is now so firmly entrenched and so immensely well financed (much of it off the books, including everything from secret budget items to the peddling of drugs and weapons) that it is all but impossible for a president to oppose it the way Kennedy did. Obama, who has proved himself to be a fairly weak character from the start, certainly has given the CIA anything it wants. The dirty business of ISIS in Syria and Iraq is one project. The coup in Ukraine is another. The pushing of NATO’s face right against Russia’s borders is another. Several attempted coups in Venezuela are still more. And the creation of a drone air force for extra-judicial killings in half a dozen countries is yet another. They don’t resemble projects we would expect from a smiley-faced intelligent man who sometimes wore sandals and refused to wear a flag pin on his lapel during his first election campaign.”<sup>3</sup>

Of course the United States government is by no means alone in practicing excessive secrecy: Scott Horton recently wrote an article entitled *How to Rein in a Secretive Shadow Government Is Our National Security Crisis*. He dedicated the article to the Soviet dissident Andrei Sakharov because, as he said, “Sakharov recognized that the Soviet Union rested on a colossal false premise: it was not so much socialism (though Sakharov was certainly a critic of socialism) as it was the obsession with secrecy, which obstructed the search for truth, avoided the exposure of mistakes, and led to the rise of powerful bureaucratic elites who were at once incompetent and prone to violence.”<sup>4</sup>

## Censorship of the news

Many modern governments have become very expert in manipulating public opinion through mass media. They only allow the public to hear a version of the “news” that has been handed down by powerholders. Of course, people can turn to the alternative media that are available on the Internet. But on the whole, the vision of the world presented on television screens and in major newspapers is the “truth” that is accepted by the majority of the public, and it is this picture of events that influences political decisions. Censorship of the news by the power elite is a form of secrecy, since it withholds information that is needed for a democracy to function properly.

## Coups, torture and illegal killing

During the period from 1945 to the present, the US interfered, militarily or covertly, in the internal affairs of at least 38 nations. 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.

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<sup>3</sup> <http://www.informationclearinghouse.info/article41222.htm>

<sup>4</sup> <http://truth-out.org/progressivepicks/item/29636-scott-horton-how-to-rein-in-a-secretive-shadow-government-is-our-national-security-crisis>

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. These Cold War interventions were also unjustifiable. 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.

Many people in Latin America and elsewhere have been tortured: The long history of CIA torture was recently investigated, but only small portions of the 6000-page report are available to the public. The rest remains secret.<sup>5</sup> Extrajudicial killing of civilians by means of drones is also shrouded by secrecy, and it too is a gross violation of democratic principles.<sup>6</sup>

## Secret trade deals

The Trans-Pacific Partnership is one of the trade deals that is being negotiated in secret. Not even the US congress is allowed to know the details of the document. However, enough information has been leaked to make it clear that if the agreement is passed, foreign corporations would be allowed to “sue” the US government for loss of profits because of (for example) environmental regulations. The “trial” would be outside the legal system, before a tribunal of lawyers representing the corporations.<sup>7</sup>

A similar secret trade deal with Europe, the Trans-Atlantic Trade and Investment Partnership (TTIP), is also being “fast-tracked”. One can hardly imagine greater violations of democratic principles.

## Secret land purchases in Africa

According to a report released by the Oakland Institute, in 2009 alone, hedge funds bought or leased nearly 60 million hectares of land in Africa, an area the size of France.<sup>8</sup>

As populations increase, and as water becomes scarce, China, and other countries, such as Saudi Arabia are also buying enormous tracts of agricultural land, not only in Africa, but also in other countries.<sup>9</sup> These land purchases are very often kept secret from the local populations by corrupt governments.

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<sup>5</sup> <https://www.transcend.org/tms/2015/03/the-cia-in-latin-america-from-coups-to-torture-and-preemptive-killings/>

<sup>6</sup> <http://www.globalresearch.ca/lawless-drone-killings/5355535>

<sup>7</sup> <http://www.citizen.org/Page.aspx?pid=5411>

<https://www.transcend.org/tms/2015/03/world-at-a-crossroads-stop-the-fast-track-to-a-future-of-global-corporate-rule/>

<sup>8</sup> <http://www.bbc.com/news/world-africa-13688683>

<sup>9</sup> <http://www.latimes.com/world/asia/la-fg-china-foreign-farmland-20140329-story.html>

## Secrecy, democracy and nuclear weapons

Nuclear weapons were developed in secret. The decision to use them on the civilian populations of Hiroshima and Nagasaki in an already-defeated Japan was made in secret. Since 1945, secrecy has surrounded all aspects of nuclear weapons, and for this reason it is clear that they are essentially undemocratic.

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.

## Freedom from fear

In order to justify secrecy, enormous dark branches of government and mass illegal spying, governments say: “We are protecting you from terrorism”. But terrorism is not a real threat, since our chances of dying from a terrorist attack are vanishingly small compared

to (for example) preventable disease or an automobile accident. If we are ever to reclaim our democracy, we must free ourselves from fear.

## 7.4 Democracy and freedom of information

The Icelandic parliamentarian, Birgitta Jonsdottir, has taken an important step towards solving one of the central problems that the world is facing today. The problem is this: How can we regain democratic government when the mainstream media are completely controlled the corporate oligarchy?

If anyone doubts that democratic government has been lost and needs to be regained, let them think of the recent US election, in which a large percentage of the voters stayed home because they were disillusioned with the political process. They knew that whomever they elected, their voices would not be heard.

The voters did not like to be told that they had power, which in fact they did not have. Both major political parties follow the dictates of the corporate oligarchs, rather than the will of the people. No doubt the Democrats in the US Congress are slightly better than the Republicans, but both parties have essentially been bought by big money from lobbies representing the military-industrial complex, the fossil fuel companies, and Israel.

Contrary to the wishes of the people, social services continue to be cut in favor of obscenely bloated military budgets, perpetual foreign wars, and environment-destroying subsidization of the fossil fuel industry. Despite the will of the people, the US government exposes our beautiful earth to the deadly risks of all-destroying thermonuclear war and out-of-control global warming.

The United States is by no means the only country with an oligarchic non-democratic government. Globally, countries with truly democratic and sane governments are the exception rather than the rule. Therefore the problem is a global one, and let us repeat it: How can we regain democratic government when the mainstream media are completely controlled the corporate oligarchy?

Let us return to Birgitta Jonsdottir. Who is she? Birgitta is a popular and successful young Icelandic poet, writer, artist, publisher and anti-war activist, who had no inkling until quite recently that she was destined to become a politician. Then in 2008, Iceland underwent a financial crisis. It became clear that the crisis was due to corrupt links of politicians with Iceland's financial sector. In 2009, Birgitta ran for the Icelandic Parliament (Althingi, the oldest parliament in the world) as part of the reform movement.

Believing that lack of free information was the main cause of the corruption behind Iceland's 2008 crisis, Birgitta Jonsdottir persuaded her colleagues in the Althingi to pass unanimously a law calling for complete freedom of information in Iceland. She also worked closely with Julian Assange to produce the video "Collateral Murder".<sup>10</sup>

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<sup>10</sup> <https://en.immi.is/media/documentaries-on-immi/>  
<http://birgitta.is>  
<http://en.immi.is>

Under Birgitta Jonsdottir's leadership, Icelandic parliamentarians have passed laws which will make Iceland a safe haven for journalistic freedom. In so doing, they will help to re-establish democratic government throughout the world, a vital step if nuclear and climatic disasters are to be averted.

## 7.5 Racism, colonialism and exceptionalism

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.

## 7.6 The agony of Iraq

There is a close relationship between petroleum and war. James A. Paul, Executive Director of the Global Policy Forum, has described this relationship very clearly in the following words:

“Modern warfare particularly depends on oil, because virtually all weapons systems rely on oil-based fuel - tanks, trucks, armored vehicles, self-propelled artillery pieces, airplanes, and naval ships. For this reason, the governments and general staffs of powerful nations seek to ensure a steady supply of oil during wartime, to fuel oil-hungry military forces in far-flung operational theaters.”

“Just as governments like the US and UK need oil companies to secure fuel for their global war-making capacity, so the oil companies need their governments to secure control over global oilfields and transportation routes. It is no accident, then, that the world’s largest oil companies are located in the world’s most powerful countries.”

“Almost all of the world’s oil-producing countries have suffered abusive, corrupt and undemocratic governments and an absence of durable development. Indonesia, Saudi Arabia, Libya, Iraq, Iran, Angola, Colombia, Venezuela, Kuwait, Mexico, Algeria - these and many other oil producers have a sad record, which includes dictatorships installed from abroad, bloody coups engineered by foreign intelligence services, militarization of government and intolerant right-wing nationalism.”

Iraq, in particular, has been the scene of a number of wars motivated by the West’s thirst for oil. During World War I, 1914-1918, the British captured the area (then known as Mesopotamia) from the Ottoman Empire after four years of bloody fighting. Although Lord Curzon (a member of the British War Cabinet who became Foreign Minister immediately after the war) denied that the British conquest of Mesopotamia was motivated by oil, there is ample evidence that British policy was indeed motivated by a desire for control of the region’s petroleum. For example, Curzon’s Cabinet colleague Sir Maurice Hankey stated in a private letter that oil was “a first-class war aim”. Furthermore, British forces continued to fight after the signing of the Murdos Armistice.

In this way, they seized Mosul, the capital of a major oil-producing region, thus frustrating the plans of the French, who had been promised the area earlier in the secret Sykes-Picot Agreement. Lord Curzon was well aware of the military importance of oil, and following the end of the First World War he remarked: “The Allied cause has floated to

victory on a wave of oil”.

The Sykes-Picot Agreement essentially took away from the Arabs the autonomy that they had been promised if they fought on the side of the Allies against the Turks. Today this secret double-cross continues to be a great source of bitterness.<sup>11</sup>

During the period between 1918 and 1930, fierce Iraqi resistance to the occupation was crushed by the British, who used poison gas, airplanes, incendiary bombs, and mobile armored cars, together with forces drawn from the Indian Army. Winston Churchill, who was Colonial Secretary at the time, regarded the conflict in Iraq as an important test of modern military-colonial methods.

An article in *The Guardian* explains that “Churchill was particularly keen on chemical weapons, suggesting that they be used ‘against recalcitrant Arabs as an experiment... I am strongly in favour of using poison gas against uncivilized tribes...’”<sup>12</sup>

In 1932, Britain granted nominal independence to Iraq, but kept large military forces in the country and maintained control of it through indirect methods. In 1941, however, it seemed likely that Germany might try to capture the Iraqi oilfields, and therefore the British again seized direct political power in Iraq by means of military force. It was not only Germany that Britain feared, but also US attempts to gain access to Iraqi oil.

The British fear of US interest in Iraqi oil was soon confirmed by events. In 1963 the US secretly backed a military coup in Iraq that brought Saddam Hussein’s Ba’ath Party to power. In 1979 the western-backed Shah of Iran was overthrown, and the United States regarded the fundamentalist Shi’ite regime that replaced him as a threat to supplies of oil from Saudi Arabia.

Washington saw Saddam’s Iraq as a bulwark against the militant Shi’ite extremism of Iran that was threatening oil supplies from pro-American states such as Kuwait and Saudi Arabia.

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 an extremely bloody 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 helped Saddam Hussein’s 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. According to the Riegel Report, “records available from the supplier for the period 1985 until the present show that during this time, pathogenic (meaning disease producing) and toxigenic (meaning poisonous),

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<sup>11</sup> <https://www.khanacademy.org/humanities/history/euro-hist/middle-east-20th-century/v/sykes-picot-agreement-and-the-balfour-declaration>

<sup>12</sup> <http://www.theguardian.com/world/2003/apr/19/iraq.arts>



and other biological research materials were exported to Iraq pursuant to application and licensing by the US Department of Commerce.”

In 1984, Donald Rumsfeld, Reagan’s newly appointed Middle East Envoy, visited Saddam Hussein to assure him of America’s continuing friendship, despite Iraqi use of poison gas. 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. Indeed US support for Saddam was so unconditional that he obtained the false impression that he had a free hand to do whatever he liked in the region.

On July 25, 1990, US Ambassador April Glaspie met with Saddam Hussein to discuss oil prices and how to improve US-Iraq relations. According to the transcript of the meeting, Ms Galspie assured Saddam that the US “had no opinion on the Arab-Arab conflicts, like your border disagreement with Kuwait.” She then left on vacation. Mistaking this conversation for a green light, Saddam invaded Kuwait eight days later.

By invading Kuwait, Hussein severely worried western oil companies and governments, since Saudi Arabia might be next in line. As George Bush senior said in 1990, at the time of the Gulf War, “Our jobs, our way of life, our own freedom and the freedom of friendly countries around the world would all suffer if control of the world’s great oil reserves fell into the hands of Saddam Hussein.”

On August 6, 1990, the UN Security Council imposed comprehensive economic sanctions against Iraq with the aim of forcing Iraq to withdraw from Kuwait. Meanwhile, US Secretary of State James A. Baker III used arm-twisting methods in the Security Council to line up votes for UN military action against Iraq. In Baker’s own words, he undertook the process of “cajoling, extracting, threatening and occasionally buying votes”.

On November 29, 1990, the Council passed Resolution 678, authorizing the use of “all necessary means” (by implication also military means) to force Iraq to withdraw from Kuwait. There was nothing at all wrong with this, since the Security Council had been set up by the UN Charter to prevent states from invading their neighbors. However, one can ask whether the response to Saddam Hussein’s invasion of Kuwait would have been so wholehearted if oil had not been involved.

There is much that can be criticized in the way that the Gulf War of 1990-1991 was carried out. Besides military targets, the US and its allies bombed electrical generation facilities with the aim of creating postwar leverage over Iraq. The electrical generating plants would have to be rebuilt with the help of foreign technical assistance, and this help could be traded for postwar compliance. In the meantime, hospitals and water-purification plants were without electricity. Also, during the Gulf War, a large number of projectiles made of depleted uranium were fired by allied planes and tanks. The result was a sharp increase in cancer in Iraq.

Finally, both Shi’ites and Kurds were encouraged by the Allies to rebel against Saddam Hussein’s government, but were later abandoned by the allies and slaughtered by Saddam.

The most terrible misuse of power, however, was the US and UK insistence the sanctions against Iraq should remain in place after the end of the Gulf War. These two countries used

their veto power in the Security Council to prevent the removal of the sanctions. Their motive seems to have been the hope that the economic and psychological impact would provoke the Iraqi people to revolt against Saddam. However that brutal dictator remained firmly in place, supported by universal fear of his police and by massive propaganda. The effect of the sanctions was to produce more than half a million deaths of children under five years of age, as is documented by UNICEF data. The total number of deaths that the sanctions produced among Iraqi civilians probably exceeded a million, if older children and adults are included.<sup>13</sup>

Ramsey Clark, who studied the effects of the sanctions in Iraq from 1991 onwards, wrote to the Security Council that most of the deaths “are from the effects of malnutrition including marasmas and kwashiorkor, wasting or emaciation which has reached twelve per cent of all children, stunted growth which affects twenty-eight per cent, diarrhea, dehydration from bad water or food, which is ordinarily easily controlled and cured, common communicable diseases preventable by vaccinations, and epidemics from deteriorating sanitary conditions. There are no deaths crueller than these. They are suffering slowly, helplessly, without simple remedial medication, without simple sedation to relieve pain, without mercy.”

In discussing Iraq, we mentioned oil as a motivation for western interest. Similar considerations hold also for Afghanistan. US-controlled oil companies have long had plans for an oil pipeline from Turkmenistan, passing through Afghanistan to the Arabian Sea, as well as plans for a natural gas pipeline from Turkmenistan through Afghanistan to Pakistan.

The September 11 terrorist attacks resulted in a spontaneous worldwide outpouring of sympathy for the United States, and within the US, patriotic support of President George W. Bush at a time of national crisis. Bush’s response to the attacks seems to have been to inquire from his advisors whether he was now free to invade Iraq. According to former counterterrorism chief, Richard Clarke, Bush was “obsessed” with Iraq as his principal target after 9/11.

The British Prime Minister, Tony Blair, was a guest at a private White House dinner nine days after the terrorist attacks on New York and Washington. Sir Christopher Meyer, former UK Ambassador to Washington, was also present at the dinner. According to Meyer, Blair said to Bush that they must not get distracted from their main goal - dealing with the Taliban and al-Qaeda in Afghanistan, and Bush replied: “I agree with you Tony. We must deal with this first. But when we have dealt with Afghanistan, we must come back to Iraq.” Faced with the prospect of wars in both Iraq and Afghanistan, Blair did not protest, according to Meyer.

During the summer of 2002, Bush and Blair discussed Iraq by telephone. A senior official from Vice-President Dick Cheney’s office who read the transcript of the call is quoted by the magazine *Vanity Fair* as saying: “The way it read was that come what may, Saddam was going to go; they said that they were going forward, they were going to take

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<sup>13</sup> <https://www.transcend.org/tms/2014/09/usauk-committed-genocide-against-iraq-people/>  
<http://www.informationclearinghouse.info/article37511.htm>

out the regime, and they were doing the right thing. Blair did not need any convincing. There was no ‘Come on, Tony, we’ve got to get you on board’. I remember reading it and then thinking, ‘OK, now I know what we’re going to be doing for the next year.’” On June 1, 2002, Bush announced a new US policy which not only totally violated all precedents in American foreign policy but also undermined the United Nations Charter and international law<sup>6</sup>. Speaking at the graduation ceremony of the US Military Academy at West Point he asserted that the United States had the right to initiate a preemptive war against any country that might in the future become a danger to the United States. “If we wait for threats to fully materialize”, he said, “we will have waited too long.” He indicated that 60 countries might fall into this category, roughly a third of the nations of the world.

The assertion that the United States, or any other country, has the right to initiate preemptive wars specifically violates Chapter 1, Articles 2.3 and 2.4, of the United Nations Charter. These require that “All members shall settle their disputes by peaceful means in such a manner that international peace, security and justice are not endangered”, and that “All members shall refrain in their international relations from the threat or use of force against the territorial integrity of any state, or in any other manner inconsistent with the purposes of the United Nations.” The UN Charter allows a nation that is actually under attack to defend itself, but only until the Security Council has had time to act.

Bush’s principle of preemptive war was promptly condemned by the Catholic Church. Senior Vatican officials pointed to the Catholic teaching that “preventive” war is unjustifiable, and Archbishop Renato Martino, prefect of the Vatican Council for Justice and Peace, stated firmly that “unilateralism is not acceptable”.

However, in the United States, the shocking content of Bush’s West Point address was not fully debated. The speech was delivered only a few months after the 9/11 terrorist attacks, and the US supported whatever exceptional measures its President thought might be necessary for the sake of national security. American citizens, worried by the phenomenon of terrorism, did not fully appreciate that the principle of preemptive war could justify almost any aggression, and that in the long run, if practiced by all countries, it would undermine the security of the United States as well as that of the entire world.

During the spring of 2003, our television and newspapers presented us with the spectacle of an attack by two technologically superior powers on a much less industrialized nation, a nation with an ancient and beautiful culture. The ensuing war was one-sided. Missiles guided by laser beams and signals from space satellites were more than a match for less sophisticated weapons. Speeches were made to justify the attack. It was said to be needed because of weapons of mass destruction (some countries are allowed to have them, others not). It was said to be necessary to get rid of a cruel dictator (whom the attacking powers had previously supported and armed). But the suspicion remained that the attack was resource-motivated. It was about oil, or at least largely about oil. The war on Iraq was also designed to destroy a feared enemy of Israel.

The Nobel Peace Prize winner, Mairead Corrigan Maguire estimates that US and UK actions between 1990 and 2012 killed 3.3 million people, including 750,000 children.

Against the historical background discussed above, we can appreciate the enormous hypocrisy of Obama’s claim that the bombing of Iraq during his administration was “hu-

manitarian”.

## 7.7 Attacks on Iran, past and present

Iran has an ancient and beautiful civilization, which dates back to 7,000 BC, when the city of Susa was founded. Some of the earliest writing that we know of, dating from from approximately 3,000 BC, was used by the Elamite civilization near to Susa. Today’s Iranians are highly intelligent and cultured, and famous for their hospitality, generosity and kindness to strangers. Over the centuries, Iranians have made many contributions to science, art and literature, and for hundreds of years they have not attacked any of their neighbors. Nevertheless, for the last 90 years, they have been the victims of foreign attacks and interventions, most of which have been closely related to Iran’s oil and gas resources. The first of these took place in the period 1921-1925, when a British-sponsored coup overthrew the Qajar dynasty and replaced it by Reza Shah.

Reza Shah (1878-1944) started his career as Reza Khan, an army officer. Because of his high intelligence he quickly rose to become commander of the Tabriz Brigade of the Persian Cossacks. In 1921, General Edmond Ironside, who commanded a British force of 6,000 men fighting against the Bolsheviks in northern Persia, masterminded a coup (financed by Britain) in which Reza Khan led 15,000 Cossacks towards the capital. He overthrew the government, and became minister of war. The British government backed this coup because it believed that a strong leader was needed in Iran to resist the Bolsheviks. In 1923, Reza Khan overthrew the Qajar Dynasty, and in 1925 he was crowned as Reza Shah, adopting the name Pahlavi.

Reza Shah believed that he had a mission to modernize Iran, in much the same way that Kamil Ata Turk had modernized Turkey. During his 16 years of rule in Iran, many roads were built, the Trans-Iranian Railway was constructed, many Iranians were sent to study in the West, the University of Tehran was opened, and the first steps towards industrialization were taken. However, Reza Shah’s methods were sometimes very harsh.

In 1941, while Germany invaded Russia, Iran remained neutral, perhaps leaning a little towards the side of Germany. However, Reza Shah was sufficiently critical of Hitler to offer safety in Iran to refugees from the Nazis. Fearing that the Germans would gain control of the Abadan oil fields, and wishing to use the Trans-Iranian Railway to bring supplies to Russia, Britain invaded Iran from the south on August 25, 1941. Simultaneously, a Russian force invaded the country from the north. Reza Shah appealed to Roosevelt for help, citing Iran’s neutrality, but to no avail. On September 17, 1941, he was forced into exile, and replaced by his son, Crown Prince Mohammed Reza Pahlavi. Both Britain and Russia promised to withdraw from Iran as soon as the war was over. During the remainder of World War II, although the new Shah was nominally the ruler of Iran, the country was governed by the allied occupation forces.

Reza Shah, had a strong sense of mission, and felt that it was his duty to modernize Iran. He passed on this sense of mission to his son, the young Shah Mohammed Reza Pahlavi. The painful problem of poverty was everywhere apparent, and both Reza Shah

and his son saw modernization of Iran as the only way to end poverty.

In 1951, Mohammad Mosaddegh became Prime Minister of Iran through democratic elections. He was from a highly-placed family and could trace his ancestry back to the shahs of the Qajar dynasty. Among the many reforms made by Mosaddegh was the nationalization of the Anglo-Iranian Oil Company's possessions in Iran. Because of this, the AIOC (which later became British Petroleum), persuaded the British government to sponsor a secret coup that would overthrow Mosaddegh. The British asked US President Eisenhower and the CIA to join M16 in carrying out the coup, claiming that Mosaddegh represented a communist threat (a ludicrous argument, considering Mosaddegh's aristocratic background). Eisenhower agreed to help Britain in carrying out the coup, and it took place in 1953. The Shah thus obtained complete power over Iran.

The goal of modernizing Iran and ending poverty was adopted as an almost-sacred mission by the young Shah, Mohammed Reza Pahlavi, and it was the motive behind his White Revolution in 1963, when much of the land belonging to the feudal landowners and the crown was distributed to landless villagers. However, the White Revolution angered both the traditional landowning class and the clergy, and it created fierce opposition. In dealing with this opposition, the Shah's methods were very harsh, just as his fathers had been. Because of alienation produced by his harsh methods, and because of the growing power of his opponents, Shah Mohammed Reza Pahlavi was overthrown in the Iranian Revolution of 1979. The revolution of 1979 was to some extent caused by the British-American coup of 1953.

One can also say that the westernization, at which both Shah Reza and his son aimed, produced an anti-western reaction among the conservative elements of Iranian society. Iran was "falling between two stools", on the one hand western culture and on the other hand the country's traditional culture. It seemed to be halfway between, belonging to neither. Finally in 1979 the Islamic clergy triumphed and Iran chose tradition.

Meanwhile, in 1963, the US had secretly backed a military coup in Iraq that brought Saddam Hussein's Ba'ath Party to power. In 1979, when the western-backed Shah of Iran was overthrown, the United States regarded the fundamentalist Shiite regime that replaced him as a threat to supplies of oil from Saudi Arabia. Washington saw Saddam's Iraq as a bulwark against the Shiite government of Iran that was thought to be threatening oil supplies from pro-American states such as Kuwait and Saudi Arabia.

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 an extremely bloody 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 helped Saddam Hussein's government to obtain chemical weapons.

The present attacks on Iran by Israel and the United States, both actual and threatened, have some similarity to the war against Iraq, which was launched by the United States in 2003. In 2003, the attack was nominally motivated by the threat that nuclear weapons would be developed, but the real motive had more to do with a desire to control and exploit the petroleum resources of Iraq, and with Israel's extreme nervousness at having

a powerful and somewhat hostile neighbor. Similarly, hegemony over the huge oil and gas reserves of Iran can be seen as one of the main reasons why the United States is presently demonizing Iran, and this is combined with Israel's almost paranoid fear of a large and powerful Iran. Looking back on the "successful" 1953 coup against Mosaddegh, Israel and the United States perhaps feel that sanctions, threats, murders and other pressures can cause a regime change that will bring a more compliant government to power in Iran - a government that will accept US hegemony. But aggressive rhetoric, threats and provocations can escalate into full-scale war.

I do not wish to say that Iran's present government is without serious faults. However, any use of violence against Iran would be both insane and criminal. Why insane? Because the present economy of the US and the world cannot support another large-scale conflict; because the Middle East is already a deeply troubled region; and because it is impossible to predict the extent of a war which, if once started, might develop into World War III, given the fact that Iran is closely allied with both Russia and China. Why criminal? Because such violence would violate both the UN Charter and the Nuremberg Principles. There is no hope at all for the future unless we work for a peaceful world, governed by international law, rather than a fearful world, where brutal power holds sway.

## 7.8 Some contributions of Islamic culture

At a time when the corporate-controlled media of Europe and the United States are doing their utmost to fill us with poisonous Islamophobia, it is perhaps a useful antidote to remember the great role that Islamic civilization played in preserving, enlarging and transmitting to us the knowledge and culture of the ancient world.

After the burning of the great library at Alexandria and the destruction of Hellenistic civilization, most of the books of the classical Greek and Hellenistic philosophers were lost. However, a few of these books survived and were translated from Greek, first into Syriac, then into Arabic and finally from Arabic into Latin. By this roundabout route, fragments from the wreck of the classical Greek and Hellenistic civilizations drifted back into the consciousness of the West.

The Roman empire was ended in the 5th century A.D. by attacks of barbaric Germanic tribes from northern Europe. However, by that time, the Roman empire had split into two halves. The eastern half, with its capital at Byzantium (Constantinople), survived until 1453, when the last emperor was killed vainly defending the walls of his city against the Turks.

The Byzantine empire included many Syriac-speaking subjects; and in fact, beginning in the 3rd century A.D., Syriac replaced Greek as the major language of western Asia. In the 5th century A.D., there was a split in the Christian church of Byzantium; and the Nestorian church, separated from the official Byzantine church. The Nestorians were bitterly persecuted by the Byzantines, and therefore they migrated, first to Mesopotamia, and later to south-west Persia. (Some Nestorians migrated as far as China.)

During the early part of the middle ages, the Nestorian capital at Gondisapur was a

great center of intellectual activity. The works of Plato, Aristotle, Hippocrates, Euclid, Archimedes, Ptolemy, Hero and Galen were translated into Syriac by Nestorian scholars, who had brought these books with them from Byzantium.

Among the most distinguished of the Nestorian translators were the members of a family called Bukht-Yishu (meaning "Jesus hath delivered"), which produced seven generations of outstanding scholars. Members of this family were fluent not only in Greek and Syriac, but also in Arabic and Persian.

In the 7th century A.D., the Islamic religion suddenly emerged as a conquering and proselytizing force. Inspired by the teachings of Mohammad (570 A.D. - 632 A.D.), the Arabs and their converts rapidly conquered western Asia, northern Africa, and Spain. During the initial stages of the conquest, the Islamic religion inspired a fanaticism in its followers which was often hostile to learning. However, this initial fanaticism quickly changed to an appreciation of the ancient cultures of the conquered territories; and during the middle ages, the Islamic world reached a very high level of culture and civilization.

Thus, while the century from 750 to 850 was primarily a period of translation from Greek to Syriac, the century from 850 to 950 was a period of translation from Syriac to Arabic. It was during this latter century that Yuhanna Ibn Masawiah (a member of the Bukht-Yishu family, and medical advisor to Caliph Harun al-Rashid) produced many important translations into Arabic.

The skill of the physicians of the Bukht-Yishu family convinced the Caliphs of the value of Greek learning; and in this way the family played an extremely important role in the preservation of the western cultural heritage. Caliph al-Mamun, the son of Harun al-Rashid, established at Baghdad a library and a school for translation, and soon Baghdad replaced Gondisapur as a center of learning.

The English word "chemistry" is derived from the Arabic words "al-chimia", which mean "the changing". The earliest alchemical writer in Arabic was Jabir (760-815), a friend of Harun al-Rashid. Much of his writing deals with the occult, but mixed with this is a certain amount of real chemical knowledge. For example, in his Book of Properties, Jabir gives a recipe for making what we now call lead hydroxycarbonate (white lead), which is used in painting and pottery glazes:

Another important alchemical writer was Rahzes (c. 860 - c. 950). He was born in the ancient city of Ray, near Teheran, and his name means "the man from Ray". Rhazes studied medicine in Baghdad, and he became chief physician at the hospital there. He wrote the first accurate descriptions of smallpox and measles, and his medical writings include methods for setting broken bones with casts made from plaster of Paris. Rahzes was the first person to classify substances into vegetable, animal and mineral. The word "al-kali", which appears in his writings, means "the calcined" in Arabic. It is the source of our word "alkali", as well as of the symbol K for potassium.

The greatest physician of the middle ages, Avicenna, (Abu-Ali al Hussain Ibn Abdullah Ibn Sina, 980-1037), was also a Persian, like Rahzes. More than a hundred books are attributed to him. They were translated into Latin in the 12th century, and they were among the most important medical books used in Europe until the time of Harvey. Avicenna also wrote on alchemy, and he is important for having denied the possibility of transmutation

of elements.

In mathematics, one of the most outstanding Arabic writers was al-Khwarizmi (c. 780 - c. 850). The title of his book, *Ilm al-jabr wa'd muqabalah*, is the source of the English word "algebra". In Arabic *al-jabr* means "the equating". Al-Khwarizmi's name has also become an English word, "algorism", the old word for arithmetic. Al-Khwarizmi drew from both Greek and Hindu sources, and through his writings the decimal system and the use of zero were transmitted to the West.

One of the outstanding Arabic physicists was al-Hazen (965-1038). He did excellent work in optics, and in this field he went far beyond anything done by the Greeks. Al-Hazen studied the reflection of light by the atmosphere, an effect which makes the stars appear displaced from their true positions when they are near the horizon; and he calculated the height of the atmospheric layer above the earth to be about ten miles. He also studied the rainbow, the halo, and the reflection of light from spherical and parabolic mirrors. In his book, *On the Burning Sphere*, he shows a deep understanding of the properties of convex lenses. Al-Hazen also used a dark room with a pin-hole opening to study the image of the sun during an eclipse. This is the first mention of the camera obscura, and it is perhaps correct to attribute the invention of the camera obscura to al-Hazen.

Another Islamic philosopher who had great influence on western thought was Averroes, who lived in Spain from 1126 to 1198. His writings took the form of thoughtful commentaries on the works of Aristotle. He shocked both his Muslim and his Christian readers by maintaining that the world was not created at a definite instant, but that it instead evolved over a long period of time, and is still evolving.

In the 12th century, parts of Spain, including the city of Toledo, were reconquered by the Christians. Toledo had been an Islamic cultural center, and many Muslim scholars, together with their manuscripts, remained in the city when it passed into the hands of the Christians. Thus Toledo became a center for the exchange of ideas between east and west; and it was in this city that many of the books of the classical Greek and Hellenistic philosophers were translated from Arabic into Latin.

It is interesting and inspiring to visit Toledo. A tourist there can see ample evidence of a period of tolerance and enlightenment, when members of the three Abrahamic religions, Christianity, Judaism and Islam, lived side by side in harmony and mutual respect, exchanging important ideas which were to become the foundations of our modern civilization. One can also see a cathedral, a mosque and a synagogue, in each of which craftsmen from all three faiths worked cooperatively to produce a beautiful monument to human solidarity.

## 7.9 Politeness in multi-ethnic societies

The attack on Charlie Hebdo, in which 12 people were killed, claimed massive media attention worldwide. Everyone agreed that freedom of speech and democracy had been brutally attacked, and many people proclaimed "Je suis Charlie!", in solidarity with the murdered members of the magazine's staff.



In Denmark, it was proposed that the offending cartoons of the prophet Mohammad should be reprinted in major newspapers. However, in the United States, there was no such proposal, and in fact, US television viewers were not even allowed to see the drawings that had provoked the attack. How is this difference between Denmark and the US to be explained?

Denmark is a country with a predominantly homogeneous population, which only recently has become more diverse through the influx of refugees from troubled parts of the world. Thus, I believe, Denmark has not yet had time to learn that politeness is essential for preventing conflicts in a multi-ethnic society. On the other hand, the United States has lived with the problem for much longer.

During most of its history, the US has had substantial Spanish-speaking and Italian-speaking minorities, as well as great religious diversity. During the 1960's the civil rights movement fought against racial prejudice and gradually achieved most of its goals. Thus, over a very long period of time, the United States learned to avoid racial and religious insults in its media, and this hard-earned wisdom has allowed the very markedly multi-ethnic US society to function with a minimum of racial and religious conflicts.

Is this a lesson that the world as a whole needs to learn? I strongly believe that it is. Globally, we are in great need of a new ethic, which regards all humans as brothers and sisters, regardless of race, religion or nationality. Human solidarity will become increasingly important in the future, as stress from climate change and the vanishing of nonrenewable resources becomes more pronounced.

To get through the difficult time ahead of us, we will need to face the dangers and challenges of the future arm in arm, respecting each other's differing beliefs, and emphasizing our common humanity rather than our differences.

## 7.10 The 2016 US presidential election

In the United States, campaigns for the presidential election of 2016 might have been an occasion for a realistic discussion of the enormously important challenges which we now face, not only in the America, but also throughout the world.

### The most important issues

Most thoughtful people agree that the two most important issues facing humanity today are the threat of catastrophic and uncontrollable climate change, and the threat of nuclear war. Each of these threatened disasters has the potential to destroy human civilization and much of the biosphere. But on the whole these vitally important issues were not discussed in an honest way in the mainstream media. Instead the campaign spectacle presented to us by the media was washed down into the murky depths of stupidity by rivers of money from the fossil fuel giants and the military industrial complex.

The Republican presidential candidates were almost single-voiced in denying the reality of climate change, and they were almost unanimously behind foreign policy options

that would push the world to the brink of nuclear war. What about the Democrats and Independents? We will discuss this question in a moment, but first let us look at the the two major issues:

## **The reality of climate change**

Unless rapid action is taken, the world may soon pass a tipping point after which human efforts to avoid catastrophic climate change will be useless because feedback loops will have taken over. However, our present situation is by no means hopeless, because of the extremely rapid rate of growth of renewable energy. What can governments do to help? They can stop subsidizing the fossil fuel industry! Without massive fossil fuel subsidies, renewables would be the cheaper option, and economic forces alone would drive the urgently-needed transition to 100% renewable energy.

A report by RNE21, a global renewable energy policy network, states that “Global subsidies for fossil fuels remain high despite reform efforts. Estimates range from USD 550 billion (International Energy Agency) to USD 5.6 trillion per year (International Monetary Fund), depending on how ‘subsidy’ is defined and calculated.”

“Growth in renewable energy (and energy efficiency improvements) is tempered by subsidies to fossil fuels and nuclear power, particularly in developing countries. Subsidies keep conventional energy prices artificially low, which makes it more difficult for renewable energy to compete...”

“Creating a level playing field can lead to a more efficient allocation of financial resources, helping to strengthen to advance the development of energy efficiency and renewable energy technologies. Removing fossil fuel and energy subsidies globally would reflect more accurately the true cost of energy generation.”<sup>14</sup>

## **An Elephant in the room**

There is, so to speak, an elephant in the room; but no one wants to talk about it. Everyone (with a very few exceptions) pretends not to see it. They pretend that it is not there. What is this metaphorical elephant? It is the Pentagon’s colossal budget, which is far too sacred a thing to be mentioned in an election campaign.

The size of this budget is almost beyond comprehension: 610 billion dollars per year. This does not include nuclear weapons research, maintenance, cleanup and production, which are paid for by the Department of Energy. Nor does it include payments in pensions to military retirees and widows, nor interest on debt for past wars, nor the State Department’s financing foreign arms sales and military-related development assistance, nor special emergency grants for current wars. Nor are the expenses of the Department of Homeland Security included in the Pentagon’s budget, nor those of the CIA, nor the huge budget of NSA and other dark branches of the US government. One can only guess at the total

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<sup>14</sup> <http://www.ren21.net/status-of-renewables/global-status-report/>

figure if everything should be included, but it is probably well over a trillion dollars per year.

The hidden presence in the room is a trillion-dollar elephant. Perhaps we should include subsidies to fossil fuel giants. Then we would have a multi-trillion-dollar elephant. But it is too sacred to be mentioned. Cut Medicare! Cut pensions! Cut Social Security! Abolish food stamps! Sacrifice support for education! We are running out of money! (Meanwhile the elephant stands there, too holy to be seen.)

## Bernie Sanders and Jill Stein

I will not say anything about Hillary Clinton, because she is almost indistinguishable from the Republican presidential candidates, both on the issues related to war and on those related to the environment. But let us now have a look at the positions of Senator Bernie Sanders and Dr. Jill Stein.<sup>15</sup>

In May, when he started his campaign for nomination as the Democratic Party's presidential candidate, Bernie Sanders, seemed to be an outsider with no chance of winning. But on June 25, the New York Times reported that, in the New Hampshire primaries, Sanders was running in a statistical dead heat with heavily financed Hillary Clinton. On July 1, Bernie Sanders made history by drawing a capacity crowd of 10,000 wildly cheering supporters to a sports stadium in Madison Wisconsin, the largest crowd assembled by any candidate in the current presidential race. Bernie now seems to have a real chance of winning the nomination, and perhaps the 2016 election, because of an avalanche of popular support.

Here is Bernie's statement about income inequality: "What we have seen is that while the average person is working longer hours for lower wages, we have seen a huge increase in income and wealth inequality, which is now reaching obscene levels. This is a rigged economy, which works for the rich and the powerful, and is not working for ordinary Americans: "You know, this country just does not belong to a handful of billionaires."

Sanders believes that "no single financial institution should have holdings so extensive that its failure would send the world economy into crisis. If an institution is too big to fail, it is too big to exist."

Sanders is opposed to the Trans-Pacific Partnership trade agreement, which he has called "a continuation of other disastrous trade agreements, like NAFTA and CAFTA..."

Concerning jobs, Bernie Sanders has said that "America once led the world in building and maintaining a nationwide network of safe and reliable bridges and roads. Today, nearly a quarter of the nation's 600,000 bridges have been designated as structurally deficient or functionally obsolete...Almost one-third of America's major roads are in poor or mediocre condition..." He believes that secure jobs can be created by developing transportation and

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<sup>15</sup> <http://edition.cnn.com/2015/07/01/politics/bernie-sanders-crowds-wisconsin-2016/>  
<http://www.commondreams.org/news/2015/07/02/sanders-draws-10000-wisconsin-support-revolution-doubles-iowa>  
<http://www.commondreams.org/views/2015/07/01/bernie-sanders-too-radical-america>



Figure 7.1: When Senator Bernie Sanders began his campaign for the Democratic presidential nomination, few people believed that he could succeed. But as his campaign gained momentum, enormous crowds were attracted to his reformist speeches, and small individual donors supported his expenses. Although the crowds at Sanders' speeches were at least four times the size of those attending the rallies of other candidates, they were not reported in the mass media. Sanders' campaign was also sabotaged by the corporate-controlled Democratic National Committee. His huge popularity remains undimmed today, despite his loss in the 2016 primary. He advocates a social system for the United States similar to these which have made the Scandinavian countries leaders in both human development and human happiness indices.

renewable energy infrastructure. Sanders also supports the development of worker-owned cooperatives.

Sanders has stated that he believes that the Citizens United decision is “one of the Supreme Court’s worst decisions ever” and that it has allowed big money to “deflect attention from the real issues” facing voters. He has proposed a constitutional amendment to overturn the ruling, and he warns that “We now have a political situation where billionaires are literally able to buy elections and candidates.”

Sanders strongly opposed the 2003 invasion of Iraq, saying: “I am opposed to giving the President a blank check to launch a unilateral invasion and occupation of Iraq... As a caring Nation, we should do everything we can to prevent the horrible suffering that a war will cause. War must be the last recourse in international relations, not the first. ...I am deeply concerned about the precedent that a unilateral invasion of Iraq could establish in terms of international law and the role of the United Nations.”

Bernie Sanders voted against the USA Patriot Act and all of its renewals and has characterized the National Security Agency as “out of control.” He has frequently criticized warrantless wiretapping and the collection of the phone, email, library, and Internet browsing records of American citizens without due process. Bernie says: “In my view, NSA is out of control and operating in an unconstitutional manner. I worry very much about kids growing up in a society where they think ‘I’m not going to talk about this issue, read this book, or explore this idea because someone may think I’m a terrorist’. That’s not the kind of free society I want for our children.”

You can find more information about Bernie, and other planks in his platform, in the Wikipedia article.

## But who is Jill?

Dr. Jill Stein is a physician from Massachusetts, who ran twice for Governor of that state. She also ran for US President in 2012 as the Green Party’s candidate, and again in 2016. She is one of the few people who is willing to talk about the elephant in the room. Here are a few things that Dr. Stein has said:<sup>16</sup>

*“Our Power to the People Plan lays out these solutions in a blueprint to move our economy from the greed and exploitation of corporate capitalism to a human-centered system that puts people, planet and peace over profit. This plan would end unemployment and poverty; avert climate catastrophe; build a sustainable and just economy; and recognize the dignity and human rights of everyone in our society. The plan affirms that we have the power to take back the future.”*

*“We have the power to create a Green New Deal, providing millions of jobs by transitioning to 100% clean renewable energy by 2030.”*

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<sup>16</sup> <http://www.commondreams.org/news/2015/06/24/under-green-party-banner-jill-stein-officially-sets-sights-2016>



Figure 7.2: Dr. Jill Stein was the Green Party's presidential candidate in 2016. She was the only candidate who was willing to talk about the "elephant in the room" - the obscenely enormous military budget that consumed almost a trillion dollars that could otherwise have been used for social goals, health, education and infrastructure.

*“We have the power to provide a living-wage job and worker’s rights to every American.”*

*“We have the power to end poverty and guarantee economic human rights.”*

*“We have the power to make health-care a human right through an improved Medicare for All system.”*

*“We have the power to provide education as a right and abolish student debt.”*

*“We have the power to create a just economy.”*

*“We have the power to protect Mother earth.”*

*“We have the power to end institutional racism, police brutality and mass incarceration-”*

*“We have the power to restore our constitutional rights.”*

*“We have the power to end our wars of aggression, close foreign bases and cut military expenditures 50%.”*

*“We have the power to empower the people.”*

## **But what happened in the disastrous 2016 election?**

One is reminded of the words of Yeats: “Things fall apart. The centre cannot hold. The best lack all conviction, while the worst are filled with passionate intensity. And what rough beast, its time come round at last, slouches towards Bethlehem to be born?”

Here are some excerpts from the transcript of a Democracy Now! program<sup>17</sup> in which Amy Goodman interviews Michael Moore:

AMY GOODMAN: This is Democracy Now! I’m Amy Goodman, as we return to our conversation with the Academy Award-winning filmmaker Michael Moore. His new film, out today, *Fahrenheit 11/9*. I spoke to him earlier this week.

AMY GOODMAN: In your film, you start with that remarkable day, but you actually start before. And you were talking about this way before. You wrote in July 2016, again before Trump was elected - *5 Reasons Why Trump Will Win*<sup>18</sup>. In it, you wrote “Donald J. Trump is going to win in November. This wretched, ignorant, dangerous part-time clown

<sup>17</sup><https://truthout.org/video/michael-moore-democrats-fatal-mistake-was-not-taking-trump-seriously/>

<sup>18</sup><https://michaelmoore.com/trumpwillwin/>



Figure 7.3: Against expectations, Donald Trump who, in the words of Michael Moore, is a “wretched, ignorant, dangerous part-time clown and full-time sociopath”, was elected in 2016. What happened? Disillusioned by the way in which the immensely popular Senator Bernie Sanders was sabotaged by the media and by the Democratic National Committee, and despising Hillary Clinton for her involvement in US wars and Wall Street banks, many progressive voters stayed away from the polls. In their absence, Trump won narrowly. He lost the popular vote, but won the electoral vote. Today, the White House is a morass of dissension, erratic decisions and lies.





Figure 7.4: Disillusioned progressive voters who stayed at home were responsible for Trump's victory.



Figure 7.5: The stain will be indelible. Kavanaugh is both a multiple perjurer under oath before congress and a multiple attempted rapist. His tenure on the US supreme court will always be tainted by the highly partisan and morally bankrupt process that forced through his US senate confirmation on October 7, 2018. The photo shows angry crowds protesting the confirmation. One fervently hopes that public action will restore democracy to the United States.

and full-time sociopath is going to be our next president. President Trump. Go ahead and say the words, 'cause you'll be saying them for the next four years: PRESIDENT TRUMP." You went on to list the five reasons you believed Trump would be president: Trump's focus on the Midwest, the last stand of the angry white man, the Hillary problem, the depressed Sanders vote, and what you call the Jesse Ventura effect - people voting for Trump simply to disrupt the system. You were predicting this well in advance...

MICHAEL MOORE: Yes, OK. First of all, I take no pleasure in being right. I never wanted to be more wrong when I wrote that. But I had just come back from the UK, where my last film, *Where To Invade Next* had just opened, and so I went and did press throughout the UK, in London, in Sheffield, ending up in Belfast, and a lot of crowds and theater screenings with the working class of the United Kingdom.

This was the week before Brexit, and I saw what I see and hear a lot in Michigan and Wisconsin and Pennsylvania and Ohio and elsewhere, where people didn't necessarily like or were in love with the idea of Brexit, but they loved being able to have a chance to go into the voting booth and throw a Molotov cocktail into the middle of a system that had left them broke and in despair.

And when we left the UK there just before the vote, we were all saying - my crew and friends - "Wow, this just sounds like many parts of the United States, and it looks like Brexit's going to pass." Even though all the polls said that it wasn't going to. We came back here and of course all the polls - Brexit did pass - and all of the polls here were saying that Hillary had it in the bag.

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AMY GOODMAN: And you have people like Les Moonves, now disgraced, who is saying things like, "It's great for us. It just may not be great for America."<sup>19</sup>

MICHAEL MOORE: Les Moonves, who was the head of CBS, and Jeff Zucker, who is the head of CNN, both kind of copped to the fact that they were putting him on the air a lot for free. He didn't have to pay for any of this. It's why Hillary - if you look at what she spent, she spent - well, he spent about... \$300 million. She spent almost a billion on her campaign. He didn't have to spend a billion, because he got all this free airtime from the mainstream networks. And in the film, I show Moonves and Zucker yukking it up over how great it is that Donald Trump is running, because it was very good for business and they sold a lot more ads.

AMY GOODMAN: So you have the red carpet treatment from the networks. Wall-to-wall coverage of his speeches. Often - I mean, the other candidates, like for example Bernie Sanders, got nothing - nothing like this... Even though he had some of the largest crowds of any of the candidates, Republican and Democrat.

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<sup>19</sup>He said: "Who would have thought that this circus would come to town? But, you know - it may not be good for America, but it's damn good for CBS. That's all I gotta say."

Moore's film *Fahrenheit 11/9* has received strongly positive reviews. Variety calls it "fearless and profound, and the reviewer adds: "Fahrenheit 11/9 is truly about something, and that's Michael Moore's fearless - and I would say accurate - perception that what's going on in our government today is more sinister than even a lot of liberals think. In Fahrenheit 11/9, Moore captures how the groundwork is being laid for a full-scale destruction of democracy... the movie, in its way, summons something ominous and powerful. It's not a screed - it's a warning. It says, quite wisely: Take action now, or you may no longer have the opportunity to do so."

New York Magazine proclaims *Fahrenheit 11/9* as "one the the most urgent films ever made. You need to see this film!"

Salon says: "This film really is Moore's tour de force - a forceful, moving, and compelling call to action. A number of Michael Moore's films have made history. This time he's asking his audience to be the ones to do it."

Other critics have called it "soul-stirring," "blistering," "ferocious," "part exposé, part doomsday warning, and part call to arms," "brutally honest..a powerfully blunt instrument" "incisively funny" and "a blistering broadside!"

Here are some excerpts from Glen Greenwald's review of *Fahrenheit 11/9*<sup>20</sup>:

*"Fahrenheit 11/9," the title of Michael Moore's new film that opens today in theaters, is an obvious play on the title of his wildly profitable Bush-era "Fahrenheit 9/11," but also a reference to the date of Donald J. Trump's 2016 election victory. Despite that, Trump himself is a secondary figure in Moore's film, which is far more focused on the far more relevant and interesting questions of what - and, critically, who - created the climate in which someone like Trump could occupy the Oval Office.*

*For that reason alone, Moore's film is highly worthwhile regardless of where one falls on the political spectrum. The single most significant defect in U.S. political discourse is the monomaniacal focus on Trump himself, as though he is the cause - rather than the by-product and symptom - of decades-old systemic American pathologies...*

*The lie-fueled destruction of Vietnam and Iraq, the worldwide torture regime, the 2008 financial collapse and subsequent bailout and protection of those responsible for it, the foreign kidnapping and domestic rounding up of Muslims, the record-setting Obama-era deportations and whistleblower prosecutions, the obliteration of Yemen and Libya, the embrace of Mubarak, Sisi, and Saudi despots, the years of bipartisan subservience to Wall Street at everyone else's expense, the full-scale immunity vested on all the elites responsible for all those crimes - it's all blissfully washed away as we unite to commemorate the core decency of America as George Bush gently hands a piece of candy to Michelle Obama at the funeral of the American War Hero and Trump-opponent-in-words John S. McCain, or as hundreds of thousands of us re-tweet the latest bromide of Americana from the leaders of America's most insidious security state, spy and police agencies.*

<sup>20</sup><https://www.transcend.org/tms/2018/09/michael-moores-fahrenheit-11-9-aims-not-at-trump-but-at-those-who-created-the-conditions-that-led-to-his-rise/>



*Beyond nationalistic myth-building, there are substantial commercial, political and reputational benefits to this Trump-centered mythology. An obsessive fixation on Trump has single-handedly saved an entire partisan cable news network from extinction, converting its once ratings-starved, close-to-being-fired prime-time hosts into major celebrities with contracts so obscenely lucrative as to produce envy among most professional athletes or Hollywood stars...*

*The overriding value of “Fahrenheit 11/9” is that it avoids - in fact, aggressively rejects - this ahistorical manipulation. Moore dutifully devotes a few minutes at the start of his film to Trump’s rise, and then asks the question that dominates the rest of it, the one the political and media establishment has steadfastly avoided examining except in the most superficial and self-protective ways: “how ... did this happen”?...*

*To Moore’s credit, virtually no powerful U.S. factions escape indictment in “Fahrenheit 11/9.” The villains of Flint and West Virginia are two Republican governors. But their accomplices, every step of the way, are Democrats. This, Moore ultimately argues, is precisely why people had lost faith in the ability of elections generally, and the Democratic Party specifically, to improve their lives.*

## 7.11 Sabotaging Jeremy Corbyn

The mass media in England are currently using the false charge of antisemitism to sabotage the British Labour Party’s immensely popular leader Jeremy Corbyn. As an 11 August 2018 Media Lens editorial <sup>21</sup> noted:

<sup>21</sup><http://medialens.org/index.php/alerts/alert-archive/2018/876-israel-is-the-real-problem.html>

*Elite power cannot abide a serious challenge to its established position. And that is what Labour under Jeremy Corbyn represents to the Tory government, the corporate, financial and banking sectors, and the ‘mainstream’ media. The manufactured ‘antisemitism crisis’ is the last throw of the dice for those desperate to prevent a progressive politician taking power in the UK: someone who supports Palestinians and genuine peace in the Middle East, a strong National Health Service and a secure Welfare State, a properly-funded education system, and an economy in which people matter; someone who rejects endless war and complicity with oppressive, war criminal ‘allies’ such as the United States, Saudi Arabia and Israel.*

*In a thoroughly-researched article<sup>22</sup>, writer and academic Gavin Lewis has mapped a deliberate pro-Israel campaign to create a ‘moral panic’ around the issue of antisemitism. The strategy can be traced all the way back to the horrendous Israeli bombardment of Gaza in the summer of 2014. A UN report estimated that 2,252 Palestinians were killed, around 65 per cent of them civilians. The death toll included 551 children. There was global public revulsion at Israel’s war crimes and empathy with their Palestinian victims. Support rose for the Boycott, Divestment, Sanctions movement (BDS) which campaigns ‘to end international support for Israel’s oppression of Palestinians and pressure Israel to comply with international law’...*

*In particular, as we noted in a media alert<sup>23</sup> in April, antisemitism has been ‘weaponised’ to attack Corbyn and any prospect of a progressive UK government critical of Israel. Around this time in Gaza, there were weekly ‘Great March of Return’ protests, with people demanding the right to reclaim ancestral homes in Israel. Many were mown down by Israeli snipers on the border firing into Gaza, with several victims shot in the back as they tried to flee. According to the Palestinian Ministry of Health, a total of 155 Palestinians were killed in the protests, including 23 children and 3 women. This is part of the brutal ongoing reality for Palestinians...*

*Despite the intense campaign against Corbyn - and perhaps, in part, because of its obviously cynical and manipulative nature - many people are perceptive enough to see what is going on. Israel is the real problem.*

One has to ask how “antisemitism” is defined. Is it really defined as “criticism of Israel”? We must remember that the genocidal treatment of Palestinians by the government of Israel is far worse than actions of the universally-condemned Apartheid regime of South Africa. Israel is grossly in violation of United Nations resolutions and international law.

## Suggestions for further reading

1. Sir Percy Sykes, *A History of Persia - 2nd edition*, MacMillan, (1921).
2. Paula K. Byers, *Reza Shah Pahlavi*, Encyclopedia of World Biography, (1998)-

<sup>22</sup><https://zcomm.org/znetarticle/hijacking-victimhood-and-demonizing-dissent/>

<sup>23</sup><http://medialens.org/index.php/alerts/alert-archive/2018/867-killing-mosquitoes-the-latest-gaza-massacres-pro-israel-media-bias-and-the-weapon-of-antisemitism.html>



Figure 7.6: Long-time British MP and social reformer Jeremy Corbyn. His landslide election as Leader of the Labour Party is an indication that restoring democracy may be possible in Britain.

3. Roger Homan, *The Origins of the Iranian Revolution*, *International Affairs* **56/4**, 673-7, (Autumm, 1980).
4. Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power*, Simon and Schuster, (1991).
5. A. Sampson, *The Seven Sisters: The Great Oil Companies of the World and How They Were Made*, Hodder and Staughton, (1988).





# Chapter 8

## THE MASS MEDIA HAVE BETRAYED US

### 8.1 The media are part of our educational system

#### 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



Figure 8.1: Goebbels said: “Propaganda works best when those who are being manipulated are confident that they are acting on their own free will”.

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 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 commodified 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.

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.

### **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 CO<sub>2</sub> 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.

## **8.2 Humanity betrayed by the mass media**

The predicament of humanity today has been called "a race between education and catastrophe": How do the media fulfil 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 the ecological catastrophes that threaten our planet because of unrestricted growth of population and industries? No, they give us sit-coms and soap operas. Do they give us unbiased news? No, they give us news that has been edited to conform with the interests of powerful lobbys. Do they present us with the urgent need to leave fossil fuels in the ground? No, they do not, because this would offend the powerholders. Do they tell of the danger of passing tipping points after which human efforts to prevent catastrophic climate change will be useless? 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 95 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 war, environmental catastrophes and threatened global famine. 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 hangs 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 most dangerous idea that the mass media peddle to a betrayed world is that there is no emergency, no crisis of civilization. Everything is fundamentally normal. We can continue to behave more or less as we always have behaved. We can continue to extract and use fossil fuels, continue to fly to vacations in foreign countries, and continue to rely on our trusted and most loved friend, the private automobile. But this is a lie. They are lying to us because no one wants to shoot Santa Claus. No one wants to undermine “consumer confidence”.

The true situation is that the future looks extremely dark, especially the long-term future, because of human greed and folly. The greatest threats are catastrophic climate change and thermonuclear war, but a large-scale global famine also has to be considered.

We give our children loving care, but it makes no sense to do so and at the same time to neglect to do all that is within our power to ensure that they and their descendants will inherit an earth in which they can survive. We also have a responsibility to all the other living organisms with which we share the gift of life.

Inaction is not an option. We have to act with courage and dedication, even if the odds are against success, because the stakes are so high. No one is exempt from this duty. Every singly person on earth has the duty to work with dedication and courage to save the future.

None of us asked to be born at a time of crisis. But we have been born at such a time, and history has given us an enormous responsibility. If we do not work with courage and dedication to save our beautiful world for future generations, all the treasures that past generations have given us will be lost.

What are the great tasks that history has given to us? If true democracy has decayed into oligarchy in our own countries, democracy must be restored. Global population must be stabilized, and in the long run, reduced. Nuclear weapons must be completely abolished. The institution of war must be abolished by turning the United Nations into a federation. Our consumption of fossil fuels must quickly end, through changes in lifestyle, and through an all-out effort to rapidly develop renewable energy.

Soldiers in war are asked to give their lives for their countries. We, who are opposed to war, must be equally willing to devote our lives to a cause - the cause of saving civilization

- the cause of saving the the biosphere - the cause of saving the future.

### 8.3 The propaganda model of the mass media

Here are some quotations from the Wikipedia article entitled “Propaganda model”:

*The propaganda model is a conceptual model in political economy advanced by Edward S. Herman and Noam Chomsky to explain how propaganda and systemic biases function in corporate mass media. The model seeks to explain how populations are manipulated and how consent for economic, social, and political policies is “manufactured” in the public mind due to this propaganda. The theory posits that the way in which corporate media is structured (e.g. through advertising, concentration of media ownership, government sourcing) creates an inherent conflict of interest that acts as propaganda for undemocratic forces.*

*First presented in their 1988 book *Manufacturing Consent: The Political Economy of the Mass Media*, the propaganda model views private media as businesses interested in the sale of a product-readers and audiences - to other businesses (advertisers) rather than that of quality news to the public. Describing the media’s “societal purpose”, Chomsky writes, “... the study of institutions and how they function must be scrupulously ignored, apart from fringe elements or a relatively obscure scholarly literature”. The theory postulates five general classes of “filters” that determine the type of news that is presented in news media. These five classes are: Ownership of the medium, Medium’s funding sources, Sourcing, Flak, and Anti-communism or “fear ideology”.*

*The first three are generally regarded by the authors as being the most important. In versions published after the 9/11 attacks on the United States in 2001, Chomsky and Herman updated the fifth prong to instead refer to the “War on Terror” and “counter-terrorism”, although they state that it operates in much the same manner.*

*Although the model was based mainly on the characterization of United States media, Chomsky and Herman believe the theory is equally applicable to any country that shares the basic economic structure and organizing principles that the model postulates as the cause of media biases.*

### 8.4 Institutional and cultural inertia

#### Why do we not respond to the crisis?

Today we are faced with multiple interrelated crises, for example the threat of catastrophic climate change or equally catastrophic thermonuclear war, and the threat of widespread famine. These threats to human existence and to the biosphere demand a prompt and rational response; but because because of institutional and cultural inertia, we are failing to take the steps that are necessary to avoid disaster.





Figure 8.2: **The heavy hand of the fossil fuel industry also made itself felt at the conference.**

### Institutional inertia

Our collective failure to respond adequately to the current crisis is very largely due to institutional inertia. For example, international relations are still based based on the concept of absolutely sovereign nation states, even though this concept has become a dangerous anachronism in an era of instantaneous global communication and economic interdependence. Within nations, systems of law and education change very slowly, although present dangers demand rapid revolutions in outlook and lifestyle. Our financial system is deeply embedded and resistant to change. Our entire industrial infrastructure is based on fossil fuels; but if the future is to be saved, the use of fossil fuels must stop.

The failure of the recent COP20 climate conference in Lima to produce a strong final document can be attributed to the fact that the nations attending the conference felt themselves to be in competition with each other, when in fact they ought to have cooperated in response to a common danger. The heavy hand of the fossil fuel industry also made itself felt at the conference.

Until the development of coal-driven steam engines in the 19th century humans lived more or less in harmony with their environment. Then, fossil fuels, representing many millions of years of stored sunlight, were extracted and burned in two centuries, driving a frenzy of growth of population and industry that has lasted until the present. But today, the party is over. Coal, oil and gas are nearly exhausted, and what remains of them must be left in the ground to avoid existential threats to humans and the biosphere. Big coal and oil corporations base the value of their stocks on ownership of the remaining resources that are still buried, and they can be counted on to use every trick, fair or unfair, turn those resources into money.

In general corporations represent a strong force resisting change. By law, the directors of corporations are obliged to put the profits of stockholders above every other consideration.

No room whatever is left for an ecological or social conscience. Increasingly, corporations have taken control of our mass media and our political system. They intervene in such a way as to make themselves richer, and thus to increase their control of the system.

## **Polite conversation and cultural inertia**

Each day, the conventions of polite conversation contribute to our sense that everything is as it always was. Politeness requires that we do not talk about issues that might be contrary to another person's beliefs. Thus polite conversation is dominated by trivia, entertainment, sports, the weather, gossip, food, and so on. Worries about the distant future, the danger of nuclear war, the danger of uncontrollable climate change, or the danger of widespread famine seldom appear in conversations at the dinner table, over coffee or at the pub. In conversations between polite people, the situation is exactly the same as in the mass media. We obtain the false impression that all is well with the world. But in fact, all is not well. We have to act promptly and adequately to save the future.

## **Shooting Santa Claus**

No one wants to shoot Santa Claus. That goes without saying! Who would want to harm that jolly old man, with his reindeer and sleigh, and his workshop at the North Pole? Who would want to prevent him from bringing happiness to everyone? Who would want to stop him from making the children's eyes light up like stars? Surely no one!

But the sad truth today is that we have to get rid of Santa somehow, before he kills us, and before he kills most of the plants and animals with which we share our world. Perhaps shooting is too harsh. Perhaps we should just forget Santa and all that he stands for, with his red suit, invented by the advertising department of Coca Cola.

This is what Santa stands for: The customer is always right. Your wish is our command. You have a right to whatever you desire. If you feel like taking a vacation on the other side of the world, don't hesitate, just do it. If you feel like buying a SUV, just do it. Self-fulfillment is your birthright. Spending makes the economy grow, and growth is good. Isn't that right?

But sadly that isn't right. We have to face the fact that endless economic growth on a finite planet is a logical impossibility, and that we have reached or passed the sustainable limits to growth.

In today's world, we are pressing against the absolute limits of the earth's carrying capacity, and further growth carries with it the danger of future collapse. In the long run, neither the growth of industry nor that of population is sustainable; and we have now reached or exceeded the sustainable limits.

The size of the human economy is, of course, the product of two factors: the total number of humans, and the consumption per capita. Let us first consider the problem of reducing the per-capita consumption in the industrialized countries. The whole structure of western society seems designed to push its citizens in the opposite direction, towards



Figure 8.3: The mass media hold before us continually the ideal of a personal utopia, filled with material goods. Self-fulfillment is your birthright. Spending makes the economy grow, and growth is good. Isn't that right?

ever-increasing levels of consumption. The mass media hold before us continually the ideal of a personal utopia, filled with material goods.

Every young man in a modern industrial society feels that he is a failure unless he fights his way to the "top"; and in recent years, women too have been drawn into the competition. Of course, not everyone can reach the top; there would not be room for everyone; but society urges us all to try, and we feel a sense of failure if we do not reach the goal. Thus, modern life has become a competition of all against all for power and possessions.

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.

If you turn on your television set, the vast majority of the programs that you will be offered give no hint at all of the true state of the world or of the dangers which we will face in the future. Part of the reason for this willful blindness is that no one wants to damage consumer confidence. No one wants to bring on a recession. No one wants to shoot Santa Claus.

But sooner or later a severe recession will come, despite our unwillingness to recognize this fact. Perhaps we should prepare for it by reordering the world's economy and infrastructure to achieve long-term sustainability, i.e. steady-state economics, population stabilization, and renewable energy.

## Religious conservatism

All known human societies have religions; and this is true not only of societies that exist today, but also of all past societies of which we have any record. Therefore it seems reasonable to suppose that the tendency to be religious is an intrinsic part of human nature. It seems to be coded into our genes. If evolutionary forces have produced the human tendency to be religious, then it must have some survival value. My own belief is that religion helps us because it is a mechanism for the preservation and transmission of human cultures.

All living organisms on earth hand on information from one generation to the next in the form of messages coded into their DNA and RNA. Humans are unique in having also evolved extremely efficient non-genetic methods for transmitting information from one generation to the next through our highly developed languages.

Cultural evolution is responsible for the success of our species. We dominate the earth because of cultural evolution. Thus, if religion is a mechanism for the preservation and transmission of particular cultures, it must have conferred a great advantage to those societies that possessed religion, and a tendency to be religious would have been favored by the Darwinian forces of natural selection. This perhaps explains why it is now a universal part of human nature.

Throughout history, until recent times, the conservative role of religions in transmitting and preserving our cultural heritage has been a great advantage. However, the dangers that we are experiencing today demand quick changes in our patterns of thought and in our lifestyles; and here the conservatism of religion may be a disadvantage. For example, at a time when the exploding global population contributes to the severity of most of the dangers that we face, religious opposition to birth control has become inappropriate.

Furthermore, human history is drenched with blood from wars have been fought in the name of religion. We can think, for example, of the Crusades, or the Islamic conquests in the Middle East, North Africa and Spain, or the wars between Catholics and Protestants in Europe, or the brutal treatment of the indigenous populations of Africa, and the Americas in the name of religion. The list by no means stops there. This is because religion is so closely associated with ethnicity and nationalism.

The religious leaders of today have the opportunity to contribute importantly to the solution of the problem of war. They have the opportunity to powerfully support the concept of universal human brotherhood, to build bridges between religious groups by making intermarriage across ethnic boundaries easier, and to soften the distinctions between communities. If they fail to do this, they will have failed humankind in a time of crisis.

Although religion may be a part of the problems that we face today, it can potentially be part of the solution. Because of the all-destroying modern weapons developed through

the misuse of science, we urgently need religious ethics, i.e. the traditional wisdom of humankind. Not only do the fundamental ethical principles of the world's great religions agree with each others, but they also do not conflict in any way with science. If practiced, these principles would make war impossible, thus eliminating one of the greatest dangers that we face today, the cause of much of the suffering that humans experience.

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 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.

Contrast this with the idea of "massive retaliation" which is part of the doctrine of nuclear deterrence! In nuclear retaliation, the victims would include people of every kind: women, men, old people, and infants, completely irrespective to any degree of guilt that they might have. As the result of such an attack, many millions of people in neutral countries would also die. This type of killing has to be classified as genocide.

When a suspected criminal is tried for a wrongdoing, great efforts are made to clarify the question of guilt or innocence. Punishment only follows if guilt can be established beyond any reasonable doubt. Contrast this with the totally indiscriminate mass slaughter that results from a nuclear attack!

Thus both the doctrine of nuclear deterrence, and the very existence of nuclear weapons, are completely contrary to the central ethical principles of Christianity; and not only to the principles of Christianity, but to those of every other major religion.

The peoples of the industrialized nations urgently need to acquire a non-anthropocentric element in their ethics, similar to the reverence for all life found in the Hindu and Buddhist traditions, as well as in the teachings of St. Francis of Assisi and Albert Schweitzer. We need to value other species for their own sakes, and not because we expect to use them for our own economic goals. (The simple life-style that we associate with St. Francis can also teach us much. St. Francis and St. Claire and many others who have followed in their footsteps lived lives of voluntary poverty and service, close to the ideals of Jesus himself, who said "Lay not up treasures on earth...".)

Today a few societies follow a way of life similar to that of our hunter-gatherer ancestors. Anthropologists are able to obtain a vivid picture of the past by studying these societies. Usually the religious ethics of the hunter-gatherers emphasize the importance of harmony with nature. As the expansion of industry threatens to produce an ecological mega-catastrophe, we can learn much from societies that live in balance with the natural world.

We can see from this discussion that religious conservatism cuts both ways. In some respects, it damages our response to the current crisis, for example when it supports war or opposes birth control. On the other hand, the ethical principles of the world's great

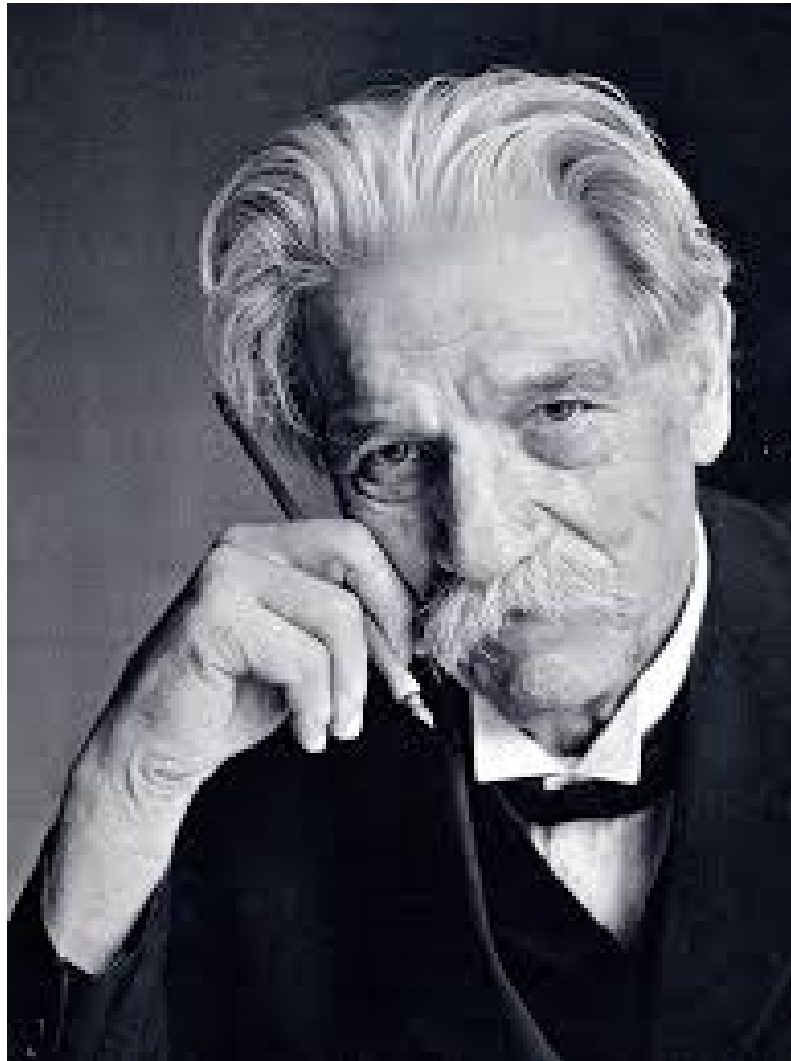


Figure 8.4: The peoples of the industrialized nations urgently need to acquire a non-anthropocentric element in their ethics, similar to the reverence for all life found in the Hindu and Buddhist traditions, as well as in the teachings of St. Francis of Assisi and Albert Schweitzer.

religions can help to save us.

## **Our responsibility to future generations and to the biosphere**

All of the technology needed for the replacement of fossil fuels by renewable energy is already in place. Although renewable sources currently supply only 19 percent of the world's energy requirements, they are growing rapidly. For example, wind energy is growing at the rate of 30 percent per year. Because of the remarkable properties of exponential growth, this will mean that wind will soon become a major supplier of the world's energy requirements, despite bitter opposition from the fossil fuel industry.

Both wind and solar energy have can now compete economically with fossil fuels, and this situation will become even more pronounced if more countries put a tax on carbon emissions, as Finland, the Netherlands, Norway, Costa Rica, the United Kingdom and Ireland already have done.

<http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>

Much research and thought have also been devoted to the concept of a steady-state economy. The only thing that is lacking is political will. It is up to the people of the world to make their collective will felt.

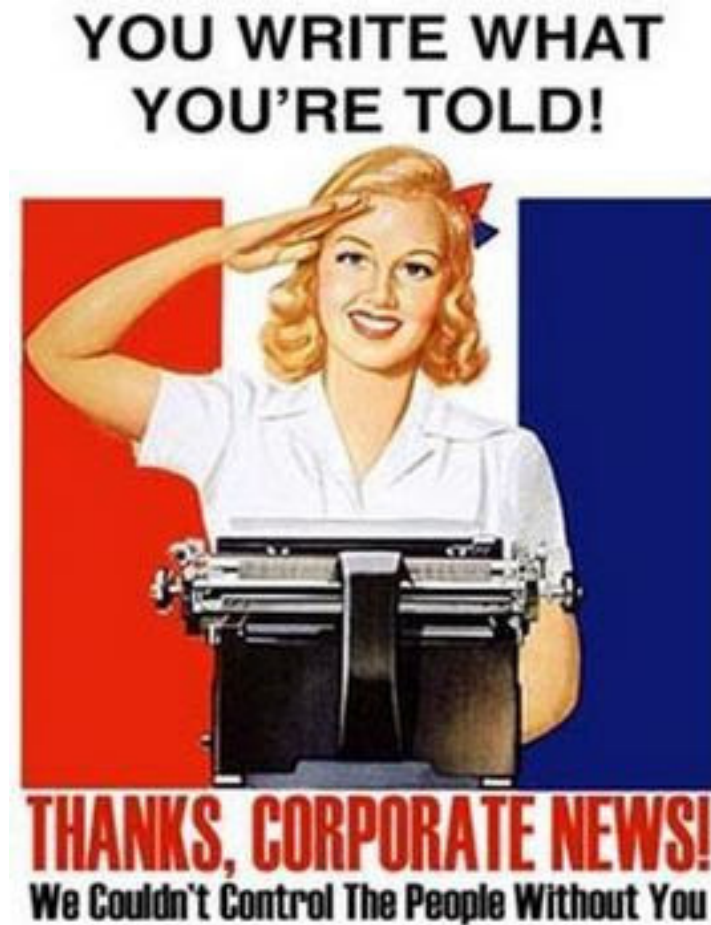
<http://steadystate.org/category/herman-daly/>

History has given to our generation an enormous responsibility towards future generations. We must achieve a new kind of economy, a steady-state economy. We must stabilize global population. We must replace fossil fuels by renewable energy. We must abolish nuclear weapons. We must end the institution of war. We must reclaim democracy in countries where it has been lost. We must replace nationalism by a just system of international law. We must prevent degradation of the earth's environment. We must act with dedication and fearlessness to save the future of the earth for human civilization and for the plants and animals with which we share the gift of life.

## **8.5 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



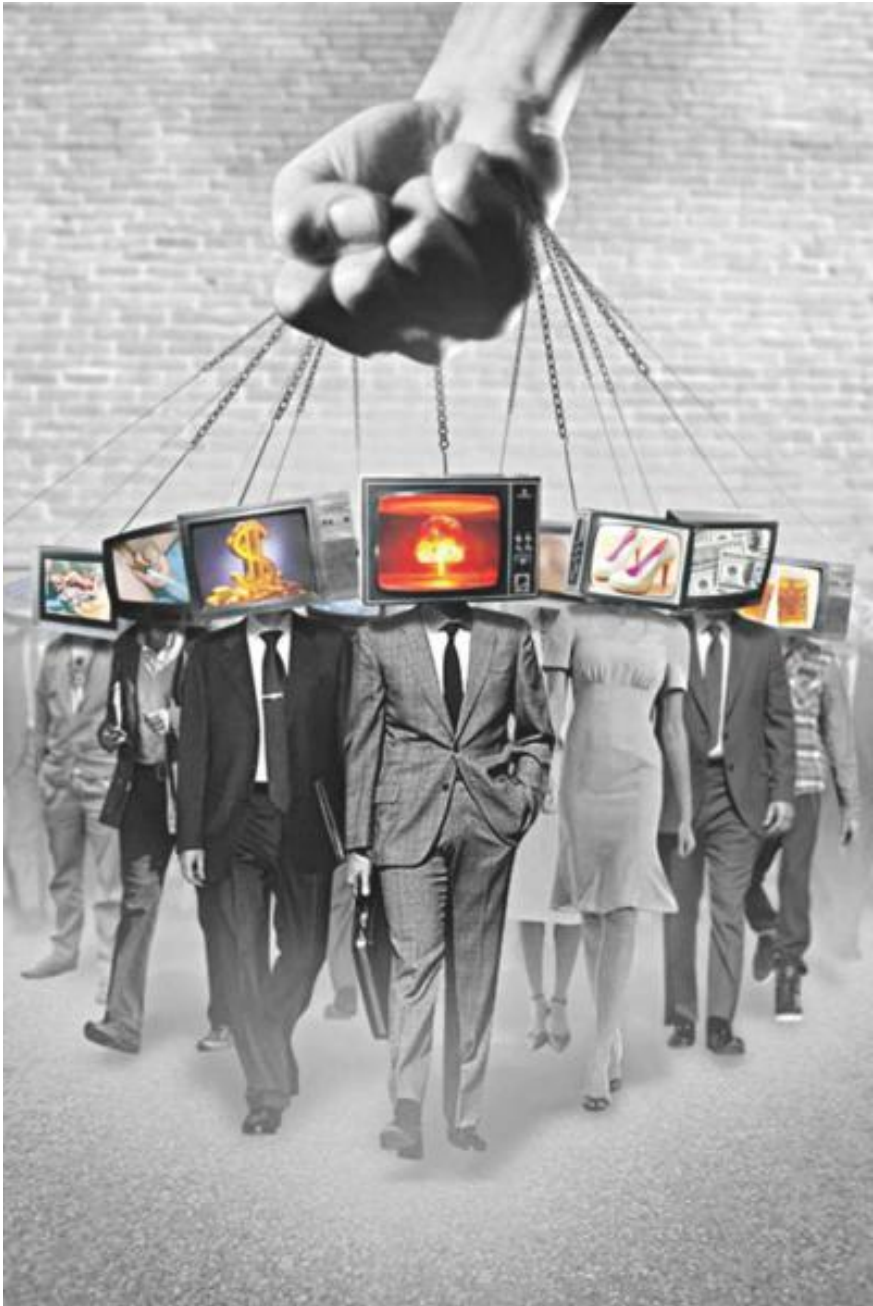
causes. The threat to human civilization and the biosphere posed by a possible Third World War is real. The threat of exhaustion of non-renewable resources and economic collapse is real. The dangers associated with our unstable fractional reserve banking system are also real. Beside these all too real 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.<sup>1</sup>

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 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.

## 8.6 Ted Turner: “My Beef With Big Media”

On the 20th of April, 2005 Ted Turner will be presented with the Alan Cranston Peace Award at the United Nations. The presentation ceremony will be honored by the presence of Nobel Peace Prize winner Mikhail Gorbachev and the Rt. Hon. Kim Campbell, former Prime Minister of Canada, as well as Jane Goodall and Michael Douglas. At the ceremony, Mr. Turner and President Gorbachev will engage in a dialogue of visionaries for a sustainable future.

No one deserves a peace award more than Ted Turner. In the late 60s and early 70s, he founded CNN, which was, at the time, a strong force for peace. Turner introduced the global weather forecast on CNN, and it was later also adopted by the BBC. This brilliant and simple device might not be helpful in planning picnics, but it gives the viewer a vision of the world as a single unified community.

In 1989, Ted Turner created the Better World Society, whose aim was to use the mass media to solve global problems. Members included prominent Hollywood figures, several

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<sup>1</sup> <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>

former US presidents, and leading environmental-ists including Jacques Cousteau and Al Gore. Ted Turner is also famous for donating 1 billion dollars of his own money to the United Nations. It was one-third of his fortune, and it was approximately equal to the amount that the United States owed to the UN at the time and was refusing to pay. Turner was asked to comment on his gift. He had two comments: 1) “It’s only money”, and 2) “I hope that Bill Gates is watching”.

Everyone will have noticed that CNN has changed in recent years. It can no longer really be called an active force for peace. This is because Ted Turner no longer owns it. When he sold CNN to Time-Warner, Turner lost control of the programming, and today CNN broadcasts the views of the establishment. For example during the US-led invasion of Iraq, CNN broadcast the official US government view of the invasion.

Although, very sadly, Ted Turner’s voice can no longer be heard through CNN, he is not entirely silent. His long, detailed, and cautiously-phrased article, “My Beef With Big Media”, is of the utmost importance, since it points to the gravest imaginable problem - the death of democracy. This vitally important article was published last year in the “Washington Monthly”, but for those without access to the magazine, it can easily be read on the Internet at (<http://www.washingtonmonthly.com/features/2004/0407.turner.html>).

In this article, Ted Turner documents his own experience as an independent voice, forced out of broadcasting by new laws favoring enormous media conglomerates. He hints at the real danger, although he is very cautious (perhaps to protect his family from government harassment). The real danger is that since the mass media have increasingly become the key to political power, governments (e.g. the present Bush Administration) seek to control the media. They do so by making the way easy for mammoth media corporations, whose control is both vertical and horizontal, and whose views are identical with the views of the administration. Although it is still possible, in principle, to vote against the government, the grip of the media is so strong that the majority of citizens do as they are told by the voices on small and large screens: Hence the death of democracy. The situation is truly Orwellian.

As Ted Turner says in his article, “This is a fight about freedom - the freedom of independent entrepreneurs to start and run a media business, and the freedom of citizens to get news, information, and entertainment from a wide variety of sources, at least some of which are truly independent... No one should underestimate the danger. Big media companies want to eliminate all ownership limits. With the removal of these limits, immense media power will pass into the hands of a very few corporations and individuals.” But a small quotation does not do justice to the article. You must read it yourself.

## 8.7 Truth versus power

Henry David Thoreau said: **“Rather than love, than money, than fame, give me truth.”**

Why did Thoreau prefer truth to all else? Do not money, power and fame deserve to be worshiped? I think that I agree with Thoreau, except that I sometimes prefer love to

truth.

To me, power seems especially 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, and truth.

A friend once said to me, “What power do NGO’s have?” I answered. “No power at all. They only have truth. An NGO’s must criticize governments, and confront power.

Truth 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.

We should not believe something because it will make us happy, or because we will suffer or be punished if we do not believe it. What we believe should be determined by evidence and logic. Nor should we believe something because almost everyone believes it. Crowds have often been wrong. Multitudes have rushed down false paths. We should not blindly follow crowds.

Many people believe what they were taught as children, for example in school, or what television and newspapers tell them. But we are no longer children, our schools are under the control of governments, and today, mass media are completely owned by corporate oligarchies. Today, the mass media have failed us. We must find our own truth by means of observation, reason and compassion, and with the help of the alternative media.

We do not stand alone. Many people seek the truth, and together we can change the world. The forces against us are both powerful and wealthy, but we must not give in to despair and lose hope. We must not abandon the future for the sake of present pleasures. We must not abandon our children and grandchildren. We must continue working with courage and dedication, because the stakes are so high.

## Suggestions for further reading

1. Ehrlich P-R (1995) *The scale of the human enterprise and biodiversity loss*, in *Extinction Rates*, eds Lawton JH, May RM (Oxford Univ Press, Oxford, UK), pp 214-226.
2. Dirzo R, et al. (2014) *Defaunation in the Anthropocene*. *Science* **345**:401-406.
3. Young HS, McCauley DJ, Galletti M, Dirzo R (2016) *Patterns, causes, and consequences of Anthropocene defaunation*. *Annu Rev Ecol Evol Syst* **47**:433-458.
4. World Wide Fund for Nature (2016) *Living Planet Report 2016. Risk and resilience in a new era*. (WWF International, Gland, Switzerland), 2017.
5. Maxwell SL, Fuller RA, Brooks TM, Watson JEM (2016) *Biodiversity: The ravages of guns, nets and bulldozers*. *Nature* **536**:143-145.
6. Laliberte AS, Ripple WJ (2004) *Range contractions of North American carnivores and ungulates*. *BioScience* **54**:123-138.
7. Worm B, Tittensor DP (2011) *Range contraction in large pelagic predators*. *Proc Natl Acad Sci USA* **108**:11942-11947.
8. Ripple WJ, et al. (2014) *Status and ecological effects of the world’s largest carnivores*. *Science* **343**:1241-1244.

9. Barnosky AD, et al. (2011) *Has the Earth's sixth mass extinction already arrived?* Nature **471**:51-57.
10. Ceballos G, Garcia A, Ehrlich PR (2010) *The sixth extinction crisis: Loss of animal populations and species.* J. Cosmology **8**:1821-1831.
11. Ceballos G, et al. (2015) *Accelerated modern human-induced species losses: Entering the sixth mass extinction.* Sci Adv **1**:e1400253.
12. Wake DB, Vredenburg VT (2008) *Colloquium paper: Are we in the midst of the sixth mass extinction? A view from the world of amphibians.* Proc Natl Acad Sci USA **105**:11466-11473.
13. McCallum ML (2015) *Vertebrate biodiversity losses point to a sixth mass extinction.* Biol Conserv **24**:2497-2519.
14. Pimm SL, et al. (2014) *The biodiversity of species and their rates of extinction, distribution, and protection.* Science **344**:1246752.
15. McCauley DJ, et al. (2015) *Marine defaunation: Animal loss in the global ocean.* Science **347**:1255641.
16. Collen B, Böhm M, Kemp R, Baillie J (2012) *Spineless: Status and Trends of the World's Invertebrates* (Zoological Society of London, London). Red List
17. Daily G (1997) *Nature's Services: Societal Dependence on Natural Ecosystems.* (Island Press, Covello, CA).
18. Naeem S, Duffy JE, Zavaleta E (2012) *The functions of biological diversity in an age of extinction.* Science **336**:1401-1406.
19. Estes JA, et al. (2011) *Trophic downgrading of planet Earth.* Science **333**:301-306.
20. Brosi BJ, Briggs HM (2013) *Single pollinator species losses reduce floral fidelity and plant reproductive function.* Proc Natl Acad Sci USA **110**:13044-13048.
21. Briggs JC (2014) *Global biodiversity gain is concurrent with decreasing population sizes.* Biodiver J **5**:447-452.
22. Hooper DU, et al. (2012) *A global synthesis reveals biRed List diversity loss as a major driver of ecosystem change.* Nature **486**:105-108.
23. Ehrlich PR (2014) *The case against de-extinction: It's a fascinating but dumb idea.* Yale Environment 360 (Yale University, New Haven, CT). Available at [bit.ly/1gAIuJF](http://bit.ly/1gAIuJF). Accessed JunStudiese 10, 2017.
24. Hobbs RJ, Mooney HA (1998) *Broadening the extinction debate: Population deletions and additions in California and Western Australia.* Conserv Biol **12**:271-283. Studies
25. Hughes JB, Daily GC, Ehrlich PR (1997) *Population diversity: Its extent and extinction.* Science **278**:689-692.
26. Ceballos G, Ehrlich PR (2002) *Mammal population losses and the extinction crisis.* Science **296**:904-907.
27. Gaston KJ, Fuller RA (2008) *Commonness, population depletion and conservation biology.* Trends Ecol Evol **23**:14-19.
28. International Union of Conservation of Nature (2015) *The IUCN Red List of Threatened Species, Version 2015.2* (IUCN, 2015). Available at [www.iucnredlist.org](http://www.iucnredlist.org). Accessed February 10, 2016. Revised January 10, 2017.

29. Durant SM, et al. (2017) *The global decline of cheetah *Acinonyx jubatus* and what it means for conservation*. Proc Natl Acad Sci USA **114**:528-533.
30. Henschel P, et al. (2014) *The lion in West Africa is critically endangered*. PLoS One **9**:e83500.
31. Challender D, et al. (2016) *On scaling up pangolin conservation*. Traffic Bulletin **28**: 19-21.
32. Fennessy J, et al. (2016) *Multi-locus analyses reveal four giraffe species instead of one*. Curr Biol **26**:2543-2549.
33. Butchart S, Dunn E (2003) *Using the IUCN Red List criteria to assess species with declining populations*. Conserv Biol **17**:1200-1202.
34. Gaston K, Blackburn T (2008) *Pattern and Process in Macroecology* (Blackwell Publishing, Hoboken, NJ). Red List
35. Thomas JA (2016) ECOLOGY. *Butterfly communities under threat*. Science **353**:216-218.
36. Régnier C, et al. (2015) *Mass extinction in poorly known taxa*. Proc Natl Acad Sci USA **112**:7761-7766.25.
37. Hughes JB, Daily GC, Ehrlich PR (1997) *Population diversity: Its extent and extinction*. Science **278**:689-692.
38. Ceballos G, Ehrlich PR (2002) *Mammal population losses and the extinction crisis*. Science **296**:904-907.
39. Cardinale BJ, et al. (2012) *Biodiversity loss and its impact on humanity*. Nature **486**: 59-67.
40. Hurlbert AH, Jetz W (2007) *Species richness, hotspots, and the scale dependence of range maps in ecology and conservation*. Proc Natl Acad Sci USA **104**:13384-13389.
41. Peterson AT, Navarro-Sigüenza AG, Gordillo A (2016) *Assumption- versus data-based approaches to summarizing species' ranges*. Conserv Biol, 10.1111/cobi.12801.
42. Martínez-Ramos M, Ortíz-Rodríguez I, Pinero D, Dirzo R, Sarukhán J (2016) *Humans disrupt ecological processes within tropical rainforest reserves*. Proc Natl Acad Sci USA **113**:5323-5328.
43. Camargo-Sanabria AA, Mendoza E, Guevara R, Martínez-Ramos M, Dirzo R (2015) *Experimental defaunation of terrestrial mammalian herbivores alters tropical rainforest understorey diversity*. Proc Biol Sci **282**:20142580.
44. Petipas RH, Brody AK (2014) *Termites and ungulates affect arbuscular mycorrhizal richness and infectivity in a semiarid savanna*. Botany **92**:233-240.
45. Wardle DA, et al. (2004) *Ecological linkages between aboveground and belowground biota*. Science **304**:1629-1633.
46. Ceballos G, Ehrlich AH, Ehrlich PR (2015) *The Annihilation of Nature: Human Extinction of Birds and Mammals*, (Johns Hopkins Univ Press, Baltimore).
47. Knoll AH (2015) *Life on a Young Planet: The First Three Billion Years of Evolution on Earth*, (Princeton Univ Press, Princeton, NJ).
48. Barnosky AD, et al. (2014) *Introducing the scientific consensus on maintaining humanity's life support systems in the 21st century: Information for policy makers*. The Anthropocene Review **1**:78-109.

49. Ceballos G, Ehrlich PR, Soberón J, Salazar I, Fay JP (2005) *Global mammal conservation: What must we manage?* Science **309**:603-607.
50. Brown IL, Ehrlich PR (1980) *Population biology of the checkerspot butterfly, Euphydryas chalcedona structure of the Jasper Ridge colony.* Oecologia **47**:239-251.
51. Environmental Systems Research Institute (2011) *Release 10. Documentation Manual*, (Environmental Systems Research Institute, Redlands, CA).
52. Balling, R. C. 1988. *The climate impact of Sonoran vegetation discontinuity.* Climate Change **13**: 99-109.
53. Balling, R. C. 1991. *Impact of desertification on regional and global warming.* Bulletin of the American Meteorological Society **72**: 232-234.
54. Barigozzi, C. (ed.). 1986. *The Origin and Domestication of Cultivated Plants.* Amsterdam: Elsevier.
55. Botkin, D. B. 1989. *Science and the global environment.* In: D. B. Botkin et al., **Global Change.** New York: Academic Press, pp. 1-14.
56. Bryson, R. 1972. *Climate modification by air pollution.* In: N. Polunin (ed.), *The Environmental Future.* London: Macmillan, pp. 133-174.
57. Dregne, H. E., M. Kassas, and B. Rozanov. 1991. *A new assessment of the world status of desertification.* Desertification Control Bulletin, **no. 20**: 6-18.
58. FAO (Food and Agriculture Organization). 1991. *Protection of land resources: Deforestation* UNCED Prepcomm., 2nd session, Doc. A/CONF. 15/PC/27.
59. Hare, F. K. and L. A. J. Ogallo. 1993. *Climate Variation, Drought and Desertification.* WMO-No. 653. Geneva: WMO.
60. Houghton, J. T., B. A. Callander, and S. K. Varney (eds.). 1992. *Climate Change 1992. The Supplementary Report to the IPCC Scientific Assessment.* (Cambridge: Cambridge University Press.
61. Hulme, M. and M. Kelly. 1993. *Exploring the links between desertification and climate change.* Environment **35(6)**: 5-11, 39-45.
62. Jackson, R. D. and S. B. Idso. 1975. *Surface albedo and desertification.* Science **189**: 1012-1013.
63. Matthews, E. 1983. *Global vegetation and land use: New high-resolution databases for climatic studies.* Journal of Climate and Meteorology **22**: 474-487.
64. Schlesinger, W. H., et al. 1990. *Biological feedback in global desertification.* Science **247**: 1043-1048.
65. Turner, B. L., et al. 1990. *Two types of global environmental changes: Definitional and special-scale issues in their human dimensions.* Global Environmental Change **1**: 14-22.
66. UNESCO. 1960. *Medicinal plants of arid zones.* Arid Zone Research **13**.
67. Vavilov, N. I. 1949. *The Origin, Variation, Immunity and Breeding of Cultivated Plants.* Waltham, Mass.: Chronica Botanical
68. O.N. Larsen, ed., *Violence and the Mass Media*, Harper and Row, (1968).
69. R.M. Liebert et al., *The Early Window: The Effects of Television on Children and Youth*, Pergamon, Elmsford, NY, (1982).
70. G. Noble, *Children in Front of the Small Screen*, Constable, London, (1975).



71. H. Schneider, *Das Geschäft mit dem Verbrechen. Massenmedien und Kriminalität*, Kindler, Munich, (1980).
72. W. Schramm, ed., *Grundfragen der Kommunikationsforschung*, Munich, (1973).
73. J.L. Singer and D.G. Singer, *Television, Imagination and Aggression: A Study of Preschoolers*, Erlbaum, Hillsdale, NY, (1981).
74. H. Skornia, *Television and Society*, McGraw-Hill, New York, (1965).
75. D.L. Bridgeman, ed., *The Nature of Prosocial Behavior*, New York, Academic Press, (1983).
76. N. Eisenberg, ed., *The Development of Prosocial Behavior*, New York, Academic Press, (1982).
77. W.H. Goodenough, *Cooperation and Change: An Anthropological Approach to Community Development*, New York, Russell Sage Foundation, (1963).
78. J.R. Macauley and L. Berkowitz, *Altruism and Helping Behavior*, Academic Press, New York, (1970).
79. P. Mussen and N. Eisenberg, *Roots of Caring, Sharing and Helping*, Freeman, San Francisco, (1977).
80. J.P. Rushton and R.M. Sorrentino, eds., *Altruism and Helping Behavior*, Erlbaum, Hillsdale, NJ, (1981).
81. L. Wispé, ed, *Altruism, Sympathy and Helping*, Academic Press, New York, (1978).
82. J.-C. Guedon, *La Planète Cyber, Internet et Cyberspace*, Gallimard, (1996).
83. J. Segal, *Théorie de l'information: sciences, techniques et société, de la seconde guerre mondiale à l'aube du XXI<sup>e</sup> siècle*, Thèse de Doctorat, Université Lumière Lyon II, (1998).
84. H. von Foerster, editor, *Cybernetics - circular, causal and feed-back mechanisms in biological and social systems. Transactions of sixth-tenth conferences*, Josiah J. Macy Jr. Foundation, New York, (1950-1954).
85. G. Bateson, *Communication, the Social Matrix of Psychiatry*, Norton, (1951).
86. G. Bateson, *Steps to an Ecology of Mind*, Chandler, San Francisco, (1972).
87. G. Bateson, *Communication et Société*, Seuil, Paris, (1988).



## Chapter 9

# TRUTH-TELLERS WHO BECAME MARTYRS

### 9.1 Giordano Bruno

Wikipedia states that “Bruno, was an Italian Dominican friar, philosopher, mathematician, poet, and cosmological theorist. He is known for his cosmological theories, which conceptually extended the then-novel Copernican model. He proposed that the stars were just distant suns surrounded by their own exoplanets and raised the possibility that these planets could even foster life of their own (a philosophical position known as cosmic pluralism). He also insisted that the universe is in fact infinite and could have no celestial body at its ‘center’.” Here are a few things that Giordano Bruno said:

*Truth does not change because it is not believed by the majority of people.*

*In space, there are countless constellations, suns and planets; we see only the suns because they give light; the planets remain invisible, for they are small and dark. There are also numberless earths, circling around their suns.*

*I beg you, reject antiquity, tradition, faith and authority! Let us begin anew by doubting everything that we assume has been proven!*

*There is no absolute up or down, as Aristotle taught; no absolute position in space; but the position of a body is relative to other bodies.*

*Time is the father of truth. Its mother is our mind.*

*If the first button of one’s coat is wrongly buttoned, the rest will be crooked.*

*I preferred a brave death to the life of an idiot.*



Figure 9.1: **Giordano Bruno (1548-1600).** He was burned at the stake as a heretic.



Figure 9.2: **The burning of a heretic.**

## 9.2 Galileo Galilei

### Experimental physics

Galileo Galilei was born in Pisa in 1564. He was the son of Vincenzo Galilei, an intellectual Florentine nobleman whose fortune was as small as his culture was great. Vincenzo Galilei was a mathematician, composer and music critic, and from him Galileo must have learned independence of thought, since in one of his books Vincenzo wrote: “It appears to me that those who try to prove an assertion by relying simply on the weight of authority act very absurdly.” This was to be Galileo’s credo throughout his life. He was destined to demolish the decayed structure of Aristotelian physics with sledgehammer blows of experiment.

Vincenzo Galilei, who knew what it was like to be poor, at first tried to make his son into a wool merchant. However, when Galileo began to show unmistakable signs of genius, Vincenzo decided to send him to the University of Pisa, even though this put a great strain on the family’s financial resources.

At the university and at home, Galileo was deliberately kept away from mathematics. Following the wishes of his father, he studied medicine, which was much better paid than mathematics. However, he happened to hear a lecture on Euclid given by Ostilio Ricci, a friend of his father who was Mathematician at the court of the Grand Duke Ferdinand de’ Medici.

Galileo was so struck by the logical beauty and soundness of the lecture that he begged Ricci to lend him some of the works of Euclid. These he devoured in one gulp, and they were followed by the works of Archimedes. Galileo greatly admired Archimedes’ scientific method, and he modeled his own scientific method after it.

After three years at the University of Pisa, Galileo was forced to return home without having obtained a degree. His father had no more money with which to support him, and Galileo was unable to obtain a scholarship, probably because his irreverent questioning of every kind of dogma had made him unpopular with the authorities. However, by this time he had already made his first scientific discovery.

According to tradition, Galileo is supposed to have made this discovery while attending a service at the Cathedral of Pisa. His attention was attracted to a lamp hung from the vault, which the verger had lighted and left swinging. As the swings became smaller, he noticed that they still seemed to take the same amount of time. He checked this by timing the frequency against his pulse. Going home, he continued to experiment with pendula. He found that the frequency of the oscillations is independent of their amplitude, provided that the amplitude is small; and he found that the frequency depends only on the length of the pendulum.

Having timed the swings of a pendulum against his pulse, Galileo reversed the procedure and invented an instrument which physicians could use for timing the pulse of a patient. This instrument consisted of a pendulum whose length could be adjusted until the swings matched the pulse of the patient. The doctor then read the pulse rate from the calibrated length of the pendulum. Galileo’s pulse meter was quickly adopted by physicians throughout Europe. Later, the famous Dutch physicist, Christian Huygens (1629-1695),

developed Galileo's discovery into the pendulum clock as we know it today.

While he was living at home after leaving the University of Pisa, Galileo invented a balance for measuring specific gravity, based on Archimedes' Principle in hydrostatics.

Through his writings and inventions, particularly through his treatise on the hydrostatic balance, Galileo was becoming well known, and at the age of 26 he was appointed Professor of Mathematics at the University of Pisa. However, neither age nor the dignity of his new title had mellowed him. As a professor, he challenged authority even more fiercely than he had done as a student. He began systematically checking all the dogmas of Aristotle against the results of experiment.

Aristotle had asserted that the speed of a falling object increased according to its weight: Thus, according to Aristotle, an object ten times as heavy as another would fall ten times as fast. This idea was based on the common experience of a stone falling faster than a feather.

Galileo realized that the issue was being complicated by air resistance. There were really two questions to be answered: 1) How would a body fall in the absence of air? and 2) What is the effect of air resistance? Galileo considered the first question to be the more fundamental of the two, and in order to answer it, he experimented with falling weights made of dense materials, such as iron and lead, for which the effect of air resistance was reduced to a minimum.

According to Galileo's student and biographer, Viviani, Galileo, wishing to refute Aristotle, climbed the Leaning Tower of Pisa in the presence of all the other teachers and philosophers and of all the students, and "by repeated experiments proved that the velocity of falling bodies of the same composition, unequal in weight, does not attain the proportion of their weight as Aristotle assigned it to them, but rather that they move with equal velocity." (Some historians doubt Viviani's account of this event, since no mention of it appears in other contemporary sources.)

Galileo maintained that, in a vacuum, a feather would fall to the ground like a stone. This experiment was not possible in Galileo's time, but later it was tried, and Galileo's prediction was found to be true.

Galileo realized that falling bodies gain in speed as they fall, and he wished to find a quantitative law describing this acceleration. However, he had no good method for measuring very small intervals of time. Therefore he decided to study a similar process which was slow enough to measure: He began to study the way in which a ball, rolling down an inclined plane, increases in speed.

Describing these experiments, Galileo wrote:

"..Having placed the board in a sloping position... we rolled the ball along the channel, noting, in a manner presently to be described, the time required to make the descent. We repeated the experiment more than once, in order to measure the time with an accuracy such that the deviation between two observations never exceeded one-tenth of a pulse beat"

"Having performed this operation, and having assured ourselves of its reliability, we now rolled the ball only one quarter of the length of the channel, and having measured the time of its descent, we found it precisely one-half the former. Next we tried other distances, comparing the time for the whole length with that for the half, or with that

for two-thirds or three-fourths, or indeed any fraction. In such experiments, repeated a full hundred times, we always found that the spaces traversed were to each other as the squares of the times...”

“For the measurement of time, we employed a large vessel of water placed in an elevated position. To the bottom of this vessel was soldered a pipe of small diameter giving a thin jet of water, which we collected in a small glass during the time of each descent... The water thus collected was weighed after each descent on a very accurate balance. The differences and ratios of these weights gave us the differences and ratios of the times, and with such an accuracy that although the operation was repeated many, many times, there was no appreciable discrepancy in the results”

These experiments pointed to a law of motion for falling bodies which Galileo had already guessed: The acceleration of a falling body is constant; the velocity increases in linear proportion to the time of fall; and the distance traveled increases in proportion to the square of the time.

Extending these ideas and experiments, Galileo found that a projectile has two types of motion superimposed: the uniformly accelerated falling motion just discussed, and, at the same time, a horizontal motion with uniform velocity. He showed that, neglecting air resistance, these two types of motion combine to give the projectile a parabolic trajectory.

Galileo also formulated the principle of inertia, a law of mechanics which states that in the absence of any applied force, a body will continue at rest, or if in motion, it will continue indefinitely in uniform motion. Closely related to this principle of inertia is the principle of relativity formulated by Galileo and later extended by Einstein: Inside a closed room, it is impossible to perform any experiment to determine whether the room is at rest, or whether it is in a state of uniform motion.

For example, an observer inside a railway train can tell whether the train is in motion by looking out of the window, or by the vibrations of the car; but if the windows were covered and the tracks perfectly smooth, there would be no way to tell. An object dropped in a uniformly-moving railway car strikes the floor directly below the point from which it was dropped, just as it would do if the car were standing still.

The Galilean principle of relativity removed one of the objections which had been raised against the Copernican system. The opponents of Copernicus argued that if the earth really were in motion, then a cannon ball, shot straight up in the air, would not fall back on the cannon but would land somewhere else. They also said that the birds and the clouds would be left behind by the motion of the earth.

In 1597, Kepler sent Galileo a copy of his *Mysterium Cosmographicum*. Galileo read the introduction to the book, which was the first printed support of Copernicus from a professional astronomer, and he replied in a letter to Kepler:

“...I shall read your book to the end, sure of finding much that is excellent in it. I shall do so with the more pleasure because I have for many years been an adherent of the Copernican system, and it explains to me the causes of many of the phenomena of nature which are quite unintelligible on the commonly accepted hypothesis.”

“I have collected many arguments in support of the Copernican system and refuting the opposite view, which I have so far not ventured to make public for fear of sharing the

fate of Copernicus himself, who, though he acquired immortal fame with some, is yet to an infinite multitude of others (for such is the number of fools) an object of ridicule and derision. I would certainly publish my reflections at once if more people like you existed; as they don't, I shall refrain from publishing."

Kepler replied urging Galileo to publish his arguments in favor of the Copernican system:

"...Have faith, Galileo, and come forward! If my guess is right, there are but few among the prominent mathematicians of Europe who would wish to secede from us, for such is the force of truth." However, Galileo left Kepler's letter unanswered, and he remained silent concerning the Copernican system.

By this time, Galileo was 33 years old, and he had become Professor of Mathematics at the University of Padua. His Aristotelian enemies at the University of Pisa had succeeded in driving him out, but by the time they did so, his fame had become so great that he was immediately offered a position at three times the salary at Padua.

The move was a very fortunate one for Galileo. Padua was part of the free Venetian Republic, outside the power of the Inquisition, and Galileo spent fifteen happy and productive years there. He kept a large house with a master mechanic and skilled craftsmen to produce his inventions (among which was the thermometer). His lectures were attended by enthusiastic audiences, sometimes as large as two thousand; and he had two daughters and a son with a Venetian girl.

## The telescope

In 1609, news reached Galileo that a Dutch optician had combined two spectacle lenses in such a way as to make distant objects seem near. Concerning this event, Galileo wrote:

"A report reached my ears that a certain Fleming had constructed a spyglass by means of which visible objects, though very distant from the eye of the observer, were distinctly seen as if nearby. Of this truly remarkable effect, several experiences were related, to which some persons gave credence while others denied them."

"A few days later the report was confirmed to me in a letter from (a former pupil) at Paris; which caused me to apply myself wholeheartedly to inquire into the means by which I might arrive at the invention of a similar instrument. This I did shortly afterward through deep study of the theory of refraction."

"First I prepared a tube of lead at the ends of which I fitted two glass lenses, both plane on one side, while on the other side one was spherically convex and the other concave. Then, placing my eye near the concave lens, I perceived objects satisfactorily large and near, for they appeared three times closer and nine times larger than when seen with the naked eye alone."

"Next I constructed another more accurate instrument, which represented objects as enlarged more than sixty times. Finally, sparing neither labor nor expense, I succeeded in constructing for myself an instrument so excellent that objects seen through it appeared nearly one thousand times larger and over thirty times closer than when regarded with our natural vision."



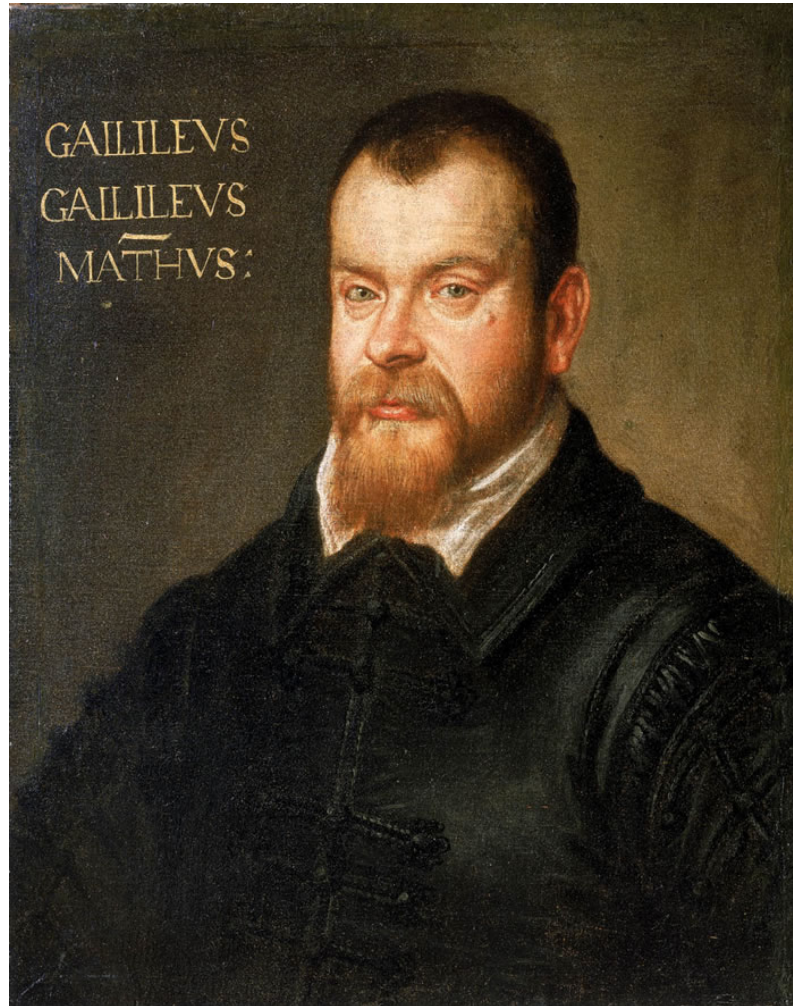


Figure 9.3: Galileo Galilei in a portrait by Domenico Tintoretto. Public domain, Wikimedia Commons

Galileo showed one of his early telescopes to his patrons, the Signoria of Venice. Writing of this, Galileo says:

“Many noblemen and senators, though of advanced age, mounted to the top of one of the highest towers to watch the ships, which were visible through my glass two hours before they were seen entering the harbor; for it makes a thing fifty miles off as near and clear as if it were only five.”

The senate asked Galileo whether he would give the city a similar instrument to aid in its defense against attack by sea. When he did this, they immediately doubled his salary, and they confirmed him in his position for life.

After perfecting the telescope as much as he could, Galileo turned it towards the moon, the planets and the stars. He made a series of revolutionary discoveries which he announced in a short booklet called *Siderius Nuncius*, (The Sidereal Messenger). The impact of this booklet was enormous, as can be judged by the report of Sir Henry Wotton, the British Ambassador to Venice:

“Now touching the occurrences of the present”, Sir Henry wrote, “I send herewith to His Majesty the strangest piece of news (as I may justly call it) that he has ever yet received from any part of the world; which is the annexed book (come abroad this very day) of the Mathematical Professor at Padua, who by the help of an optical instrument (which both enlargeth and approximateth the object) invented first in Flanders and bettered by himself, hath discovered four new planets rolling around the sphere of Jupiter, besides many other unknown fixed stars; likewise the true cause of the *Via Lactae* (Milky Way), so long searched; and lastly that the moon is not spherical but endued with many prominences, and, which is strangest of all, illuminated with the solar light by reflection from the body of the earth, as he seemeth to say. So as upon the whole subject, he hath overthrown all former astronomy..”

“These things I have been so bold to discourse unto your Lordship, whereof here all corners are full. And the author runneth a fortune to be either exceeding famous or exceeding ridiculous. By the next ship your Lordship shall receive from me one of the above instruments, as it is bettered by this man.”

Wherever Galileo turned his powerful telescope, he saw myriads of new stars, so utterly outnumbering the previously known stars that mankind’s presumption to know anything at all about the universe suddenly seemed pitiful. The Milky Way now appeared as a sea of stars so numerous that Galileo despaired of describing them in detail. The vastness of the universe as postulated by Nicolas Copernicus and Gordiano Bruno (one ridiculed and the other burned alive) was now brought directly to Galileo’s senses. In fact, everywhere he looked he saw evidence supporting the Copernican system and refuting Aristotle and Ptolemy.

The four moons of Jupiter, which Galileo had discovered, followed the planet in its motion, thus refuting the argument that if the earth revolved around the sun, the moon would not be able to revolve around the earth. Also, Jupiter with its moons formed a sort of Copernican system in miniature, with the massive planet in the center and the four small moons circling it, the speed of the moons decreasing according to their distance from Jupiter.

Galileo discovered that the planet Venus has phase changes like the moon, and that these phase changes are accompanied by changes in the apparent size of the planet. Copernicus had predicted that if the power of human vision could be improved, exactly these changes in the appearance of Venus would be observed. Galileo's observations proved that Venus moves in an orbit around the sun: When it is on the opposite side of the sun from the earth, it appears small and full; when it lies between the earth and the sun, it is large and crescent.

Galileo also observed mountains on the moon. He measured their height by observing the way in which sunlight touches their peaks just before the lunar dawn, and he found some of the peaks to be several miles high. This disproved the Aristotelian doctrine that the moon is a perfect sphere, and it established a point of similarity between the moon and the earth.

Galileo observed that the dark portion of the moon is faintly illuminated, and he asserted that this is due to light reflected from the earth, another point of similarity between the two bodies. Generally speaking, the impression which Galileo gained from his study of the moon is that it is a body more or less like the earth, and that probably the same laws of physics apply on the moon as on the earth.

All these observations strongly supported the Copernican system, although the final rivet in the argument, the observation of stellar parallax, remained missing until the 19th century. Although he did not possess this absolutely decisive piece of evidence, Galileo thought that he had a strong enough basis to begin to be more open in teaching the Copernican system. His booklet, *Siderius Nuncius* had lifted him to an entirely new order of fame. He had seen what no man had ever seen before, and had discovered new worlds. His name was on everyone's lips, and he was often compared to Columbus.

## Still it moves!

In 1610, Galileo left Padua to take up a new post as Mathematician to the court of the Medicis in Florence; and in the spring of 1611, he made a triumphal visit to Rome. Describing this visit, Cardinal del Monte wrote: "If we were living under the ancient Republic of Rome, I really believe that there would have been a column on the Capital erected in Galileo's honor!" The Pope received Galileo in a friendly audience, and Prince Cesi made him a member of the Adademia dei Lincei.

The Jesuit astronomers were particularly friendly to Galileo. They verified his observations and also improved some of them. However, Galileo made many enemies, especially among the entrenched Aristotelian professors in the universities. He enjoyed controversy (and publicity), and he could not resist making fools of his opponents in such a way that they often became bitter personal enemies.

Not only did Galileo's law describing the acceleration of falling bodies contradict Aristotle, but his principle of inertia contradicted the Aristotelian dogma, *omne quod movetur ab alio movetur* - whatever moves must be moved by something else. (The Aristotelians believed that each planet is moved by an angel.) Galileo also denied Aristotle's teaching

that generation and decay are confined to the sphere beneath the orbit of the moon.

Although Galileo was at first befriended and honored by the Jesuit astronomers, he soon made enemies of the members of that order through a controversy over priority in the discovery of sunspots. In spite of this controversy, Galileo's pamphlet on sunspots won great acclaim; and Cardinal Maffeo Barberini (who later became Pope Urban VIII) wrote to Galileo warmly praising the booklet.

In 1613, the Medicis gave a dinner party and invited Professor Castelli, one of Galileo's students who had become Professor of Mathematics at Pisa. After dinner, the conversation turned to Galileo's discoveries, and the Grand Duchess Christina, mother of Duke Cosimo de' Medici, asked Castelli his opinion about whether the motion of the earth contradicted the Bible.

When this conversation was reported to Galileo, his response was to publish a pamphlet entitled *Letter to Castelli*, which was later expanded into a larger pamphlet called *Letter to the Grand Duchess Christina*. These pamphlets, which were very widely circulated, contain the following passage:

"...Let us grant, then, that Theology is conversant with the loftiest divine contemplation, and occupies the regal throne among the sciences by this dignity. By acquiring the highest authority in this way, if she does not descend to the lower and humbler speculations of the subordinate sciences, and has no regard for them because they are not concerned with blessedness, then her professors should not arrogate to themselves the authority to decide on controversies in professions which they have neither studied nor practiced. Why this would be as if an absolute despot, being neither a physician nor an architect, but knowing himself free to command, should undertake to administer medicines and erect buildings according to his whim, at the grave peril of his poor patients' lives, and the speedy collapse of his edifices..."

Galileo's purpose in publishing these pamphlets was to overcome the theological objections to the Copernican system. The effect was exactly the opposite. The *Letter to Castelli* was brought to the attention of the Inquisition, and in 1616 the Inquisition prohibited everyone, especially Galileo, from holding or defending the view that the earth turns on its axis and moves in an orbit around the sun.

Galileo was silenced, at least for the moment. For the next eighteen years he lived unmolested, pursuing his scientific research. For example, continuing his work in optics, he constructed a compound microscope.

In 1623, marvelous news arrived: Cardinal Maffeo Barberini had been elected Pope. He was a great intellectual, and also Galileo's close friend. Galileo went to Rome to pay his respects to the new Pope, and he was received with much warmth. He had six long audiences with the Pope, who showered him with praise and gifts. The new Pope refused to revoke the Inquisition's decree of 1616, but Galileo left Rome with the impression that he was free to discuss the Copernican system, provided he stayed away from theological arguments.

Galileo judged that the time was right to bring forward his evidence for the Copernican cosmology; and he began working on a book which was to be written in the form of a Platonic dialogue. The characters in the conversation are Salivate, a Copernican philosopher,

Sagredo, a neutral but intelligent layman, and Simplicio, a slightly stupid Aristotelian, who always ends by losing the arguments.

The book, which Galileo called *Dialogue on the Two Chief World Systems*, is a strong and only very thinly veiled argument in favor of the Copernican system. When it was published in 1632, the reaction was dramatic. Galileo's book was banned almost immediately, and the censor who had allowed it to be printed was banished in disgrace. When the agents of the Inquisition arrived at the bookstores to confiscate copies of the *Dialogue*, they found that the edition had been completely sold out.

The Pope was furious. He felt that he had been betrayed. Galileo's enemies had apparently convinced the Pope that the character called Simplicio in the book was a caricature of the Pope himself! Galileo, who was seventy years old and seriously ill, was dragged to Rome and threatened with torture. His daughter, Maria Celeste, imposed severe penances and fasting on herself, thinking that these would help her prayers for her father. However, her health was weak, and she became ill.

Meanwhile, Galileo, under threat of torture, had renounced his advocacy of the motion of the earth. According to tradition, as he rose from his knees after the recantation he muttered "*Eppur si muove!*", ("Still it moves!"). It is unlikely that he muttered anything of the kind, since it would have been fatally dangerous to do so, and since at that moment, Galileo was a broken man. Nevertheless, the retort which posterity has imagined him to make remains unanswerable. As Galileo said, before his spirit was broken by the Inquisition, "...It is not in the power of any creature to make (these ideas) true or false or otherwise than of their own nature and in fact they are."

Galileo was allowed to visit the bedside of his daughter, Marie Celeste, but in her weak condition, the anxiety of Galileo's ordeal had been too much for her. Soon afterward, she died. Galileo was now a prisoner of the Inquisition. He used his time to write a book on his lifelong work on dynamics and on the strength of material structures. The manuscript of this book, entitled *Two New Sciences*, was smuggled out of Italy and published in Holland.

When Galileo became blind, the Inquisition relaxed the rules of his imprisonment, and he was allowed to have visitors. Many people came to see him, including John Milton, who was then 29 years old. One wonders whether Milton, meeting Galileo, had any premonition of his own fate. Galileo was already blind, while Milton was destined to become so. The two men had another point in common: their eloquent use of language. Galileo was a many-sided person, an accomplished musician and artist as well as a great scientist. The impact of his ideas was enhanced by his eloquence as a speaker and a writer. This can be seen from the following passage, taken from Galileo's *Dialogue*, where Sagredo comments on the Platonic dualism between heavenly perfection and earthly corruption:

"...I cannot without great wonder, nay more, disbelief, hear it being attributed to natural bodies as a great honor and perfection that they are impassable, immutable, inalterable, etc.; as, conversely, I hear it esteemed a great imperfection to be alterable, generable and mutable. It is my opinion that the earth is very noble and admirable by reason of the many different alterations, mutations and generations which incessantly occur in it. And if, without being subject to any alteration, it had been one vast heap of sand, or a mass of jade, or if, since the time of the deluge, the waters freezing that covered it, it had continued

an immense globe of crystal, whereon nothing had ever grown, altered or changed, I should have esteemed it a wretched lump of no benefit to the Universe, a mass of idleness, and in a word, superfluous, exactly as if it had never been in Nature. The difference for me would be the same as between a living and a dead creature.”

“I say the same concerning the moon, Jupiter and all the other globes of the Universe. The more I delve into the consideration of the vanity of popular discourses, the more empty and simple I find them. What greater folly can be imagined than to call gems, silver and gold noble, and earth and dirt base? For do not these persons consider that if there were as great a scarcity of earth as there is of jewels and precious metals, there would be no king who would not gladly give a heap of diamonds and rubies and many ingots of gold to purchase only so much earth as would suffice to plant a jasmine in a little pot or to set a tangerine in it, that he might see it sprout, grow up, and bring forth such goodly leaves, fragrant flowers and delicate fruit?”

The trial of Galileo cast a chill over the intellectual atmosphere of southern Europe, and it marked the end of the Italian Renaissance. However, the Renaissance had been moving northward, and had produced such figures as Dürer and Gutenberg in Germany, Erasmus and Rembrandt in Holland, and Shakespeare in England. In 1642, the same year during which Galileo died in Italy, Isaac Newton was born in England.

### 9.3 Mordechi Vanuno

An editorial entitled “Who Gave Israel a Nuclear Bomb?” is available on the following link: <https://www.thenational.ae/opinion/who-gave-israel-a-nuclear-bomb-1.10355> . Here are some quotations from the article:

*Israel had long wanted a nuclear weapon of its own, but was isolated diplomatically in the years after its founding in 1948. But by the mid-1950s, that had changed. Western powers were so concerned at the rise of Arab nationalism, and in particular the leadership of Gamal Abdel Nasser, that they conspired in 1956 to use Israel to attack Egypt and bring down Nasser. That plan failed, but it began a long association between the West and Israel.*

*It was France, in particular, enraged by the failure in 1956, that began building Israel’s bomb. By the end of the 1950s, there were hundreds of French scientists and technicians living in Dimona, teaching Israelis how to master the nuclear fuel cycle. Later, other western countries, including Britain, helped.*

*In the years since, the Israelis openly lied to the United States during inspections, supported brutal regimes like Apartheid South Africa in order to get its hands on materials, conducted test explosions in violation of international treaties, spied on allies and censored the press at home. When a disgruntled technician, Mordechai Vanunu, told the world Israel had nuclear weapons in 1986, he was drugged by Israeli agents, kidnapped and jailed for nearly 20 years after a secret trial.*

*Israel’s nuclear programme continues to this day. The West appears to treat Israel’s nuclear weapons the same way it treats its occupation of Palestine: as an inconvenient fact to be ignored if possible, in the hope that both crimes will somehow be forgotten.*



Figure 9.4: Vanunu was imprisoned for 18 years, during 11 of which he was held in solitary confinement and subjected to psychological torture, such as not being allowed to sleep for long periods.



Figure 9.5: Cheryl Bentov, the Mossad agent who prostituted herself in order to drug and kidnap Vanunu

## 9.4 Edward Snowden

The revelations of Edward Snowden and others have shown that the number of people involved in secret operations of the United States government is now as large as the entire population of Norway: roughly 5 million. The influence of this dark side of government has become so great that no president is able to resist it.

In a recent article, John Chuckman remarked that “The CIA is now so firmly entrenched and so immensely well financed (much of it off the books, including everything from secret budget items to the peddling of drugs and weapons) that it is all but impossible for a president to oppose it the way Kennedy did. Obama, who has proved himself to be a fairly weak character from the start, certainly has given the CIA anything it wants. The dirty business of ISIS in Syria and Iraq is one project. The coup in Ukraine is another. The pushing of NATO’s face right against Russia’s borders is another. Several attempted coups in Venezuela are still more. And the creation of a drone air force for extra-judicial killings in half a dozen countries is yet another. They don’t resemble projects we would expect from a smiley-faced intelligent man who sometimes wore sandals and refused to wear a flag pin on his lapel during his first election campaign.”<sup>1</sup>

Of course the United States government is by no means alone in practicing excessive secrecy: Scott Horton recently wrote an article entitled *How to Rein in a Secretive Shadow Government Is Our National Security Crisis*. He dedicated the article to the Soviet dissident Andrei Sakharov because, as he said, “Sakharov recognized that the Soviet Union rested on a colossal false premise: it was not so much socialism (though Sakharov was certainly a critic of socialism) as it was the obsession with secrecy, which obstructed the search for truth, avoided the exposure of mistakes, and led to the rise of powerful bureaucratic elites who were at once incompetent and prone to violence.”

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

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<sup>1</sup><http://www.informationclearinghouse.info/article41222.htm>



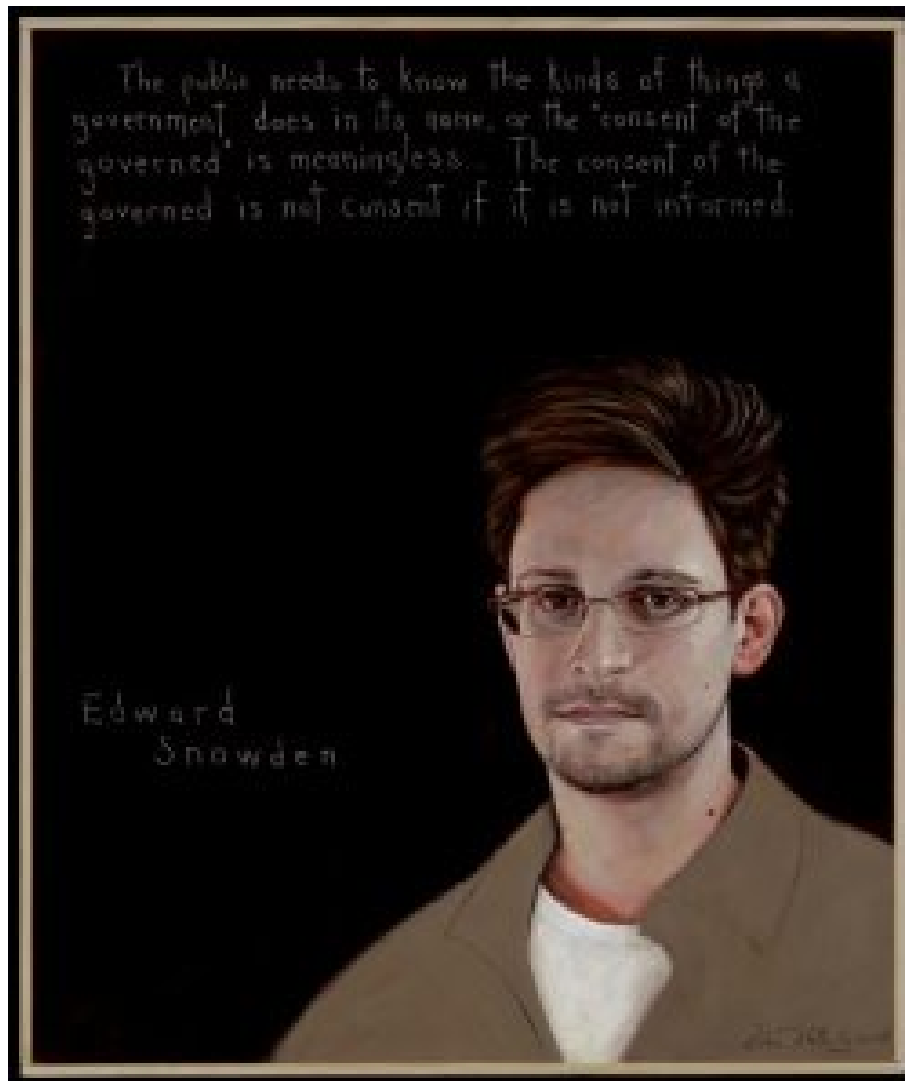


Figure 9.6: The revelations of Edward Snowden and others have shown that the number of people involved in secret operations of the United States government is now as large as the entire population of Norway: roughly 5 million.

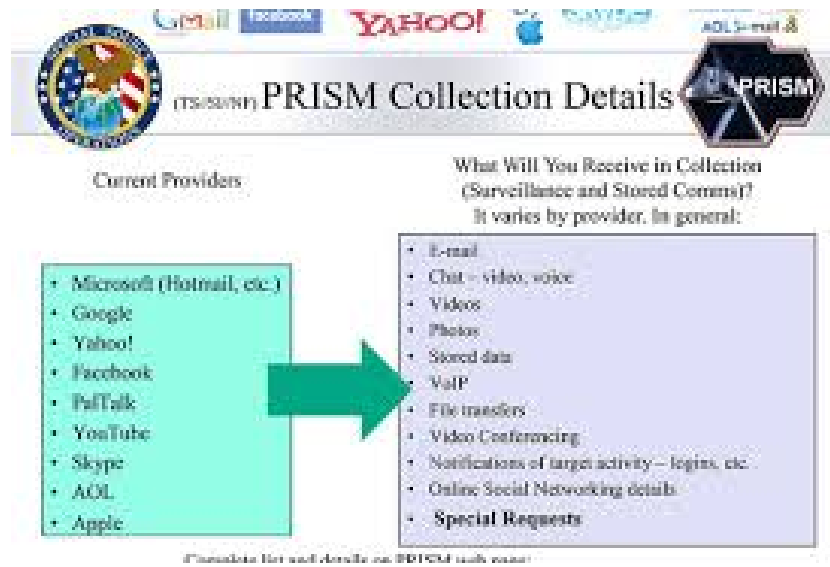


Figure 9.7: One of the power points used by NSA to sell their comprehensive collection of private data.



Figure 9.8: These huge buildings in Fort Meade, Maryland, are the main headquarters of NSA.



Figure 9.9: Angela Merkel’s telephone was bugged by NSA. In a cartoon depicting the incident, she says “Tell the Americans to stop listening to our telephone conversations”. Her aide replies, “You just did”.



Figure 9.10: Big Brother is watching you.



Figure 9.11: **The sales of George Orwell’s 1984 soared after Snowden’s revelations.**

unconstitutional does not take long at all.

The Magna Carta is trashed. No one dares to speak up. Habeas 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 dystopian prophesy has proved to be accurate in every detail.

What is the excuse for 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.

7

## 9.5 Julian Assange

We do not know what will happen to Julian Assange. If his captors send him to the US, and if he is imprisoned or executed there for the crime of publishing leaked documents (a crime that he shares with the New York Times), he will not be the first martyr to the truth. The ageing Galileo was threatened with torture and forced to recant his heresy - that the earth moves around the sun. Galileo spent the remainder of his days in house arrest. Giordano Bruno was less lucky. He was burned at the stake for maintaining that the universe is larger than it was then believed to be. If Julian Assange becomes a martyr to the truth like Galileo or Bruno, his name will be honored by generations in the future, and the shame of his captors will be remembered too.



## 9.6 Secrecy versus democracy

*“Every government degenerates when trusted to the rulers of the people alone. The people themselves, therefore, are its only safe depositories.”* Thomas Jefferson, (1743-1826)

*“The jaws of power are always open to devour, and her arm is always stretched out, if possible, to destroy the freedom of thinking, speaking, and writing.”* John Adams, (1735-1826)

According to the Nuremberg Principles, the citizens of a country have a responsibility for the crimes that their governments commit. But to prevent these crimes, the people need to have some knowledge of what is going on. Indeed, democracy cannot function at all without this knowledge.

What are we to think when governments make every effort to keep their actions secret from their own citizens? We can only conclude that although they may call themselves democracies, such governments are in fact oligarchies or dictatorships.

At the end of World War I, it was realized that secret treaties had been responsible for its outbreak, and an effort was made to ensure that diplomacy would be more open in the future. Needless to say, these efforts did not succeed, and diplomacy has remained a realm of secrecy.

Many governments have agencies for performing undercover operations (usually very dirty ones). We can think, for example of the KGB, the CIA, M5, or Mossad. How can countries that have such agencies claim to be democracies, when the voters have no knowledge of or influence over the acts that are committed by the secret agencies of their governments?

Nuclear weapons were developed in secret. It is doubtful whether the people of the United States would have approved of the development of such antihuman weapons, or their use against an already-defeated Japan, if they had known that these things were going to happen. The true motive for the nuclear bombings was also kept secret. In the words of General Groves, speaking confidentially to colleagues at Los Alamos, the real motive was “to control the Soviet Union”.

The true circumstances surrounding the start of the Vietnam war would never have been known if Daniel Ellsberg had not leaked the Pentagon Papers. Ellsberg thought that once the American public realized that their country's entry into the war was based on a lie, the war would end. It did not end immediately, but undoubtedly Ellsberg's action contributed to the end of the war.

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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 dystopian prophesy has proved to be accurate in every detail.

What is the excuse for 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.

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.

## 9.7 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 organizations, 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.

A Convention prohibiting nuclear weapons has recently been passed by an overwhelming majority at the United Nations General Assembly. The Convention prohibits the production of weapons usable fissile material and requires delivery vehicles to be destroyed



Figure 9.12: **Sir Joseph Rotblat emphasized that complete abolition of nuclear weapons requires societal verification, and therefore whistleblowers must be protected.**

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 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.

### Suggestions for further reading

1. Joseph C. Pitt, *Galileo, Human Knowledge and the Book of Nature; Method Replaces Metaphysics*, Kluwer, Dordrecht, (1992).
2. Michael Segre, *In the Wake of Galileo*, Rutgers University Press, New Brunswick, N.J., (1991).
3. Stillman Drake, *Galileo, Pioneer Scientist*, Toronto University Press, (1990).
4. Silvio A. Bedini, *The Pulse of Time; Galileo Galilei, the Determination of Longitude and the Pendulum Clock*, Olschki, Fierenze, (1991).
5. Stillman Drake et al., *Nature, Experiment and the Sciences; Essays on Galileo and the History of Science*, Kluwer, Dordrecht, (1990).

6. Pietro Redondi, *Galileo Heretic*, Princeton University Press, (1987).
7. William A. Wallace, *Galileo and his Sources; The Heritage of the Collegio Romani in Galileo's Science*, Princeton University Press, (1984).
8. William A. Wallace, *Prelude to Galileo*, Reidel, Dordrecht, (1981).
9. Stillman Drake, *Telescopes, Tides nad Tactics; a Galilean Dialogue about the Starry Messenger and Systems of the World*, University of Chicago Press, (1980).
10. Stillman Drake, *Galileo*, Oxford University Press, (1980).
11. K.J.J. Hintikka et al. editors, *Conference on the History and Philosophy of Science*, Reidel, Dordrecht, (1981).
12. Marc Ambinder and D.B. Grady, *Deep State: Inside the Government Secrecy Industry*, Wiley, (2013).
13. Michael J. Glennon *National Security and Double Government* (PDF), Harvard National Security Journal. 5, (2014).
14. Jordan Michael Smith. *Vote all you want. The secret government won't change*. The Boston Globe,(October 19, 2014).
15. Amanda Taub and Max Fisher, *As Leaks Multiply, Fears of a 'Deep State' in America*. The New York Times, (February 16, 2017).
16. Bob Jessop,*The State: Past, Present, Future*, John Wiley & Sons, (2015).
17. Jeremy Scahill, *Donald Trump and the Coming Fall of the American Empire*. The Intercept, (2017-07-22).
18. Alana Abramson, *President Trump's Allies Keep Talking About the 'Deep State.' What's That?*. Time, (8 March 2017).
19. Ishaan Tharoor, *Is Trump fighting the deep state or creating his own?*. The Washington Post, (February 1, 2017).
20. Michael Crowley, *The Deep State Is Real*. Politico Magazine, (September-October 2017).
21. Julie Hirschfeld Davis, *Rumblings of a 'Deep State' Undermining Trump? It Was Once a Foreign Concept*. The New York Times, (March 6, 2017).
22. Marc Ambinder and D.B. Grady, *Deep State: Inside the Government Secrecy Industry*, Wiley, (2013).
23. Michael J. Glennon *National Security and Double Government* (PDF), Harvard National Security Journal. 5, (2014).
24. Jordan Michael Smith. *Vote all you want. The secret government won't change*. The Boston Globe,(October 19, 2014).
25. Amanda Taub and Max Fisher, *As Leaks Multiply, Fears of a 'Deep State' in America*. The New York Times, (February 16, 2017).
26. Bob Jessop,*The State: Past, Present, Future*, John Wiley & Sons, (2015).
27. Jeremy Scahill, *Donald Trump and the Coming Fall of the American Empire*. The Intercept, (2017-07-22).
28. Alana Abramson, *President Trump's Allies Keep Talking About the 'Deep State.' What's That?*. Time, (8 March 2017).
29. Ishaan Tharoor, *Is Trump fighting the deep state or creating his own?*. The Washington Post, (February 1, 2017).

30. Michael Crowley, *The Deep State Is Real*. Politico Magazine, (September-October 2017).
31. Julie Hirschfeld Davis, *Rumblings of a 'Deep State' Undermining Trump? It Was Once a Foreign Concept*. The New York Times, (March 6, 2017).

# Chapter 10

## THE ALTERNATIVE MEDIA

### 10.1 A few outstanding voices

The greatest threats facing the world today are catastrophic climate change and thermonuclear war, but a large-scale global famine also has to be considered.

We give our children loving care, but it makes no sense do so and at the same time to neglect to do all that is within our power to ensure that they and their descendants will inherit an earth in which they can survive. We also have a responsibility to all the other living organisms with which we share the gift of life.

Inaction is not an option. We have to act with courage and dedication, even if the odds are against success, because the stakes are so high.

The mass media could mobilize us to action, but they have failed in their duty.

Our educational system could also wake us up and make us act, but it too has failed us. The battle to save the earth from human greed and folly has to be fought in the alternative media.

It is impossible to list all of the many thousands of brave, dedicated and eloquent people who write for the alternative media, or the equally brave and dedicated editors who publish these articles. But here are pictures of a few famous names that come to mind:



Figure 10.1: Daisaku Ikeda (born 1928), President of the 12-million-strong Buddhist organization Soka Gakkai International. Throughout his long life he has worked with courage and dedication for peace and international dialogue.



Figure 10.2: **Former US Vice President Al Gore (born in 1948). Because of his outstanding work to make the public aware of the danger of catastrophic climate change, he shared the 2007 Nobel Peace Prize with the IPCC.**



Figure 10.3: The Norwegian mathematician and sociologist Johan Galtung (born 1930), pioneer of the discipline Conflict Resolution. He also founded the Peace Research Institute, Oslo and the *Journal of Peace Research*. He has published over 1000 articles and more than 100 books.





Figure 10.4: Jan Øberg (born 1951), co-founder and Director of the Transnational Foundation for Peace and Future Research, and editor of *The Transnational*. Born in Denmark, Dr. Øberg was formerly the leader of the Lund Peace Research Institute.



Figure 10.5: Mrs. Fumiko Galtung, Transcend Media Service Weekly Digest editor Antonio C.S. Rosa, and Johan Galtung in Norway, 2007.



Figure 10.6: Binu Mathew is the heroic and dedicated editor of the Internet journal “Countercurrents”. He lives in the Kerala Province of India, which has recently been hit by enormous floods, despite which he continues to publish his vitally important journal every day.



Figure 10.7: John Pilger (born in Australia in 1939). His outstanding documentary films on global problems have won a BAFTA award. He is a critic of American, British and Australian foreign policy, which he considers to be driven by an imperialist agenda.



Figure 10.8: The American film maker Oliver Stone (born 1946) has won three Academy Awards for his work, and he has been nominated for very many other Oscars. His Vietnam War trilogy “Platoon”, “Born on the Fourth of July”, and “Heaven and Earth” have won critical acclaim, as have his films “Salvador”, “Wall Street”, “Money Never Sleeps”, “JFK”, “Nixon”, “W”, and “Snowdon”.



Figure 10.9: Born in 1957. Amy Goodman co-founded Democracy Now: The War and Peace Report in 1996. She credits the great success of the program, broadcast on radio, television and the Internet, with the deficiencies of the mainstream media which leave a huge niche for alternative reporting. Amy Goodman has received dozens of awards for her work, including the Right Livelihood Award, sometimes called “The Alternative Nobel Prize”, and the Gandhi Peace Award for making “a significant contribution to the promotion of an enduring international peace”.



Figure 10.10: The Academy Award winning actor and environmental activist Leonardo DiCaprio (born in 1974) has produced several documentaries on climate change, most notably “Before the Flood”. He also established a foundation to promote public awareness of climate change. In 2014 DiCaprio was chosen to address the opening ceremony of the UN Climate Summit. In accepting the 2016 Best Actor Academy Award, he said: “Climate change is real, it is happening right now. It is the most urgent threat facing our entire species, and we need to work collectively together and stop procrastinating. We need to support leaders around the world who do not speak for the big polluters, but who speak for all of humanity, for the indigenous people of the world, for the billions and billions of underprivileged people out there who would be most affected by this. For our children’s children, and for those people out there whose voices have been drowned out by the politics of greed.”



Figure 10.11: Thom Hartmann (born in 1951) is the host of the daily radio and television show “The Big Picture”. As a writer, he has published more than twenty books. His book “Last Hours of Ancient Sunlight” inspired Leonardo DiCaprio’s documentary “Before the Flood”. Together with the DiCaprio family, Hartmann helped to produce an important short video “Last Hours”, which is available at <https://www.youtube.com/watch?v=2bRrg96UtMc> . The video discusses the mass extinctions that can be observed in the geological record, and warns that anthropogenic climate change might cause an extinction comparable to the largest one, the Permian-Triassic event, by initiating a methane hydrate feedback loop.

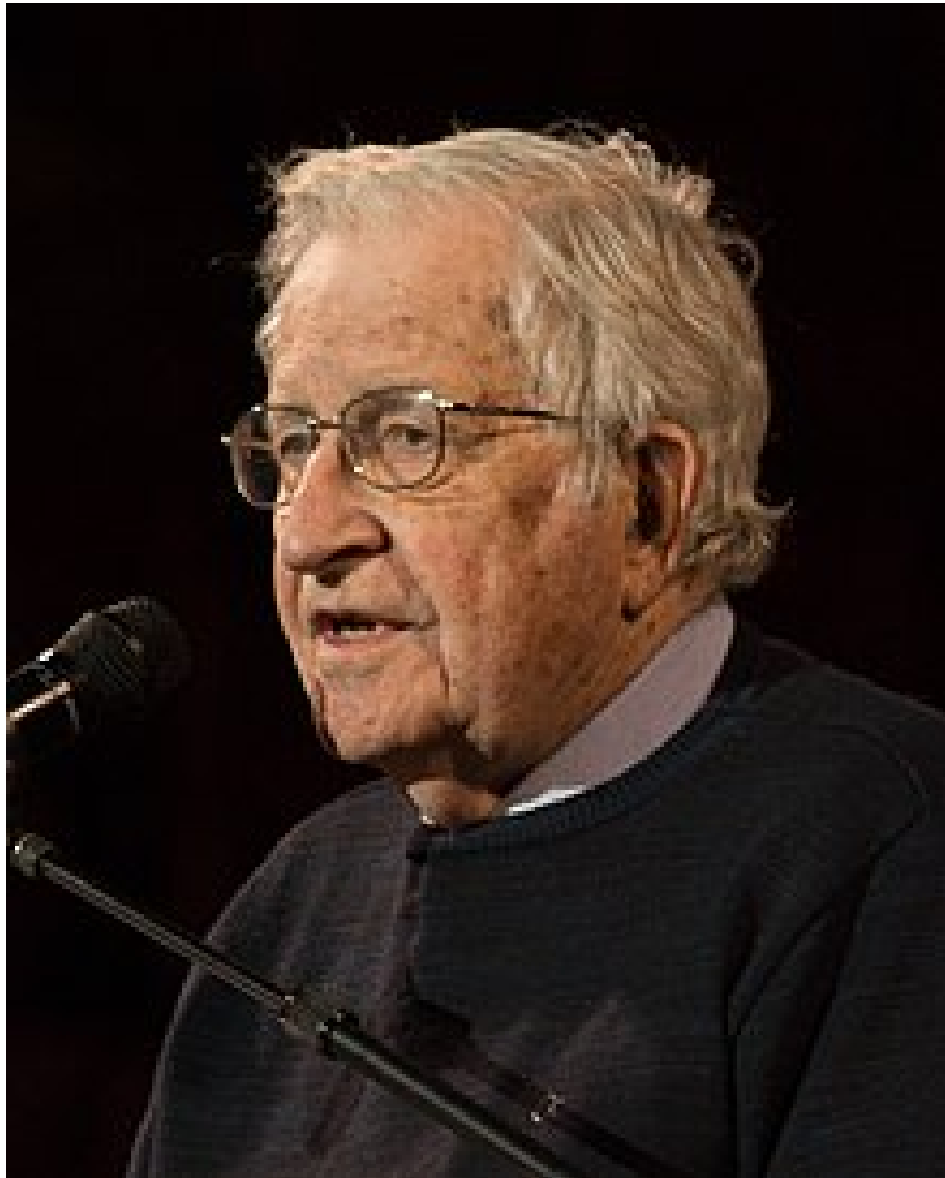


Figure 10.12: Born in 1928, Institute Professor Emeritus Noam Chomsky of MIT and the University of Arizona is considered to be one of the greatest public intellectuals in the world. As a linguist and cognitive scientist, he revolutionized our ideas of the inherited universal grammar of humans. He is also a philosopher and historian, and has written more than 100 important books, many of which criticize the the mass media and US government policies. Professor Chomsky has stated that because of its climate change denial, the US Republican Party is the most dangerous organization in history, since its actions may lead to catastrophic climate change and perhaps the extinction of the human species.



Figure 10.13: James Hansen (born in 1941) is the former head of the NASA Goddard Institute for Space Studies, and he currently directs the Program on Climate Science, Awareness and Solutions at Columbia University's Earth Institute. Originally an astrophysicist, Professor Hansen became aware of the threat of catastrophic climate change on the earth through his studies of the planet Venus. His 1988 US Senate committee testimony did much to make the US government aware of the dangers of anthropogenic global warming. His warnings can be read in detail in his 2009 book, "Storms of My Grandchildren". He has been arrested several times in connection with his climate activism. Professor Hansen says that we immediately need to cut back atmospheric carbon dioxide emissions such that atmospheric concentrations are stabilized at 350 ppm or less, in order to avoid environmental disasters.





Figure 10.14: Pulitzer Prize winning author Chris Hedges (born in 1956) worked for 15 years as a foreign correspondent for the New York Times, before resigning in 2005. He is the author of many important anti-war and anti-fascist books, including “War is a Force That Gives Us Meaning” (2002), “Empire of Illusion: The End of Literacy and the Triumph of Spectacle” (2009), “Death of the Liberal Class” (2010), “Days of Destruction, Days of Revolt” (2012), “Wages of Rebellion: The Moral Imperative of Revolt” (2015) and “America. The Farewell Tour” (2018). In a 2013 interview, Hedges said that “the left has been destroyed, especially the radical left, quite consciously in the whole name of anti-communism”, and “we have allowed ourselves to embrace an ideology which, at its core, states that all governance is about maximizing corporate profit at the expense of the citizenry. For what do we have structures of government, for what do we have institutions of state, if not to hold up all the citizenry, and especially the most vulnerable?”.



Figure 10.15: Award-winning author Naomi Klein was born in 1970 into a Canadian family of prominent peace activists. As a teenager, she felt embarrassed by her family's politics, and she reacted by becoming a mall-junkie, addicted to consumerism. Later, however, she became (in her own words) "less of a brat", and she wholeheartedly adopted her family's reformist traditions. Her first book, "No Logo: Taking Aim at the Brand Bullies" was published in 1999, shortly after the Seattle WTO protests, and it quickly became a highly-influential best-seller. Her famous book "The Shock Doctrine" (2007) argues that neoliberal politicians take advantage of disasters, when the public demands quick action, to ram through whatever changes they wish, and these are accepted uncritically by the change-demanding public, although they may have nothing to do with correcting the disaster. In another deservedly-famous book, "This Changes Everything" (2014), Naomi Klein addresses the twin threats of catastrophic climate change and thermonuclear war. She argues that environmental activists and peace activists ought to join hands and work together for system change. Partly as a result of her book, the slogan "System change not climate change!" was adopted by protest marchers both in New York and Paris.

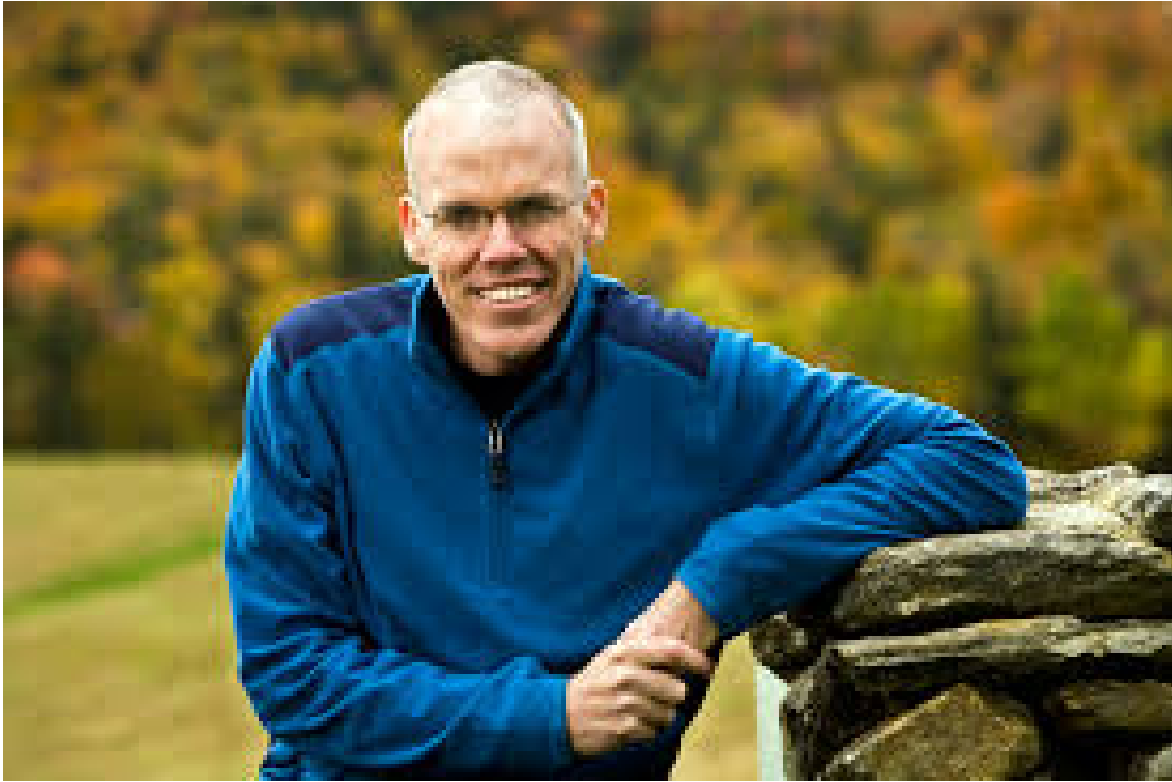


Figure 10.16: The American author, journalist and environmental activist Bill McKibben (born in 1960) is the founder and leader of 350.org, an important organization that campaigns world-wide for the immediate reduction of CO<sub>2</sub> emissions. Wikipedia writes of him: “In 2009, he led 350.org’s organization of 5,200 simultaneous demonstrations in 181 countries. In 2010, McKibben and 350.org conceived the 10/10/10 Global Work Party, which convened more than 7,000 events in 188 countries.” After graduating from Harvard in 1982, McKibben worked for five years as a writer for the New Yorker Magazine, after which he produced numerous books on the dangers of climate change. 350.org takes its name from James Hansen’s statement that “If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO<sub>2</sub> will need to be reduced from its current 385 ppm to at most 350 ppm, but likely less than that.” (Today the atmospheric CO<sub>2</sub> concentration has exceeded 400 ppm!). In 2014, Bill McKibben and 350.org shared the Right Livelihood Award, which is often called the “Alternative Nobel Prize”.



Figure 10.17: The extremely distinguished scholar and author Professor Richard Falk was born in 1930, and is still very active today. He is the author of more than 20 books on international law and editor or co-editor of 20 others.

## 10.2 The Eqbal Ahmed Centre For Public Education

This centre for public education (EACPE) can be reached on the link <http://eacpe.org/> . It was established by the distinguished theoretical physicist Pervez Hoodbhoy and others, and it takes its name from the courageous writer, university professor and activist Eqbal Ahmed.

An article by S.M. Tatar in the Friday Times<sup>1</sup> states that “The late Eqbal Ahmad was an internationally known and respected Pakistani political scientist, intellectual, scholar and teacher who returned to Islamabad in the 1990’s with a dream. He wanted to build Khaldunia University. Khaldunia could have been a game-changer in Pakistan’s higher education system. Eqbal Ahmad taught at various US universities and was a key political voice in international affairs. He enjoyed the friendship and respect of the likes of Edward Said and Noam Chomsky - who admired his work, his independent thinking and his identification with the causes of oppressed peoples.

“Ahmad was an intellectual with roots in Pakistan, influencing thinking on major world events like the Vietnam war, Algeria’s war of independence and the Palestinian tragedy. He was fully committed to his vision. He was not a desk scholar. He was part of the Algerian liberation movement in the 1960’s and an active opponent of the Vietnam war. Along with others, he was charged with being part of a plot to kidnap Henry Kissinger, in an effort to end the Vietnam war. And he advised the the PLO leadership in Palestine!”

<sup>1</sup><https://www.thefridaytimes.com/tft/a-dream-rudely-shattered/>

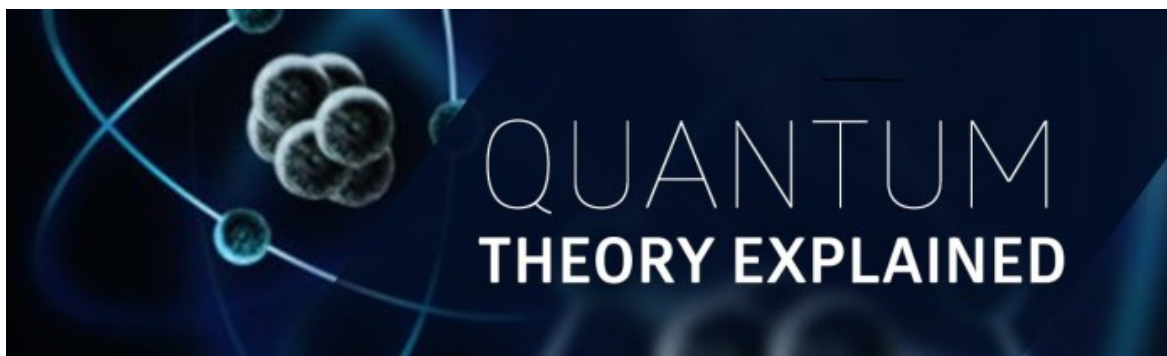


Figure 10.18: A set of freely downloadable lectures on quantum theory by Prof. Hoodbhoy is available on the EACPE website.



Figure 10.19: Another freely downloadable set of lectures by Prof. Hoodbhoy deals with special relativity.

The Eqbal Ahmed Centre for Public Education states that “Knowledge translated into action is the most potent and powerful game-changer known to man. The wedding of computers and telecommunications enables the transportation of ideas, the sharing of knowledge and the promotion of learning on a scale and with a speed that is near miraculous.

“The Eqbal Ahmad Centre for Public Education honours the life and work of Dr. Eqbal Ahmad, a Pakistani academic, social scientist, writer, public intellectual and activist. The Centre’s web site of the same name is a rich mother lode of enlightening content for those who thirst for knowledge. They also keep adding to the content frequently, so the site is always worth a visit.

“We believe the site is a great resource for students as well. Some their content is directed at science students, particularly students of the physical sciences and mathematics. This particular section is rich in video content, and is certain to be helpful in acquiring a solid grounding in the subjects. Apart from such video lectures, there is also a great wealth of video material for those who wish to enhance their knowledge of scientific subjects in general.”



Figure 10.20: Professor Eqbal Ahmed (1933-1999).



Figure 10.21: Professor Pervez Hoodbhoy (born in 1950) is Zohra and Z.Z. Ahmad Distinguished Professor of Physics and Mathematics at Forman Christian College, Lahore. In 2013, he was made a member of the UN Secretary General's Advisory Board on Disarmament. Among the awards he has won are the IEEE Baker Award for Electronics (1968); the Abdus Salam Prize for Mathematics (1984); the UNESCO Kalinga Prize for the popularization of science (2003); the Joseph A. Burton Award (2010) from the American Physical Society and the Jean Meyer Award from Tufts University. In 2011, he was included in the list of 100 most influential global thinkers by Foreign Policy magazine. As the head of Mashal Books in Lahore, Prof. Hoodbhoy leads a major translation effort to produce books in Urdu that promote modern thought, human rights, and emancipation of women.

### 10.3 The Danish Peace Academy

The Danish Peace Academy is an organization that was founded by Holger Terp. Holger 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 Holger’s 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.

Holger’s greatest achievement has been to found the Danish Peace Academy and to single-handedly create its enormous website. The website contains more than 90,000 files related to peace, in Danish, English and German, and it is currently visited by approximately 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 1996 course at Copenhagen’s 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 Holger’s “Greenham Common Songbook”, which is an account of the successful efforts of the woman’s 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.

Holger himself is the author or editor of numerous books, and he has translated Gandhi’s autobiography into Danish. The example of Gandhi’s life has always been a guide for Holger, and perhaps Holger’s 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.

Here are some quotations from the forward to Holger’s autobiography. It is written in Danish, but I have made an approximate translation:

*Militarism and the Military Industrial Complex have proved to be too big a mouthful for the peace movement, despite the fact that militarism has always been the main contributor to pollution and climate change. Ever since the First World War, military activities have been the largest users of fossil fuels.*

*Let’s consider a nice little war somewhere. Besides the human and other biological costs, cities are ruined, as well as the country’s administration and infrastructure. The gross national product collapses down to a tiny fraction of what it had been before the war. Military hardware is destroyed in war, and the environment is polluted with poisonous*





Figure 10.22: **Holger Terp** receives an award for his life-long efforts for world peace.

*byproducts of its degradation, such as heavy metals. This has always been the case with war. Furthermore, wars do not turn out as the politicians and war departments plan. Wars are unpredictable. Militarists make at least as many mistakes as the rest of us.*

*Therefore it cannot surprise even the most ignorant politician that war is primarily about resources and economy. The empty places in arsenals need to be refilled after a war. Governments buy from private weapons manufacturers, and a new war starts somewhere in a distant country whose policies have not given us unlimited access to cheap resources; and the mills of disaster begin to roll again, since weapon production is both resource-swallowing and environment-destroying. The more powerful weapons are, the more environmentally destructive they are, both when they are ,amufactured and when they are used....*

*It seems strange to me that religious fundamentalists can read in the Old Testament the commandment: "Thou shalt not kill". In other words, killing is both a sin and a crime; also when the killing is organized by governments. But soldiers do exactly the opposite of what religion requires. They go to war and kill. They do so because politicians are manipulated by the merchants of death. the arms manufacturers. One has to admire the war party's propaganda-machine. It is amazingly effective, with the result that the weapon industry's profits have grown enormously ever since the Iraq War of 2003. Soldiers and civilians are traumatized by war. Not so the politicians who start the wars, and certainly not the weapons manufacturers.*

## 10.4 List of progressive media websites

### International:

- 'Asian Correspondent: Asia's leading independent news' (outlet of Hybrid News Ltd in UK, Malaysia & Australia)
- "Clara Chooi - EdinCh,HybridNews" <clara@hybrid.co>
- "Mas Shaari - SubEd" <mas.shaari@hybrid.co>
- "Asian Correspondent - Hybrid News" <editor@hybridnewsgroup.com>
- 'The Epoch Times' (run by Chinese-Americans)
- "The Epoch Times" <submissions@epochtimes.com>
- <http://www.theepochtimes.com/>
- Global Community, Global Parliament, Federation of Global Governments
- "Global Community for all Life" <globalcommunity@telus.net>
- "Global Community webmaster" <gdufour@globalcommunitywebnet.com>
- Website: <http://globalcommunitywebnet.com/>
- 'Global News Hub' (based in Germany)
- "Editor, Global News Hub" <news@globalnewshub.net>
- <http://www.globalnewshub.net/>
- 'IDN - InDepthNews: Analysis That Matters' (Global Ed: Ramesh Jaura) [send to first address only]
- "IDN - InDepthNews" <editors@indepthnews.net>
- "Ramesh Jaura - GlobalEd,IDN" <rjaura@indepthnews.net>
- "Ernest Corea - GlobalEd,IDN" <editor@indepthnews.net>
- "Julio Godoy - GlobalEd,IDN" <info@indepthnews.net>
- "Suresh Jaura - NthAmBur,IDN" <sjaura@indepthnews.net>
- "Katsuhiko Asagiri - AsPacBur,IDN" <kasagiri@indepthnews.net>
- <http://www.indepthnews.info/>
- 'Inter Press Service News Agency' (raising the voices of the South)
- "Inter Press Service News Agency" <romacol@ips.org>
- "Kitty Stapp" <kitty.stapp@gmail.com>
- "IPS - Tafadzwa" <gill.rafemoyo@gmail.com>
- "Kanya D'Almeida - Ed,Asia-Pac,IPS" <kanyaldalmeida@gmail.com>
- <http://www.ipsnews.net/>
- 'Pressenza International News Agency' (peace and nonviolence)
- \*\*"PÃa Figueroa - Dir,Pressenza" <piaf@pressenza.com>
- \*\*"PÃa Figueroa - Dir, Pressenza" <figueroa.temp@gmail.com>
- "Tony Robinson - Dir,Pressenza" <tonymrobinson@gmail.com>
- "Iris Colil - PhEd,Pressenza" <iris.colil@pressenza.com>
- "Paulo Genovese - PortEd,Pressenza" <paulogenovese@yahoo.com.br>
- "Olivier Turquet - ItalianEd,Pressenza" <olivier.turquet@gmail.com>
- "Silvia Swinden - LondonEd,Pressenza" <silvia.swinden@pressenza.com>
- "Mariano Quiroga - SpanEd,Pressenza" <quirogamariano@yahoo.es>

- "Ricardo Arias - FrEd,Pressenza" <ricardoarias2@gmail.com>
- <http://www.pressenza.com/>
- 'South-South News'
- "South-South News" <submissions@southsouthnews.com> <webcontactssn@gmail.com>  
<operations@southsouthnews.com>
- <http://southsouthnews.com/>
- 'The Times of Earth - International'
- "The Times of Earth - International" <editor@timesofearth.com>
- <http://timesofearth.com/>

### Australia:

- 'Australian Book Review' (Ed: Peter Rose; DepEd: Amy Baillieu)
- "Peter Rose - Ed, ABR" <editor@australianbookreview.com.au>
- "Amy Baillieu - DepEd, ABR" <abr@australianbookreview.com.au>
- "Luke Horton" <assistant@australianbookreview.com.au>
- <https://www.australianbookreview.com.au/>
- 'The Big Issue' (Editorial Coordinator: Lorraine Pink)
- "Lorraine Pink - EdCoord,The Big Issue" <lpink@bigissue.org.au>
- "Editorial Team - The Big Issue" <editorial@bigissue.org.au>
- <http://www.thebigissue.org.au/>
- 'The Big Smoke' (Ed-in-Ch: Paul Bugeja)
- Paul Bugeja - EdinCh,TheBigSmoke <editor@thebigsmoke.com.au>
- <http://thebigsmoke.com.au/>
- 'The Byron Shire Echo' (Ed: Hans Lovejoy)
- "Hans Lovejoy - Ed,ByronShireEcho" <editor@echo.net.au>
- <http://www.echo.net.au/>
- 'Echonetdaily' (Ed: Chris Dobney)
- "Chris Dobney - Ed,Echonetdaily" <onlineeditor@echo.net.au>
- <http://www.echo.net.au/>
- 'Eureka Street' (Jesuit)
- "Michael Mullins - Ed, Eureka St, Aust" <submissions@eurekastreet.com.au>
- "Michael Mullins - Ed, Eureka St" <editor@eurekastreet.com.au>
- "Tim Kroenert - AssEd, Eureka St" <tim@eurekastreet.com.au>
- <http://www.eurekastreet.com.au/>
- \*'Ground Report India' (Ed: Vivek Umrao Glendenning)
- "Vivek Umrao Glendenning - Chief Ed" <chiefeditor@groundreportindia.org>
- <http://www.international.groundreportindia.org/>
- 'Independent Australia: The journal of democracy and independent thought' (Ed: Sandi Keane)
- "Sandi Keane - Ed,IndependentAustralia" <sandikeane@independentaustralia.net>
- "Michelle Pini - DepEd,IA" <assistanteditor@independentaustralia.net>
- <http://www.independentaustralia.net/>

- 'Inside Story' (Editor: Peter Browne; Ass Ed: Kate Manton) (wants exclusives)
- <http://inside.org.au/>
- 'New Matilda' (Ed/Pub: Chris Graham)
- "Chris Graham - Ed/Pub,NewMatilda" <writeforus@newmatilda.com>
- "Max Chalmers" <max.chalmers@newmatilda.com>
- <http://newmatilda.com/>
- 'The Nimbin Good Times' (Eds: Bob Dooley & Sue Stock)
- "Bob Dooley & Sue Stock - Eds,NimbinGoodTimes"
- <nimbin.goodtimes@gmail.com>
- <http://www.nimbingoodtimes.com/>
- 'NOVA: Australia's Holistic Journal' (Ed: Margaret Evans)
- "Margaret Evans - Ed, NOVA" <admin@novamagazine.com.au>
- <http://novamagazine.com.au/>
- 'On Line Opinion' (ChEd/Fndr: Graham Young)
- "Graham Young" <graham.young@onlineopinion.com.au>
- <http://www.onlineopinion.com.au/>
- 'PBS Radio'
- Namila Bensen - PBS Radio,Melb <namilab@hotmail.com>
- <http://www.pbsfm.org.au/>
- 'The Truth Library' (Ed: Bernie Smith)
- "Bernie Smith - TheTruthLibrary" <admin@truthlibrary.info>
- <https://www.truthlibrary.info/>

## Bangladesh:

- \*'Green Watch Dhaka - People's voice for sustainable living' (Eds: Zerine & Mostafa)
- "Mostafa Kamal Majumder & Farzana Afroze Zerine - Ed,GreenWatchDhaka" <editorgreenwatchdhaka@gmail.com>
- <http://greenwatchbd.com/>

## Bolivia:

- 'Bolivia Rising' (Ed: Federico Fuentes)
- "Federico Fuentes - Editor" <boliviarising@gmail.com>
- <http://boliviarising.blogspot.com.au>

## Burma:

- 'M-Media'
- "Editor - M-Media, Myanmar" <editor@m-mediagroup.com>
- <http://www.m-mediagroup.com/en/>

**Canada:**

- 'DeSmog: Clearing the PR Pollution that Clouds Climate Science' (Jim Hoggan; ExecDir/ManEd: Brendan DeMelle)
- "Brendan DeMelle - ExecDir/ManEd,DeSmogBlog" <editor@desmogblog.com>
- <http://www.desmogblog.com/>
- \*\*'Global Research' (Ed: Prof Michel Chossudovsky)
- "Prof Michel Chossudovsky" <crgeditor@yahoo.com>
- <http://globalresearch.ca>
- 'Pride News Magazine' (Ed/Pub: Michael L. Van Cooten)
- "Michael L Van Cooten - Ed, Pride News" <pridenews@bellnet.ca>
- <http://pridenews.ca/>
- 'Rabble', via website: <http://rabble.ca/>
- 'Straight Goods News' (Ed: Penney Kome)
- "Penney Kome - Ed,StraightGoodsNews" <penney@straightgoods.com>
- <http://sgnews.ca>

**China:**

- 'The 4th Media; Just Another Voice' (EdinCh: Prof Kiyul Chung, Korean-American)
- "Prof Kiyul Chung - EdinCh,4thMedia" <ChiefEditor@4thmedia.org>
- <http://www.4thmedia.org/>

**Denmark:**

- 'NSNBC International' (EdinCh: Dr Christof Lehmann)
- "Dr Christof Lehmann - EdinCh,NSNBCInt" <nsnbc.wordpress@gmail.com>
- <http://nsnbc.me/>

**Ecuador:**

- 'América Latina en movimiento' ('Latin American Information Agency')
- "América Latina en movimiento" <info@alainet.org>
- "América Latina en movimiento" <alaiadmin@alainet.org>
- "América Latina en movimiento" <tecnica@alainet.org>
- "Agencia Latinoamericana de Informacion" <alai-amlatina@alai.info>
- <http://www.alainet.org/index.phtml.en>

**Egypt:**

- 'The Cairo Post'
- "The Cairo Post" <opinions@thecairopost.com>
- <http://thecairopost.com/>

**Europe:**

- 'Fort Russ: Read What Russia Reads' (Eds: Kristina Rus Kharlova & Joaquin Flores)
- "Kristina Rus Kharlova" <k.kharlova@gmail.com>
- "Joaquin Flores" <findmeflores@gmail.com>
- <http://fortruss.blogspot.com.au/>
- 'Katoikos.eu'
- "Meghan O'Farrell - EngManEd,Katoikos.eu" <editorial@katoikos.eu>
- <http://www.katoikos.eu/>

**Ghana:**

- \*\*'Ghana web Online' (Ed: Gifty Ayim-Korankye)
- "Gifty Ayim-Korankye" <ghanawebonline@gmail.com>
- <http://ghanawebonline.com/>
- \*\*'Modern Ghana' (Ed: William Nana Yaw Beeko)
- "William Nana Yaw Beeko" <editor@modernghana.com>
- <http://www.modernghana.com/>

**India:**

- 'The aPolitical'
- "The aPolitical" <opinion@theapolitical.in>
- <https://www.theapolitical.in/>
- 'The Citizen: India's 1st Independent Online Daily' (Ed: Seema Mustafa)
- "Seema Mustafa - Ed,TheCitizen" <seemamustafa@gmail.com>
- "The Citizen" <editor@thecitizen.in>
- "The Citizen" <thecitizen242@gmail.com>
- <http://www.thecitizen.in/>
- \*\*'Countercurrents' (Ed: Binu Mathew)
- "Binu Mathew" <editor@countercurrents.org>
- "Binu Mathew" <binumathew100@gmail.com>
- <http://countercurrents.org>
- \*\*'Frontier Weekly' (Ed: Timir Basu; [active] Ed: Rabin Chakraborty)
- \*\*'Rabin Chakraborty - Frontier Weekly' <fromrabin@gmail.com>
- "Rabin Chakraborty" <rabinchakraborty1@gmail.com>
- "Timir Basu - Ed,FrontierWeekly" <frontierweekly@yahoo.co.in>
- "Timir Basu - Ed,FrontierWeekly" <frontierweekly@hotmail.com>
- <http://frontierweekly.com>
- 'The Globe Monitor' (Ed: Sufyan bin Uzayr)
- "Sufyan bin Uzayr" <sufyan@theglobemonitor.com>
- <http://theglobemonitor.com/>
- \*'Kalimpong News' (ManDir/ChEd: Arun K. Rai)
- "Arun K.Rai - ManDir/ChEd,Kalimpong News" <thulungakrai@gmail.com>

- "Kalimpong News" <newskalimpong@gmail.com>
- "Kalimpong News" <kalimpongpress@gmail.com>
- <http://kalimpongonlinenews.blogspot.com.au/>
- 'The Morung Express' (Ed?: Ak $\frac{1}{4}$ m Longchari)
- "Ak $\frac{1}{4}$ m Longchari - The Morung Express" <morung@gmail.com>
- <http://morungexpress.com/>
- \*'Rethinking Islam with Sultan Shahin' & 'New Age Islam' (Ed: Sultan Shahin)
- "Sultan Shahin" <sultan.shahin@gmail.com>
- <https://rethinkingislamwithsultanshahin.wordpress.com/>
- <http://newageislam.com/>
- 'Trans Asia News Service' (Ed: ?, AssocEd: Wajahat Qazi)
- "Wajahat Qazi - AssocEd,TransAsiaNewsService" <wajahat@transasianews.com>
- "TransAsiaNewsService" <editor@transasianews.com>
- <http://transasianews.com/>
- 'The Verdict' (Ed-in-Ch: Kaizen Krishna)
- "Kaizen Krishna" <kaizen-krishna@y7mail.com>
- <http://www.theverdictindia.com/Leadstory-19-Oct.asp>
- 'World News Report' (Ed/CEO: Neeraj Mahajan) - wants exclusives (but have copied one of my articles from elsewhere)
- "Neeraj Mahajan" <news@taazakhabarnews.com>
- <http://worldnewsreport.in/>
- 'Youth Ki Awaaz'
- "Youth Ki Awaaz" <info@youthkiawaaz.com>
- <https://www.youthkiawaaz.com/>

### Iran:

- 'Armanshahr/OPEN ASIA'
- "Armanshahr/OPEN ASIA" <contact@openasia.org>
- <http://openasia.org/en/>
- 'Organization for Defending Victims of Violence' (Ed: Maryam Erzi)
- "Maryam Erzi - Organization for Defending Victims of Violence, Iran" <info@odvv.org>
- <http://www.odvv.org/>

### Ireland:

- 'Irish Left Review' (Ed: Donagh Brennan)
- "Donagh Brennan - Ed,Irish Left Review" <dublinopinion@gmail.com>
- "Irish Left Review" <irishleftreview@gmail.com>
- <http://www.irishleftreview.org/>
- 'News Beacon Ireland' (Ed: Rudi Teichmann)
- "B & R Teichmann" <bernyteichmann@sky.com>
- <http://news-beacon-ireland.info/>

**Japan:**

- 'The Diplomat' (Ed: Harry Kazianis)
- "Harry Kazianis - Ed, TheDiplomat, Japan" <submissions@the-diplomat.com>
- <http://thediplomat.com/>

**Malaysia:**

- \*'JUST International' (Ed: Prof Chandra Muzaffar)
- "Prof Chandra Muzaffar" <cmuzaffar@just-international.org>
- "Nurul Haida Binti Dzulkiffi" <haida@just-international.org>
- <http://www.just-international.org/>

**Middle East:**

- 'Middle East Eye'
- "Mamoon Alabbasi - News&OpEd" <mamoon.alabbasi@middleeasteye.org>
- <http://www.middleeasteye.net>
- 'Muftah' - wants exclusives (Eds: ?)
- "Muftah" <submissions@muftah.org>
- "Muftah" <info@muftah.org>
- <http://muftah.org/>

**Montenegro:**

- \*'Wall Street International Magazine' (EdinCh: Nathalie Dodd)
- "Nathalie Dodd - EdinCh,WallStreetInternationalMag" <nathalie@wsimag.com>
- <http://wsimag.com/>

**Nepal:**

- \*'Nepal24hours.com' (ChEd: Purushottam Dhakal)
- "Purushottam Dhakal - ChEd,Nepal24hours.com" <nepal24hour@gmail.com>
- <http://www.nepal24hours.com/>

**New Zealand:**

- \*\*'Scoop Independent News' (Fndr/Pub/Ed: Alastair Thompson)
- "Alastair Thompson - Fndr/Pub/Ed,Scoop Ind News - NZ" <editor@scoop.co.nz>
- <http://www.scoop.co.nz/>



**Nigeria:**

- \*'Nigerian Voice' (Ed: Henry Oduenyi)
- "The Nigerian Voice" <editor@thenigerianvoice.com>
- "Henry Oduenyi - ManEd,NigerianVoice" <henry@thenigerianvoice.com>
- <https://www.thenigerianvoice.com/>

**Norway (& Russia):**

- 'Figuro International News' (Ed: Matthew Figurski; expat American in Europe)
- "Matthew Figurski - Ed,FiguroIntNews" <americanress@gmail.com>
- <http://www.figuro.us>
- 'Barents Observer' (EdinCh: Thomas Nilsen; reports on Russia, Norway, Sweden, Finland and the Arctic; all articles published in English and Russian)
- "Thomas Nilsen - EdinCh,BarentsObserver" <thomas@barents.no>
- "Trude Pettersen - AssEd,BarentsObserver" <trude@barents.no>
- <http://barentsobserver.com/en/>

**Palestine:**

- 'The Alternative Information Center'
- The Alternative Information Center <info@alternativenews.org>
- <http://www.alternativenews.org/english/>
- 'Alwatan Center'
- Alwatan Center <info@alwatan.org>
- <http://www.alwatan.org>
- 'The Electronic Intifada' (wants exclusives usually)
- The Electronic Intifada <info@electronicintifada.net>
- <http://electronicintifada.net/>
- 'International Middle East Media Center' (editorial collective)
- via website: <http://www.imemc.org/contact>
- <http://www.imemc.org/>
- 'Ma'an News Agency'
- Ma'an News Agency <english@maannews.net>
- <http://www.maannnews.net/eng>
- 'Mondoweiss' (Fndr/Co-Ed: Philip Weiss, Co-Ed: Adam Horowitz)
- Mondoweiss <submissions@mondoweiss.net>
- Philip Weiss - Fndr/Co-Ed <phil@mondoweiss.net>
- Adam Horowitz - Co-Ed <adam@mondoweiss.net>
- <http://mondoweiss.net/>
- '+972 Magazine' (Eds: Noam Sheizaf, Michael Omer-Man, Edo Konrad & Noa Yachot)
- +972 Magazine <oped@972mag.com>

- <http://972mag.com/>
- 'The Palestine Chronicle' (Ed: Ramzy Baroud)
- "The Palestine Chronicle" <editor@palestinechronicle.com>
- <http://palestinechronicle.com/>

## Papua New Guinea:

- 'Stella Magazine: Star of the Pacific' (Ed: Amanda Donigi)
- "Amanda Donigi - Ed,StellaMagazine" <editor@pacificpencil.com>
- <http://www.stellamag.com/>
- West Papua Media (Fndr/Ed: Nick Chesterfield)
- "Nick Chesterfield - Fndr/Ed,West Papua Media" <editor@westpapuamedia.info>
- <http://westpapuamedia.info/>

## Philippines:

- 'Bulatlat: Journalism for the people' (Eds: )
- "Eds - Bulatlat,Philippines" <bulatlat@gmail.com>
- "PressRel's&Statements - Bulatlat,Philippines" <pr@bulatlat.com>
- <http://bulatlat.com/>
- 'WorldNews.Ph' (Ed: Prof Valentine Anthony)
- "Prof Valentine Anthony" <valentineanthony29@yahoo.com>
- <http://www.worldnews.ph>

## Portugal:

- '\*Other News' (Pres: Roberto Savio <utopie@ips.org>; Ed-in-Ch: Mario Dujisin)
- "Mario Dujisin - EdinCh,OtherNews" <othernews@netcabo.pt>
- <http://www.other-news.info/>

## Russia:

- 'New Eastern Outlook' (covers Japan to coast of Africa; exclusives only)
- "New Eastern Outlook" <editor@journal-neo.org>
- <http://journal-neo.org/>
- 'Oriental Review'
- "Oriental Review" <or@orientalreview.org>
- <https://orientalreview.org/>
- 'Russia Insider' (Ed/Fndr/Pub: Charles Bausman; Dep Ed: Marko Marjanović)
- "Charles Bausman - Ed/Fndr/Pub,RussiaInsider" <charlesb@russia-insider.com>
- "Marko Marjanović - DepEd,RussiaInsider" <marko.marjanovic@gmx.com>
- <http://russia-insider.com/en>

- 'Strategic Culture Foundation' (Ed-in-Ch: Vladimir Maximenko; Ed: Alex Lebedinskiy - contact Alex)
- "Alex Lebedinskiy - Ed,SCF" <editoralex@strategic-culture.org>
- "Vladimir Maximenko, EdinCh - SCF OnlJnl" <info@strategic-culture.org> ???
- <http://www.strategic-culture.org>

### South Africa:

- 'Jamiatul Ulama - KwaZulu-Natal, South Africa' (Council of Muslim Theologians; Ed: Moosa Salie)
- "Moosa Salie - JamiatPubs" <publications@jamiat.org.za>
- <http://jamiat.org.za/>
- 'Media Review Network' (Islamic site)
- "Media Review Network" <webmaster@mediareviewnet.com>
- "Suraya Dadoo - Researcher,MRN" <suraya-dadoo@telkomsa.net>
- <http://mediareviewnet.com/>
- 'South African Civil Society Information Service' (Ed: Fazila Farouk)
- "Fazila Farouk" <fazilafarouk@sacsis.org.za>
- <http://sacsis.org.za/s/>

### Spain:

- \*'Human Wrongs Watch' (Ed & Pub: Baher Kamal, Egyptian-born, Spanish national)
- "Baher Kamal - Ed,HWW" <baher.kamal@gmail.com>
- <http://human-wrongs-watch.net/>
- Spain/USA
- \*'Eurasia Review' & 'Albany Tribune' (Ed: Robert Duncan)
- "Robert Duncan" <rilduncan@hotmail.com>
- <http://www.eurasiareview.com>

### Sri Lanka:

- 'Groundviews: Journalism for Citizens' (Ed: Sanjana Hattotuwa)
- "Sanjana Hattotuwa - Ed,Groundviews,SL" <sanjana@groundviews.org>
- <http://groundviews.org/>
- \*'Sri Lanka Guardian' (Ed: Nilantha Ilanguamuwa)
- "Nilantha Ilanguamuwa - Ed, Sri Lanka Guardian" <editor@srilankaguardian.org>
- "Nilantha Ilanguamuwa - Ed, Sri Lanka Guardian" <ilangamuwa@gmail.com>
- <http://www.srilankaguardian.org/>

### Switzerland/Germany (based in Portugal):

- \*\*'TRANSCEND Media Service' (Ed: Antonio C.S. Rosa) - articles on 'sociological aspects of violence'
- "Antonio C.S. Rosa - Ed, TMSWD" <submissions@transcend.org>
- <http://www.transcend.org/tms/>

### Thailand:

- 'Alternative Thai News Network' (Ed: Tony Cartalucci)
- "Tony Cartalucci- Ed, AltThaiNews" <cartalucci@gmail.com>
- <http://altthainews.blogspot.com.au/>

### UK:

- 'Ceasefire Magazine' (quarterly) (Founder/Ed-in-Ch: Hicham Yezza)
- "Hicham Yezza" <editor@ceasefiremagazine.co.uk>
- <http://ceasefiremagazine.co.uk>
- 'Facilitate Global' (Eds: Soraya Boyd)
- "Soraya Boyd" <soraya.boyd@facilitateglobal.org>
- <http://facilitateglobal.org>
- Fellowship of Reconciliation
- "Emma Anthony - Outreach" <emma@for.org.uk>
- "Padmakumara - Admin&FinanceOff" <office@for.org.uk>
- <http://www.for.org.uk/>
- \*'openDemocracy' (Ed-in-Ch: Mary Fitzgerald; Ed: Rosemary Bechler)
- "openDemocracy" <submissions@opendemocracy.net>
- <https://www.opendemocracy.net/node/add/submission> (post articles online for consideration)
- Diversity password: WeEncourageTheWorldToWrite
- "Rosemary Bechler" <rosemary@rbechler.com>
- "Katherine Soroya" <katherine.soroya@opendemocracy.net>
- "Phoebe Braithwaite" <phoebe.braithwaite@opendemocracy.net>
- <http://opendemocracy.net/>
- 'Oximity: News That Matters!' (Founders: Sanjay Goel, Christian Hapke)
- "Sanjay Goel" <contact.sanjay@oximity.com>
- "Christian Hapke" <contact.christian@oximity.com>
- <https://www.oximity.com/>
- 'Peace News' (Eds: Emily and Milan)
- "Peace News" <editorial@peacenews.info>
- <http://peacenews.info>
- 'RINF Alternative News' (Ed: Mick Meaney)
- "Mick Meaney - RINF" <mickmeaney@gmail.com>

- <http://rinf.com/>
- 'Roar Magazine' (Eds [from several Euro countries]: Jerome Roos, Joris Leverink, Leonidis Oikonomakis, Carlos Delclós)
- "Roar Magazine" <info@roarmag.org>
- <https://roarmag.org/>
- \*\*'truepublica' (Ed: Graham Vanbergen)
- "Graham Vanbergen - Ed,truepublica" <truepublica@gmail.com>
- <http://truepublica.org.uk/>
- 'UK Progressive' (Ed: Denis G. Campbell)
- "Denis G. Campbell - Ed, UK Progressive" <>
- <http://www.ukprogressive.co.uk/>

## USA:

- 'Activist Post' ()
- contact via website
- <http://www.activistpost.com/>
- 'AlterNet: Alternative News and Information' (Exec Ed: Don Hazen)
- "Don Hazen - ExecEd,AlterNet" <articlesubmissions@altnet.org>
- <http://www.altnet.org/>
- 'The Anti-Media' ()
- contact via website
- <http://theantimedia.org/>
- 'Blacklisted News' (Ed: Doug Owen)
- Doug Owen - Blacklisted News <doug@blacklistednews.com>
- <http://www.blacklistednews.com/>
- 'Christian Science Monitor' (Ed: John Yemma)
- "John Yemma - Editor" <editor@csmonitor.com>
- <http://www.csmonitor.com/>
- 'Common Dreams' (Ed: Craig Brown; Snr Eds: Jon Queally & Andrea Germanos)
- "Common Dreams" <submissions@commondreams.org>
- "Craig Brown - Ed,CommonDreams" <editor@commondreams.org>
- "Jon Queally" <jon@commondreams.org>
- "Andrea Germanos" <andrea@commondreams.org>
- <http://www.commondreams.org>
- 'Consortium News' (Ed: Robert Parry)
- "Robert Parry - Ed" <> <https://consortiumnews.com/2011/12/29/contact-us-form/>
- <https://consortiumnews.com>
- \*\*'Counterpunch' (Ed: Jeffrey St. Clair)
- "Jeffrey St Clair" <counterpunch@counterpunch.org>
- "Jeffrey St Clair" <sitka@comcast.net>
- <http://www.counterpunch.org>
- 'The Daily Journalist' (Fndr/Pres: Jaime Ortega Simo)

- "Jaime Ortega Simo - Fndr/Pres,TDJ" <Jortega@thedailyjournalist.com>
- "Enoch Ortega Simo - Ed,TDJ" <Enochortegasimo@gmail.com>
- <http://thedailyjournalist.com/>
- 'Democracy Now' (Eds: Amy Goodman & Juan Gonzalez; Digest: Jamie)
- "Democracy Now!" <stories@democracynow.org>
- "Democracy Now! Daily Digest" <digest@democracynow.org>
- <http://www.democracynow.org/>
- 'DeSmog: Clearing the PR Pollution that Clouds Climate Science' (Ed/ExecDir: Brendan DeMelle)
- "Brendan DeMelle - ED,DeSmogBlog" <editor@desmogblog.com>
- <http://www.desmogblog.com/>
- 'Dissident Voice' (Senior Editor: Angie Tibbs)
- "Angie Tibbs - SnrEd,DV" <angie@dissidentvoice.org>
- "Angie Tibbs - SnrEd,DV" <angiedvcoeditor@gmail.com>
- <http://dissidentvoice.org/>
- \*\*'The Ecologist' (Ed: Oliver Tickell; Ed [while Oliver away for balance of 2017]: Susan Clark)
- "Oliver Tickell - Ed,TheEcologist" <oliver@theecologist.org>
- "Oliver Tickell" <oliver.tickell@theecologist.org>
- "Susan Clark - Ed, The Ecologist" <susan@theecologist.org>
- <http://www.theecologist.org/>
- 'Evergreene Digest: A Journal of Progress for the Rest of Us' (Ed: David Culver)
- "David Culver - Ed, Evergreene Digest" <tevergreenedigest@earthlink.net> <http://evergreenedigest.org/>
- 'ExtraSensory.News: For a World Breaking Loose from AutoSleep' (Ed: R. Mark Sink)
- "R. Mark Sink - Ed,ExtraSensory.News" <admin.extrasensory@unseen.is>
- <https://extrasensoryprecepts.blogspot.com.au/>
- 'Fellowship' (Ed: Ethan Vesely-Flad)
- "Ethan Vesely-Flad" <editor@forusa.org>
- <http://forusa.org/fellowship>
- 'Firedoglake'
- "Zach Tomanelli" <zach@firedoglake.com>
- <http://my.firedoglake.com/>
- 'Foreign Policy in Focus' (Ed: Peter Certo; Co-Director: John Feffer)
- "Peter Certo - Ed,FPIP,IPS" <peter@ips-dc.org>
- "John Feffer - Co-Dir,FPIP,IPS" <johnf@ips-dc.org>
- "Emily Schwartz Greco - ManEd,OtherWords" <OtherWords@ips-dc.org>
- "Domenica Ghanem" <domenica@ips-dc.org>
- <http://www.fpif.org/>
- 'Foreign Policy Journal' (Ed: Jeremy R. Hammond) - articles attached as a Word file
- "Jeremy R. Hammond - Ed,ForeignPolicyJournal" <editor@foreignpolicyjournal.com>
- <http://www.foreignpolicyjournal.com/>

- \*'Foreign Policy News' (Ed: Justin Farrell)
- "Justin Farrell - Ed,FPN" <editor@foreignpolicynews.org>
- <http://foreignpolicynews.org>
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<https://tinyurl.com/flametree> (Flame Tree Project to Save Life on Earth)

<https://tinyurl.com/whyviolence> ('Why Violence?')

<https://feelingsfirstblog.wordpress.com/> (Feelings First)

<https://nonviolentstrategy.wordpress.com/> (Nonviolent Campaign Strategy)

<https://nonviolentliberationstrategy.wordpress.com/> (Nonviolent Defense/Liberation Strategy)

[https://anitamckone.wordpress.com](https://anitamckone.wordpress.com/) (Anita: Songs of Nonviolence)

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# Chapter 11

## REFORMED TEACHING OF HISTORY

### **Cultural history rather than the history of power struggles**

Human nature has two sides: It has a dark side, to which nationalism and militarism appeal; but our species also has a genius for cooperation, which we can see in the growth of culture. 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, chilli peppers, and quinine are gifts from the American Indians.

We need to reform our educational systems, particularly the teaching of history. As it is taught today, history is a chronicle of power struggles and war, told from a biased national standpoint. We are taught that 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 credit to all who have contributed. When we teach history, it should not be about power struggles. It should be about how human culture was gradually built up over thousands of years by the patient work of millions of hands and minds. Our common global culture, the music, science, literature and art that all of us share, should be presented as a precious heritage - far too precious to be risked in a thermonuclear war.

Many areas of science can be thought of as history:

- Cosmology is history: It is the history of our entire universe.
- Geology is history: It is the history of our Earth, its continents and its oceans.
- Evolutionary biology is history: It is the history of all living creatures. It is the history of our own species and our place in nature.
- Paleoanthropology is history: It is the history of how homonids became humans.
- The study of languages is history: Relationships between languages allow us to trace the spread of humans from their origin in Africa to other parts of the earth.

- Modern genetics contributes to history: The study of mitochondrial DNA and Y-chromosomal DNA allows us to trace the pathways that our ancestors followed in populating the earth.

## Two sides of human nature: Compassion and Greed

Humans are capable of great compassion and unselfishness. Mothers and fathers make many sacrifices for the sake of their families. Kind teachers help us through childhood, and show us the right path. Doctors and nurses devote themselves to the welfare of their patients.

Sadly there is another, side to human nature, a darker side. Human history is stained with the blood of wars and genocides. Today, this dark, aggressive side of human nature threatens to plunge our civilization into an all-destroying thermonuclear war.

Humans often exhibit kindness to those who are closest to themselves, to their families and friends, to their own social group or nation. By contrast, the terrible aggression seen in wars and genocides is directed towards outsiders. Human nature seems to exhibit what might be called “tribalism”: altruism towards one’s own group; aggression towards outsiders. Today this tendency towards tribalism threatens both human civilization and the biosphere.

Greed, in particular the greed of corporations and billionaire oligarchs, is driving human civilization and the biosphere towards disaster.

The greed of giant fossil fuel corporations is driving us towards a tipping point after which human efforts to control climate change will be futile because feedback loops will have taken over. The greed of the military industrial complex is driving us towards a Third World War that might develop into a catastrophic thermonuclear war. The greed of our financial institutions is also driving us towards economic collapse, as we see in the case of Greece.

Until the start of the Industrial Revolution in the 18th and 19th centuries, human society maintained a more or less sustainable relationship with nature. However, with the beginning of the industrial era, traditional ways of life, containing elements of both social and environmental ethics, were replaced by the money-centered, growth-oriented life of today, from which these vital elements are missing.

According to the followers of 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 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. Limitless growth of population or industry on a finite planet is a logical impossibility.

## **Culture, education and human solidarity**

Cultural and educational activities have a small ecological footprint, and therefore are more sustainable than pollution-producing, fossil-fuel-using jobs in industry. Furthermore, since culture and knowledge are shared among all nations, work in culture and education leads societies naturally towards internationalism and peace.

Economies based on a high level of consumption of material goods are unsustainable and will have to be abandoned by a future world that renounces the use of fossil fuels in order to avoid catastrophic climate change, a world where non-renewable resources such as metals will become increasingly rare and expensive. How then can full employment be maintained?

The creation of renewable energy infrastructure will provide work for a large number of people; but in addition, sustainable economies of the future will need to shift many workers from jobs in industry to jobs in the service sector. Within the service sector, jobs in culture and education are particularly valuable because they will help to avoid the disastrous wars that are currently producing enormous human suffering and millions of refugees, wars that threaten to escalate into an all-destroying global thermonuclear war.

## **Culture is cooperative, not competitive!**

Our modern civilization has been built up by means of a worldwide exchange of ideas and inventions. It is built on the achievements of all the peoples of the world throughout history. The true history of humanity is not the history of power struggles, conflicts, kings, dictators and empires. The true history of humanity is a history of ideas, inventions, progress, shared knowledge, shared culture and cooperation.

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 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 not competitive. It is cooperative!

## 11.1 The need for a new global ethic

Today the world urgently needs 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”, a part of which is 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 the message: All humans are brothers and sisters - not just some - all! It is almost a national anthem of humanity. The feelings that the music and words provoke are similar to patriotism, but broader. It is this sense of a universal human family that we need to cultivate in education, in the mass media, and in religion.

We already appreciate music, art and literature from the entire world, and scientific achievements are shared by all, regardless of their country of origin. We need to develop this principle of universal humanism so that it will become the cornerstone of a new ethic.

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 who have contributed. Our modern civilization 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, pineapples, quinine, etc. 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 as a precious heritage - far too precious to be risked in a thermonuclear war.

The human race has a genius for cooperation. All of the great achievements of modern society are achievements of cooperation. We can fly, but no one builds an airplane alone. We can cure diseases, but only through the cooperative efforts of researchers, doctors and medicinal firms. We can photograph and understand distant galaxies, but the ability to do so is built on the efforts of many cooperating individuals. The comfort and well-being that we experience depends on far-away friendly hands and minds, since trade is global, and the exchange of ideas is also global.

The heritage of knowledge and culture, on which our complex civilization depends, is a monument to cooperation. Science and technology could not exist without the worldwide sharing of knowledge. Art, literature and music are the common heritage of humanity. We are who we are because of sharing.

All the peoples of the earth have contributed to the great treasure of human culture that we all share: Agriculture was invented independently in the Middle East, in Asia and in the New World, and from these places it spread throughout the earth. The art of writing and the first steps towards mathematics and astronomy had their beginnings in Mesopotamia



and Egypt. India and Arabia gave us algebra and chemistry. The art of printing began in Asia, and further developed in Europe. Japanese art influenced European painters such as Degas, Gauguin and Van Gogh.

Today, the sharing of knowledge and culture is symbolized by the Internet, which binds us all together, no matter where we are living. The authors who contribute to Wikipedia do so from an unselfish wish to increase the sum of human knowledge. Their names do not even appear on their articles.

Let us use our almost miraculous modern communications media to bind humanity together. Let us eliminate the insanity and immorality of war from our future, and let us replace it with a more noble goal - the development and sharing of the world's cultural heritage.

## 11.2 Some peace education initiatives in Denmark

### Introduction

This section 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 Danis Peace Academy website<sup>1</sup>, founded and maintained by Holger Terp, contains 99,000 documents and illustrations. The beautifully illustrated website features, among many other things, a war and peace timeline from 1500 to 2015, an encyclopedia on peace and security, and a library and online reading room with books, articles and music on peace and war. About 4,000 independent users from all over the world visit the website

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<sup>1</sup><http://www.fredsakademiet.dk/faquk.htm>



Figure 11.1: **Holger Terp, founder of the Danish Peace Academy and editor of its website.**

every day. Many of them are students who need background information for essays that they are writing.

## **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

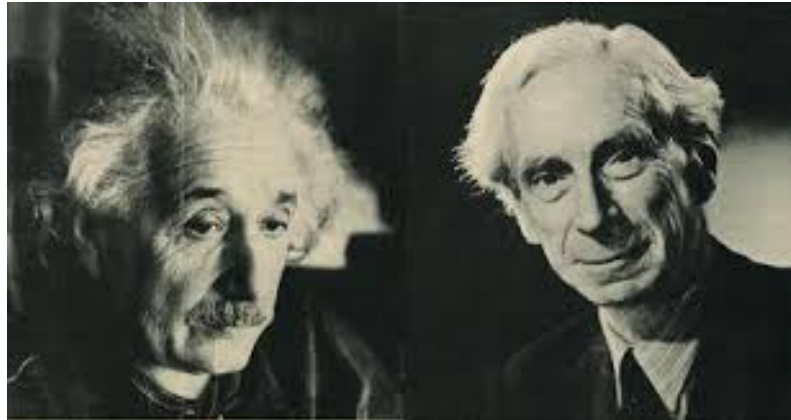


Figure 11.2: **The Russell-Einstein Manifesto: “Shall we put an end to the human race, or shall mankind renounce war?”** Source: Pugwash Conferences on Science and World Affairs.

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 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 NGO's, 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. Akiba's visit, we also arranged a day of peace education at Copenhagen's Open Gymnasium. About 15 people from various branches of Denmark's 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



Figure 11.3: **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**

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 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 Grundtvigian Peoples' Colleges

A unique feature of the Danish educational system is the adult education that is available at about a hundred Folkehøjskole (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



Figure 11.4: 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

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 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 Hartmann’s 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 don’t 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 other's 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 people's fundamental 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 Hartmann's 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.**

An 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

## **11.3 Culture, education and human solidarity**

Cultural and educational activities have a small ecological footprint, and therefore are more sustainable than pollution-producing, fossil-fuel-using jobs in industry. Furthermore, since culture and knowledge are shared among all nations, work in culture and education leads societies naturally towards internationalism and peace.

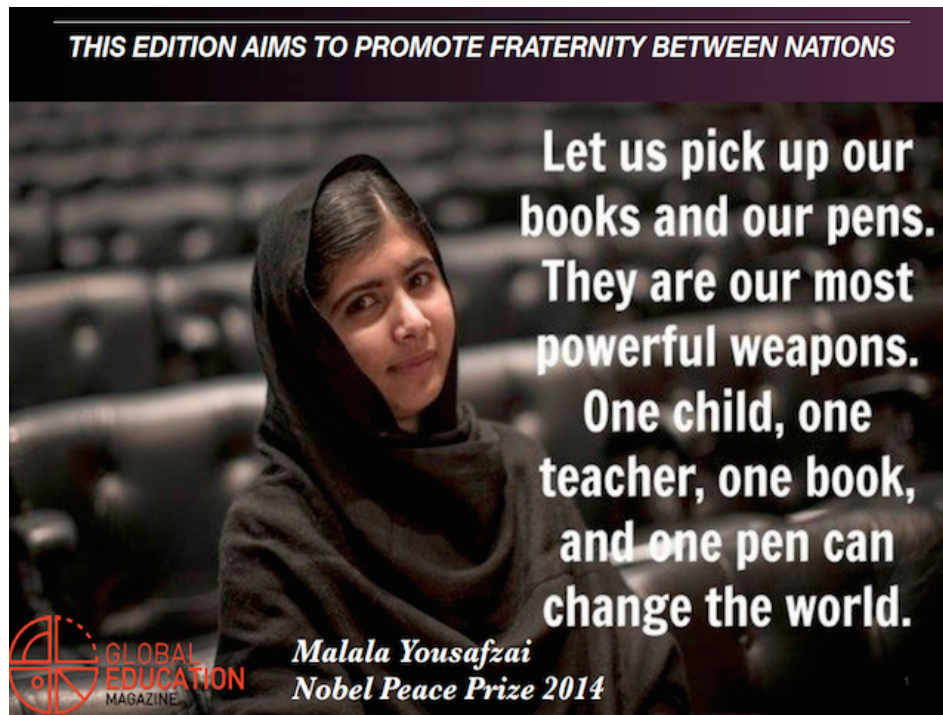
Economies based on a high level of consumption of material goods are unsustainable and will have to be abandoned by a future world that renounces the use of fossil fuels in order to avoid catastrophic climate change, a world where non-renewable resources such as metals will become increasingly rare and expensive. How then can full employment be maintained?

The creation of renewable energy infrastructure will provide work for a large number of people; but in addition, sustainable economies of the future will need to shift many workers from jobs in industry to jobs in the service sector. Within the service sector, jobs in culture and education are particularly valuable because they will help to avoid the disastrous wars that are currently producing enormous human suffering and millions of refugees, wars that threaten to escalate into an all-destroying global thermonuclear war.<sup>2</sup>

Human nature has two sides: It has a dark side, to which nationalism and militarism appeal; but our species also has a genius for cooperation, which we can see in the growth

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<sup>2</sup><http://www.fredsakademiet.dk/library/need.pdf>  
<http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>



of culture. 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, chilli peppers, and quinine are gifts from the American Indians.<sup>3</sup>

We need to reform our educational systems, particularly the teaching of history. As it is taught today, history is a chronicle of power struggles and war, told from a biased national standpoint. We are taught that 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 credit to all who have contributed. When we teach history, it should not be about power struggles. It should be about how human culture was gradually built up over thousands of years by the patient work of millions of hands and minds. Our common global culture, the music, science, literature and art that all of us share, should be presented as a precious heritage - far too precious to be risked in a thermonuclear war.

We have to extend our loyalty to the whole of the human race, and to work for a world not only free from nuclear weapons, but free from war. A war-free world is not utopian but very practical, and not only practical but necessary. It is something that we can achieve and must achieve. Today there are large regions, such as the European Union, where war would be inconceivable. What is needed is to extend these.

Nor is a truly sustainable economic system utopian or impossible. To achieve it, we

<sup>3</sup><http://eruditio.worldacademy.org/article/evolution-cooperation>



should begin by shifting jobs to the creation of renewable energy infrastructure, and to the fields of culture and education. By so doing we will support human solidarity and avoid the twin disasters of catastrophic war and climate change.

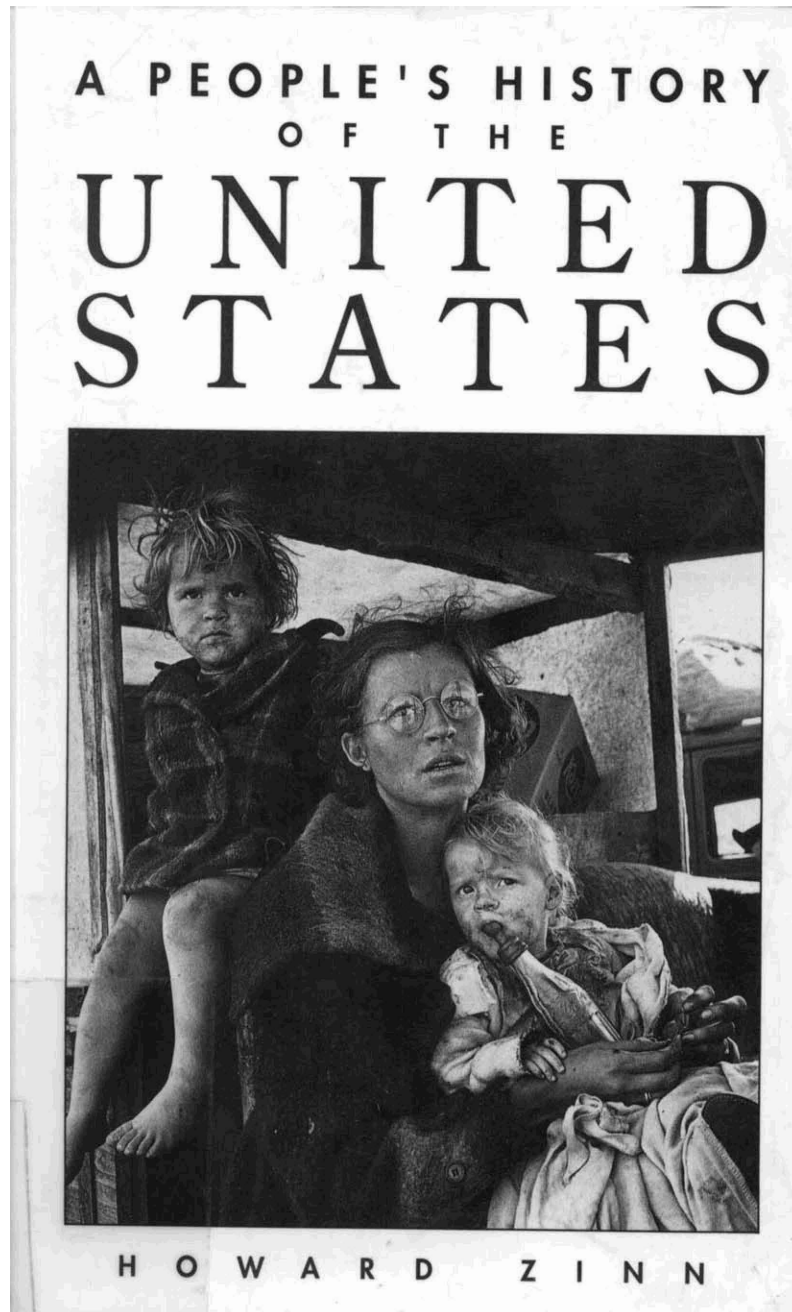


Figure 11.5: The frontpiece of Howard Zinn's book.

## 11.4 History from the perspective of ordinary people

Here are some quotations from the first chapter of “A People’s History of the United States”:

*Arawak men and women, naked, tawny, and full of wonder, emerged from their villages onto the island’s beaches and swam out to get a closer look at the strange big boat. When Columbus and his sailors came ashore, carrying swords, speaking oddly, the Arawaks ran to greet them, brought them food, water, gifts.*

*He later wrote of this in his log: They . . . brought us parrots and balls of cotton and spears and many other things, which they exchanged for the glass beads and hawks’ bells. They willingly traded everything they owned. . . . They were well-built, with good bodies and handsome features. . . . They do not bear arms, and do not know them, for I showed them a sword, they took it by the edge and cut themselves out of ignorance. They have no iron. Their spears are made of cane. . . . They would make fine servants. . . . With fifty men we could subjugate them all and make them do whatever we want...*

*To emphasize the heroism of Columbus and his successors as navigators and discoverers, and to deemphasize their genocide, is not a technical necessity but an ideological choice. It serves-unwittingly to justify what was done.*

*My point is not that we must, in telling history, accuse, judge, condemn Columbus in absentia. It is too late for that; it would be a useless scholarly exercise in morality. But the easy acceptance of atrocities as a deplorable but necessary price to pay for progress (Hiroshima and Vietnam, to save Western civilization; Kronstadt and Hungary, is still to save socialism; nuclear proliferation, to save us all)-that with us. One reason these atrocities are still with us is that we have learned to bury them in a mass of other facts, as radioactive wastes are buried in containers in the earth. We have learned to give them exactly the same proportion of attention that teachers and writers often give them in the most respectable of classrooms and textbooks. This learned-sense of moral proportion, coming from the apparent objectivity of the scholar, is accepted more easily than when it comes from politicians at press conferences. It is therefore more deadly.*

*“History is the memory of states,” wrote Henry Kissinger in his first book, *A World Restored*, in which he proceeded to tell the history of nineteenth-century Europe from the viewpoint of the leaders of Austria and England, ignoring the millions who suffered from those states- men’s policies. From his standpoint, the “peace” that Europe had before the French Revolution was “restored” by the diplomacy of a few national leaders. But for factory workers in England, farmers in France, colored people in Asia and Africa, women and children everywhere except in the upper classes, it was a world of conquest, violence, hunger, exploitation-a world not restored but disintegrated.*

*My viewpoint, in telling the history of the United States, is different: that we must not accept the memory of states as our own. Nations are not communities and never have been. The history of any country, presented as the history of a family, conceals fierce conflicts of interest (sometimes exploding, most often repressed) between conquerors and conquered.*



Figure 11.6: **Howard Zinn, (1922-2010).**

### Some Suggestions for further reading

1. Brandon, William. *The Last Americans: The Indian in American Culture*. New York: McGraw-Hill, 1974.
2. Collier, John. *Indians of the Americas*. New York: W . W. Norton, 1947.
3. de las Casas, BartolomC. *History of the Indies*. New York: Harper & Row, 1971.
4. Jennings, Francis. *The Invasion of America: Indians, Colonialism, and the Cant of Conquest*. Chapel Hill: University of North Carolina Press, 1975.
5. Koning, Hans. *Columbus: His Enterprise*. New York: Monthly Review Press, 1976.
6. Morgan, Edmund S. *American Slavery, American Freedom: The Ordeal of Colonial Virginia*. New York: W . W. Norton, 1975.
7. Morison, Samuel Eliot. *Admiral of the Ocean Sea* Boston: Little, Brown, 1942.
8. Morrison, Samual Elliot *Christopher Columbus, Mariner*. Boston: Little, Brown, 1955.
9. Nash, Gary B. *Red, White, and Black: The Peoples of Early America* Englewood Cliffs: Prentice-Hall, 1970.
10. Vogel, Virgil, ed. *This Country Was Ours*. New York: Harper & Row, 1972.
11. Aptheker, Herbert, ed. *A Documentary History of the Negro People in the United States*. Secaucus, N.J.: Citadel, 1974.
12. Boskin, Joseph. *Into Slavery: Radical Decisions in the Virginia Colony*. Philadelphia, Lippincott, 1966.
13. Catterall, Helen. *Judicial Cases Concerning American Slavery and the Negro*. 5 vols. Washington, Negro University Press, 1937.

14. Davidson, Basil. *The African Slave Trade*. Boston: Little, Brown, 1961.
15. Donnan, Elizabeth, ed. *Documents Illustrative of the History of the Slave Trade to America*. 4 vols. New York: Octagon, 1965.
16. Elkiis, Stanley. *Slavery: A Problem in American Institutional and Intellectual Life*. Chicago: University of Chicago Press, 1976.
17. Federal Writers Project. *The Negro in Virginia*. New York: Arno, 1969.
18. Franklin, John Hope. *From Slavery to Freedom: A History of American Negroes*. New York: Knopf, 1974.
19. Jordan, Winthrop. *White Over Black: American Attitudes Toward the Negro, 1558-1812*. Chapel Hill: University of North Carolina Press, 1968.
20. Morgan, Edmund S. *American Slavery, American Freedom: The Ordeal of Colonial Virginia*. New York: W. W. Norton, 1975.
21. Mullin, Gerald. *Flight and Rebellion: Slave Resistance in Eighteenth-Century Virginia*. New York: Oxford University Press, 1974.
22. Mullin, Michael, ed. *American Negro Slavery: A Documentary History*. New York: Harper & Row, 1975.
23. Phillips, Ulrich B. *American Negro Slavery: A Survey of the Supply, Employment and Control of Negro Labor as Determined by the Plantation Regime*. Baton Rouge: Louisiana State University Press, 1966.
24. Redding, J. Saunders. *They Came in Chains*. Philadelphia: Lippincott, 1973.
25. Stamp, Kenneth M. *The Peculiar Institution*. New York: Knopf, 1956.
26. Tannenbaum, Frank. *Slave and Citizen: The Negro in the Americas*. New York: Random House, 1963.
27. Allen, Robert. *Reluctant Reformers: Racism and Social Reform Movements in the United States*. New York: Anchor, 1975.
28. Bellamy, Edward. *Looking Backward*. Cambridge: Harvard University Press, 1967.
29. Bowles, Samuel, and Gintis, Herbert. *Schooling in Capitalist America*. New York: Basic Books, 1976.
30. Brandeis, Louis. *Other People's Money*. New York: Frederick Stokes, 1914.
31. Brecher, Jeremy. *Strike!* Boston: South End Press, 1979.
32. Carwardine, William. *The Pullman Strike*. Chicago: Charles Kerr, 1973.
33. Cochran, Thomas, and Miller, William. *The Age of Enterprise*. New York: Macmillan, 1942.
34. Conwell, Russell H. *Acres of Diamonds*. New York: Harper & Row, 1915.
35. Crowe, Charles. *Tom Watson, Populists, and Blacks Reconsidered*, *Journal of Negro History*. April 1970.
36. David, Henry. *A History of the Haymarket Affair*. New York: Collier, 1963.
37. Feldstein, Stanley, and Costello, Lawrence, eds. *The Ordeal of Assimilation: A Documentary History of the White Working Class, 1830's to the 1970's*. Garden City, N.Y.: Anchor, 1974.
38. Foner, Philip. *A History of the Labor Movement in the United States*. 4 vols. New York: International Publishers, 1947-1964.

37. George, Henry. *Progress and Poverty*. New York: Robert Scholkenbach Foundation, 1937.
38. Ginger, Ray. *The Age of Excess: The U S . from 1877 to 1914*. New York: Macmillan, 1975.
39. Goodwyn, Lawrence. *Democratic Promise: The Populist Movement in America*. New York: Oxford University Press, 1976.
40. Hair, William Ivy. *Bourbonism and Agrarian Protest: Louisiana Politics, 1877-1900*. Baton Rouge: Louisiana State University Press, 1969.
41. Heilbroner, Robert, and Singer, Aaron. *The Economic Transformation of America*. New York: Harcourt Brace Jovanovich, 1977.
42. Hofstadter, Richard, and Wallace, Michael, eds. *American Violence: A Documentary History*. New York: Knopf, 1970.
43. Josephson, Matthew. *The Politicos* New York: Harcourt Brace Jovanovich, 1963.
44. Mason, Alpheus T., and Beaney, William M. *American Constitutional Law*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
45. Myers, Gustavus. *History of the Great American Fortunes*. New York: Modern Library, 1936.
46. Pierce, Bessie L. *Public Opinion and the Teaching of History in the United States*. New York: DaCapo, 1970.
47. Pollack, Norman. *The Populist Response to Industrial America*. Cambridge, Mass.: Harvard University Press, 1976.
48. Smith, Henry Nash. *Virgin Land*. Cambridge, Mass.: Harvard University Press, 1970.
49. Spring, Joel H. *Education and the Rise of the Corporate State*. Boston: Beacon Press, 1973.
50. Wasserman, Harvey. *Harvey Wusserman's History of the United States*. New York: Harper & Row, 1972.
51. Wertheimer, Barbara. *We Were There: The Story of Working Women in America* New York: Pantheon, 1977.
52. Woodward, C. Vann. *Origins of the New South*. Baton Rouge: Louisiana State University Press, 1972.
53. Tom Watson, *Agrarian Rebel*. New York: Oxford University Press, 1963.
54. Aptheker, Herbert, ed. *A Documentary History of the Negro People in the United States*. New York: Citadel, 1973.
55. Beale, Howard K. *Theodore Roosevelt and the Rise of America to World Power*. New York: Macmillan, 1962.
56. Beisner, Robert. *Twelve Against Empire: The Anti-Imperialists, 1898-1902*. New York: McGraw-Hill, 1968.
57. Foner, Philip. *A History of the Labor Movement in the United States*. 4 vols. New York: International Publishers, 1947-1964.
58. Francisco, Luzviminda. *The First Vietnam: The Philippine-American War, 1899-1902*, Bulletin of Concerned Asian Scholars, 1973.



59. Gatewood, Willard B. *Smoked Yankees and the Struggle for Empire: Letters from Negro Soldiers, 1898-1902*. Urbana: University of Illinois Press, 1971.
60. Lafeber, Walter. *The New Empire: An Interpretation of American Expansion*. Ithaca, N.Y.: Cornell University Press, 1963.
61. Pratt, Julius. *American Business and the Spanish-American War*, *Hispanic-American Historical Review*, 1934.
62. Schirmer, Daniel Boone. *Republic or Empire: American Resistance to the Philippine War*. Cambridge, Mass.: Schenkman, 1972.
63. Williams, William Appleman. *The Roots of the Modern American Empire*. New York: Random House, 1969.
64. Young, Marilyn. *The Rhetoric of Empire*. Cambridge, Mass.: Harvard University Press, 1968.
65. Aptheker, Herbert. *A Documentary History of the Negro People in the United States*. New York: Citadel, 1974.
66. Baxandall, Rosalyn, Gordon, Linda, and Reverby, Susan, eds. *America's Working Women*. New York: Random House, 1976.
67. Braverman, Harry. *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. New York: Monthly Review, 1975.
68. Brody, David. *Steelworkers in America: The Non-Union Era*. Cambridge, Mass.: Harvard University Press, 1960.
69. Chafe, William. *Women and Equality: Changing Patterns in American Culture*. New York: Oxford University Press, 1977.
70. Cochran, Thomas, and Miller, William. *The Age of Enterprise*. New York: Macmillan, 1942.
71. Dancis, Bruce. *Socialism and Women*, *Socialist Revolution*, January-March 1976.
72. Dubofsky, Melvyn. *We Shall Be All: A History of the Industrial Workers of the World*. New York: Quadrangle, 1974.
73. Flexner, Eleanor. *A Century of Struggle*. Cambridge, Mass.: Harvard University Press, 1975.
74. Flynn, Elizabeth Gurley. *The Rebel Girl*. New York: International Publishers, 1973.
75. Foner, Philip, ed. *Helen Kellec Her Socialist Years*. New York: International Publishers, 1967.
76. Gilman, Charlotte Perkins. *Women and Economics*. New York: Harper & Row, 1966.
77. Ginger, Ray. *The Bending Cross: A Biography of Eugene Victor Debs*. New Brunswick: Rutgers University Press, 1969.
78. Goldman, Emma. *Anarchism and Other Essays*. New York: Dover, 1970.
79. Green, James. *Grass-Roots Socialism: Radical Movements in the Southwest, 1895-1943*. Baton Rouge: Louisiana State University Press, 1978.
80. Hays, Samuel. "The Politics of Reform in Municipal Government in the Progressive Era," *Pacific Northwest Quarterly*, October 1964. (Reprinted by New England Free Press.)

81. Haywood, Bill. *The Autobiography of Big Bill Haywood*. New York: International Publishers, 1929.
82. James, Henry. *The American Scene*. Bloomington: Indiana University Press, 1968.
83. Hofstadter, Richard. *The American Political Tradition*. New York: Random House, 1954.
84. Jones, Mary. *The Autobiography of Mother Jones*. Chicago: Charles Kerr, 1925.
85. Kaplan, Justin. *Mr. Clemens and Mark Twain: A Biography*. New York: Simon & Schuster, 1966.
86. Kolko, Gabriel. *The Triumph of Conservatism*. New York: Free Press, 1977.
87. Kornbluh, Joyce, ed. *Rebel Voices: An I. W. W. Anthology*. Ann Arbor: University of Michigan Press, 1964.
88. Lerner, Gerda, ed. *Black Women in White America*. New York: Random House, 1973.
89. London, Jack. *The Iron Heel*. New York: Bantam, 1971.
90. Naden, Corinne J. *The Triangle Shirtwaist Fire, March 25, 1911*. New York: Franklin Watts, 1971.
91. Sanger, Margaret. *Woman and the New Race*. New York: Brentano's, 1920.
92. Schoener, Allon, ed. *Portal to America: The Lower East Side, 1870-1925*. New York: Holt, Rinehart and Winston, 1967.
93. Sinclair, Upton. *The Jungle*. New York: Harper & Row, 1951.
94. Sochen, June. *Movers and Shakers: American Women Thinkers and Activists, 1900-1970*. New York: Quadrangle, 1974.
95. Stein, Leon. *The Triangle Fire*. Philadelphia: Lippincott, 1965.
96. Wasserman, Harvey. *Harvey Wasserman's History of the United States*. New York: Harper & Row, 1972.
97. Weinstein, James. *The Corporate Ideal in the Liberal State, 1900-1918*. Boston: Beacon Press, 1968.
98. Wertheimer, Barbara. *We Were There: The Story of Working Women in America*. New York: Pantheon, 1977.
99. Wiebe, Robert H. *The Search for Order, 1877-1920*. New York: Hill & Wang, 1966.
100. Yellen, Samuel. *American Labor Struggles*. New York: Pathfinder, 1974.
101. Zinn, Howard. *The Politics of History*. Boston: Beacon Press, 1970.
102. Baritz, Loren, ed. *The American Left*. New York: Basic Books, 1971.
103. Chafee, Zechariah, Jr. *Free Speech in the United States*. New York: Atheneum, 1969.
104. Dos Passos, John. 1919. New York: Signet, 1969.
105. Du Bois, W. E. B. "The African Roots of War," *Atlantic Monthly*, May 1915.
106. Fleming, D. F. *The Origins and Legacies of World War I*. Garden City, N.Y.: Doubleday, 1968.
107. Fussell, Paul. *The Great War and Modern Memory*. New York: Oxford University Press, 1975.
108. Ginger, Ray. *The Bending Cross: A Biography of Eugene Victor Debs*. New Brunswick: Rutgers University Press, 1969.

109. Goldman, Eric. *Rendezvous with Destiny*. New York: Random House, 1956.
110. Gruber, Carol S. *Mars and Minerva: World War I and the Uses of Higher Learning in America*. Baton Rouge.: Louisiana State University Press, 1975.
111. Joughin, Louis, and Morgan, Edmund. *The Legacy of Sacco and Vanzetti*. New York: Quadrangle, 1964.
112. Knightley, Philip. *The First Casualty: The War Correspondent as Hero. Propagandist. and Myth Maker*. New York; Harcourt Brace Jovanovich, 1975.
113. Kornbluh, Joyce, ed. *Rebel Voices: An I. W. W. Anthology*. Ann Arbor: University of Michigan Press, 1964.
114. Levin, Murray. *Political Hysteria in America* New York: Basic Books, 1971.
115. Mayer, Arno J. *The Politics and Diplomacy of Peace-Making 1918-1919*. New York: Knopf, 1967.
116. Peterson, H. C., and Fite, Gilbert C. *Opponents of War, 191 7-1 918*. Seattle: University of Washington Press, 1968.
117. Simpson, Colin. *Lusitania*. Boston: Little, Brown, 1973.
118. Sinclair, Upton, Boston. Cambridge, Mass.: Robert Bentley, 1978.
119. Alperovitz, Gar. *Atomic Diplomacy*. New York: Vintage, 1967.
120. Aronson, James. *The Press and the Cold War*. Indianapolis: Bobbs-Merrill, 1970.
121. Barnet, Richard J. *Intervention and Revolution: The US. and the Third World*. New York: New American Library, 1969.
122. Blackett, P. M. S. *Fear, War and the Bomb: Military and Political Consequences of Atomic Energy*. New York: McGraw Hill, 1948.
123. Bottome, Edgar. *The Balance of Terroc A Guide to the Arms Race*. Boston: Beacon Press, 1972.
124. Butow, Robert. *Japan's Decision to Surrender*. Stanford: Stanford University Press, 1954.
125. Catton, Bruce. *The War Lords of Washington*. New York: Harcourt Brace, 1948.
126. Chomsky, Noam. *American Power and the New Mandarins*. New York: Pantheon, 1969.
127. Davidson, Basil. *Let Freedom Come: Africa in Modern History*. Boston: Little, Brown, 1978.
128. Feingold, Henry L. *The Politics of Rescue: The Roosevelt Administration and the Holocaust*. New Brunswick, N.J.: Rutgers University Press, 1970.
129. Freeland, Richard M. *The Truman Doctrine and the Origins of McCarthyism*. New York: Knopf, 1971.
130. Gardner, Lloyd. *Economic Aspects of New Deal Diplomacy*. Madison: University of Wisconsin Press, 1964.
131. Griffith, Robert W. *The Politics of Feac Joseph R. McCarthy and the Senate*. Rochelle
132. Park, N.J.: Hayden, 1971.
133. Hamby, Alonzo L. *Beyond the New Deal: Harry S. Truman and American Liberalism*. New York: Columbia University Press, 1953.
134. Irving, David. *The Destruction of Dresden*. New York: Ballantine, 1965.
135. Kahn, Herman. *On Thermonuclear War*. New York: Free Press, 1969.
- 136.

137. Kolko, Gabriel. *The Politics of War: The World and United States Foreign Policy, 1943-1945*. New York: Random House, 1968.
138. Lemisch, Jesse. *On Active Service in War and Peace: Politics and Ideology in the American Historical Profession*. Toronto: New Hogtown Press, 1975.
139. Mailer, Norman. *The Naked and the Dead*. New York: Holt, Rinehart and Winston, 1948.
140. Miller, Douglas, and Nowak, Marion. *The Fifties: The Way We Really Were*. New York: Doubleday, 1977.
141. Miller, Marc. "The Irony of Victory: Lowell During World War II." Unpublished doctoral dissertation. Boston University, 1977.
142. Mills, C. Wright. *The Power Elite*. New York: Oxford University Press, 1970.
143. Minear, Richard H. *Victor's Justice: The Tokyo War Crimes Trial*. Princeton, N.J.: Princeton University Press, 1973.
144. Offner, Arnold. *American Appeasement: US. Foreign Policy and Germany, 1933-1938*. New York: W. W. Norton, 1976.
145. Rostow, Eugene V. "Our Worst Wartime Mistake," *Harper's*, September 1945.
146. Russett, Bruce. *No Clear and Present Danger*. New York: Harper & Row, 1972.
147. Sampson, Anthony. *The Seven Sisters: The Great Oil Companies and the World They Shaped*. New York: Viking, 1975.
148. Schneir, Walter and Miriam. *Invitation to an Inquest*. New York: Doubleday, 1965.
150. Sherwin, Martin. *A World Destroyed: The Atom Bomb and the Grand Alliance*. New York: Knopf, 1975.
151. Stone, I. F. *The Hidden History of the Korean War*. New York: Monthly Review Press, 1969.
152. United States Strategic Bombing Survey. *Japan's Struggle to End the War*. Washington: Government Printing Office, 1946.
153. Weglyn, Michi. *Years of Infamy: The Untold Story of America's Concentration Camps*. New York: William Morrow, 1976.
154. Wittner, Lawrence S. *Rebels Against War: The American Peace Movement, 1941-1960*. New York: Columbia University Press, 1969.
155. Zinn, Howard. *Postwar America: 1945-1971*. Indianapolis: Bobbs-Merrill, 1973.
156. Zinn, Howard, *The Pentagon Papers*. 4 vols. Boston: Beacon Press, 1971.
157. UNESCO-IBE, *Situation of Education for International Understanding: International Conference on Education, 44th Session, Geneva, UNESCO-IBE, Geneva, (1994)*.
158. P.M. Bisch, *Culture of Democracy: A Challenge for Schools, UNESCO-IBE, Geneva, (1995)*.
159. Branfman, Fred. *Voices from the Plain of Jars*. New York: Harper & Row, 1972.
160. Green, Philip, and Levinson, Sanford. *Power and Community: Dissenting Essays in Political Science*. New York: Pantheon, 1970.
161. Hersch, Seymour. *My Lai 4: A Report on the Massacre and Its Aftermath*. New York: Random House, 1970.
162. Kovic, Ron. *Born on the Fourth of July*. New York: McGraw-Hill, 1976.

163. Lipsitz, Lewis. "On Political Belief: The Grievances of the Poor," *Power and Community: Dissenting Essays in Political Science*, ed. Philip Green and Sanford Levinson. New York: Pantheon, 1970.
164. Modigliani, Andrew. "Hawks and Doves, Isolationism and Political Distrust: An Analysis of Public Opinion on Military Policy," *American Political Science Review*, September 1972.
165. Pike, Douglas. *Viet Cong*. Cambridge, Mass.: MIT Press, 1966.
166. Schell, Jonathan. *The Village of Ben Suc*. New York: Knopf, 1967.
167. Zinn, Howard. *Vietnam: The Logic of Withdrawal*. Boston: Beacon Press, 1967. Blair, John M. *The Control of Oil*. New York: Pantheon, 1977.
168. Dommergues, Pierre. "L'Essor Du consematisme Americain," *Le Monde Diplomatique*, May 1978.
169. Evans, Les, and Myers, Allen. *Watergate and the Myth o American Democracy*. New York: Pathfinder Press, 1974.
170. Frieden, Jess. "The Trilateral Commission," *Monthly Review*, December 1977.
171. Gardner, Richard. *Alternative America: A Directory of 5000 Alternative Lifestyle Groups and Organizations*. Cambridge, Richard Gardner, 1976.
172. Glazer, Nathan, and Kristol, Irving. *The American Commonwealth 1976*. New York: Basic Books, 1976.
173. *New York Times*. *The Watergate Hearings*. Bantam, 1973.
174. U.S., Congress, Senate Committee to Study Governmental Operations with Respect to Intelligence Activities. *Hearings*. 94th Congress. 1976.
175. Bryan, C. D. B. *Friendly Fire*. New York: Putnam, 1976. Levin, Murray B. *The Alienated Voter*. New York: Iwington, 1971.
176. Warren, Donald I. *The Radical Center: Middle America and the Politics of Alienation* Notre Dame, Ind.: University of Notre Dame Press, 1976.
177. Weizenbaum, Joseph. *Computer Power and Human Reason*. San Francisco: Freeman, 1976.
178. UNESCO-IBE, *International Conference on Education, 44th Session, Geneva, 3-8 October, 1994: Final Report*, UNESCO-IBE, Geneva, (1995).
179. Niels Hartmann, *Et barn har brug for fred!*, Danish UNICEF Committee, (1986).
180. P. Manniche, *Living Democracy in Denmark*, Gad, Copenhagen, (1939).
181. J.C. MÅller and K. Watson, *Education in Democracy: The Folk High Schools of Denmark*, Faber, London, (1944).
182. T. Rorodam, *The Danish Folk High Schools*, Det Danske Selskab, Copenhagen, (1965).
183. R. Aldridge and J. Aldridge, *Children and Nonviolence*, Hope Publishing House, Pasadena, CA, (1989).
184. American Friends Service Committee, *Trading Books for Soldiers: The True Cost of JROTC, AFSC National Youth and Militarism Program*, Philadelphia PA, (1999).
185. Amnesty International, *In the Firing Line: War and Children's Rights*, Amnesty International, London, United Kingdom, (1999).

186. D.P. Barash, *Introduction to Peace Studies*, Wadsworth Publications, Belmont, CA, (1991).
187. D.P. Barash, *Approaches to Peace: A Reader in Peace Studies*, Oxford University Press, New York, (1999).
188. E. Benoit and K.E. Boulding, *Disarmament and the Economy*, Greenwood Press, Westport CT, (1978).
189. G.A. Bischak, *Towards a Peace Economy in the United States: Essays on Military Industry, Disarmament and Economic Conversion*, St. Martins Press, New York, (1991).
190. Elsie Boulding, Ed., *New Agendas for Peace Research: Conflict and Security Reexamined*, Lynne Rienner Publishers., Boulder, CO, (1992).
191. Elsie Boulding, *Cultures of Peace: The Hidden Side of History*, Syracuse University Press, Syracuse, NY, (2000).
192. K. Boulding, *Economics of Peace*, Ayer Co. Pubs., Salem, NH, (1972).
193. K. Boulding, *Peace and the War Industry*, Transaction Books, New Brunswick, NJ, (1975).
194. British Atlantic Committee, *Peace and Conflict Studies: A Syllabus in Peace Studies*, BAC, London, (1983).
195. B. Brock-Utne, *Educating for Peace: A Feminist Perspective*, Teachers College press, New York, (1985).
196. B. Brock-Utne, *Feminist Perspectives on Peace and Peace Education*, Elsevier, New York, (1989).
197. A.K.K. Chandy, *Peace Culture Amidst Power Conflicts*, FOR India, Karala, India, (1992).
198. S. Dasgupta, *Philosophical Assumptions for Training in Non-Violence*, Gujarant Vidyapith, Amendabad, India, (1984).
199. R. Ehrlich, Ed., *Perspectives on Nuclear War and Peace Education*, Greenwood Press, Westport, CT, (1987).
200. Z. Fairbairnes, *Study War No More: Military Involvement in British Universities and Colleges*, Campaign for Nuclear Disarmament, London, (1974).
201. P.N. Fedoseyev, *Peace and Disarmament: Academic Studies*, Imported Pubs., Chicago, IL, (1987).
202. G. Feller et al., Eds., *Peace and World Order Studies: A Curriculum Guide*, World Policy, New York, (1981).
203. Five College Program in Peace and World Security Studies, *Guide to Careers, Internships and Graduate Education in Peace Studies*, PAWSS, Hampshire College, Amherst, MA, (1997).
204. B.R. Ford, *Educating for Peace: Curriculum with a Global Perspective: Pre-Kindergarten, Kindergarten, and Early Elementary Grades*, Inst. for Global Education, Grand Rapids, MI, (1997).
205. H. Gordon and L. Grob, Eds., *Education for Peace: Testimonies from the World's Religions*, Orbis Books, Maryknoll, NY, (1987).

206. M. Haavelsrud, *Education for Peace*, Science and Technology Press, Guilford, Surrey, GB, (1976).
207. V. Harle, *Essays in Peace Studies*, Dartmouth Pub., Brookfield, VT, (1987).
208. I.M. Harris, *Peace Education*, McFarland and Co., Jefferson, NC, (1994).
209. D. Heater, *Peace Through Education: The Contribution of the Council for Education in World Citizenship*, Taylor and Francis, Philadelphia, PA, (1984).
210. D. Hicks, *Education for Peace: What Does It Mean?*, Centre for Peace Studies, Lancaster, England, (1988).
211. D. Hicks, Ed., *Education for Peace: Issues, Principles and Practices in the Classroom*, Routledge, Boston, MA, (1988).
212. R.A. Hinde and D.A. Parry, Eds., *Education for Peace*, Spokesman Books, Philadelphia, PA, (1989).
213. M.W. Hovey and G.C. Gordon, *ROTC and Catholic Higher Education*, The Center on Conscience and War, Charlestown, MA, (1989).
214. I.T. Jacobs and J.J. DeBoer, Eds., *Educating for Peace: A Report of the Committee on International Relations of the National Council of Teachers of English*, D. Appleton-Century Co., New York, (1940).
215. G.G. Jampolsky et al., Eds., *Children as Teachers of Peace*, Celestial Arts Pub., Milbrae, CA, (1982).
216. R.A. Janke and J.P. Petersen, *Peacemakers ABC's for Young Children: A Guide for Teaching Conflict Resolution with a Peace Table*, Growing Committee for Peace, St. Croix, MN, (1995).
217. T. Keefe and R.E. Roberts, *Realizing Peace. An Introduction to Peace Studies*, Iowa State Univ. Press, Ames, IA, (1991).
218. M.T. Klare, Ed., *Peace and World Security Studies: A Curriculum Guide*, Lynne Rienner Pub., Boulder, CO, (1994).
219. W.J. Kreidler, *Teaching Conflict Resolution through Childrens' Literature*, Scholastic Press, New York City, (1994).
220. W.J. Kreidler, *Elementary Perspectives No. 1: Teaching Concepts of Peace and Conflict*, Educators for Social Responsibility, Cambridge, MA, (1990).
221. W.J. Kreidler, *Conflict Resolution in the Middle School*, Educators for Social Responsibility, Cambridge, MA, (1994)
222. W.J. Kreidler and L. Furlong, *Adventures in Peacemaking: A Conflict Resolution Guide for School-Age Programs*, Educators for Social Responsibility, Cambridge, MA, (1995). *Education for Peace*
223. H. Kung, *Global Responsibility: In Search of a New World Ethic*, Coninum Press, New York, (1992).
224. T.J. Lasley, *Teaching Peace: Toward Cultural Selflessness*, Birgim and Garvey Pub., Westport, CT, (1994).
225. P. Lawler, *A Question of Values: Johan Galtung's Peace Research*, Lynne Rienner, Boulder CO, (1995).
226. D.E. Levin, *Teaching Young Children in Violent Times: Building a Peaceable Classroom*, Educators for Social Responsibility, Cambridge, MA, (1994).

227. G.A. Lopez, *Peace Studies: Past and Future*, Sage Pubs., Beverly Hills, CA, (1989).
228. K.A. Maddava, *Peace Studies: Towards a Transformative Process*, LEPS Press, Dekalb, IL, (1994).
229. J. McGinnis et al., *Educating for Peace and Justice* (3 vols.), Inst. For Peace and Justice, St. Louis, MO, (1985).
230. J. McGinnis et al., *A Manuel for Teachers* (3 vols.), Inst. for Peace and Justice, St. Louis, MO, (1985).
231. National Council of Women of Great Britain, *Educating People for Peace*, NCWGB, London, (1983).
232. J. O'Connell and A. Curle, *Peace with Work to Do: The Academic Study of Peace*, St. Martin's Press, New York, (1987).
233. B. Reardon, *Comprehensive Peace Education: Educating for Social Responsibility*, Teachers College Press, New York, (1988).
234. B. Reardon, Ed., *Educating for Global Responsibility. Teacher Designed Curricula for Peace Education*, Teachers College Press, New York, (1987).
235. B. Reardon and E.N. Nordland, Eds., *Learning Peace: The Promise of Ecological and Cooperative Education*, SUNY Press, Albany, New York, (1994).
236. B.F. Reys, *Education for World Peace*, World Univ. Amer., Ojai, CA, (1977).
237. P. Smoker et al., Eds., *A Reader in Peace Studies*, Pergamon Press, New York, (1990).
238. A. Stomfay-Stitz, *Peace Education in America, 1828-1990: Sourcebook or Education and Research*, Scarecrow Press, Lexington, MA, (1993).
239. UNESCO, *Peace Research Trend Report and World Directory*, UNESCO, Paris, (1978).
240. UNESCO, *UNESCO Yearbook on Peace and Conflict Studies*, Greenwood Press, Westport, CT, (1980-1990).
241. UNESCO, *World Directory of Peace Research and Training Institutions*, Berg Pubs., Herndon, VA, (1988).
242. Universitetsforlaget, *Journal of Peace Research*, periodical, Universitetsforlaget, Oslo, Norway, (1964-present).
243. University Conversion Project, *Study War No More*, periodical, UCP/War Research Information Service, Cambridge, MA, (1991-present).
244. P. Wallensteen, Ed., *Peace Research: Achievements and Challenges*, Westview, Boulder, CO, (1988).
245. A.G. White, *Educating for Peace: A Selected Bibliography*, Vance Bibliographies, Montecello, IL, (1989).
246. S. Wichert, *Keeping the Peace: Practicing Cooperation and Conflict Resolution with Preschoolers*, New Society Pubs., Philadelphia, PA, (1989).
247. B. Wein, Ed., *Peace and World Order Studies: A Curriculum Guide*, World Policy, United Nations, New York, (1985).
248. O.N. Larsen, ed., *Violence and the Mass Media*, Harper and Row, (1968).
249. R.M. Liebert et al., *The Early Window: The Effects of Television on Children and Youth*, Pergamon, Elmsford, NY, (1982).
250. G. Noble, *Children in Front of the Small Screen*, Constable, London, (1975).



251. H. Schneider, *Das Geschäft mit dem Verbrechen. Massenmedien und Kriminalität*, Kindler, Munich, (1980).
252. W. Schramm, ed., *Grundfragen der Kommunikationsforschung*, Munich, (1973).
253. J.L. Singer and D.G. Singer, *Television, Imagination and Aggression: A Study of Preschoolers*, Erlbaum, Hillsdale, NY, (1981).
254. H.J. Skornia, *Television and Society*, McGraw-Hill, New York, (1965).
255. D.L. Bridgeman, ed., *The Nature of Prosocial Behavior*, New York, Academic Press, (1983).
256. N. Eisenberg, ed., *The Development of Prosocial Behavior*, New York, Academic Press, (1982).
257. W.H. Goodenough, *Cooperation and Change: An Anthropological Approach to Community Development*, New York, Russell Sage Foundation, (1963).
258. J.R. Macauley and L. Berkowitz, *Altruism and Helping Behavior*, Academic Press, New York, (1970).



# Chapter 12

## NON-VIOLENT RESISTANCE

### 12.1 From tribalism to universal brotherhood

Early religions tended to be centered on particular tribes, and the ethics associated with them were usually tribal in nature. However, the more cosmopolitan societies that began to form after the neolithic agricultural revolution required a more universal code of ethics.

In the 6th century B.C., Prince Gautama Buddha founded a new religion in India, with a universal (non-tribal) code of ethics. Among the sayings of the Buddha are the following:

“Hatred does not cease by hatred at any time; hatred ceases by love.”

“Let a man overcome anger by love; let him overcome evil by good.”

“All men tremble at punishment. All men love life. Remember that you are like them, and do not cause slaughter.”

One of the early converts to Buddhism was the emperor Ashoka Maurya, who reigned in India between 273 B.C. and 232 B.C. After his conversion, he resolved never again to use war as an instrument of policy. He became one of the most humane rulers in history, and he also did much to promote the spread of Buddhism throughout Asia.

In Christianity, which is built on the foundations of Judaism, the concept of universal human brotherhood replaces narrow loyalty to the tribe. The universality of Christian ethical principles, which we see especially in the Parable of the Good Samaritan, make them especially relevant to our own times. Today, in a world of thermonuclear weapons, the continued existence of civilization depends on whether or not we are able to look on all of humanity as a single family.

In the Christian Gospel According to Mathew, the following passage occurs: “You have heard it said: Thou shalt love thy neighbor and hate thy enemy. But I say unto you: Love your enemies, bless them that curse you, do good to them that hate you, and pray for them that spitefully use you and persecute you.” This echos the sayings of Buddha, “Hatred does not cease by hatred at any time; hatred ceases by love”, and “Let a man overcome anger by love; let him overcome evil by good.”



Figure 12.1: A statue of the Buddha

The seemingly impractical advice given to us by both Jesus and Buddha - that we should love our enemies and return good for evil - is in fact of the greatest practicality, since acts of unilateral kindness and generosity can stop escalatory cycles of revenge and counter-revenge such as those which characterize the present conflict in the Middle East and the recent troubles in Northern Ireland. Amazingly, Christian nations, while claiming to adhere to the ethic of love and forgiveness, have adopted a policy of “massive retaliation”, involving systems of thermonuclear missiles whose purpose is to destroy as much as possible of the country at which retaliation is aimed. It is planned that entire populations shall be killed in a “massive retaliation”, innocent children along with guilty politicians. The startling contradiction between what Christian nations profess and what they do was obvious even before the advent of nuclear weapons, at the time when Leo Tolstoy, during his last years, was exchanging letters with a young Indian lawyer in South Africa.

## 12.2 Tolstoy

One of the functions of good literature is to help us to put ourselves imaginatively into the skin of another person. Good literature (and for that matter, good cinema and television) ought to broaden the range of human sympathy, allowing us to share the feelings of other people who are very different from ourselves.

It is an interesting fact that Leo Tolstoy, who is generally considered to have been one of the greatest novelists of all time, was deeply aware of ethical problems. Leo Tolstoy was born in 1828. While he was still a child, his parents died, and he became Count Tolstoy, with responsibility for the family estate at Yasnaya Polyana. As a young man, he was attracted to the gay and worldly social life of Moscow, but his diary during this period shows remorse over his pursuit of sensual pleasures. Disgusted with himself, he entered the army, and during idle periods he began his career as a writer. While still a soldier, he published a beautiful nostalgic work entitled “Childhood” as well as a number of skillful stories describing army life.

At the age of 28, Tolstoy left the army and spent a brief period as a literary idol in St. Petersburg. He then became concerned about lack of education among Russian peasants, and he travelled widely in Europe, studying educational theory and methods. Returning to Yasnaya Polyana, he established schools for the peasants, published an educational magazine and compiled a number of textbooks whose simplicity and attractiveness anticipated modern teaching methods.

Tolstoy married in 1862 at the age of 34. His wife, Sonya Bers, shared his wide intellectual interests, and they had a happy family life with thirteen children. During this period, Tolstoy managed his estate with much success, and he produced his great literary masterpieces “War and Peace” and “Anna Karenina”. He modeled the characters in “War and Peace” after members of his own family. For example, Tolstoy’s famous heroine, Natassia, is modeled after his sister-in-law, Tanya Bers. Pierre in “War and Peace” and Levin in “Anna Karenina” reflect Tolstoy’s own efforts to understand the meaning of life, his concern with the misery of the Russian peasants, and his ultimate conclusion that true

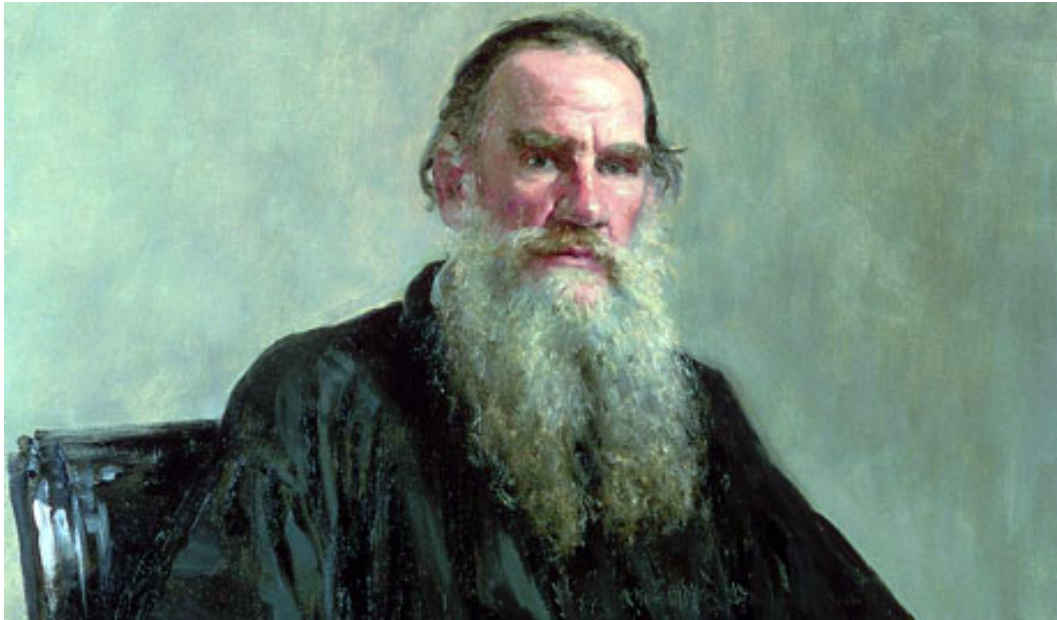


Figure 12.2: Tolstoy as an old man

happiness and peace of mind can only be found in a simple life devoted to the service of others.

By the time Tolstoy had finished “Anna Karenina”, he had become very dissatisfied with the life that he was leading. Despite having achieved in great measure all of the goals for which humans usually strive, he felt that his existence lacked meaning; and in 1879 he even contemplated suicide. He looked for life’s purpose by systematically studying the writings of scientists and philosophers, but he could not find an answer there that satisfied him.

Finally Tolstoy found inspiration in the humble and devout lives of the peasants. He decided that the teachings of Jesus, as recorded in the New Testament, could provide the answer for which he was searching. Tolstoy published an account of his spiritual crisis in a book entitled “A Confession”, in which he says:

“I searched for enlightenment everywhere in the hard-won accumulated knowledge of mankind. I searched passionately and long, not in a lazy way, but with my whole soul, day and night - I searched like a drowning man looking for safety - and found nothing.”

“I searched all the sciences, and not only did I find nothing, but I also came to the conclusion that everyone who, like myself, had searched in the sciences for life’s meaning had also found nothing.”

“I then diligently studied the teachings of Buddhism and Islam in the holy books of those religions; but most of all I studied Christianity as I met it in the holy Scriptures and in the living Christians around me...”

“I began to approach the believers among the poor, simple ignorant people - pilgrims, monks and peasants... The whole life of Christians of our own circle seemed to be a

contradiction of their faith. By contrast, the whole life of Christians of the peasant class was an affirmation of the view of life which their religious faith gave to them. I looked more and more deeply into the faith of these people, and the more deep my insight became, the more I became convinced that they had a genuine belief, that their faith was essential to them, and that it was their faith alone which gave their life a meaning and made it possible for them to live... I developed a love for these simple people.”

Moved by the misery of the urban poor whom he encountered in the slums of Moscow, Tolstoy wrote: “Between us, the rich and the poor, there is a wall of false education, and before we can help the poor, we must first tear down that wall. I was forced to the conclusion that our own wealth is the true cause of the misery of the poor.”

Tolstoy’s book, “What Then Must We Do?”, tells of his experiences in the slums and analyses the causes of poverty. Tolstoy felt that the professed Christian belief of the Czarist state was a thin cosmetic layer covering a structure that was fundamentally built on violence. Violence was used to maintain a huge gap between the rich and the poor, and violence was used in international relations. Tolstoy felt especially keenly the contradiction between Christianity and war. In a small book entitled “The Kingdom of God is Within Us” he wrote:

“All other contradictions are insignificant compared with the contradiction which now faces humankind in international relations. and which cries out for a solution, since it brings the very existence of civilization into danger. This is the contradiction between the Christian conscience and war.”

“All of the Christian peoples of the world, who all follow one and the same spiritual life, so that any good and fruitful thought which is put forward in any corner of the world is immediately communicated to all of Christendom, where it arouses feelings of pride and happiness in us regardless of our nationality; we who simply love the thinkers, humanitarians, and poets of other countries; we who not only admire their achievements, but also feel delight in meeting them and greet them with friendly smiles - we will all be forced by the state to participate in a murderous war against these same people - a war which if it does not break out today will do so tomorrow.”

“...The sharpest of all contradictions can be seen between the government’s professed faith in the Christian law of the brotherhood of all humankind, and the military laws of the state, which force each young man to prepare himself for enmity and murder, so that each must be simultaneously a Christian and a gladiator.”

Tolstoy’s writings on Christianity and on social questions were banned by the public censor, and he was excommunicated from the Russian Orthodox Church. However, his universally recognized stature as one of the world’s greatest writers was undiminished, and his beliefs attracted many followers, both inside and outside of Russia.

In 1894, the young Indian lawyer, Mohandas K. Gandhi, (who was then working for the civil rights of Indians in South Africa), read Tolstoy’s books on Christianity and was greatly influenced by them. Gandhi wrote a review of “The Kingdom of God is Within Us”, and in 1909 he sent Tolstoy an account of the activities of the civil rights movement in South Africa. He received a reply in which Tolstoy said:

“...The longer I live, and especially now, when I vividly feel the nearness of death, the

more I want to tell others what I feel so particularly clearly and what to my mind is of great importance - namely that which is called passive resistance, but which is in reality nothing else but the teaching of love, uncorrupted by false interpretations. That love - i.e. the striving for the union of human souls and the activity derived from that striving - is the highest and only law of human life, and in the depth of his soul every human being knows this (as we most clearly see in children); he knows this until he is entangled in the false teachings of the world. This law was proclaimed by all - by the Indian as by the Chinese, Hebrew, Greek and Roman sages of the world. I think that this law was most clearly expressed by Christ, who plainly said that 'in this alone is all the law and the prophets'..."

"...The peoples of the Christian world have solemnly accepted this law, while at the same time they have permitted violence and built their lives on violence; and that is why the whole life of the Christian peoples is a continuous contradiction between what they profess, and the principles on which they order their lives - a contradiction between love accepted as the law of life, and violence which is recognized and praised, acknowledged even as a necessity in different phases of life, such as the power of rulers, courts, and armies..."

"This year, in the spring, at a Scripture examination in a girls' high school in Moscow, the teacher and the bishop present asked the girls questions on the Commandments, and especially on the sixth. After a correct answer, the bishop generally put another question, whether murder was always in all cases forbidden by God's law; and the unhappy young ladies were forced by previous instruction to answer 'not always' - that murder was permitted in war and in the execution of criminals. Still, when one of these unfortunate young ladies (what I am telling is not an invention, but a fact told to me by an eye witness) after her first answer, was asked the usual question, if killing was always sinful, she, agitated and blushing, decisively answered 'Always', and to all the usual sophisms of the bishop, she answered with decided conviction that killing always was forbidden in the Old Testament and forbidden by Christ, not only killing, but every wrong against a brother. Notwithstanding all his grandeur and arts of speech, the bishop became silent and the girl remained victorious."

Tolstoy believed that violence can never under any circumstances be justified, and that therefore an individual's resistance to governmental violence must be passive and non-violent. He also believed that each individual ought to reduce his needs to a minimum in order to avoid exploiting the labor of others.

Tolstoy gave up meat, alcohol, tobacco, and hunting. He began to clean his own room, wore simple peasant clothes, worked in the fields, and made his own boots. He participated in famine relief, and he would have liked to give away all of his great wealth to feed the poor, but bowing to the protests of his family, he gave his wealth to them instead.

Because he had been unable to convert his family to his beliefs, Tolstoy left home secretly on a November night in 1910, accompanied, like King Lear, by his youngest daughter. He died of pneumonia a few days later at a remote railway junction.



## 12.3 Gandhi

In the hands of Gandhi, non-violent passive resistance became a practical political force. Mohandas Karamchand Gandhi was born in 1869 in Porbandar, India. His family belonged to the Hindu caste of shopkeepers. (In Gujarati “Gandhi” means “grocer”.) However, the family had risen in status, and Gandhi’s father, grandfather, and uncle had all served as prime ministers of small principalities in western India.

In 1888, Gandhi sailed for England, where he spent three years studying law at the Inner Temple in London. Before he left India, his mother had made him take a solemn oath not to touch women, wine, or meat. He thus came into contact with the English vegetarians, who included Sir Edward Arnold (translator of the Bhagavadgita), the Theosophists Madame Blavatsky and Annie Besant, and the Fabians. Contact with this idealistic group of social critics and experimenters helped to cure Gandhi of his painful shyness, and it also developed his taste for social reform and experimentation.

Gandhi’s exceptionally sweet and honest character won him many friends in England, and he encountered no racial prejudice at all. However, when he travelled to Pretoria in South Africa a few years later, he experienced racism in its worst form. Although he was meticulously well dressed in an English frock coat, and in possession of a first-class ticket, Gandhi was given the choice between travelling third class or being thrown off the train. (He chose the second alternative.) Later in the journey he was beaten by a coach driver because he insisted on his right to sit as a passenger rather than taking a humiliating position on the footboard of the coach.

The legal case which had brought Gandhi to South Africa was a dispute between a wealthy Indian merchant, Dada Abdullah Seth, and his relative, Seth Tyeb (who had refused to pay a debt of 40,000 pounds, in those days a huge sum). Gandhi succeeded in reconciling these two relatives, and he persuaded them to settle their differences out of court. Later he wrote about this experience:

“Both were happy with this result, and both rose in public estimation. My joy was boundless. I had learnt the true practice 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. The lesson was so indelibly burnt into me that a large part of my time during my twenty years of practice as a lawyer was occupied in bringing about compromises of hundreds of cases. I lost nothing thereby - not even money, certainly not my soul.”

Gandhi was about to return to India after the settlement of the case, but at a farewell party given by Abdullah Seth, he learned of a bill before the legislature which would deprive Indians in South Africa of their right to vote. He decided to stay and fight against the bill.

Gandhi spent the next twenty years in South Africa, becoming the leader of a struggle for the civil rights of the Indian community. In this struggle he tried “...to find the better side of human nature and to enter men’s hearts”. Gandhi’s stay in England had given him a glimpse of English liberalism and English faith in just laws. He felt confident that if the general public in England could be made aware of gross injustices in any part of the



Figure 12.3: **Gandhi and his wife Kasturbai in 1902**

British Empire, reform would follow. He therefore organized non-violent protests in which the protesters sacrificed themselves so as to show as vividly as possible the injustice of an existing law. For example, when the government ruled that Hindu, Muslim and Parsi marriages had no legal standing, Gandhi and his followers voluntarily went to prison for ignoring the ruling.

Gandhi used two words to describe this form of protest: “satyagraha” (the force of truth) and “ahimsa” (non-violence). Of these he later wrote: “I have nothing new to teach the world. Truth and non-violence are as old as the hills. All that I have done is to try experiments in both on as vast a scale as I could. In so doing, I sometimes erred and learnt by my errors. Life and its problems have thus become to me so many experiments in the practice of truth and non-violence.”

In his autobiography, Gandhi says: “Three moderns have left a deep impression on my life and captivated me: Raychandbhai (the Indian philosopher and poet) by his living contact; Tolstoy by his book ‘The Kingdom of God is Within You’; and Ruskin by his book ‘Unto the Last’.”

Ruskin’s book, “Unto the Last”, which Gandhi read in 1904, is a criticism of modern industrial society. Ruskin believed that friendships and warm interpersonal relationships are a form of wealth that economists have failed to consider. He felt that warm human contacts are most easily achieved in small agricultural communities, and that therefore the modern tendency towards centralization and industrialization may be a step backward in terms of human happiness. While still in South Africa, Gandhi founded two religious

utopian communities based on the ideas of Tolstoy and Ruskin. Phoenix Farm (1904) and Tolstoy Farm (1910). At this time he also took an oath of chastity (“bramacharya”), partly because his wife was unwell and he wished to protect her from further pregnancies, and partly in order to devote himself more completely to the struggle for civil rights.

Because of his growing fame as the leader of the Indian civil rights movement in South Africa, Gandhi was persuaded to return to India in 1914 and to take up the cause of Indian home rule. In order to reacquaint himself with conditions in India, he travelled tirelessly, now always going third class as a matter of principle.

During the next few years, Gandhi worked to reshape the Congress Party into an organization which represented not only India’s Anglicized upper middle class but also the millions of uneducated villagers who were suffering under an almost intolerable burden of poverty and disease. In order to identify himself with the poorest of India’s people, Gandhi began to wear only a white loincloth made of rough homespun cotton. He travelled to the remotest villages, recruiting new members for the Congress Party, preaching non-violence and “firmness in the truth”, and becoming known for his voluntary poverty and humility. The villagers who flocked to see him began to call him “Mahatma” (Great Soul).

Gandhi organized demonstrations whose purpose was to show the British public that although the British raj gave India many benefits, the toll exacted was too high, not only in terms of money, but also in terms of India’s self-respect and self-sufficiency. All of Gandhi’s demonstrations were designed to underline this fact. For example, in 1930 Gandhi organized a civil-disobedience campaign against the salt laws. The salt laws gave the Imperial government a monopoly and prevented Indians from making their own salt by evaporating sea water. The majority of Indians were poor farmers who worked long hours in extreme heat, and salt was as much a necessity to them as bread. The tax on salt was essentially a tax on the sweat of the farmers.

Before launching his campaign, Gandhi sent a polite letter to the Viceroy, Lord Irwin, explaining his reasons for believing that the salt laws were unjust, and announcing his intention of disregarding them unless they were repealed. Then, on March 12 1930, Gandhi and many of his followers, accompanied by several press correspondents, started on a march to the sea to carry out their intention of turning themselves into criminals by making salt. Every day, Gandhi led the procession about 12 miles, stopping at villages in the evenings to hold prayer meetings. Many of the villagers joined the march, while others cast flower petals in Gandhi’s path or sprinkled water on his path to settle the dust.

On April 5, the marchers arrived at the sea, where they spent the night in prayer on the beach. In the morning they began to make salt by wading into the sea, filling pans with water, and letting it evaporate in the sun. Not much salt was made in this way, but Gandhi’s action had a strong symbolic power. A wave of non-violent civil disobedience demonstrations swept over India, so extensive and widespread that the Imperial government, in danger of losing control of the country, decided to arrest as many of the demonstrators as possible. By midsummer, Gandhi and a hundred thousand of his followers were in prison, but nevertheless the civil disobedience demonstrations continued.

In January, 1931, Gandhi was released from prison and invited to the Viceroy’s palace

to talk with Lord Irwin. They reached a compromise agreement: Gandhi was to call off the demonstrations and would attend a Round Table Conference in London to discuss Indian home rule, while Lord Irwin agreed to release the prisoners and would change the salt laws so that Indians living near to the coast could make their own salt.

The salt march was typical of Gandhi's non-violent methods. Throughout the demonstrations he tried to maintain a friendly attitude towards his opponents, avoiding escalation of the conflict. Thus at the end of the demonstrations, the atmosphere was one in which a fair compromise solution could be reached. Whenever he was in prison, Gandhi regarded his jailers as his hosts. Once, when he was imprisoned in South Africa, he used the time to make a pair of sandals, which he sent to General Smuts, the leader of the South African government. Thus Gandhi put into practice the Christian principle, "Love your enemies; do good to them that hate you."

Gandhi's importance lies in the fact that he was a major political leader who sincerely tried to put into practice the ethical principles of religion. In his autobiography Gandhi says: "I can say without the slightest hesitation, and yet with all humility, that those who say that religion has nothing to do with politics do not know what religion means."

Gandhi believed that human nature is essentially good, and that it is our task to find and encourage whatever is good in the character of others. During the period when he practiced as a lawyer, Gandhi's aim was "to unite parties riven asunder", and this was also his aim as a politician. In order for reconciliation to be possible in politics, it is necessary to avoid escalation of conflicts. Therefore Gandhi used non-violent methods, relying only on the force of truth. "It is my firm conviction", he wrote, "that nothing can be built on violence."

To the insidious argument that "the end justifies the means", Gandhi answered firmly: "They say 'means are after all means'. I would say 'means are after all everything'. As the means, so the end. Indeed the Creator has given us control (and that very limited) 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." In other words, a dirty method produces a dirty result; killing produces more killing; hate leads to more hate. But there are positive feedback loops as well as negative ones. A kind act produces a kind response; a generous gesture is returned; hospitality results in reflected hospitality. Hindus and Buddhists call this principle "the law of karma".

Gandhi believed that the use of violent means must inevitably contaminate the end achieved. Because Gandhi's methods were based on love, understanding, forgiveness and reconciliation, the non-violent revolution which he led left very little enmity in its wake. When India finally achieved its independence from England, the two countries parted company without excessive bitterness. India retained many of the good ideas which the English had brought - for example the tradition of parliamentary democracy; and the two countries continued to have close cultural and economic ties.



Figure 12.4: Gandhi said, “The means may be likened to a seed, and the end to a tree; and there is the same inviolable connection between means and end as there is between the seed and the tree. Means and end are convertible terms in my philosophy of life.”

## 12.4 Martin Luther King, Jr.

Another example of a successful non-violent revolution is the black civil rights movement in America, led by Martin Luther King, Jr. The son of a southern Baptist minister, King received his Ph.D. in theology from Boston University in 1955. During his studies, he had admired Thoreau's essay "On the Duty of Civil Disobedience", and he had also been greatly moved by the life and teachings of Mahatma Gandhi.

Martin Luther King Jr. had been pastor of the Dexter Avenue Baptist Church in Montgomery Alabama for only a year when he was chosen to lead a boycott protesting segregation in the Montgomery busses. Suddenly thrust into this situation of intense conflict, he remembered both the Christian principle of loving one's enemies and Gandhi's methods of non-violent protest. In his first speech as President of the Montgomery Improvement Association (a speech which the rapid pace of events had forced him to prepare in only twenty minutes, five of which he spent in prayer), he said:

"Our method will be that of persuasion, not coercion. We will only say to people, 'Let your conscience be your guide'. Our actions must be guided by the deepest principles of our Christian faith. Love must be our regulating ideal. Once again we must hear the words of Jesus echoing across the centuries: 'Love your enemies, bless them that curse you, and pray for them that despitefully use you.' If we fail to do this, our protest will end up as a meaningless drama on the stage of history, and its memory will be shrouded by the ugly garments of shame. In spite of the mistreatment that we have confronted, we must not become bitter and end up by hating our white brothers. As Booker T. Washington said, 'Let no man pull you down so low as to make you hate him.'"

"If you will protest courageously, and yet with dignity and Christian love, when the history books are written in future generations, the historians will have to pause and say, 'There lived a great people - a black people - who injected new meaning and dignity into the veins of civilization.' This is our challenge and our overwhelming responsibility."

This speech, which Dr. King made in December 1955, set the tone of the black civil rights movement. Although the protesters against racialism were often faced with brutality and violence; although many of them, including Dr. King were unjustly jailed; although the homes of the leaders were bombed; although they constantly received telephone calls threatening their lives; although many civil rights workers were severely beaten, and several of them killed, they never resorted to violence in their protests against racial discrimination. Because of this adherence to Christian ethics, public opinion shifted to the side of the civil rights movement, and the United States Supreme Court ruled bus segregation to be unconstitutional.

In 1959, while recovering from an almost-fatal stabbing, Martin Luther King Jr. visited India at the invitation of Prime Minister Jawaharlal Nehru. Dr. King and his wife Coretta were warmly welcomed by Nehru, who changed his schedule in order to meet them. They had an opportunity to visit a religious community or "ashram" that Gandhi had founded, and they discussed non-violence with many of Gandhi's disciples.

In 1964, the change in public opinion produced by the non-violent black civil rights movement resulted in the passage of the civil rights act. In the same year, Dr. King was



Figure 12.5: Dr. Martin Luther King Jr. speaking in Washington D.C.

awarded the Nobel Peace Prize. He accepted it, not as an individual, but on behalf of all civil rights workers; and he immediately gave all the prize money to the movement.

In 1967, a year before his assassination, Dr. King forcefully condemned the Viet Nam war in an address at a massive peace rally in New York City. He felt that opposition to war followed naturally from his advocacy of non-violence. In his book, “Strength to Love”, Dr. King wrote: “Wisdom born of experience should tell us that war is obsolete. There may have been a time when war served a negative good by preventing the spread of an evil force, but the power of modern weapons eliminates even the possibility that war may serve as a negative good. If we assume that life is worth living, and that man has a right to survival, then we must find an alternative to war... I am convinced that the Church cannot be silent while mankind faces the threat of nuclear annihilation. If the church is true to her mission, she must call for an end to the nuclear arms race.”

Concerning the Christian principle of loving one’s enemies, Dr. King wrote: “Why should we love our enemies? Returning hate for hate multiplies hate, adding deeper darkness to a night already devoid of stars. Darkness cannot drive out darkness; only light can do that. Hate cannot drive out hate. Only love can do that... Love is the only force capable of transforming an enemy into a friend. We never get rid of an enemy by meeting hate with hate; we get rid of an enemy by getting rid of enmity... It is this attitude that

made it possible for Lincoln to speak a kind word about the South during the Civil War, when feeling was most bitter. Asked by a shocked bystander how he could do this, Lincoln said, ‘Madam, do I not destroy my enemies when I make them my friends?’ This is the power of redemptive love.”

To a large extent, the black civil rights movement of the ’50’s and ’60’s succeeded in ending racial discrimination in America. If the methods used had been violent, the movement could easily have degenerated into a nightmare of interracial hatred; but by remembering the Christian message, “Love your enemy; do good to them that spitefully use you”, Martin Luther King Jr. raised the ethical level of the civil rights movement; and the final result was harmony and understanding between the black and white communities. Later the nonviolent methods of Gandhi and King were successfully applied to the South African struggle against Apartheid.

## 12.5 The court of world public opinion

### Non-violence

In struggling against governmental injustice, both in South Africa and in India, Mahatma Gandhi firmly rejected the use of violence. He did so partly because of his experience as a lawyer. In carrying out non-violent protests against oppression, Gandhi was making a case before the jury of international public opinion. He thought that he had a better chance of succeeding if he and his followers were 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.”

Thus there are two elements in Gandhi’s insistence on non-violent methods of resistance: Firstly, he and the resistance movements which he led were making a case in the court of world opinion; and secondly, the result achieved is always colored by the means that are used to achieve it. In South Africa, the fact that violence was not used to end the apartheid regime was chiefly responsible for achievement of lasting peace, and the avoidance of a blood-bath. In India, the former colony parted from the British Empire in a manner that was beneficial to both. India retained what was valuable in British culture.

We can remember from Richard Attenborough’s splendid film of the life of Gandhi how important good reporting was to the success of India’s non-violent resistance movement. Today, when the mainstream media are so thoroughly enslaved by our oligarchic governments, we might ask whether Gandhian methods of non-violent resistance can still succeed. Nevertheless, I believe that it is still worthwhile to make a clear case in the court of world opinion.



For example, I believe that the few ineffective rockets recently fired by Hamas were damaging to the Palestinian cause. They did no real harm to Israel, but they made the case far less clear. Israel, an apartheid regime far more evil than its South African counterpart ever was, justifies its genocidal atrocities by claiming that it “has a right to self-defense”; and the clarity of the situation is lost.

I believe that even in an era such as ours, where the mainstream media are so thoroughly failing us, Gandhi’s non-violence is still relevant.

## 12.6 Non-Violence

The examples that we have considered here - the Indian civil rights movement in South Africa, the Indian independence movement, and the black civil rights movement in the United States - all show that non-violent protest can sometimes be a very effective method for resisting governmental violence and for changing unjust laws. As Gandhi pointed out, the end achieved inevitably reflects the means used. Therefore, if harmony and understanding are to be the end result of a political movement, then non-violent methods must be used.

There is, however, another question that we should try to answer: To what extent can violence be eliminated altogether from a society and replaced by the rule of love? Tolstoy was completely uncompromising in his condemnation of violence; and he even went so far as to maintain that there are no circumstances whatever under which violence can be justified, even in law-enforcement. Tolstoy’s arguments are logically consistent, and consistent also with the words and spirit of the Sermon on the Mount. However, one feels that he may be exaggerating for the sake of clarity.

Tolstoy tells us that the only thing needed for a new order - “the Kingdom of God” - to be established on Earth is for all men and women to abandon violence and to follow the rule of love. He is right, of course, but when we read his words, we cannot help noticing the word “all”. If *all* humans abandon violence and follow the rule of love, a new order will come; but what if some of us become as gentle as lambs, while others remain unregenerate wolves? Will not the wolves eat the lambs? This is the difficulty that has always blocked progress towards a non-violent society. It is the problem that lies at the root of the arms race. It is the riddle that we somehow must solve if we are to save civilization from a third world war.

Although no real society is completely free from violence, some societies are much less violent than others. For example, feudal Japan was a very violent society, as was the American west in the days when everyone carried a gun. Scandinavia, as it is described in the Sagas, was also extremely violent. By contrast, one can also think of societies where the level of violence is very low, for example Bhutan, Tibet or Nepal (until recently), modern Scandinavia, modern Switzerland, or the Arapesh society described by Margaret Mead, to name only a few.

Many of the world’s nations have reduced their level of internal violence considerably during the last few hundred years. A few centuries ago, a gentleman in France or England

carried a sword, and a child could be hanged for stealing a handkerchief. Today it is usually no longer necessary for citizens to carry personal weapons, and in many countries both torture and the death penalty have been abolished. On the other hand, very little progress has been made towards solving the problem of international violence.

While the level of violence *within* many nations has decreased, the level of international violence has greatly increased because of modern weapons: The two world wars that have taken place during this century have produced destruction and death on a scale previously unknown; and humanity is threatened with the possibility of a third world war that could dwarf the other two. Thus it is imperative that we achieve at an international level the same degree of order and good government that has been achieved locally in such places as (for example) Scandinavia.

In the Sagas, one can hardly find a page that is free from violence, and yet in modern Scandinavia the citizens are so law-abiding that they will not cross a street against a red light, even if there is neither an automobile nor a policeman anywhere in sight. This obedience to laws is not derived from fear, but from a belief that the laws are beneficial. The fact that it has been possible to achieve such a degree of internal peace and order in what was once one of the world's most violent societies can make us optimistic as we work to make the same transition at the international level.

Violence within a society is a symptom that something is wrong, just as violence within a family is a symptom that something is wrong. A good government does not need torture or the death penalty or an excessively numerous police force in order to govern, just as good parents do not need the threat of physical violence in order to control their children. The power of a good government rests on the consent of the governed, just as the authority of good parents rests on the love and respect that their children feel for them.

The achievement of good government is not a trivial problem. In those places in the world where it exists today, it has been built up only through much effort and thought. Nevertheless, the fact that there are countries where a great measure of peace and happiness have been achieved locally shows that the problem is not insoluble.

What we need to do is to concentrate more effort and intelligence on the problem of achieving good government globally. This problem should not really be beyond the ability of mankind to solve. Humans are, after all, very intelligent. In fact, the acuteness of the present crisis is due to the rapid technological development that human ingenuity has produced. The intelligence of mankind has seen very deeply into the secrets of nature. Can we not use the same intelligence to achieve good government at a global level?

In his excellent and highly readable book, *Ancient Wisdom, Modern World: Ethics for the New Millennium*, the Dalai Lama writes:

“..At present and for the conceivable future, the UN is the only global institution capable of influencing and formulating policy on behalf of the international community. Of course, many people criticize it on the grounds that it is ineffective, and it is true that time and again we have seen its resolutions ignored, abandoned and forgotten. Nevertheless, in spite of its shortcomings, I for one continue to have the highest regard not only for the principles on which it was founded but also for the great deal that it has achieved since its inception in 1945. We need only ask ourselves whether or not it has helped to save



Figure 12.6: His Holiness the 14th Dalai Lama of Tibet

lives by defusing potentially dangerous situations to see that it is more than the toothless bureaucracy some people say it is. We should also consider the great work of its subsidiary organizations, such as UNICEF, United Nations High Commission for Refugees, UNESCO and the World Health Organization..."

"I see the UN, developed to its full potential, as being the proper vehicle for carrying out the wishes of humanity as a whole. As yet it is not able to do this very effectively, but we are only just beginning to see the emergence of a global consciousness (which is made possible by the communications revolution). And in spite of tremendous difficulties, we have seen it in action in numerous parts of the world, even though at the moment there may be only one or two nations spearheading these initiatives. The fact that they are seeking the legitimacy conferred by a United Nations mandate suggests a felt need for justification through collective approbation. This, in turn, I believe to be indicative of a growing sense of a single, mutually dependent, human community."

Another example of religious leadership in addressing global problems was given by H.H. Pope John Paul II. In his Christmas address on 25 December, 2002, the Pope said that efforts for peace were urgently needed "in the Middle East, to extinguish the ominous smouldering of a conflict which, with the joint efforts of all, can be avoided." Although he did not specifically name the countries involved, it was clear that his remarks referred to the threatened invasion of Iraq by the United States and England. This interpretation was strengthened by senior Vatican officials who reiterated Catholic teaching that "preventative" war is unjustifiable. In an interview with Rome's *La Repubblica*, Archbishop Renato Martino, prefect of the Council for Justice and Peace, stated that "unilateralism is not acceptable".

Pope John Paul II was not an exception among the Roman Catholic Popes of the 20th century. All of them have spoken strongly against the institution of war. Especially notable are H.H. Pope Paul IV who made a one-day visit to the United Nations where his speech included the words "no more war, war never again", and H.H. Pope John XXIII, author of the eloquent encyclical, *Pacem in Terris*. One can think also of the Ecumenical Council *Vatican II*, which denounced the arms race as an "utterly treacherous trap for humanity", questioned the method of deterrence as a safe way to preserve a steady peace, and condemned war as a "crime against God and man himself".

Other powerful voices have been raised by the World Conference of Religions for Peace, which met for the first time in October 1970 in Kyoto Japan.<sup>1</sup> At this meeting, more than 1000 religious leaders gathered to discuss the grave dangers posed by modern war. Among them were representatives of the Baha'i, Mahayana and Theravada Buddhists, Protestants, Roman Catholics, and Orthodox Christians, Confucianists, representatives of several streams of Hinduism, a number of communities of Indigenous faith, Shiite and Sunni Muslims, Jainists, Reform Jews, Shintos, Sikhs, Zoroastrians, and representatives of a number of new religions.

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<sup>1</sup>Subsequent World Assemblies of the WCRP have been held in Louvain, Belgium, (1974); Princeton New Jersey, (1979); Nairobi, Kenya, (1984); Melbourne, Australia, (1989); Riva del Garda, Italy, (1994); and Amman, Jordan, (1999).

The WCRP sponsors many projects related to conflict resolution, the world's children, development, disarmament and security, human rights, and peace education. For example, in the field of peace education, WCRP sponsors a project in Israel called "Common Values/Different Sources" which brings together Jews, Muslims and Christians to study sacred texts together in search of shared values, eventually resulting in a book for classroom use. In England and Germany, another WCRP project analyzes school textbooks' treatment of religious traditions that are foreign to the books' intended audiences.

Dr. Edy Korthals Altes, a former Ambassador of the Netherlands to Poland and Spain and an Honorary President of the World Conference of Religions for Peace, has expressed his vision of our current global situation in the following words: "We need a new concept of security. The old concept dates back to the Romans who said 'If you want peace, prepare for war'. The new concept I would propose is exactly the opposite, 'If you want peace, prepare for peace'. While this may sound simplistic, it is difficult to put into practice since the application of justice and solidarity in international political and economic relations require sacrifices from 'those who have'. I would give three reasons why the old concept of 'security' is no longer valid: a) The extreme vulnerability of modern society; b) The tremendous destructive power of modern arms and terrorism; c) The interdependence between nations. These three elements are closely interconnected. It is therefore imperative to apply justice and solidarity in our international relations. If not, disaster looms!"

Dr. Altes feels that economic reforms are needed if global peace is to be achieved. "Not only economic justice is involved", he writes, "but also political justice. A clear example of which is the current situation in the Middle East. There must also be justice in the economic world situation where 1/5 of the world population enjoys a high standard of living while 1/5 lives in terrible poverty, millions dying every year from hunger. This 'North South gap' is increasing!"

Discussing "myths that underlie our present economic system", he points to

1. "The notion that each person has unlimited material needs. We are told to 'consume more' which is totally contra to any religion. What is more, it is a self-defeating program that is contrary to humanity in general. The New Testament is clear 'you shall not live on bread alone.' Our deeper needs are not for material goods but for inner growth."
2. "Unlimited growth. The economy, my firm, my salary should all grow. In a finite planet, this is total nonsense. This maxim of growth has brought about great ecological damage."
3. Idolatry of the Free Market. I am in favor of a free market, but one that is set in the context of social and human conditions. We need to apply means to avoid the 'law of the jungle' in the market place."

No enumeration of religious voices raised in the cause of peace would be complete without mention of the Religious Society of Friends (Quakers), all of whom refuse to give any support whatever to the institution of war. Although they are fundamentally opposed to war as being completely contrary to Christian ethics, the Quakers are active in caring for

the victims of war, and in 1947 the American Friends Service Committee and the Friends Service Council were jointly awarded the Nobel Peace Prize.

The Non-violence of Mahatma Gandhi, Martin Luther King and Nelson Mandela, the writings of the Dalai Lama, the messages of Pope John Paul II and other Popes, the anti-war convictions of the Quakers, and the many projects of the World Conference of Religions for Peace all illustrate the potentialities of the world's religions as powerful forces for mobilizing public opinion in the cause of peace. One hopes that the voice of religion in this cause will become still more powerful in the future. Each week, all over the world, congregations assemble and are addressed by their leaders on ethical issues. But all too often there is no mention of the astonishing and shameful contradiction between the institution of war (especially the doctrine of "massive retaliation"), and the principle of universal human brotherhood, loving and forgiving one's enemies, and returning good for evil. At a moment of history when the continued survival of civilization is in doubt because of the incompatibility of war with the existence of thermonuclear weapons, our religious leaders ought to use their enormous influence to help to solve the problem of war, which is after all an ethical problem.

## 12.7 We can unilaterally stop being nasty

In general, nations should not act unilaterally in foreign affairs. They should instead support international law and the United Nations. But there is one thing that we can and should do on our own: We can unilaterally stop being nasty!

Interestingly, this principle is at the core of Christian ethics, although our supposedly Christian governments rarely follow it. Here are some words from the Sermon on the Mount:

"Ye have heard it hath been said, Thou shalt love thy neighbour and hate thine enemy.

"But I say unto you, Love your enemies, bless them that curse you, do good to them that curse you, and pray for them that despitefully use you and persecute you."

Christians are required to love their enemies, and to do good to those who have wronged them. This seemingly impractical advice is in fact extremely practical. Cycles of revenge and counter-revenge can only be stopped by unilateral acts of kindness.

Contrast the duty to love and do good to one's enemies with the doctrine of massive retaliation, which is built into the concept of nuclear deterrence. In a nuclear war, the hundreds of millions, or even billions, of victims in every country of the world, also neutral countries, would include people of every kind: women, men, old people, children and babies, completely irrespective of any degree of guilt that they might have. This type of killing has to be classified as genocide.

If Christians were true to their beliefs, not only nuclear war, but every kind of war would be forbidden for them.

The Second World War was the direct consequence of Clemenceau's insistence on revenge. The impossible-to-pay reparations imposed on Germany by the Treaty of Versailles lead to hyper-inflation, financial chaos, and desperation in Germany, and without these

conditions, Hitler's Nazi Party would never have gained a foothold. By contrast, the unilateral act of kindness implicit in the Marshall Plan has produced the peaceful Germany of today.

Humanitarian disasters provide us with many opportunities for unilateral acts of kindness. For example, an extremely severe drought is currently threatening the children of North Korea with starvation. We have the opportunity to help by providing food. Has anyone thought of treating North Korea with kindness? It might be a useful experiment to try.

## 12.8 The fragility of our complex civilization

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.

## Suggestions for further reading

1. Stefan Zweig, *Tolstoi's Udødelige Tanker (Tolstoy's Immortal Thoughts)*, Danish translation by Kai Friis Møller, Martin's Forlag, Copenhagen, (1939).



2. Ronald Duncan, *Selected Writings of Mahatma Gandhi*, Faber and Faber Ltd., London, (1941).
3. M.K. Gandhi, *An Autobiography or The Story of my Experiments with Truth*, translated from the original Gujarati by Mahadev Dasai, Penguin Books, (1982).
4. Ved Mehta, *Mahatma Gandhi and his Apostles*, Penguin Books, (1977).
5. Henry David Thoreau, *On the Duty of Civil Disobedience*, in *Social and Political Philosophy*, John Sommerville and Ronald Santoni editors, Doubleday and Company, New York, (1963).
6. William Robert Miller, *Martin Luther King, Jr., His Life, Martyrdom, and Meaning for the World*, Weybright and Talley, New York, (1968).
7. Martin Luther King, Jr., *Strength to Love*, Harper and Row, New York, (1963).
8. A. Montagu, ed., *Learning Non-Aggression*, Oxford University Press, (1978).
9. C.A. Robarcheck, *The image of nonviolence: The world view of the Semai Senoi*, Federated States Museums, **24**, (1981).
10. S.J. Tambiah, *World Conqueror and World Renouncer: A Study of Buddhism and Polity in Tailand Against a Historical Background*, Cambridge University Press, (1976).
11. Tenzen Gyatso (His Holiness the Dalai Lama), *Ancient Wisdom, Modern World: Ethics for the New Millennium*, Abacus, London, (2000).
12. H.A. Schmidt, *Quakers and Nazis: Inner Light in Outer Darkness*, University of Missouri Press, Colombus MO, (1997).



# Appendix A

## 9/11: WHAT IS THE TRUTH?

### A.1 Is it a question of truth, or of identity?

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

*“The human brain was not designed by evolution for finding truth. It was designed for finding advantage.”* Albert Szent-Györgyi

*“History is a set of agreed-upon lies”*, Napoleon, quoting Fontanelle

When two people tell each other that they believe the same nonsense, a bond is formed between them; and the worse the nonsense, the stronger the bond. This is an aspect of tribalism. The bonding through shared beliefs is, like ritual scarification in African tribes, a mark of identity. This aspect of human nature makes it difficult to find out the truth. For example, any American who casts doubt on the official government-endorsed narrative of the events of September 11, 2001 becomes a “conspiracy theorist”, or a “terrorist sympathiser” - in any case certainly not a loyal, upstanding, patriotic citizen. As George W. Bush said shortly after the events, “You are either with us or against us.” It is not a question of truth. It is a question of identity.

But what is the truth? 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 explosives.

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 of the collapse of the buildings, especially Building 7, show them falling



**Figure A.1: Molten steel pouring from the burning World Trade Center. An ordinary fire is not hot enough to melt steel.**

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”.



Figure A.2: Molten steel in the ruins of the World Trade Center.



Figure A.3: Photo of the World Trade Center shortly before its collapse. Thermite, used for cutting steel in the demolition of buildings, produces white smoke when it burns

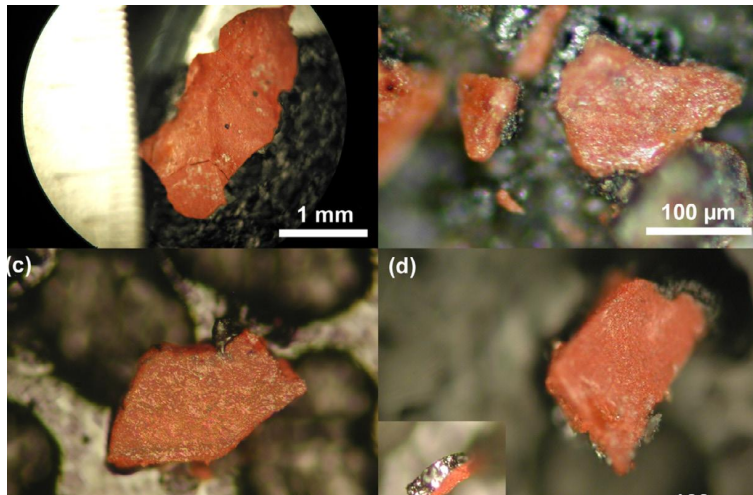


Figure A.4: The type of thermite that seems to have been used for the destruction of WTC 1 and WTC 2 was military-grade nano-thermite, which cannot be purchased by private persons.



Figure A.5: Building 7 was not hit by any aircraft, and yet it collapsed many hours later, during the afternoon, in a manner that looked exactly like a controlled demolition.



Figure A.6: Reports of observers who heard explosions are corroborated by MSNBC video footage of reporter Ashleigh Banfield several blocks north of WTC 7. In the video, she hears a loud sound, turns her attention to WTC 7, and says, “Oh my god.... This is it.” About seven seconds after she hears the loud sound, WTC 7 collapses. As David Chandler observes in the video *Sound Evidence for Explosions*: There were two blasts, followed by seven more regularly spaced all in two and a half seconds. Craig Bartmer’s testimony may come to mind: “The whole time you’re hearing ‘thume, thume, thume, thume, thume.’ ”....



Figure A.7: This picture shows materials of WTC 1, including multi-ton beams, being explosively ejected several hundred feet in all directions. Physics teacher David Chandler states that “[U]nder the canopy of falling debris, do you see the rapid sequence of explosive ejections of material? Some of the jets have been clocked at over 100 mph.... They’re continuous and widespread. They move progressively down the faces of the building, keeping pace with the falling debris.... The building is being progressively destroyed from the top down by waves of explosions creating a huge debris field.”



## A.2 *Beyond Misinformation*

In 2015, Architects and Engineers for 9/11 Truth Inc. published a 52-page report entitled **Beyond Misinformation**. It can be downloaded from their website at <https://www.ae911truth.org/>. Here are a few quotations from the report.

*The history of steel-framed high-rise buildings spans about 100 years. Setting aside the events of September 11, 2001, every total collapse of a steel-framed high-rise building during that period of time has been caused by controlled demolition. In comparison, fires have never caused the total collapse of high-rise buildings, though high-rise building fires occur frequently...*

*If the destruction of WTC 1, WTC 2, and WTC 7 were caused by fire, this would make them the first steel-framed high-rise buildings in history to suffer total fire-induced collapse (combined with structural damage from the airplane impacts in the case of WTC 1 and WTC 2). They would also be the first fire-induced collapses to exhibit nearly all of the features of controlled demolition and none of the features of fire-induced collapse. Edward Muniyak, a fire protection engineer, puts it this way: “Even one progressive global collapse would have been extraordinary. But to have three occur in one day was just beyond comprehension.”...*

*According to NIST<sup>1</sup>, once collapse initiated, WTC 1 and WTC 2 fell in approximately 11 seconds and 9 seconds, respectively, each coming down “essentially in free fall.” To many observers, the speed of collapse was the most striking feature of their destruction. Yet, NIST’s explanation for why WTC 1 and WTC 2 collapsed “essentially in free fall” was limited to a half-page section of its 10,000-page report titled “Events Following Collapse Initiation.” In this section, NIST attempted to explain the speed and completeness of the collapses simply by saying: “It was not stopped by the floors below. So there was no calculation that we did to determine what is clear from the videos.”...*

*Not only was molten metal seen pouring out of WTC 2, dozens of eyewitnesses observed it in the debris of all three buildings. A small selection is presented below:*

- *Leslie Robertson, a lead engineer in the design of WTC 1 and WTC 2, told an audience: “We were down at the B-1 level and one of the firefighters said, ‘I think you’d be interested in this.’ And they pulled up a big block of concrete, and there was like a little river of steel flowing.”*
- *FDNY Captain Philip Ruvolo recalled with other firefighters seated next to him: “You’d get down below and you’d see molten steel, molten steel, running down the channel rails, like you’re in a foundry, like lava”. Other firefighters chimed in, “Like lava”, “Like lava from a volcano”.*
- *Ken Holden, the Commissioner of the NYC Department of Design and Construction, testified before the 9/11 Commission: “Underground it was still so hot that molten metal dripped down the sides of the wall from building 6”.*

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<sup>1</sup>NIST, the National Institute of Standards and Technology, produced a report on 9/11 which many regard as a cover-up.

*Three scientific studies have documented evidence in the WTC dust that indicates extremely high temperatures during the destruction of WTC 1 and WTC 2 - and possibly WTC 7.*

*Released in May 2004, the RJ Lee report titled WTC Dust Signature identified “[s]pherical iron and spherical or vesicular silicate particles that result from exposure to high temperature” in the dust.*

*An earlier 2003 version of RJ Lee’s report observed: “Various metals (most notably iron and lead) were melted during the WTC event, producing spherical metallic particles. Exposure of phases to high heat results in the formation of spherical particles due to surface tension.... Particles of materials that had been modified by exposure to high temperature, such as spherical particles of iron and silicates, are common in the WTC dust...but are not common in normal office dust.” The 2003 version also reported that while iron particles make up only 0.04 percent of normal building dust, they constituted 5.87 percent of the WTC dust.*

*Iron does not melt until 1,538 °C (2,800 °F), which, as discussed above, cannot be reached by diffuse hydrocarbon fires. Still, even higher temperatures than 1,538 °C were indicated by another discovery documented in RJ Lee’s report...*

*In April 2009 a group of scientists led by Dr. Niels Harrit, an expert in nano-chemistry who taught chemistry at the University of Copenhagen for over 40 years, published a paper in the Open Chemical Physics Journal titled “Active Thermite Materials Discovered in Dust from the 9/11 World Trade Center Catastrophe”. This paper, which reported the results of experiments conducted on small red-gray, bi-layered chips found in multiple independent WTC dust samples, concluded that the chips were unreacted nano-thermite, a form of thermite with explosive properties engineered at the nano-level.*

### **A.3 9/11 Unmasked**

“9/11 Unmasked” is a very recent book by David Ray Griffin and Elizabeth Woodworth. A review of the book in “The Guardian” by Piers Robinson can be found on the following link: <https://off-guardian.org/2018/09/10/9-11-unmasked-by-david-ray-griffin-and-elizabeth-woodworth-a-review/> Here are a few quotations from the review:

*Although not a topic for polite conversation, nor a widely recognized ‘acceptable’ issue for mainstream academics and journalists, the issue of 9/11 and the multiple questions that persist with respect to this transformative event continue to bubble under the surface. 9/11 ushered in the global ‘war on terror’, shaping the geo-political agenda of Western governments for almost two decades now and having a deleterious impact on civil liberties across Western liberal democratic states. Torture has been used as part of official policy and there is bulk data collection and surveillance of entire populations.*

*In recent years, further information has come into the public domain, via the UK Chilcot report regarding the formative stages of the post 9/11 ‘war on terror’: Within days of 9/11 having occurred a British embassy cable reported that “the “regime-change hawks” in*

*Washington are arguing that a coalition put together for one purpose (against international terrorism) could be used to clear up other problems in the region'; Chilcot also published a Bush-Blair communication from the aftermath of 9/11 which discussed phase two of the 'war on terror' and indicated debate over when to 'hit' countries unconnected with Al Qaeda, such as Iraq, Syria and Iran.*

*Broadly speaking, Chilcot corroborated former Supreme Allied Commander Wesley Clark's claim that he was informed, immediately after 9/11, that seven countries, including Syria, were to be 'taken out' in five years.*

*It is against this backdrop that "9/11 Unmasked" by David Ray Griffin and Elizabeth Woodworth now emerges. The book is the culmination of seven years work by the 9/11 Consensus Panel which includes 23 experts from fields including physics, chemistry, structural engineering, aeronautical engineering, piloting, airplane crash investigation, medicine, journalism, psychology, and religion.*

Another review of the book, by Edward Curtin, has recently been published by TMS Media Service Weekly Digest. It can be reached on the following link: <https://www.transcend.org/tms/2018-fakest-fake-news-the-u-s-governments-9-11-conspiracy-theory/> . Here are some excerpts from the review:

*For seventeen years we have been subjected to an onslaught of U.S. government and corporate media propaganda about 9/11 that has been used to support the "war on terror" that has resulted in millions of deaths around the world. It has been used as a pretext to attack nations throughout the Middle East, South Asia, and Africa. It has led to a great increase in Islamophobia since Muslims were accused of being responsible for the attacks. It has led to a crackdown on civil liberties in the United States, the exponential growth of a vast and costly national security apparatus, the spreading of fear and anxiety on a great scale, and a state of permanent war that is pushing the world toward a nuclear confrontation. And much, much more.*

*The authors of this essential book, David Ray Griffin and Elizabeth Woodworth, and all their colleagues who have contributed to this volume, have long been at the front lines trying to wake people up to the real news about 9/11. They have battled against three U.S. presidents, a vast propaganda machine "strangely" allied with well-known leftists, and a corporate mass media intent on serving deep-state interests, all of whom have used illogic, lies, and pseudo-science to conceal the terrible truth. Yet despite the establishment's disinformation and deceptions, very many people have come to suspect that the official story of the September 11, 2001 attacks is not true.*

*With the publication of "9/11Unmasked: An International Review Panel Investigation", they now have a brilliant source book to use to turn their suspicions into certitudes. And for those who have never doubted the official account (or accounts would be more accurate), reading this book should shock them into reality, because it is not based on speculation, but on carefully documented and corroborated facts, exacting logic, and the scientific method...*

*This research process went on for many years, with the findings reported in this book. The Consensus 9/11 Panel provides evidence against the official claims in nine categories:*

1. *The Destruction of the Twin Towers*
2. *The Destruction of WTC 7*
3. *The Attack on the Pentagon*
4. *The 9/11 Flights*
5. *US Military Exercises on and before 9/11*
6. *Claims about Military and Political Leaders*
7. *Osama bin Laden and the Hijackers*
8. *Phone Calls from the 9/11 Flights*
9. *Insider Trading*

*Each category is introduced and then broken down into sub-sections called points, which are examined in turn. For example, the destruction of the Twin Towers has points that include, “The Claim That No One Reported Explosions in the Twin Towers,” “The Claim That the Twin Towers Were Destroyed by Airplane Impacts, Jet Fuel, and Fire,” “The Claim That There Were Widespread Infernos in the South Tower,” etc. Each point is introduced with background, the official account is presented, then the best evidence, followed by a conclusion. Within the nine categories there are 51 points examined, each meticulously documented through quotations, references, etc., all connected to 875 endnotes that the reader can follow. It is scrupulously laid out and logical, and the reader can follow it sequentially or pick out an aspect that particularly interests them...*

*As a grandson of a Deputy Chief of the New York Fire Department (343 firefighters died on 9/11), I find it particularly despicable that the government agency, the National Institute of Standards and Technology (NIST), that was charged with investigating the collapse of the Towers and Building 7, would claim that no one gave evidence of explosions in the Twin Towers, when it is documented by the fastidious researcher Graeme MacQueen, a member of The 9/11 Consensus Panel, that over 100 firefighters who were at the scene reported hearing explosions in the towers. One may follow endnote 22 to MacQueen’s research and his sources that are indisputable. There are recordings.*

## **A.4 The arrogance of power**

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.

## A.5 Terrorism: a pseudothreat

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 Shelley'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.

### Some Suggestions for further reading

1. Bazant, Zdenek and Le, Jia-Liang, *Why the Observed Motion History of the World Trade Center Towers is Smooth*, Journal of Engineering Mechanics (January 2011)
2. Chandler, David, *NIST Finally Admits Free Fall*, video (February 2010)
3. Chandler, David, *North Tower Exploding* video (February 2010)
4. Chandler, David, *Sound Evidence for Explosions*, video (July 2010)
5. Chandler, David. *The Destruction of the World Trade Center North Tower and Fundamental Physics*, Journal of 9/11 Studies (February 2010)
6. Chandler, David, *Free Fall and Building 7 on 9/11* (Reprinted by AE911Truth in April 2014)
7. Cole, Jonathan, *9/11 Experiments: The Mysterious Eutectic Steel*, video (July 2010)
8. FEMA, *World Trade Center Building Performance Study: Data Collection, Preliminary Observations, and Recommendations* (May 2002)
9. Fire Department of New York (FDNY), *World Trade Center Task Force Interviews*, The New York Times (October 2001 - January 2002)
10. Griffin, David Ray, *The Mysterious Collapse of World Trade Center 7*, (2009)
11. Harrit, Niels (et al.), *Active Thermite Materials Discovered in Dust from the 9/11 World Trade Center Catastrophe*, Open Chemical Physics Journal (April 2009)
12. Jones, Steven (et al.), *Extremely High Temperatures during the World Trade Center Destruction*, Journal of 9/11 Studies (February 2008)
13. Jones, Steven, *Revisiting 9/11/2001 - Applying the Scientific Method*, Journal of 9/11 Studies (May 2007)
14. Jones, Steven, *Why Indeed Did the WTC Buildings Collapse Completely?*, Journal of 9/11 Studies (September 2006)
15. Legge, Frank and Szamboti, Anthony, *9/11 and the Twin Towers: Sudden Collapse Initiation was Impossible*, Journal of 9/11 Studies (December 2007)
16. Lee, Richard J., RJ Lee Group, Inc., *WTC Dust Signature* (May 2004)
17. MacQueen, Graeme, *Eyewitness Evidence of Explosions in the Twin Towers*, Chapter Eight, The 9/11 Toronto Report, Editor: James Gourley (November 2012)
18. MacQueen, Graeme, *118 Witnesses: The Firefighters' Testimony to Explosions in the Twin Towers*, Journal of 9/11 Studies (2006)
19. National Fire Protection Association (NFPA), *NFPA 921 Guide for Fire and Explosion Investigations* (Current edition: 2014)
20. NFPA Report, *High-Rise Building Fires* by John R. Hall, Jr. (September 2013)
21. National Institute of Standards and Technology (NIST), *National Institute of Standards and Technology Final Plan: National Building Fire Safety Investment of the World Trade Center* by Sivraj Shyam-Sunder (August 2002)
22. NIST, *June 2004 Progress Report on the Federal Building and Fire Safety Investigation of the World Trade Center Disaster (WTC 1 & WTC 2)*
23. NIST, *Draft Reports from the NIST World Trade Center Disaster Investigation (WTC 1 & WTC 2 in April 2005; WTC 7 in August 2008)*
24. NIST, *Final Reports from the NIST Investigation of the World Trade Center Disaster (WTC 1 & WTC 2 in September 2005; WTC 7 in November 2008)*

25. NIST: To NIST, *Request for Correction* from Bob McIlvaine, Bill Doyle, Steven Jones, Kevin Ryan, Richard Gage, Frank Legge (April 2007)
26. NIST: From NIST, *Response to the Request for Correction* (September 2007)
27. NIST: To NIST, *Appeal from James R. Gourley, Bob McIlvaine, Steven Jones to NIST's Response to the Request for Correction* (October 2007)
28. NIST, *Questions and Answers about the NIST WTC Towers Investigation (NIST FAQs for WTC 1 & WTC 2* updated September 19, 2011)
29. NIST, *Questions and Answers about the NIST WTC 7 Investigation (NIST FAQs for WTC 7*, updated June 27, 2012)
30. NIST, *WTC 7 Technical Briefing* (August 26, 2008)
31. NIST, *Analysis of Needs and Existing Capabilities for Full-Scale Fire Resistance Testing* (October 2008)
32. Ryan, Kevin, *High Velocity Bursts of Debris from Point-Like Sources in the WTC Towers*, *Journal of 9/11 Studies* (June 2007)
33. Szamboti, Anthony and Johns, Richard, *ASCE Journals Refuse to Correct Fraudulent Paper Published on WTC Collapses*, *Journal of 9/11 Studies* (September 2014)
34. Szamboti, Anthony and MacQueen, Graeme, *The Missing Jolt: A Simple Refutation of the NIST-Bazant Collapse Hypothesis*, *Journal of 9/11 Studies* (April 2009)
35. Szuladziński, Gregory and Szamboti, Anthony and Johns, Richard, *Some Misunderstandings Related to WTC Collapse Analysis*, *International Journal of Protective Structures* (June 2013)
36. U.S. Geological Survey (USGS), *Particle Atlas of World Trade Center Dust* by Heather A. Lowers and Gregory P. Meeker (2005)





## Appendix B

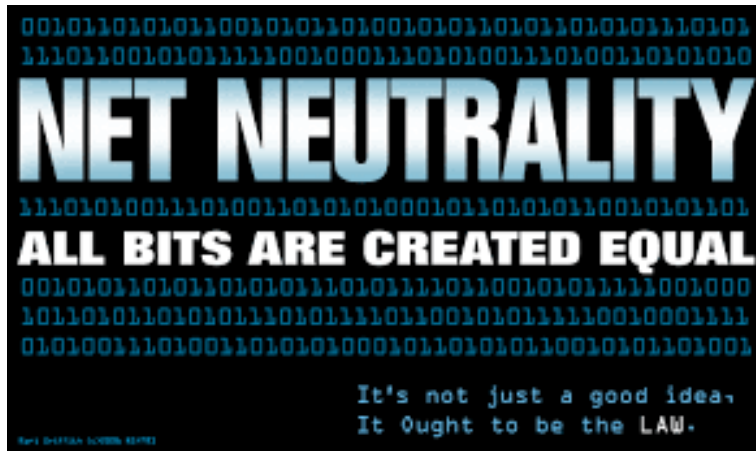
# THE STRUGGLE FOR INTERNET NUTRALITY

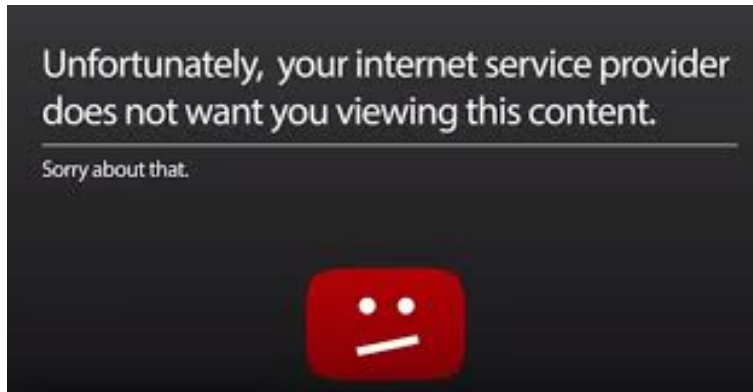
The Wikipedia article on Net Neutrality states that “Net neutrality is the principle that Internet service providers treat all data on the Internet equally, and not discriminate or charge differently by user, content, website, platform, application, type of attached equipment, or method of communication. For instance, under these principles, internet service providers are unable to intentionally block, slow down or charge money for specific websites and online content. This is sometimes enforced through government mandate. These regulations can be referred to as ‘common carrier’ regulations.”...

“In the United States, in April 2015, the FCC issued its Open Internet Order, which reclassified Internet access - previously classified as an information service - as a common carrier telecommunications service; i.e. a public utility. But on December 14, 2017, the Commission, which was led by Chairman Ajit Pai, voted to partially repeal the 2015 Open Internet Order, classifying Internet access once again as an information service.”









**URGENT**

If you're not freaking out about Net Neutrality right now, you're not paying attention.





## Appendix C

# HAROLD PINTER'S NOBEL LECTURE

Harold Pinter (1930-2008) was a British author who received the 2005 Nobel Prize in Literature. Here is the final section of his Nobel Lecture:

*Political language, as used by politicians, does not venture into any of this territory since the majority of politicians, on the evidence available to us, are interested not in truth but in power and in the maintenance of that power. To maintain that power it is essential that people remain in ignorance, that they live in ignorance of the truth, even the truth of their own lives. What surrounds us therefore is a vast tapestry of lies, upon which we feed.*

*As every single person here knows, the justification for the invasion of Iraq was that Saddam Hussein possessed a highly dangerous body of weapons of mass destruction, some of which could be fired in 45 minutes, bringing about appalling devastation. We were assured that was true. It was not true. We were told that Iraq had a relationship with Al Qaeda and shared responsibility for the atrocity in New York of September 11th 2001. We were assured that this was true. It was not true. We were told that Iraq threatened the security of the world. We were assured it was true. It was not true.*

*The truth is something entirely different. The truth is to do with how the United States understands its role in the world and how it chooses to embody it.*

*But before I come back to the present I would like to look at the recent past, by which I mean United States foreign policy since the end of the Second World War. I believe it is obligatory upon us to subject this period to at least some kind of even limited scrutiny, which is all that time will allow here.*

*Everyone knows what happened in the Soviet Union and throughout Eastern Europe during the post-war period: the systematic brutality, the widespread atrocities, the ruthless suppression of independent thought. All this has been fully documented and verified.*

*But my contention here is that the US crimes in the same period have only been superficially recorded, let alone documented, let alone acknowledged, let alone recognised as crimes at all. I believe this must be addressed and that the truth has considerable bearing on where the world stands now. Although constrained, to a certain extent, by the existence*

of the Soviet Union, the United States' actions throughout the world made it clear that it had concluded it had *carte blanche* to do what it liked.

Direct invasion of a sovereign state has never in fact been America's favoured method. In the main, it has preferred what it has described as 'low intensity conflict'. Low intensity conflict means that thousands of people die but slower than if you dropped a bomb on them in one fell swoop. It means that you infect the heart of the country, that you establish a malignant growth and watch the gangrene bloom. When the populace has been subdued - or beaten to death - the same thing - and your own friends, the military and the great corporations, sit comfortably in power, you go before the camera and say that democracy has prevailed. This was a commonplace in US foreign policy in the years to which I refer.

The tragedy of Nicaragua was a highly significant case. I choose to offer it here as a potent example of America's view of its role in the world, both then and now.

I was present at a meeting at the US embassy in London in the late 1980s.

The United States Congress was about to decide whether to give more money to the Contras in their campaign against the state of Nicaragua. I was a member of a delegation speaking on behalf of Nicaragua but the most important member of this delegation was a Father John Metcalf. The leader of the US body was Raymond Seitz (then number two to the ambassador, later ambassador himself). Father Metcalf said: 'Sir, I am in charge of a parish in the north of Nicaragua. My parishioners built a school, a health centre, a cultural centre. We have lived in peace. A few months ago a Contra force attacked the parish. They destroyed everything: the school, the health centre, the cultural centre. They raped nurses and teachers, slaughtered doctors, in the most brutal manner. They behaved like savages. Please demand that the US government withdraw its support from this shocking terrorist activity.'

Raymond Seitz had a very good reputation as a rational, responsible and highly sophisticated man. He was greatly respected in diplomatic circles. He listened, paused and then spoke with some gravity. 'Father,' he said, 'let me tell you something. In war, innocent people always suffer.' There was a frozen silence. We stared at him. He did not flinch.

Innocent people, indeed, always suffer.

Finally somebody said: 'But in this case "innocent people" were the victims of a gruesome atrocity subsidised by your government, one among many. If Congress allows the Contras more money further atrocities of this kind will take place. Is this not the case? Is your government not therefore guilty of supporting acts of murder and destruction upon the citizens of a sovereign state?'

Seitz was imperturbable. 'I don't agree that the facts as presented support your assertions,' he said.

As we were leaving the Embassy a US aide told me that he enjoyed my plays. I did not reply.

I should remind you that at the time President Reagan made the following statement: 'The Contras are the moral equivalent of our Founding Fathers.'

The United States supported the brutal Somoza dictatorship in Nicaragua for over 40 years. The Nicaraguan people, led by the Sandinistas, overthrew this regime in 1979, a breathtaking popular revolution.



*The Sandinistas weren't perfect. They possessed their fair share of arrogance and their political philosophy contained a number of contradictory elements. But they were intelligent, rational and civilised. They set out to establish a stable, decent, pluralistic society. The death penalty was abolished. Hundreds of thousands of poverty-stricken peasants were brought back from the dead. Over 100,000 families were given title to land. Two thousand schools were built. A quite remarkable literacy campaign reduced illiteracy in the country to less than one seventh. Free education was established and a free health service. Infant mortality was reduced by a third. Polio was eradicated.*

*The United States denounced these achievements as Marxist/Leninist subversion. In the view of the US government, a dangerous example was being set. If Nicaragua was allowed to establish basic norms of social and economic justice, if it was allowed to raise the standards of health care and education and achieve social unity and national self respect, neighbouring countries would ask the same questions and do the same things. There was of course at the time fierce resistance to the status quo in El Salvador.*

*I spoke earlier about 'a tapestry of lies' which surrounds us. President Reagan commonly described Nicaragua as a 'totalitarian dungeon'. This was taken generally by the media, and certainly by the British government, as accurate and fair comment. But there was in fact no record of death squads under the Sandinista government. There was no record of torture. There was no record of systematic or official military brutality. No priests were ever murdered in Nicaragua. There were in fact three priests in the government, two Jesuits and a Maryknoll missionary. The totalitarian dungeons were actually next door, in El Salvador and Guatemala. The United States had brought down the democratically elected government of Guatemala in 1954 and it is estimated that over 200,000 people had been victims of successive military dictatorships.*

*Six of the most distinguished Jesuits in the world were viciously murdered at the Central American University in San Salvador in 1989 by a battalion of the Atlacatl regiment trained at Fort Benning, Georgia, USA. That extremely brave man Archbishop Romero was assassinated while saying mass. It is estimated that 75,000 people died. Why were they killed? They were killed because they believed a better life was possible and should be achieved. That belief immediately qualified them as communists. They died because they dared to question the status quo, the endless plateau of poverty, disease, degradation and oppression, which had been their birthright.*

*The United States finally brought down the Sandinista government. It took some years and considerable resistance but relentless economic persecution and 30,000 dead finally undermined the spirit of the Nicaraguan people. They were exhausted and poverty stricken once again. The casinos moved back into the country. Free health and free education were over. Big business returned with a vengeance. 'Democracy' had prevailed.*

*But this 'policy' was by no means restricted to Central America. It was conducted throughout the world. It was never-ending. And it is as if it never happened.*

*The United States supported and in many cases engendered every right wing military dictatorship in the world after the end of the Second World War. I refer to Indonesia, Greece, Uruguay, Brazil, Paraguay, Haiti, Turkey, the Philippines, Guatemala, El Salvador, and, of course, Chile. The horror the United States inflicted upon Chile in 1973 can*

*never be purged and can never be forgiven.*

*Hundreds of thousands of deaths took place throughout these countries. Did they take place? And are they in all cases attributable to US foreign policy? The answer is yes they did take place and they are attributable to American foreign policy. But you wouldn't know it.*

*It never happened. Nothing ever happened. Even while it was happening it wasn't happening. It didn't matter. It was of no interest. The crimes of the United States have been systematic, constant, vicious, remorseless, but very few people have actually talked about them. You have to hand it to America. It has exercised a quite clinical manipulation of power worldwide while masquerading as a force for universal good. It's a brilliant, even witty, highly successful act of hypnosis.*

*I put to you that the United States is without doubt the greatest show on the road. Brutal, indifferent, scornful and ruthless it may be but it is also very clever. As a salesman it is out on its own and its most saleable commodity is self love. It's a winner. Listen to all American presidents on television say the words, 'the American people', as in the sentence, 'I say to the American people it is time to pray and to defend the rights of the American people and I ask the American people to trust their president in the action he is about to take on behalf of the American people.'*

*It's a scintillating stratagem. Language is actually employed to keep thought at bay. The words 'the American people' provide a truly voluptuous cushion of reassurance. You don't need to think. Just lie back on the cushion. The cushion may be suffocating your intelligence and your critical faculties but it's very comfortable. This does not apply of course to the 40 million people living below the poverty line and the 2 million men and women imprisoned in the vast gulag of prisons, which extends across the US.*

*The United States no longer bothers about low intensity conflict. It no longer sees any point in being reticent or even devious. It puts its cards on the table without fear or favour. It quite simply doesn't give a damn about the United Nations, international law or critical dissent, which it regards as impotent and irrelevant. It also has its own bleating little lamb tagging behind it on a lead, the pathetic and supine Great Britain.*

*What has happened to our moral sensibility? Did we ever have any? What do these words mean? Do they refer to a term very rarely employed these days - conscience? A conscience to do not only with our own acts but to do with our shared responsibility in the acts of others? Is all this dead? Look at Guantanamo Bay. Hundreds of people detained without charge for over three years, with no legal representation or due process, technically detained forever. This totally illegitimate structure is maintained in defiance of the Geneva Convention. It is not only tolerated but hardly thought about by what's called the 'international community'. This criminal outrage is being committed by a country, which declares itself to be 'the leader of the free world'. Do we think about the inhabitants of Guantanamo Bay? What does the media say about them? They pop up occasionally - a small item on page six. They have been consigned to a no man's land from which indeed they may never return. At present many are on hunger strike, being force-fed, including British residents. No niceties in these force-feeding procedures. No sedative or anaesthetic. Just a tube stuck up your nose and into your throat. You vomit blood. This is torture.*

*What has the British Foreign Secretary said about this? Nothing. What has the British Prime Minister said about this? Nothing. Why not? Because the United States has said: to criticise our conduct in Guantanamo Bay constitutes an unfriendly act. You're either with us or against us. So Blair shuts up.*

*The invasion of Iraq was a bandit act, an act of blatant state terrorism, demonstrating absolute contempt for the concept of international law. The invasion was an arbitrary military action inspired by a series of lies upon lies and gross manipulation of the media and therefore of the public; an act intended to consolidate American military and economic control of the Middle East masquerading - as a last resort - all other justifications having failed to justify themselves - as liberation. A formidable assertion of military force responsible for the death and mutilation of thousands and thousands of innocent people.*

*We have brought torture, cluster bombs, depleted uranium, innumerable acts of random murder, misery, degradation and death to the Iraqi people and call it 'bringing freedom and democracy to the Middle East'.*

*How many people do you have to kill before you qualify to be described as a mass murderer and a war criminal? One hundred thousand? More than enough, I would have thought. Therefore it is just that Bush and Blair be arraigned before the International Criminal Court of Justice. But Bush has been clever. He has not ratified the International Criminal Court of Justice. Therefore if any American soldier or for that matter politician finds himself in the dock Bush has warned that he will send in the marines. But Tony Blair has ratified the Court and is therefore available for prosecution. We can let the Court have his address if they're interested. It is Number 10, Downing Street, London.*

*Death in this context is irrelevant. Both Bush and Blair place death well away on the back burner. At least 100,000 Iraqis were killed by American bombs and missiles before the Iraq insurgency began. These people are of no moment. Their deaths don't exist. They are blank. They are not even recorded as being dead. 'We don't do body counts,' said the American general Tommy Franks.*

*Early in the invasion there was a photograph published on the front page of British newspapers of Tony Blair kissing the cheek of a little Iraqi boy. 'A grateful child,' said the caption. A few days later there was a story and photograph, on an inside page, of another four-year-old boy with no arms. His family had been blown up by a missile. He was the only survivor. 'When do I get my arms back?' he asked. The story was dropped. Well, Tony Blair wasn't holding him in his arms, nor the body of any other mutilated child, nor the body of any bloody corpse. Blood is dirty. It dirties your shirt and tie when you're making a sincere speech on television.*

*The 2,000 American dead are an embarrassment. They are transported to their graves in the dark. Funerals are unobtrusive, out of harm's way. The mutilated rot in their beds, some for the rest of their lives. So the dead and the mutilated both rot, in different kinds of graves.*

*Here is an extract from a poem by Pablo Neruda, 'I'm Explaining a Few Things':*

*And one morning all that was burning,  
one morning the bonfires*

*leapt out of the earth  
 devouring human beings  
 and from then on fire,  
 gunpowder from then on,  
 and from then on blood.  
 Bandits with planes and Moors,  
 bandits with finger-rings and duchesses,  
 bandits with black friars spattering blessings  
 came through the sky to kill children  
 and the blood of children ran through the streets  
 without fuss, like children's blood.*

*Jackals that the jackals would despise  
 stones that the dry thistle would bite on and spit out,  
 vipers that the vipers would abominate.*

*Face to face with you I have seen the blood  
 of Spain tower like a tide  
 to drown you in one wave  
 of pride and knives.*

*Treacherous  
 generals:  
 see my dead house,  
 look at broken Spain:  
 from every house burning metal flows  
 instead of flowers  
 from every socket of Spain  
 Spain emerges  
 and from every dead child a rifle with eyes  
 and from every crime bullets are born  
 which will one day find  
 the bull's eye of your hearts.*

*And you will ask: why doesn't his poetry  
 speak of dreams and leaves  
 and the great volcanoes of his native land.*

*Come and see the blood in the streets.  
 Come and see  
 the blood in the streets.  
 Come and see the blood  
 in the streets!*

*Let me make it quite clear that in quoting from Neruda's poem I am in no way comparing Republican Spain to Saddam Hussein's Iraq. I quote Neruda because nowhere in contemporary poetry have I read such a powerful visceral description of the bombing of civilians.*

*I have said earlier that the United States is now totally frank about putting its cards on the table. That is the case. Its official declared policy is now defined as 'full spectrum dominance'. That is not my term, it is theirs. 'Full spectrum dominance' means control of land, sea, air and space and all attendant resources.*

*The United States now occupies 702 military installations throughout the world in 132 countries, with the honourable exception of Sweden, of course. We don't quite know how they got there but they are there all right.*

*The United States possesses 8,000 active and operational nuclear warheads. Two thousand are on hair trigger alert, ready to be launched with 15 minutes warning. It is developing new systems of nuclear force, known as bunker busters. The British, ever cooperative, are intending to replace their own nuclear missile, Trident. Who, I wonder, are they aiming at? Osama bin Laden? You? Me? Joe Dokes? China? Paris? Who knows? What we do know is that this infantile insanity - the possession and threatened use of nuclear weapons - is at the heart of present American political philosophy. We must remind ourselves that the United States is on a permanent military footing and shows no sign of relaxing it.*

*Many thousands, if not millions, of people in the United States itself are demonstrably sickened, shamed and angered by their government's actions, but as things stand they are not a coherent political force - yet. But the anxiety, uncertainty and fear which we can see growing daily in the United States is unlikely to diminish.*

*I know that President Bush has many extremely competent speech writers but I would like to volunteer for the job myself. I propose the following short address which he can make on television to the nation. I see him grave, hair carefully combed, serious, winning, sincere, often beguiling, sometimes employing a wry smile, curiously attractive, a man's man.*

*'God is good. God is great. God is good. My God is good. Bin Laden's God is bad. His is a bad God. Saddam's God was bad, except he didn't have one. He was a barbarian. We are not barbarians. We don't chop people's heads off. We believe in freedom. So does God. I am not a barbarian. I am the democratically elected leader of a freedom-loving democracy. We are a compassionate society. We give compassionate electrocution and compassionate lethal injection. We are a great nation. I am not a dictator. He is. I am not a barbarian. He is. And he is. They all are. I possess moral authority. You see this fist? This is my moral authority. And don't you forget it.'*

*A writer's life is a highly vulnerable, almost naked activity. We don't have to weep about that. The writer makes his choice and is stuck with it. But it is true to say that you are open to all the winds, some of them icy indeed. You are out on your own, out on a limb. You find no shelter, no protection - unless you lie - in which case of course you have constructed your own protection and, it could be argued, become a politician.*

*I have referred to death quite a few times this evening. I shall now quote a poem of my*

*own called 'Death'.*

*Where was the dead body found?  
Who found the dead body?  
Was the dead body dead when found?  
How was the dead body found?*

*Who was the dead body?*

*Who was the father or daughter or brother  
Or uncle or sister or mother or son  
Of the dead and abandoned body?*

*Was the body dead when abandoned?  
Was the body abandoned?  
By whom had it been abandoned?*

*Was the dead body naked or dressed for a journey?*

*What made you declare the dead body dead?  
Did you declare the dead body dead?  
How well did you know the dead body?  
How did you know the dead body was dead?*

*Did you close both its eyes  
Did you bury the body  
Did you leave it abandoned  
Did you kiss the dead body*

*When we look into a mirror we think the image that confronts us is accurate. But move a millimetre and the image changes. We are actually looking at a never-ending range of reflections. But sometimes a writer has to smash the mirror - for it is on the other side of that mirror that the truth stares at us.*

*I believe that despite the enormous odds which exist, unflinching, unswerving, fierce intellectual determination, as citizens, to define the real truth of our lives and our societies is a crucial obligation which devolves upon us all. It is in fact mandatory.*

*If such a determination is not embodied in our political vision we have no hope of restoring what is so nearly lost to us - the dignity of man.*



Figure C.1: **Harold Pinter (1930-2008)**





# Appendix D

## UNDERSTATEMENT OF EXISTENTIAL CLIMATE RISK

Here are some excerpts from a 44-page report entitled WHAT LIES BENEATH: THE UNDERSTATEMENT OF EXISTENTIAL CLIMATE RISK, by David Spratt and Ian Dunlop<sup>1</sup>:

### D.1 Introduction

*Three decades ago, when serious debate on human-induced climate change began at the global level, a great deal of statesmanship was on display. There was a preparedness to recognise that this was an issue transcending nation states, ideologies and political parties which had to be addressed proactively in the long-term interests of humanity as a whole. This was the case even though the existential nature of the risk it posed was far less clear cut than it is today.*

*As global institutions, such as the United Nations Framework Convention on Climate Change (UNFCCC) which was established at the Rio Earth Summit in 1992, were developed to take up this challenge, and the extent of change this would demand of the fossil-fuel-dominated world order became clearer, the forces of resistance began to mobilise. Today, as a consequence, and despite the diplomatic triumph of the 2015 Paris Agreement, the debate around climate change policy has never been more dysfunctional, indeed Orwellian.*

*In his book 1984, George Orwell describes a double-think totalitarian state where most of the population accepts “the most flagrant violations of reality, because they never fully grasped the enormity of what was demanded of them, and were not sufficiently interested in public events to notice what was happening. By lack of understanding they remained sane.”*

*Orwell could have been writing about climate change and policymaking. International agreements talk of limiting global warming to 1.5-2 degrees Celsius (°C), but in reality they*

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<sup>1</sup><https://www.breakthroughonline.org.au/>

*set the world on a path of 3-5°C of warming. Goals are reaffirmed, only to be abandoned. Coal is “clean”. Just 1°C of warming is already dangerous, but this cannot be admitted. The planetary future is hostage to myopic national self-interest. Action is delayed on the assumption that as yet unproven technologies will save the day, decades hence. The risks are existential, but it is “alarmist” to say so.*

*A one-in-two or one-in-three chance of missing a goal is normalised as reasonable. Moral hazard permeates official thinking, in that there is an incentive to ignore the risks in the interests of political expediency.*

*Climate policymaking for years has been cognitively dissonant, “a flagrant violation of reality”. So it is unsurprising that there is a lack of understanding amongst the public and elites of the full measure of the climate challenge. Yet most Australians sense where we are heading: three-quarters of Australians see climate change as catastrophic risk, and half see our way of life ending within the next 100 years.*

*Politics and policymaking have norms: rules and practices, assumptions and boundaries, that constrain and shape them. In recent years, the previous norms of statesmanship and long-term thinking have disappeared, replaced by an obsession with short-term political and commercial advantage. Climate policymaking is no exception. Since 1992, short-term economic interest has trumped environmental and future human needs.*

*The world today emits 50% more carbon dioxide (CO<sub>2</sub>) from the consumption of energy than it did 25 years ago, and the global economy has more than doubled in size. The UNFCCC strives “to enable economic development to proceed in a sustainable manner”, but every year humanity’s ecological footprint becomes larger and less sustainable. Humanity now requires the biophysical capacity of 1.7 Earths annually as it rapidly chews up natural capital.*

*A fast, emergency-scale transition to a post-fossil fuel world is absolutely necessary to address climate change. But this is excluded from consideration by policymakers because it is considered to be too disruptive. The orthodoxy is that there is time for an orderly economic transition within the current short-termist political paradigm. Discussion of what would be safe - less warming than we presently experience - is non-existent. And so we have a policy failure of epic proportions.*

*Policymakers, in their magical thinking, imagine a mitigation path of gradual change to be constructed over many decades in a growing, prosperous world. The world not imagined is the one that now exists: of looming financial instability; of a global crisis of political legitimacy and “fake news”; of a sustainability crisis that extends far beyond climate change to include all the fundamentals of human existence and most significant planetary boundaries (soils, potable water, oceans, the atmosphere, biodiversity, and so on); and of severe global energy-sector dislocation.*

*In anticipation of the upheaval that climate change would impose upon the global order, the IPCC was established by the United Nations (UN) in 1988, charged with regularly assessing the global consensus on climate science as a basis for policymaking. The IPCC Assessment Reports (AR), produced every five-to-eight years, play a large part in the public framing of the climate narrative: new reports are a global media event.*

*AR5 was produced in 2013-14, with AR6 due in 2022. The IPCC has done critical,*

*indispensable work of the highest standard in pulling together a periodic consensus of what must be the most exhaustive scientific investigation in world history.*

*It does not carry out its own research, but reviews and collates peer-reviewed material from across the spectrum of this incredibly complex area, identifying key issues and trends for policymaker consideration. However, the IPCC process suffers from all the dangers of consensus-building in such a wide-ranging and complex arena. For example, IPCC reports, of necessity, do not always contain the latest available information. Consensus-building can lead to “least drama”, lowest-common-denominator outcomes, which overlook critical issues. This is particularly the case with the “fat-tails” of probability distributions, that is, the high-impact but lower-probability events where scientific knowledge is more limited.*

*Vested-interest pressure is acute in all directions; climate denialists accuse the IPCC of alarmism, whereas many climate action proponents consider the IPCC to be far too conservative. To cap it all, the IPCC conclusions are subject to intense political oversight before being released, which historically has had the effect of substantially watering-down sound scientific findings*

*These limitations are understandable, and arguably were not of overriding importance in the early period of the IPCC. However, as time has progressed, it is now clear that the risks posed by climate change are far greater than previously anticipated. We have moved out of the twilight period of much talk, but relatively limited climate impacts, into the harsh light of physically-evident existential threats. Climate change is now turning nasty, as we have witnessed recently in the North America, East and South Asia, the Middle East and Europe, with record-breaking heatwaves and wildfires, more intense flooding and more damaging hurricanes.*

*The distinction between climate science and risk is the critical issue, for the two are not the same. Scientific reticence - a reluctance to spell out the full risk implications of climate science in the absence of perfect information - has become a major problem. Whilst this is understandable, particularly when scientists are continually criticised by denialists and political apparatchiks for speaking out, it is extremely dangerous given the fat-tail risks of climate change. Waiting for perfect information, as we are continually urged to do by political and economic elites, means it will be too late to act. Time is not on our side. Sensible risk management addresses risk in time to prevent it happening, and that time is now.*

*Irreversible, adverse climate change on the global scale now occurring is an existential risk to human civilisation. Many of the world’s top climate scientists - Kevin Anderson, James Hansen, Michael E. Mann, Michael Oppenheimer, Naomi Oreskes, Stefan Rahmstorf, Eric Rignot, Hans Joachim Schellnhuber, Kevin Trenberth and others - who are quoted in this report well understand these implications and are forthright about their findings, where we are heading, and the limitations of IPCC reports.*

*This report seeks to alert the wider community and business and political leaders to these limitations and urges changes to the IPCC approach, to the wider UNFCCC negotiations, and to national policymaking. It is clear that existing processes will not deliver the transformation to a carbon-negative world in the limited time now available. We urgently require a reframing of scientific research within an existential risk-management framework.*

*This requires special precautions that go well beyond conventional risk management. Like an iceberg, there is great danger in “what lies beneath”.*

## D.2 Existential Risk to Human Civilization

*In 2016, the World Economic Forum survey of the most impactful risks for the years ahead elevated the failure of climate change mitigation and adaptation to the top of the list, ahead of weapons of mass destruction, ranking second, and water crises, ranking third. By 2018, following a year characterised by high-impact hurricanes and extreme temperatures, extreme-weather events were seen as the single most prominent risk. As the survey noted: “We have been pushing our planet to the brink and the damage is becoming increasingly clear.*

*Climate change is an existential risk to human civilisation: that is, an adverse outcome that would either annihilate intelligent life or permanently and drastically curtail its potential.*

*Temperature rises that are now in prospect, after the Paris Agreement, are in the range of 3-5 °C. At present, the Paris Agreement voluntary emission reduction commitments, if implemented, would result in planetary warming of 3.4 °C by 2100, without taking into account “long-term” carbon- cycle feedbacks. With a higher climate sensitivity figure of 4.5 °C, for example, which would account for such feedbacks, the Paris path would result in around 5 °C of warming, according to a MIT study.*

*A study by Schroder Investment Management published in June 2017 found - after taking into account indicators across a wide range of the political, financial, energy and regulatory sectors - the average temperature increase implied for the Paris Agreement across all sectors was 4.1 °C.*

*Yet 3 °C of warming already constitutes an existential risk. A 2007 study by two US national security think-tanks concluded that 3 °C of warming and a 0.5 metre sea-level rise would likely lead to “outright chaos” and “nuclear war is possible”, emphasising how “massive non-linear events in the global environment give rise to massive nonlinear societal event”.*

*The Global Challenges Foundation (GCF) explains what could happen: “If climate change was to reach 3 °C, most of Bangladesh and Florida would drown, while major coastal cities - Shanghai, Lagos, Mumbai - would be swamped, likely creating large flows of climate refugees. Most regions in the world would see a significant drop in food production and increasing numbers of extreme weather events, whether heat waves, floods or storms. This likely scenario for a 3 °C rise does not take into account the considerable risk that self-reinforcing feedback loops set in when a certain threshold is reached, leading to an ever increasing rise in temperature. Potential thresholds include the melting of the Arctic permafrost releasing methane into the atmosphere, forest dieback releasing the carbon currently stored in the Amazon and boreal forests, or the melting of polar ice caps that would no longer reflect away light and heat from the sun.”*

*Warming of 4 °C or more could reduce the global human population by 80% or 90%, and*

the World Bank reports “there is no certainty that adaptation to a 4 °C world is possible.

Prof. Kevin Anderson says a 4 °C future “is incompatible with an organized global community, is likely to be beyond ‘adaptation’, is devastating to the majority of ecosystems, and has a high probability of not being stable”.

This is a commonly-held sentiment amongst climate scientists. A recent study by the European Commission’s Joint Research Centre found that if the global temperature rose 4 °C, then extreme heatwaves with “apparent temperatures” peaking at over 55 °C will begin to regularly affect many densely populated parts of the world, forcing much activity in the modern industrial world to stop. (“Apparent temperatures” refers to the Heat Index, which quantifies the combined effect of heat and humidity to provide people with a means of avoiding dangerous conditions.)

In 2017, one of the first research papers to focus explicitly on existential climate risks proposed that “mitigation goals be set in terms of climate risk category instead of a temperature threshold”, and established a “dangerous” risk category of warming greater than 1.5 °C, and a “catastrophic” category for warming of 3 °C or more. The authors focussed on the impacts on the world’s poorest three billion people, on health and heat stress, and the impacts of climate extremes on such people with limited adaptation resources. They found that a 2 °C warming “would double the land area subject to deadly heat and expose 48% of the population (to deadly heat). A 4 °C warming by 2100 would subject 47% of the land area and almost 74% of the world population to deadly heat, which could pose existential risks to humans and mammals alike unless massive adaptation measures are implemented.”

A 2017 survey of global catastrophic risks by the Global Challenges Foundation found that: “In high-end [climate] scenarios, the scale of destruction is beyond our capacity to model, with a high likelihood of human civilization coming to an end.”

84% of 8000 people in eight countries surveyed for the Foundation considered climate change a “global catastrophic risk”.

Existential risk may arise from a fast rate of system change, since the capacity to adapt, in both the natural and human worlds, is inversely proportional to the pace of change, amongst other factors. In 2004, researchers reported on the rate of warming as a driver of extinction...

At 4 °C of warming “the limits for adaptation for natural systems would largely be exceeded throughout the world”.

Ecological breakdown of this scale would ensure an existential human crisis. By slow degrees, these existential risks are being recognised. In May 2018, an inquiry by the Australian Senate into national security and global warming recognised “climate change as a current and existential national security risk... defined as ‘one that threatens the premature extinction of Earth-originating intelligent life or the permanent and drastic destruction of its potential for desirable future development’”.

In April 2018, the Intelligence on European Pensions and Institutional Investment think-tank warned business leaders that “climate change is an existential risk whose elimination must become a corporate objective”.

However the most recent IPCC Assessment Report did not consider the issue. Whilst the term “risk management” appears in the 2014 IPCC Synthesis Report fourteen times,

*the terms “existential” and “catastrophic” do not appear...*

# Appendix E

## NOAM CHOMSKY'S LECTURE

On 4 May, 2018, Professor Emeritus Noam Chomsky of MIT and the University of Arizona gave the following lecture<sup>1</sup> to the graduating class of St. Olaf College in Northfield, Minnesota. Here is the text of his lecture, transcribed by Felton Davis:

*Quite a number of interesting and important topics were raised by the students who invited me here, and I wish that there were time to talk about all of them. I hope you will feel free to bring them up in discussion, but I thought what I would try to do rather than trying to review those briefly is to focus on just one question, the most important question that's ever been asked in human history, a question that should be uppermost in everyone's mind. It's been hanging over our heads like a "sword of Damocles" for many years, becoming more urgent every year, and it has now reached the point where the question will be answered in this generation.*

*It's your challenge to answer it, it can't be delayed. The question is whether organized human life will indeed survive, and not in the distant future. The question was raised clearly to everyone with eyes open on August 6, 1945. I was then roughly your age. I happened to be at a summer camp, where I was a counselor. In the morning an announcement came over the loudspeaker saying that the United States had obliterated the city of Hiroshima with a single bomb, the atom bomb. People listened, a few expressions of relief, and then everyone went on to their next activity: a baseball game, swimming, whatever it might be.*

*I was horrified, both by the news, and also by the casual reaction. I was so utterly horrified that I just took off and went off into the woods for a couple of hours to think about it. It was perfectly obvious if you thought about it for a second, not only about the horror of the event, but that humans in their glory had achieved the capacity to destroy everything. Not quite at that time, but it was clear that once the technology was established it would only develop further and escalate and reach the point of becoming what Dan Ellsberg in his recent book - central reading incidentally - calls "the doomsday machine," an automatic system set up so that everything becomes annihilated, and as he points out, we have indeed constructed such a machine and we're living with it.*

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<sup>1</sup><http://www.informationclearinghouse.info/50370.htm>

*Coming forward until today, leading specialists in these topics echo much the same double concern, but now in more stark and urgent terms than 1945. One of the leading nuclear specialists, former defense secretary William Perry, has been touring the country recently, with the message that he is, as he puts it, doubly terrified, terrified by the severe and mounting threat of nuclear war, and even more so by the lack of concern about the possible termination of organized human life.*

*And he's not alone. Among others, General Lee Butler - formerly head of the US Strategic Command, which controls nuclear weapons and nuclear weapons policy - he recently reflected with deep remorse on his many years of service, in implementing plans for what is sometimes called "omnicide," a crime far surpassing genocide, the crime of wiping out every living organism. He writes that "We have so far survived the nuclear age by some combination of skill, luck, and divine intervention, and I suspect the latter in greatest proportion."*

*And he adds a haunting question, "By what authority do succeeding generations of leaders in the nuclear weapons states usurp the power to dictate the odds of continued life on our planet? And most urgently, why does such breathtaking audacity persist at a moment when we should stand trembling in the face of our folly, and united in our commitment to abolish its most deadly manifestations?"*

*And again, Ellsberg in his most recent book - and I urge that you read it, if you haven't already - describes the record that he reviews, mostly from inside the government at the highest planning level for many years, he describes it as a chronicle of human madness, and that's accurate enough. Repeatedly, we have come very close, ominously close, to terminal disaster. The record should really be studied carefully, it's shocking. Sometimes it is due to the reckless acts of leaders, sometimes our leaders, very often through sheer accident. I'll give you a couple of examples, there are actually hundreds, literally.*

*Take one in 1960, when it was discovered that the Russians might soon have missiles, the first early warning system was set up to detect a missile attack. The first day it went into operation it provided to high leaders the information that the Russians had launched a missile attack, with 99.9 percent certainty. Fortunately, people did not react the way they were instructed to react, and it turned out that there had been some miscalculations, and the radar had hit the Moon and bounced back, when it wasn't expected to bounce back. That's one case.*

*A couple of years later, in 1962, during what's been called rightly the most dangerous moment in history - the Cuban Missile Crisis - the background is worth studying. I won't have time to go into it, but it is reckless acts of leaders, including our own leaders. At the peak moment of threat of the Cuban Missile Crisis - which came extremely close to terminal disaster - at that moment there were Russian submarines outside the quarantine area that [President] Kennedy had established, and they were under attack by US destroyers that were dropping depth bombs on them. The conditions in the submarines were such that the crew could not really survive much longer, [because] they were not designed for service in the Caribbean, they were designed for the far north. The US did not know it at the time, but they had missiles with nuclear warheads, and the crew at some point decided, "Look, since they're dropping bombs on us..." - they had no contact with anyone else, and thought*



*there must be a nuclear war - "we might as well send off the ultimate weapon." That would have been the end. There would have been a retaliation, and then we're finished. To send off the missiles required the agreement of three submarine commanders. Two agreed, and one refused - Vasili Arkhipov - one of the reasons why we're still here.*

*Many other cases. In 1979, the national security advisor, Zbigniew Brzezinski, was literally on the phone ready to call President Carter, saying that there was definite information of a massive Russian missile attack, when he got a call saying there was an error. So he didn't call him.*

*A year later, [President] Ronald Reagan came into office, and one of his first acts was to start a program to probe Russian defenses. The objective was to determine what kind of defenses the Russians had against our attack, if we had one. The official wording was "to practice command and staff procedures with particular emphasis on the transition from conventional to non-conventional operations, use of nuclear weapons." The idea was to simulate air and naval attacks on Russia, with all of this made as public as possible to the Russians, because they wanted to see how they would react, including simulated nuclear attacks.*

*At the time it was thought that the Russians would probably figure out that it was simulated and would not react. Now that the Russian archives came out, it turns out that they took it pretty seriously, just as we would certainly have done. In fact one of the leading US intelligence analyses that recently appeared concludes from the record - it's title is "The War Scare Was For Real" - that they took it extremely seriously. Right in the midst of this - the Russian detection systems which were far more primitive than ours - they did detect an ongoing US missile attack. The protocol is for the human being who receives it - his name happened to be [Stanislav] Petrov - he's supposed to take that information and send it up to the Russian high command, and then they decide whether to release a totally destructive missile attack on us. He just decided not to do it. He decided it was probably wasn't serious - another reason why we're alive. You can add him to the roll of honor.*

*This goes on time after time. There have been literally hundreds of cases that came very close. The Bulletin of Atomic Scientists, as you probably know, established what they call "the doomsday clock" shortly after the atomic bombing. What they do is that every year a group of physicists, nuclear specialists, political and strategic analysts, get together and try to assess the state of the world and threats to the world, and set the minute hand of the doomsday clock a certain number of minutes before midnight. "Midnight" means say goodbye, we're finished. The first setting, in 1947, was seven minutes to midnight. It reached the most frightening setting, just two minutes to midnight, in 1953, when what was easy to anticipate in 1945, had happened. First the United States, and then the Soviet Union, carried out tests of hydrogen bombs, vastly more destructive than atom bombs. In fact, an atom bomb is just used as a trigger to set it off, with huge destructive capacity.*

*That meant that human intelligence had reached the point where we could easily destroy all life, no problem. And the minute hand reached two minutes then. Since then it has oscillated, but in recent years it's been approaching midnight again. In January 2017, right after President Trump's inauguration, the minute hand was advanced to two-and-a-half minutes to midnight. Last January [2018], after a year of Trump in office, it was*

*advanced another half minute, to two minutes to midnight. That's a sign that we have now matched the closest point to terminal disaster in the nuclear age, ominously close. That was January. A couple months later, President Trump's nuclear posture review was released, and raises the dangers further. I presume that if the clock were set now, it might be moved another half minute to midnight.*

*I will return to current crises, which are very real, how they are being handled, and what we might do about them, to avoid disaster. But first something else. Since 1945, we have been somehow surviving the nuclear age, actually miraculously, and we can't count on miracles going on forever. What we didn't know in 1945 was that humans were entering into another epoch, a new one, which is no less ominous. It's what geologists call the Anthropocene, a new geological epoch in which human activity is destroying the environment.*

*There have been debates among scientists about when to date the onset of the Anthropocene [epoch]. But last year the World Geological Society determined that a proper time to set it is right after World War II, the same time as the nuclear age. The reason is because of the sharp escalation at that point in human activities which were significantly damaging and will soon destroy the environment for organized life. We might add that the Anthropocene carries with it automatically a third major epoch which is called "the sixth extinction." If you look through millions of year of history there have been periods in which some event caused a mass extinction of animal life. The last one was [65 million] years ago, when an asteroid hit the Earth, and destroyed about 75 percent of animal life, ending the age of the dinosaurs, and actually opened the way for small mammals to survive. They ultimately became us, and we are determined to become another asteroid, intent on destroying all or most animal life on Earth, and we're well advanced in that process.*

*So there are three major epochs that we've been living with: the nuclear age, the Anthropocene, and the sixth extinction, all accelerating. So let's just ask how dangerous is the Anthropocene? I'll give you a couple of illustrations from some of the leading scientific journals, and recent articles, starting with Nature, a British journal, the leading scientific article. The title of the article is "Global Warming's Worst Case Projections Look Increasingly Likely."<sup>2</sup>*

*[Reading from the article]: "A new study based on satellite observations finds that temperatures could rise nearly five degrees centigrade by the end of this century. The odds that temperatures could increase more than four degrees by 2010, in the current scenario, increased from 62 percent to 93 percent."*

*In other words, pretty near certain. If you go back to the Paris negotiations of December 2015, the hope was in the international negotiations that the temperature rise could be kept to 1.5 degrees centigrade rise, and they considered that maybe 2 degrees would be tolerable. Instead we're heading to 4 or 5 degrees, with very high confidence.*

*Here's one from a recent World Meteorological Organization: "Concentrations of carbon dioxide in the atmosphere surged at a record-breaking speed in 2016" - the last figures they have - "to the highest level in 800,000 years. The abrupt changes in atmosphere witnessed*

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<sup>2</sup><https://www.technologyreview.com/s/609620/global-warmings-worst-case-projections-look-increasingly-likely/>

*in the past 70 years” - the Anthropocene - “are without precedent in the geological record. Globally averaged concentrations of CO<sub>2</sub> reached over [410?] parts per million, up from just 400 parts per million in 2015,” which has been considered the upper tolerable limit, so we’re now beyond it.*

*“The concentrations of CO<sub>2</sub> are now 150 percent above the pre-industrial level. Rapidly increasing atmospheric levels of CO<sub>2</sub> and other greenhouse gases have the potential to initiate unprecedented changes in climate systems, leading to severe ecological and economic destruction.”*

*The last time the Earth experience a comparable concentration of CO<sub>2</sub> was somewhere around 3 to 5 million years ago. At that point the temperature was 2 to 3 degrees centigrade above now, and the sea level was 30 to 60 feet higher than it is now. That’s what we’re moving to in the near future. In fact we’re going beyond because the prediction is 4 to 5 degrees centigrade. Well, I’ll leave the effects to your imagination.*

*Here’s a final example, from Science, one of the leading American science journals: “Even slightly warmer temperatures, less than anticipated, in coming years, can start melting permafrost, which in turn threatens to trigger the release of huge amounts of greenhouse gases trapped in ice. There’s twice as much carbon in permafrost as in the atmosphere. This will release huge amounts of methane which is actually far more lethal than CO<sub>2</sub>, although of shorter persistence. And that accelerates other processes that are already underway, like the rapid melting of polar ice. Polar ice, as it melts, reduces the reflective surface for the Sun’s rays, and creates more absorbent surfaces than dark seas. So that accelerates warming, and could lead to a non-linear process in which everything blows up. It’s leading among other things to the breaking up and melting of huge Antarctic ice caps. One of them, West Antarctica, contains enough ice to raise sea level more than 10 feet.*

*Pretty easy to continue... In brief the prospects are extremely serious, in fact they’re really awesome, which raises an obvious question: what are we going about it, how are we reacting? Well, the world is actually taking some steps, inadequate, but at least something, there’s a commitment. And states and localities in the United States are also taking steps, which is quite important. But what is of prime importance, of course, is the federal government, the most powerful institution in human history.*

*So what is it doing? It’s withdrawing from the international efforts, but beyond that, it’s committed to increasing the use of the most destructive fossil fuels. So our federal government, for which we are responsible, is dramatically leading our race to destruction, while we sit and watch. That’s pretty astounding. That ought to be the screaming headline in every day’s newspaper, ought to be the main topic you study in every class. There’s never been anything like it. And it is astounding, as is the lack of attention, another doubly terrifying phenomenon. We should be asking, among other things, what this tells us about our society, and about our culture, what we are immersed in. And remember, all of this is imminent, we’re approaching this rapidly, this century, your task is to do something about it, and we’re ignoring it. We’re racing towards it, and we’re ignoring it.*

*Meanwhile our chief competitor in destroying the planet, the Saudi Arabian dictatorship, has just announced plans to spend 7 billion dollars this year, for 7 new solar plants, and a big wind farm. That’s part of an effort on its part to move from oil, which destroys*

*everything, to solar, renewable energy. This is Saudi Arabia. And that highlights how lonely we are in our race to destruction. Even the extreme reactionary dictatorship of Saudi Arabia, which lives on oil, refuses to join us in our unique insanity, which is dedicated to destroying organized human life.*

*And it's not just the current administration. The entire Republican Party leadership agrees. If you go back to the 2016 primaries, every single candidate denied that what was happening is happening, with the exception of those who were called "sensible moderates." Jeb Bush, who said it's all kind of uncertain, but we don't have to do anything about it, because we're producing more natural gas, thanks to fracking, in other words making it worse. The other sensible moderate, an adult in the womb as he was called, was John Kasich, the Governor of Ohio, he's the one person who agreed that anthropogenic global warming is taking place, but he added, "We're going to burn coal in Ohio, and we're not going to apologize for it." On ethical grounds, that's the worst of all, when you think about it.*

*Well, what about the media? They totally ignored this spectacle. Every crazy thing you can imagine was discussed extensively in the massive coverage of the primaries, but not the fact that the entire leadership of the party was saying, "Let's quickly destroy ourselves." Nothing - go back and check. Almost no comment about it. The denialism of the leadership is having an effect on public opinion.*

*So Republican voters have been climate change skeptics for a long time, way beyond anything in the world, but it's gotten far more extreme since Trump took office. And the numbers are pretty shocking. So by now, half of Republican voters deny that global warming is taking place at all. And only 30 percent think humans may be contributing to global warming. I don't think you can find anything like that among any significant part of the population, anywhere in the world. And it should tell us something. One thing it should tell us is that there's a lot to do for those who hope that maybe organized human life will survive. We're not talking about a remote future. Just think about the numbers I gave you before. We're talking about something imminent.*

*Well let's put [climate crisis] aside for a moment and go back to the growing threat of nuclear war. Are these ominous developments inexorable? So should we just throw up our hands in despair, and say okay, we're finished, have a nice time, good-bye? That's not at all true. There are very plausible answers in every single case that exists: diplomatic options are always open, and there are straightforward general principles that can be quite effective.*

*One principle is quite simple: obey the law. Not a particularly radical idea. Almost unheard of, but it could have some consequences. So what is the law? Well there is something called the US Constitution which people are supposed to honor and revere. The Constitution has parts, Article Six for example. Article Six of the Constitution says that valid treaties are the supreme law of the land, and every elected official is required to observe them.*

*What's the most important treaty of the modern period? Unquestionably it's the United Nations Charter. Article One of the Charter requires us to keep to peaceful means to resolve international tensions and disputes, and to refrain from the threat or use of force*

*in international affairs. And I stress "threat" because that is violated all the time by every president and every high political leader. Every time you hear the phrase "all options are open," that's violating the supreme law of the land, if anyone cares.*

*Let's take a couple of examples. Let's take Iran, an important example. A good deal of the talk about the possibility that Iran may be violating the joint comprehensive agreement - the JCPOA [Joint Comprehensive Plan of Action], the "Iran deal" - there's absolutely no evidence for that. US intelligence says they're observing it, the International Atomic Energy Agency [IAEA] that carries out repeated inspections says they're observing it completely.*

*There's a lot of discussion about it, but there's no talk about something else: is the US violating the agreement? Try to check to see if anybody's talked about that. The answer to that is pretty simple: the US is radically violating the agreement and has been all along. The agreement states that all participants - meaning us - are not permitted to impede in any way Iran's re-integration into the global economy, particularly the global financial system, which we pretty much control, since everything works through New York. We are not permitted to interfere in any way with the normalization - I'm quoting it - the normalization of trade and economic relations with Iran. We're doing that all the time, and in fact are proud of it. All violations of the agreement. But it's ignored on a principle that's kind of interesting, the prevailing tacit assumption that the United States just stands above the law, including its own laws. So we don't have to observe our laws, or any other laws, because we're just unique, we do what we like.*

*See if you can find an exception to that in the discourse on this topic. Well, in a couple of days as you know President Trump will probably withdraw from the treaty, possibly. That's a gift to the hard-liners in Iran, it tells them that maybe they should return to nuclear programs. That's an opening for the new national security advisor John Bolton, or Binyamin Netanyahu, both of whom have called for bombing Iran right away, even while they fully respect the terms of the agreement that we've already violated quite publicly, there's no secret about it. And the consequences could be horrendous. But there happens to be a way of blocking those consequences, namely, by the very simple device of respecting our own law, in fact the supreme law of the land. Again, see if you can find the suggestion to that effect.*

*Are there peaceful options? Pretty obviously, in this case, we could join the rest of the world, and permit the agreement to continue to function. Or better, we might turn to improvement of the agreement. That's one thing that Trump has vociferously demanded. And there's good ways to do that. One obvious proposal for improving the agreement, which is ignored entirely, is to move towards establishing a nuclear weapons free zone in the region. There are such agreements in various parts of the world, in Latin America, for example, and it's a step towards mitigating the threat of disaster.*

*So what about a nuclear weapons free zone in the Middle East? If that were established, it would end any conceivable Iranian threat that you could imagine. So is there a problem of establishing it? Actually there is one problem, but it's not the one that comes to mind. There's certainly no problem convincing Iran because they have been calling for this for years, vociferously. Certainly not any problem with the Arab world, they're the ones who initiated the proposal 25 years ago. And the rest of the world agrees as well. There's*

*one exception: the United States refuses to allow this, and it comes up every couple of years in the annual review meetings of the Non-Proliferation Treaty, countries in which it's continually brought up, and continually vetoed by the United States, most recently by President Obama in 2015.*

*And the reasons are perfectly clear to everyone. The US will not permit Israeli nuclear weapons even to be examined by the International Agency [IAEA], let alone be dismantled. So therefore we can't proceed with this very simple way of eliminating any nuclear threat from Iran or anyone else in the region.*

*And also not discussed is that the United States and Britain have a special obligation, a unique obligation to pursue a nuclear weapons free zone in the Middle East. The reason is United Nations Security Council Resolution 687<sup>3</sup> - you can look it up on the internet - which was initiated by the US. This was the resolution that was initiated when the US and Britain, back in 1991, a resolution which called on Iraq to terminate any nuclear weapons programs. The US and Britain relied on this resolution in 2003 when they were trying to concoct some pretext for their planned invasion of Iraq. So they appealed to this resolution and said, we think Iraq is violating it, which in fact they weren't, and they knew they weren't.*

*But if you read that resolution and go to Article Fourteen, it commits the signers to work for a nuclear weapons free zone in the Middle East. So the US and Britain are uniquely committed to working for this by the Security Council resolution that they initiated. Again, check to see if it ever discussed.*

*So in short, US willingness to observe US law could bring this crisis to a very quick end, and could even move on to a better solution. For example, if we were willing to observe Security Council resolutions that we ourselves have instituted to end the illegal threats of force by every recent president and other high officials, and to end our constant violations of the Iran nuclear agreement.*

*So there's an easy answer to this crisis, really simple: obey the law. Okay? That would end the crisis. Again, I would advise you to search to see how often this is discussed, and what that implies about our educational system, our culture, our media, our universities, and so on.*

*Well, let's turn to the other major threat, North Korea. There has been a proposal on the table for some years about how to reduce the threat in northeast Asia. It's called a double-freeze. It was initiated by China, supported by North Korea, supported by Russia, general support throughout the world. The idea is that North Korea should freeze its weapons and nuclear programs, and in return the United States should call off the threatening military maneuvers that the US constantly carries out on North Korea's border, including flights on the border by our most advanced nuclear-capable bombers, warning of the threat of total obliteration of North Korea, constantly happening.*

*It's no joke for the North Koreans - they have a little memory that we may want to forget, but at the end of the Korean War when it was more or less settled, US bombing was so intensive that there was nothing left to bomb, literally. So the Air Force General*

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<sup>3</sup><http://unscr.com/en/resolutions/687>

*MacArthur started destroying dams, major dams, and if you read the Air Force history they exult about this. It happens to be a crime for which people were hanged at Nuremberg, but again, we're above the law. But the North Koreans can remember, and when these advanced nuclear-capable bombers are flying they evoke some memory.*

*So double-freeze is one possibility. Double-freeze could easily open the way to further negotiations, and at this point, the record becomes important, and you can find it, in the scholarly record, not in the press, but in the scholarly record. There have been successes in negotiations. The major one was in 2005. The Bush administration was pressured by international pressure to return to negotiations, and the negotiations were extremely successful. North Korea agreed - I'm quoting the final document - agreed to abandon all nuclear weapons and existing weapons programs, and to allow international inspections. In return for that the US agreed to establish a consortium that would provide North Korea with a light-water reactor for medical use. The US would also issue a non-aggression pledge and an agreement that the two sides would respect each others' sovereignty, exist peacefully together, and take steps to normalize relations.*

*Instantly, the Bush administration renewed the threat of force, froze North Korean funds that were in foreign banks, and disbanded the consortium that was to provide North Korea with a light-water reactor. The leading US Korea scholar, Bruce Cummings, writes that the sanctions were specifically designed to destroy the September pledges, and to head off an accommodation between Washington and Pyongyang. That was 2005, and I've been searching the press for some time to see if these facts could even be reported, breaking the constant refrain that North Korea has broken all agreements and so can't be trusted. We can't review it now, but I urge you to try, you'll learn a lot.*

*That path could be pursued again, but as we know, there are even better options, and it's worth taking a close look at them. On April 27 [2018], North and South Korea signed a remarkable historic document - the Panmunjeom Declaration for Peace, Prosperity, Unification of the Korean Peninsula<sup>4</sup> - and it's worth reading carefully. I urge you to do that. Not the commentary, the actual words. In this declaration, the two Koreas "affirm the principle of determining the destiny of the Korean nation on their own accord." On their own accord. Continuing, "to completely cease all hostile acts against each other in every domain, to actively cooperate to establish a permanent and solid peace regime on the Korean Peninsula, to carry out disarmament on a phased level manner, to achieve the common goal of realizing through complete denuclearization, a nuclear-free Korean Peninsula, to strengthen the positive momentum towards continuous advancement of inter-Korean relations, as well as peace, prosperity and unification of the Korean Peninsula." And they further agreed "to actively seek the support and cooperation of the international community," which means the United States, "for the denuclearization of the Korean Peninsula."*

*It's important to read those words, their import is very clear. What they're saying is, the US should back off and allow the two Koreas to achieve peace, disarmament, unification and complete denuclearization on their own, "on their own accord," in the words of the declaration. So we, the United States, should accept the call for support and cooperation in*

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<sup>4</sup><http://documents.latimes.com/panmunjom-declaration-peace/>

*this endeavor by the two parts of the Korean nation to determine their destiny “on their own accord.” To put it more simply, the declaration is a polite letter saying, “Dear Mr. Trump, declare victory if you want to prance around in public, but please go away and let us move towards peace, disarmament, and unification without disrupting the process.”*

*That plea could hardly be more clear, and the general interpretation here is quite revealing. The general interpretation is that this complicates Washington’s strategy. As the New York Times explains<sup>5</sup>, “Mr. Trump will find it hard to threaten military action against a country that is extending an olive branch.” Okay? That’s the liberal side. It’s entirely true that threatening military action, which happens to be a criminal act, is hard when the target is extending an olive branch, so we have some problems.*

*Well, case after case - and I won’t go through other cases - we find that there are peaceful diplomatic options. We can’t ever be certain that they will work, but they should always be prioritized, in accordance with our international obligations, in fact, in accord with the supreme law of the land. Is this hopeless? No, far from it, we have plenty of evidence for that.*

*So let’s go back to that very important date in modern history, November 8, [2016]. Huge coverage of that date, and several events happened that are significant. The least significant of those was the one that gets most of the coverage, the election of Donald Trump. It’s a little bit unusual, but not that far out of the norm, that a billionaire with a huge amount of campaign spending and huge media support wins the presidency. That’s kind of within the norm. But something really surprising did happen, the Sanders campaign broke with nearly all of American political history. For well over a century, American elections have been mainly bought, literally. You can predict the outcome of an election with almost complete certainty by just looking at campaign funding - there’s extensive, detailed, academic study of this, both for president and congress. What happened in November 2016 was different. For the first time, a candidate came very close to winning the nomination, and would have won the nomination, probably, if the Democratic Party managers hadn’t manipulated affairs to keep him out and he did it without any campaign funding from any of the major sources. No corporate funding, no wealth, no media support - he was either ignored, or denigrated in the media. That’s a real breakthrough. What’s more he ended up by becoming by far the most popular political candidate in the country. Take a look at the polls. You can see it on Fox News in fact, well above any other figure in popularity.*

*In a democratic society the most popular political figure in the country just carried off a remarkable break in well over a century of political history, you’d hear him once in a while. Okay, I urge to you to take a look and make your own decisions. That’s a more important event that took place on November 8, 2016 .*

*There’s another one that doesn’t get covered, but should. At that time the world was carrying out the successor negotiations to the Paris negotiations on climate change of December 2015, aimed at a verifiable treaty to do something about this ominous threat. They couldn’t reach a treaty, for one reason, the Republican Party would not permit it. So they couldn’t have a treaty, it was a voluntary agreement. The following year, 2016, they*

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<sup>5</sup><https://www.nytimes.com/2018/04/28/us/politics/trump-north-korea.html>



*were meeting again to try to put some teeth into the treaty. On November 8th, the day of the American elections, the World Meteorological Organization - this was taking place in Marrakesh, Morocco - where the World Meteorological Organization released a study on the very dire state of the climate, the kind of thing that I gave a couple of samples of before. Then the election results came in, and the meeting basically stopped. The question before the international world is: can the world survive when the most powerful county in history is taken over by a political party that not only denies that what is happening is happening, but is committed to accelerate the race to destruction?*

*And they kind of hoped that maybe China would save the world from disaster. Just think about that for a moment: maybe China will save the world from the disaster that the Republican Party is bringing to the world. I'll let you think about that. But the fact is that there are plenty of things that can be done, and the success of the Sanders campaign and particularly in the aftermath, lots of things are going on that fed from it that could make a difference. But it doesn't happen on its own - it takes serious engagement.*

*Well, to go back to the beginning, your generation - that's you - is facing the most awesome question that has ever arisen in human history. The question is: will organized human life survive? And we're talking about the near future, can't escape it. There are plenty of opportunities, but like it or not, it's up to you to determine the fate of the human species. It's an awesome responsibility, one that cannot be evaded. Thanks.*

# Index

- A gram is better than a damn, 138
- A United Nations television channel?, 238
- Ablition of war, 114
- Abolition 2000, 109
- Abolition of nuclear weapons, 83, 89
- Abolition of war, 19, 28, 83, 89
- Abrams, Elliot, 74
- Absorption of a neutron, 98
- Abstraction, 25
- Accelerating cultural evolution, 48
- Acceleration of cultural change, 38
- Accents, 42
- Accidental nuclear war, 88
- Actions bordering on insanity, 77
- Acts which even the savage keeps hid, 154
- Adam Smith's invisible hand, 151
- Admiration of excessive consumption, 243
- Advanced ethics needed, 82
- Advertisers on mass media, 191
- Advertising denying climate change, 156
- Advertising department of Coca-Cola, 242
- AF (After Ford) 632, 138
- Afghanistan, 74
- Agent Orange, 79
- Aggression, 34, 36, 326
- Aggression towards outsiders, 326
- Aggressive foreign policies, 155
- Agony of Iraq, 207
- Agreed-upon lies, 379
- Agriculture, 90
- Ahimsa, 362
- Ahmed, Eqbal, 300, 301
- Air pollution, 158
- Al Qaeda, 100
- Alaska, 38
- Albedo effect, 160, 161
- All wars are illegal, 114
- All-destroying thermonuclear war, 326
- All-destroying weapons, 68
- All-inclusive family of humankind, 83
- Alliance for Nuclear Accountability, 109
- Allies of death, 19
- Alternative media, 285
- Altes, Dr. Edy Korthals, 373
- Altruism, 36, 54
- American Civil War, 69
- American Friends Service Committee, 374
- American Indians, 325
- Amherst, Lord Jeffrey, 81
- Amoeba, 54
- Amusing Ourselves to Death, 141
- An accident waiting to happen, 101
- An Outline of History, 129
- Anachronism of nation-states, 67
- Anarchy, 67
- Ancestor worship, 40
- Ancient Wisdom, Modern World, 21
- Andersen, Hans Christian, 123
- Angela Merkel's telephone, 200, 272
- Anger, 355
- Animal Farm, 133
- Anthropogenic climate change, 161
- Antibiotics, 48
- Antisemitism defined as criticism of Israel?, 229
- Apartheid, 368
- Appalling war-machine, 156
- Arab nationalism and Islam, 42
- Arabian sea, 74
- Arapesh society, 369

- Archimedes Principle, 262  
 Are we being driven like cattle?, 247  
 Argentinan genocide, 81  
 Aristotle, 43, 261, 267  
 Armaments industry, 73  
 Armaments race, 69  
 Armenian Genocide, 79, 81  
 Armies, 360  
 Arms manufacturers, 155  
 Arms race, 369, 372  
 Arnold, Sir Edward, 361  
 Around the World in Eighty Days, 127  
 Art objects, 38  
 Ashoka Maurya, 355  
 Ashram, 366  
 Asia, 355  
 Assange, Julian, 277  
 Assassination, 367  
 Assassinations, 272  
 Astronomy, 127, 266  
 Atmospheric concentration of CO<sub>2</sub>, 158  
 Atom bomb, 35  
 Atomic structure, 14  
 Atoms for Peace self-contradictory, 99  
 Atoms for peace?, 95  
 Atrocities, 34  
 Attacks on Iran, actual and threatened, 214  
 Attempt to contain China, 77  
 Attempted coups, 272  
 Autocatalytic molecules, 51  
  
 Babies are not born but decanted, 140  
 Bad actions, 21  
 Baha'i, 372  
 Balzac, Honoré de, 127  
 Barnaby, Frank, 100  
 Baseline scenario, 92  
 Basil Peace Office, 109  
 Beasts of England, 133  
 Beautiful and popular fetus technician, 140  
 Beethoven's 9th Symphony, 68, 328  
 Bering Strait, 38  
 Bernard Lowen, 89  
  
 Bers, Sonya, 358  
 Besant, Annie, 361  
 Between 3,000 and 11,000 gigatons, 156  
 Bhagavadgita, 361  
 Bhutan, 369  
 Biased national standpoint, 325  
 Big Brother, 134, 272  
 Big event needed, 277, 389  
 Bikini, 106, 330  
 Bikini nuclear tests, 75  
 Billion or more deaths from starvation, 155  
 Billionaires oligarchs, 326  
 Biological weapons, 78  
 Biology, 127  
 Biology of War and Peace, 39  
 Biosphere threatened by war, 75  
 Birth defects on the Marshall Islands, 106  
 Black civil rights movement, 366, 368  
 Black comedy, 101  
 Blair, Bruce G., 102  
 Blavatsky, Madame, 361  
 Blind to the larger whole, 86  
 Blindness of science, 16  
 Bloated military budgets, 155  
 Blocks of pure graphite, 98  
 Blood money, 77  
 Bloomsbury Group, 138  
 Boer War, 72  
 Bohr, Niels, 25  
 Bohr-Wheeler theory, 98  
 Bohr. Niels, 98  
 Bolton, John, 74  
 Bombardment of neutral Copenhagen, 78  
 Bombing of Berlin, 79  
 Books, 67  
 Bosnia-Herzegovina genocide, 81  
 Bottomless pit of war, 155  
 Bought-and-paid-for politicians, 156  
 Boyle, Francis A., 81  
 Bramacharya, 363  
 Brave New World, 86, 137, 144  
 Bread and circuses, 191, 239  
 Breakdown of human civilization, 76

- British Empire, 362  
 British public, 363  
 British raj, 363  
 British used poison gas in Iraq, 208  
 British-American coup of 1953, 213  
 Brotherhood, 355, 359  
 Brotherhood of humankind, 19  
 Brown, Lester, 160  
 Bruno, Gordiano, 259  
 Buddha, Prince Gautama, 355  
 Buddhism, 355, 364  
 Buddhist philosophy, 21  
 Burial customs, 40  
 Burmese Days, 131  
 Burned at the stake, 277  
 Burning of tropical rainforests, 158, 161  
 Burrowes, Robert J., 323  
 Bush was obsessed with Iraq, 210  
 Bush, George W., 74, 379  
  
 Cambodian genocide, 81  
 Campaign for a Nuclear Weapon Free World, 109  
 Campaign for Nuclear Disarmament, 109  
 Cancer from nuclear testing, 75  
 Cannot tolerate a single malfunction, 102  
 Canons, use in warfare, 67  
 Carrying capacity, 157  
 Caste markings, 40  
 Castles, 67  
 Catastrophic climate change, 156, 159, 160, 285, 409  
 Catastrophic nuclear war, 87, 90, 94  
 Cave-man's brain, 43  
 Censor, 359  
 Censorship of the news, 202  
 Central monarchs, 67  
 Centralization, 363  
 Centrifugal Bumblepuppy, 141, 144  
 Ceremonies, 40  
 Chadors, 40  
 Chain reaction, 98  
 Chaos, 18  
  
 Chastity, 363  
 Chemical weapons were used, 79  
 Cheney, Dick, 74  
 Chernobyl, 69, 75, 95, 97  
 Chief Standing Bear, 23  
 Childe Harold, 124  
 Chili peppers, 325  
 China, 77, 325  
 China's economic growth rate, 159  
 Chloroplasts, 54  
 Chocolate, 325  
 Choked with excrementous matter, 153  
 Chomsky, Noam, 240, 285, 300, 415  
 Christian conscience and war, 359  
 Christian ethical principles, 355, 364, 366, 368  
 Christian ethics, 374  
 Christian Europe, 325  
 Christian love, 366  
 Christianity, 355, 358, 359  
 Chrome Yellow, 138  
 Chronic war, 83  
 Chronicle of power struggles, 325  
 Chuckman, John, 202, 272  
 Church, 367  
 CIA, 198, 272  
 CIA insider Susan Lindauer, 389  
 Cinema, 357  
 Circular flow of money, 70, 77  
 Circumcision, 40  
 Civil disobedience, 363, 366  
 Civil rights, 361, 363, 366  
 Civil rights movement, 359  
 Civil society, 80  
 Civil War, 368  
 Civil war in Guatemala, 81  
 Civilians as hostages, 75, 77, 80  
 Civilization, 366  
 Civilization is cooperative, 375  
 Civilization's crisis, 49, 142  
 Clemenceau's insistence on revenge, 375  
 Climate change denial, 151, 188  
 Climate-change denial, 156

- Clinton, Hillary, 219  
Clock, 262  
Cloned identical twins, 140  
CNN, 237  
CO<sub>2</sub> concentration has passed 400 ppm., 161  
Coal-fired power plants, 97  
Cold War, 74, 134, 203, 277  
Collective approbation, 372  
College of Cardinals, 25  
Colonial expansion, 71  
Colonialism, 70, 71, 73  
Colonies, 69–71  
Common carrier, 393  
Common global culture, 325  
Common land, 152  
Common values, 373  
Communal aggression, 34  
Communal defense response, 34, 35  
Communication, 67  
Communications revolution, 372  
Comparison between Orwell and Huxley, 141  
Compassion, 43, 326  
Competition, 39  
Competition of all against all, 243  
Complementarity, 25  
Complete breakdown of human civilization, 106  
Complexity of life, 18  
Complicity in crimes of governments, 114  
Compromise, 361  
Computers, 48  
Concentration of attention, 16, 86  
Conflict, 366  
Conflict Resolution, 285  
Confucius, 19, 43  
Congo genocides, 81  
Congress Party, 363  
Conscience, 366  
Consent of the governed, 370  
Construction versus destruction, 18  
Consume more, 191  
Consumption, 49  
Container ships could carry bombs, 100  
Contributions of Islamic culture, 214  
Control government policy, 272  
Cooperation, 36, 48, 51  
Cooperation between cells, 54  
Cooperation between species, 58  
Cooperative efforts of researchers, 57  
Copernicus, 263, 266, 268  
Corbyn, Jeremy, 228  
Corn, 325  
Corporate oligarchs, 70, 77, 276  
Corporate oligarchy, 205  
Corporations motivated only by greed, 162  
Corporations resist change, 242  
Corrupt governments, 203  
Cosmopolitan societies, 355  
Cottages were afterward burned, 152  
Council for Justice and Peace, 372  
Coup overthrowing Mosaddegh, 213  
Coups, torture, and illegal killing, 202  
Courage, 35  
Cries of the women and children, 152  
Crime of crimes, 82  
Crimes against humanity, 112  
Crimes against peace, 72, 112  
Crippling defense budgets, 80  
Crisis, 42, 370  
Crisis of civilization, 28, 82  
Critical mass, 98  
Cruelty by children, 42  
Cruelty was, of course, the consequence, 153  
Crusade Against Communism, 74  
Crusades, 28, 42  
Cuban Missile Crisis, 103  
Cultural barriers to marriage, 39  
Cultural evolution, 38, 39, 48, 57, 58  
Cultural heritage of humankind, 94  
Cultural history, 325  
Culture and human solidarity, 327, 337  
Custodial attitude, 23  
Cynical game of power and money, 77  
Dalai Lama, 21, 27, 370, 374  
Daly, Herman, 158

- Damage to global agriculture, 76
- Damaged ecology of Vietnam, 79
- Dances and songs, 40
- Danger of nuclear proliferation, 97
- Dangerous feedback loops, 156
- Dangerous nuclear proliferation, 95
- Dangers of nuclear power generation, 95
- Danish Minister of Education, 335
- Danish Peace Academy, 304, 329
- Darfur genocide, 79, 81
- Dark government, 198, 201, 272
- Dark side of human nature, 326
- Darwin, Charles, 13, 31, 42, 48, 51
- Davis, Felton, 415
- Death of democracy, 252
- Death penalty, 370
- Decay of democracy, 154
- Decisions affecting war and peace, 94
- Dedicated editors, 285
- Deep state, 272
- Definition of genocide, 81
- Dehumanized language, 16, 86
- Democracy Now, 223, 285
- Demonstrations, 363
- Depleted uranium, 209
- Desertification, 157
- Destruction, 18
- Destruction of civilization, 80
- Destruction of Dresden, 79
- Destruction of food and water, 78
- Deterioration in personal form, 153
- Devil's dynamo, 70, 155
- Devotion, 35, 36
- Diabolical machine, 70
- Dialects, 40
- DiCaprio, Leonardo, 285
- Dickens, Charles, 123
- Diction, 42
- Diet, 40
- Dignity, 366
- Dirac equation, 14
- Dirac, P.A.M., 14, 25
- Director of Hatcheries and Conditioning, 140
- Dirty business of ISIS, 272
- Dirty wars, 272
- Disappeared more than 200,000 people, 81
- Disarmament, 373
- Disarmament and Security Centre, 111
- Disaster avoided by a hair, 76
- Disease, 363
- Disempowered TV viewers, 191, 239
- Disorder, 18
- Disputes of the moment, 94
- Distortion of values, 16
- Ditzel, Meta, 334
- Diverse populations, 38
- Division of labor, 151
- DNA, 21
- Do "Defense Departments defend us?", 75
- Dogma of economic growth, 158
- Doomsday Machine, 101
- Doubling time, 159
- Douglas, Michael, 251
- Dr. Strangelove, 101
- Driven to commit suicide, 153
- Driving force behind militarism, 77
- Drone air force, 272
- Drones, 87
- Drowned in distraction, 142
- Drug-resistant tuberculosis, 143
- Dynamics, 269
- Earth Policy Institute, 160
- Ecological catastrophe, 75, 106
- Ecological catastrophes, 191, 238
- Ecological conscience, 156
- Economic collapse, 75
- Economic inequality, 72, 143
- Economic interdependence, 67
- Economic justice, 373
- Economic reforms, 161, 373
- Economic system without growth, 160
- Economic waste, 105
- Ecstasy, 35
- Ecumenical Council, 372
- Education and human solidarity, 327

- Education for peace, 373  
Educational reforms, 18, 328  
Educational theory, 357  
Edward Snowden, 272  
Egypt, 325  
Eibl-Eibesfeldt, Irenäus, 39, 42  
Einstein, Albert, 236, 263  
Eisenhower's Farewell Address, 73, 154  
Eisenhower, Dwight David, 73, 154  
Electronic golf, 141  
Elephant in the room, 218  
Eliminating democracy, 272  
Emmeche, Claus, 335  
Emotions, 31, 58, 67  
Empires, 74  
Empty-world picture, 157  
Enclosure Acts, 152  
End of the fossil fuel era, 142, 144, 327  
Ends and means, 364  
Enemies, 355, 364, 366, 368  
Energy-intensive agriculture, 142  
Engineers have a great responsibility, 85  
England, 361, 362, 364, 372  
Enmity, 359  
Environment's carrying capacity, 157  
Environmental disaster, 191  
Environmental threats, 43  
Eric Arthur Blair, 131  
Error in evaluating a signal, 102  
Escalation of conflicts, 68, 357, 364  
Essays by George Orwell, 136  
Ethical and ecological considerations, 152  
Ethical and ecological dimensions, 154  
Ethical principles, 19, 42  
Ethical problems, 357  
Ethics, 16, 27, 43, 57, 360, 370  
Ethics for scientists and engineers, 334  
Ethnic diversity, 38  
Ethnic groups, 19  
Ethnic identity, 39  
Ethnicity, 39  
Ethnicity and nationalism, 244  
Ethnicity and religion, 42  
Ethology, 31  
Euclid, 261  
Europe needs to be independent, 198  
European colonial conquests, 42  
Evil, 355  
Examples of genocide, 80  
Exceptionalism, 207  
Exceptions to natural laws, 13  
Excess money of the rich, 72  
Execution of criminals, 360  
Exotic locations and cultures, 127  
Experimental science, 261  
Exploding populations, 43  
Explosive growth of knowledge, 375  
Explosive growth of technology, 86  
Exponential growth, 159, 160  
Exposure of mistakes, 272  
Expression of emotions, 31  
Extra-judicial killings, 272  
Extraterrestrial life, 14  
Fabian Society, 129  
Fabians, 72, 361  
Facts, 13  
Fahrenheit 11/9, 223  
Falk, Richard, 285  
Falling bodies, 262  
False charge of antisemitism, 228  
False reports of nuclear attacks, 76  
Family, 355  
Family system will disappear, 138  
Famine, 69, 142, 156, 162, 285, 373  
Famine from nuclear winter, 76  
Famine relief, 360  
Famous names of truth-tellers, 285  
Fanaticism, 35  
Fascist destruction of Guernica, 78  
Fast breeder reactors, 99  
Fatal increase in global temperature, 160  
Father of science fiction, 127  
FBI, 198  
FCC, 393  
Federation of American Scientists, 111

- Feedback loops, 160–162
- Feelies, 141
- Fermi, Enrico, 16, 86, 98
- Fertility of mixed marriages, 39
- Feudal barons, 67
- Feudal Japan, 369
- Fischer, R.A., 36
- Fielden, John, 153
- Filed teeth, 40
- Financial support for the UN, 85
- Finite planet, 159
- Finn, Beatrice, 103
- Fire storms, 90
- Fire-bombing of Hamburg, 79
- Firestorms, 69
- Fischer, R.A., 50
- Fission reaction, 88
- Fissionable isotope of plutonium, 98, 99
- Five Weeks in a Balloon, 127
- Flags, 35
- Flametree Project, 323
- Fleeing refugees targeted, 79
- Flogged, fettered and tortured, 153
- Florence, 267
- Fly more, 191
- Force of truth, 364
- Ford replaces God, 138
- Ford, Henry, 138
- Forgiveness, 357, 364
- Fossil fuel corporations, 188
- Fossil fuel era is ending, 142
- Fossil fuel industry, 154, 241
- Fossil fuels, 144, 160, 327
- Fourth Amendment trashed, 276
- Fractional reserve banking system, 159
- Fragile structure of this planet, 94
- Fragility of our complex civilization, 375
- France violated the NPT, 99
- Frankenstein, 125, 144
- Franklin a modern Prometheus, 124
- Franklin, Benjamin, 124
- Free markets, 151
- Free the Children, 111
- Freedom from fear, 205
- Friendship, 363
- Frisch, Karl von, 31
- Frisch, Otto, 98
- From the Earth to the Moon, 127
- Fruiting body, 54
- Fukushima, 69, 75, 95, 97, 105
- Full employment, 327, 337
- Full-world picture, 159
- Future generations, 160, 247, 285
- Future of humanity, 94
- Future threats, 376
- Galespie, April, 209
- Galilean relativity, 263
- Galilei, Vincenzo, 261, 277
- Galtung, Fumiko, 285
- Galtung, Johan, 285
- Galvani's experiments, 125
- Gandhi's autobiography, 304
- Gandhi, Mahatma, 25, 357, 359, 361, 363, 364, 366, 368, 374
- Gaskell, Dr. Peter, 153
- Gasset, Ortega y, 18, 87
- General welfare of humankind, 86
- Genes, 36
- Genetic change, 38
- Genetic engineering, 48
- Genetic evolution, 48, 58
- Genetic pool, 88
- Genetically homogenous tribes, 38
- Geneva Conventions, 78
- Genius for cooperation, 57
- Genocidal nuclear war, 75
- Genocidal treatment of Palestinians, 79
- Genocide, 42, 113
- Genocide against Jews, 42
- Genocide by Israel against Palestinians, 81
- Genocide: definition, 81
- Genocides, 79
- Geology, 127
- George Orwell, 131
- German nationalism, 42



- Girls and women walk lamely, 153  
 Glaring contradiction, 272  
 Global consciousness, 372  
 Global economic interdependence, 68  
 Global ethic, 57, 236  
 Global famine, 285  
 Global food crisis, 142  
 Global hegemony, 74  
 Global hegemony by means of military force, 199  
 Global interdependence, 49  
 Global Security Institute, 111  
 Global weather forecast, 237  
 Globalization, 67  
 Godwin, William, 125  
 Golden rule, 19  
 Good actions, 21  
 Good Samaritan, 19, 355  
 Goodall, Jane, 251  
 Goodman, Amy, 223  
 Goodman, Amy, 285  
 Gorbachev, Mikhail, 251  
 Gordiano Bruno, 277  
 Gore, Al, 285  
 Gossington Hall, 138  
 Government, 370  
 Governments subsidize fossil fuels, 160  
 Great Mystery, 23  
 Greatest threat to humanity, 88  
 Greece, 325  
 Greed, 152  
 Greed and folly, 43  
 Greed for land, 81  
 Greed of corporations, 326  
 Greed-based economic system today, 154  
 Green Party, 221  
 Greenham Common Songbook, 304  
 Grey, Colin S., 102  
 Gross, wholesale spying, 272  
 Ground Zero Center for Nonviolent Action, 111  
 Group identity, 38  
 Group selection, 36  
 Group selection in evolution, 50  
 Growing population, vanishing resources, 142  
 Growth of knowledge, 49  
 Growth-obsessed economic system, 161  
 Grundtvig, N.F.S., 333  
 Grundtvigian adult education colleges, 329  
 Guatemalan genocide, 81  
 Guernica, 78  
 Gulf War, 209  
 Habias Corpus trashed, 276  
 Hair standing on end, 34  
 Hair-trigger alert, 102  
 Haldane, J.B.S., 36, 50, 138  
 Half-lives of many millenia, 97  
 Hamilton, W.D., 36  
 Hansen, Arne, 337  
 Hansen, James, 285  
 Happiness, 27  
 Happy and just society, 154  
 Harmful ultraviolet light, 76  
 Harmonizing institutions with technology, 86  
 Harmony, 14, 368  
 Harold Pinter's Nobel Lecture, 399  
 Hartmann, Thom, 285  
 Hate, 364, 368  
 Hatred, 355, 366  
 Hearst, William Randolph, 234  
 Heartrending cruelties, 153  
 Hedges, Chris, 285  
 Heiliger Schauer, 35  
 Hermod Lannung Foundation, 332  
 Hero face, 34  
 Heroic behavior, 36  
 Heroism, 34  
 Hetzel, Pierre-Jules, 127  
 Hibakusha Stories, 111  
 Higher loyalty, 57, 68  
 Highland Clearances, 152  
 Highly-enriched uranium, 95, 98  
 Hindu religion, 21  
 Hinduism, 355, 361, 372

- Hiroshima, 36, 76, 79, 88, 95, 97, 103, 106, 236
- Hiroshima Peace Media Center, 111
- Hiroshima Peace Museum, 111
- His Fordship, 138
- History, 40
- History of science, 16, 87, 123
- Hitler Youth, 35, 49
- Hitler, Adolf, 234, 375
- HIV/AIDS, 143
- Hobson, John Atkinson, 72
- Holger Terp's autobiography, 304
- Holocaust Museum in Houston, 81
- Holy shiver, 34
- Homage to Catalonia, 133
- Homeland Security, 198
- Homespun cotton, 363
- Hoodbhoy, Pervez, 100, 300, 301
- Hope for the future, 38
- Horton, Scott, 272
- Hospitality, 40
- Hospitals targeted, 79
- Hubris, 201
- Huge and far-flung missile forces, 102
- Hugo, Victor, 127
- Human community, 372
- Human emotions, a paradox, 43
- Human error and nuclear war, 88
- Human genius for cooperation, 328
- Human hands used as currency, 206
- Human knowledge, 48
- Human nature, 21, 42, 361
- Human rights, 87, 373
- Human rights trashed, 276
- Humanitarian disasters, 375
- Humanitarian law, 87, 105
- Humanity betrayed by the mass media, 238
- Humanity's yearning for peace, 94
- Humility, 363
- Hunter-gatherers, 38, 48, 67
- Hussein, Saddam, 208
- Huxley feared that desire would ruin us, 142
- Huxley, Aldous, 86, 137, 144
- Huxley, Andrew, 137
- Huxley, Julian, 129, 137
- Huxley, T.H., 48, 51, 137
- Huygens, Christian, 261
- Hydrogen bomb testing, 75
- Hydrological cycle, 92
- Hydrostatics, 262
- Hyper-inflation, 375
- I cannot have children, 106
- I'll supply the war, 234
- ICAN, 109
- ICAN is a coalition of 468 NGO's, 103
- ICAN receives Nobel Peace Prize, 103
- Iceland's financial crisis was brief, 205
- Idolatry of the Free Market, 373
- Ikeda, President Daisaku, 285
- Ikle, Fred, 102
- ILANA, 111
- Illegal collection of private data, 200
- Illegal we do at once, 276
- Illegality and immorality of nuclear weapons, 103
- Impact of science, 16
- Imperial College, 129
- Imperial Police, 131
- Imperialism, 71, 72
- Imprinting, 34
- In-vitro fertilization, 138, 140
- Inaction is not an option, 285
- Incendiary bombings, 92
- Incendiary rockets, 78
- Increased severity of hurricanes, 161
- India, 325, 355, 361, 363, 364
- India's nuclear weapons, 99
- India-Pakistan nuclear conflict?, 99
- Indian home rule, 363, 364
- Indian independence movement, 369
- Indian textiles, 70
- Indigenous faiths, 372
- Indiscriminate attacks on civilians, 78
- Individual responsibility, 85, 112
- Indochina: 6,162,000 tons of bombs, 79

- Indoctrination in Chauvinism, 328  
 Indoctrination in chauvinism, 325  
 Industrial Revolution, 70, 144, 154  
 Industrial society and fossil fuels, 144  
 Industrialization, 363  
 Industrialized countries, 70, 71  
 Inequality has increased, 154  
 Inertia, 263  
 INES, 109  
 INESAP, 111  
 Information accumulation, 38  
 Information explosion, 16, 48  
 Injustice, 362  
 Injustice, economic, 67  
 Inner peace, 21  
 Inquisition, 268  
 Installed photovoltaic capacity, 160  
 Instantaneous communication, 49  
 Instinctive behavior, 39  
 Instincts, 31  
 Institution of war, 19  
 Institutional and cultural inertia, 240  
 Institutional change, 49  
 Institutionalized injustice, 83  
 Inter-group aggression, 49  
 Interdependence, 57, 373  
 Internal peace, 370  
 Internal social cohesion, 83  
 International anarchy, 83  
 International Association of Lawyers, 111  
 International Campaign to Abolish Nuclear  
     Weapons, 109  
 International community, 372  
 International Court of Justice, 105  
 International Criminal Court, 113  
 International law, 73, 82, 112  
 International Peace Bureau, 109  
 International Physicians for the Prevention  
     of Nuclear War, 111  
 International treaties, 72  
 International violence, 370  
 Internet, 48, 329, 337, 393  
 Internet neutrality, 393  
 Interrelatedness of life, 18  
 Intertribal aggression, 36  
 Intertribal massacres, 42  
 Intervention, 74  
 Intolerable economic inequality, 143  
 Intragroup aggression, 34  
 Inuit culture, 23  
 Invasion of Iraq, 372  
 Investment, 72  
 IPPNW, 103, 111  
 Iran's oil and gas resources, 212  
 Iraq, 372  
 Iraq's war with Iran, 208  
 Irreversible damage to civilization, 88  
 Is science fiction self-contradictory?, 123  
 ISIS, 202  
 Islam, 19  
 Islamic conquests, 28  
 Islamic world, 325  
 Israel and oil motivated Iraq war, 211  
 Israel's genocide against Palistinians, 229  
 Israel's nuclear weapons, 99  
 Ituri Provence of Congo, 42  
  
 Jackson, Tim, 159  
 Jainists, 372  
 Japan, 325  
 Japan Council Against A and H Bombs, 111  
 Japan's militaristic government, 97  
 Jelly-fish babies, 75  
 Jesus, 43, 357, 358  
 Jewish intellectual traditions, 325  
 Jewish tradition, 19  
 Jonsdottir, Birgitta, 205  
 Journey to the Center of the Earth, 127  
 Judaism, 355  
  
 Kaiser Wilhelm, 68  
 Karma, 21, 364  
 Kashmir conflict, 99  
 Kavanaugh, Brett, 223  
 Kepler, Johannes, 263  
 Khan sold nuclear secrets and materials, 100

- Khan, Abdul Qadeer, 99  
 Killer robots, 87  
 Killing, 360  
 Killing civilians, 78  
 Killing entire populations, 82  
 Killing indians in Argentina, 81  
 Kim Jong Un, 103  
 Kindness, 36  
 Kindness within one's own group, 326  
 King, Coretta, 366  
 King, Rev. Martin Luther, 357, 366, 368, 374  
 Kinship with all living things, 82  
 Kipps, 129  
 Kissinger, Henry, 276  
 Klein, Naomi, 285  
 Koestler, Arthur, 18, 35, 49  
 Kolos, Wlodzimierz, 27  
 Korean Peninsula, 68  
 Kosovo, 42  
 Krieger, David, 109  
 Kropotkin, Prince Peter, 51  
 Kubrick, Stanley, 101  
 Kurdish civilians gassed, 42  
  
 Labor was viewed as a commodity, 153  
 Lake Geneva, 124, 125  
 Lakota, 23  
 Land mines, 78  
 Language and ethnic identity, 40  
 Languages, 39, 56  
 Laozi, 19  
 Lapps, 38  
 Large-scale species extinction, 161  
 Law of human life, 360  
 Law-enforcement, 369  
 Laws, 370  
 Laws of nature, 13  
 Lawyers' Committee on Nuclear Policy, 111  
 Lebanese civil war, 42  
 Leibnitz, Gottfried William von, 138  
 LeMay, General Curtis, 79, 102  
 Let us have new leaders, 80  
  
 Libby, I. Lewis, 74  
 Liberalism, 362  
 Life or death question, 82  
 Limits to Growth, 143  
 Limits to growth and climate change, 157  
 Lincoln, Abraham, 368  
 List of progressive websites, 306  
 Literature, 40, 357  
 Literature and art, 325  
 Lithium-6 isotope, 99  
 Local communities, 42  
 Long-term survival of civilization, 156  
 Lord Byron, 124, 125  
 Lorenz, Konrad, 31, 34, 36, 39, 50  
 Love, 355, 360, 364, 366, 368  
 Love your enemies, 374  
 Loyalty, 35, 36, 67  
 Loyalty to a research discipline, 86  
 Loyalty to humanity, 236  
 Loyalty to tribe, 355  
 Lust for money, 77  
  
 Mafia with nuclear weapons?, 100  
 Magazine of Education and Recreation, 127  
 Magna Carta trashed, 276  
 Mahayana Buddhists, 372  
 Mainstream media, 70, 276  
 Making war illegal, 73  
 Malaria, 143  
 Malthus, T.R., 48  
 Manufactured goods, 70  
 Manufacturing Consent, 240  
 Margulis, Lynn, 51  
 Markets, 74  
 Marriage, 36  
 Marriage across ethnic boundaries, 42, 50  
 Marshall Islands, 75, 106  
 Marshall Plan, 198, 375  
 Martino, Archbishop Renato, 372  
 Martyr to the truth, 277  
 Mary Shelly's *Frankenstein*, 124  
 Mary's half-sister Claire Claremont, 124  
 Mass extinctions, 144

- Mass media, 19, 48, 143, 285  
 Mass media have betrayed us, 233  
 Mass murder of Jews, 79  
 Mass production, 138  
 Massacres, 42  
 Massive air attacks on Britain, 79  
 Massive retaliation, 245, 357, 374  
 Massive spying, 277  
 Materials, 269  
 Mathematical beauty, 14  
 Mathematical natural laws, 14  
 Mathematics and nature, 13  
 Mathew, Binu, 285  
 Maxim machine gun, 69, 71  
 Maximizing productivity, 151  
 Maxwell's equations, 14  
 Mayors for Peace, 111  
 McKibben, Bill, 285  
 Mead, Margaret, 369  
 Means, 364, 369  
 Media are a battleground, 233  
 Media neglect of climate change, 191, 238  
 Media part of our educational system, 235  
 Media sabotage progressive politics, 197  
 Medici family, 261, 267, 268  
 Medicine has nothing to offer, 90  
 Melting glaciers, 142  
 Melting of polar icecaps, 158  
 Merchants, 67  
 Mesopotamia, 56, 325  
 Methane-hydrate feedback loop, 156, 160, 161  
 Microscope, 268  
 Middle East, 357, 372, 373  
 Middle Powers Initiative, 109  
 Migrations, 38  
 Militant enthusiasm, 34, 35  
 Militarism's hostages, 75  
 Military force, 74  
 Military preparedness, 69  
 Military-industrial complex, 70, 73–75, 77, 143, 154, 155, 198  
 Milky Way, 266  
 Miraculous modern communications, 329  
 Miscanthus, 174  
 Misery, 358  
 Missile defense systems useless, 100  
 Missile launching officers cheating and lying, 101  
 Missiles accidentally loaded on a bomber, 101  
 Misuse of science, 28  
 Mitochondria, 54  
 Modern arms, 373  
 Modern weapons, 367, 370  
 Modernization of Iran, 213  
 Mond, Sir Alfred, 138  
 Monetizing underground "assets", 188  
 Money and power the only goal, 75  
 Money buys votes, 77  
 Money used to control governments, 154  
 Money-controlled media, 234  
 Montgomery, Alabama, 366  
 Moore, Michael, 223  
 Moral and legal responsibility, 114  
 Morrell, Lady Ottoline, 138  
 Morris, William, 129  
 Much of the world uninhabitable, 161  
 Multicellular organisms, 48  
 Murder, 359, 360  
 Music, 325  
 Mustard gas and nerve gas, 209  
 Mutual Assured Destruction (MAD), 75  
 Mutual dependence, 372  
 Mutually Assured Destruction (MAD), 80  
 Myth of Prometheus, 124  
 Nagasaki, 36, 76, 79, 95, 97, 106, 236  
 Nagasaki Atomic Bomb Museum, 111  
 Nanking Massacre, 78  
 Narrow escapes, 76  
 Narrow escapes from nuclear disaster, 76  
 Nation-states, 49, 67  
 National Security Agency, 198  
 Nationalism, 35, 49, 67, 68  
 Nationalism and religion, 42

- NATO against Russia, 272  
 NATO now violates the UN Charter, 199  
 Natural gas pipelines, 74  
 Natural selection, 36, 50  
 Naval armaments race, 71  
 Nazi air attacks on Warsaw, 79  
 Nazi genocides, 81  
 Nazi leaders, 72, 114  
 Nazi Party, 42  
 Need for raw materials, 74  
 Nehru, Jawaharlal, 366  
 Neocolonialism, 73  
 Neolithic agricultural revolution, 355  
 Nepal, 369  
 Nerve gas, 48  
 Netanyahu contemplates insane attack, 101  
 Netanyahu, Benjamin, 68  
 Neutral countries, 94  
 Nevada Desert Experience, 111  
 New American Century, 74  
 New Testament, 358  
 New world of law, 83  
 New York Times, 277  
 News From Nowhere, 129  
 Newspapers, 67  
 Newspapers and war, 233  
 Nineteen Eighty-Four, 134, 142, 144, 276  
 No one can escape, 94  
 No President can resist, 272  
 No-first-use of nuclear weapons, 200  
 Nobel Prize in Literature, 129, 137, 399  
 Non-anthropocentric ethics, 21  
 Non-dollar trading, 200  
 Non-military targets, 78  
 Non-renewable resources, 327  
 Non-violence, 357, 360, 362–364, 366, 369, 374  
 Non-violent protest, 362, 363  
 Nonviolence Charter, 323  
 Nonviolent resistance, 355  
 Nonvoters, 223  
 Northern Ireland, 357  
 NSA Headquarters, 272  
 NSA Power Points, 272  
 Nuclear Age Peace Foundation, 111  
 Nuclear annihilation, 367  
 Nuclear arms race, 367  
 Nuclear catastrophe, 88  
 Nuclear disarmament, 105  
 Nuclear environmental catastrophe, 90  
 Nuclear Famine, 111  
 Nuclear nationalism, 100  
 Nuclear Nonproliferation Treaty, 99  
 Nuclear power generation, 97  
 Nuclear power plant accidents, 89  
 Nuclear terrorism, 100  
 Nuclear war, 28  
 Nuclear warfare as genocide, 82  
 Nuclear Watch New Mexico, 111  
 Nuclear Watch South, 111  
 Nuclear weapons, 16, 48, 49, 78  
 Nuclear weapons and revolutions, 100  
 Nuclear Weapons Convention, 102  
 Nuclear weapons states, 99  
 Nuclear winter, 69, 76, 90, 92  
 Nuremberg Principles, 68, 72, 74, 105, 112  
  
 Oath for graduating students, 85  
 Obama, Barak, 198  
 Obedience to laws, 370  
 Oberg, Jan, 285  
 Obscenely bloated military budgets, 77  
 Obsession with secrecy, 272  
 Occupy Wall Street, 197  
 Oceanography, 127  
 Ode to Joy, 328  
 Oil and war in Iraq, 208  
 Oil pipelines, 74  
 Oil-rich regions, 277, 389  
 Oligarchs own the government, 276  
 Omnicidal nuclear war, 75  
 Omnicidal nuclear weapons, 105  
 Omnicide, 82  
 One-celled organisms, 51  
 Open Internet Order of 2015, 393  
 Operation Sophia, 81

- Opposition to birth control, 244  
 Optics, 264, 268  
 Optimism, 138  
 Orgy of external cruelty, 207  
 Orphic religion, 13  
 Orthodox Christians, 372  
 Orwell's dystopian prophesy, 276  
 Orwell, George, 144, 276  
 Orwellian name, 389  
 Our lives are linked to nature, 106  
 Outlawing war, 72  
 Overpopulation, 28  
 Oversimplification, 25  
 Oxfam, 154  
 Ozone layer, 92  
  
 Pacem in Terris, 372  
 Package of broadcasts, 191, 239  
 Padua, 264  
 Pai, Ajit, 393  
 Pakistan, 74  
 Pakistan's nuclear weapons, 99  
 Pale student of unhallowed arts, 125  
 Paleontology, 127  
 Paper, invention of, 48  
 Parallax, 267  
 Paranoid ultra-nationalist general, 101  
 Parleientarians for Nuclear Nonproliferation, 111  
 Parliamentary democracy, 364  
 Passive resistance, 360  
 Path to peace, 85  
 Patriot Act, 389  
 Patriotism, 35  
 Patterns of facts, 13  
 Paul Ehrlich, 92  
 Pawns in the power game, 75  
 Pax Christi, 111  
 Peace Action, 112  
 Peace Action New York State, 112  
 Peace and Planet, 109  
 Peace education, 373  
 Peace education in elementary schools, 335  
 Peace education initiatives in Denmark, 329  
 Pecci, Aurelio, 158  
 Peierls, Rudolf, 98  
 Pendulum, 261  
 Peoples' Colleges, 333  
 Perle, Richard, 74  
 Permian-Triassic extinction, 160  
 Perpetual war, 74, 134  
 Peter Sellers in multiple roles, 101  
 Petroleum and war, 207  
 Petrov, Stanislav, 76  
 Phoenix Farm, 363  
 Phronesis Lab at Oregon State University, 112  
 Physicians for Social Responsibility, 112  
 Picasso's painting of Guernica, 78  
 Pictographic writing, 56  
 Pilger, John, 285  
 Pinter, Harold, 399  
 Pipeline wars, 210  
 Pisa, 261  
 Plantations and mines, 72  
 Plutonium, 97, 99  
 PNND, 111  
 Poetry, 40  
 Poison gas, 42  
 Poison gas used in Iran war, 208  
 Poland, 27  
 Polar ice melting, 142  
 Polite conversation, 242  
 Political cohesion, 67  
 Political consequences, 16  
 Political justice, 373  
 Political language, 399  
 Political maturity, 370  
 Political miscalculations and accidents, 102  
 Politics of global warming, 188  
 Pollution, 28  
 Poorly-guarded fissionable material, 100  
 Pop culture is addictive, 235  
 Pope John Paul II, 25, 372, 374  
 Pope John XXIII, 372  
 Pope Paul IV, 372

- Population, 49
- Population genetics, 36
- Population of Norway, 272
- Postman, Niel, 141
- Potatoes, 325
- Poverty, 359, 363, 373
- Power cuts, 376
- Power games of leaders, 75
- Power of rulers, 360
- Power over nature, 87
- Power-drunk thinking, 77
- Powerful bomb using uranium, 144
- Powerful lobbies, 143
- Pre-Ford era, 138
- Pre-industrial Europe, 152
- Precariousness of life, 18
- Precious bodily fluids, 101
- Predictability, 13
- Predicting the future, 123
- Predictions, 13
- Preemptive war, 211
- Preindustrial societies, 23
- President claims right to kill, 276
- Preventative war unjustifiable, 372
- Prevention of famine, 114
- Prevention of poverty, 114
- Printing, 67
- Prison, 363
- Production, 49
- Progress was a religion, 71
- Prohibitively dangerous, 99
- Project for a New American Century, 77, 199
- Project Plowshares, 112
- projectiles, 263
- Prokaryotic cells, 54
- Prometheus, 125
- Propaganda, 234
- Propaganda and entertainment, 191, 239
- Propaganda of the mainstream media, 77
- Prophetic social critic, 129
- Prosperity Without Growth, 159
- Protecting whistleblowers, 282
- Protection of whistleblowers, 204
- Protestants, 372
- Prussian army officers, 39
- Pseudospeciation, 39
- Pu-239, 98
- Public opinion, 366
- Public opinion against nuclear power, 97
- Pugwash Conferences, 85, 112, 329, 334
- Punishment, 355
- Purely economic laws, 152, 154
- Pythagoras, 13
- Pythagorean ethic, 13
- Quakers, 374
- Quantum theory, 48
- Quantum Theory Explained, 300
- Quasi-automatic reaction time, 102
- Quinine, 325
- Racial cleansing, 42
- Racial discrimination, 366, 368
- Racism, 361
- Racism, colonialism and exceptionalism, 206
- Radiation illness, 75
- Radiation sickness, 88
- Radioactive contamination, 69, 75, 95, 106, 155
- Radioactive waste disposal, 97
- Radioactive wasteland, 100
- Radioactive water from Fukushima, 95
- Rainforests destroyed, 157
- Rank-determining fights, 34, 36
- Rapid population growth, 142
- Raychandbhai, 362
- Reaching Critical Will, 112
- Reciprocity, 21, 364
- Reconciliation, 361, 364
- Reform, 362
- Reform Jews, 372
- Reformation, 16, 86
- Reformed educational system, 325
- Reformed science teaching, 18
- Reformed teaching of history, 325
- Refraction, 264



- Relatedness of all life, 21  
Relativity, 48, 263  
Relativity explained, 301  
Religion and culture, 42  
Religion and ethnicity, 42  
Religion and politics, 364  
Religion and Science, 27  
Religious conservatism, 244  
Religious cosmology, 18  
Religious ethics, 18, 19  
Religious ethics needed, 28  
Religious wars, 28, 86  
Religious wisdom, 27  
Renewable energy infrastructure, 327, 337  
Research reactors, 95  
Reserves of uranium, 98  
Resident World Controller, 141  
Resources of the Earth, 98  
Respect for laws, 370  
Responsibility, 366  
Responsibility of scientists, 85  
Restless chase after excitement, 243  
Restoring democracy, 197  
Retaliation, 357  
Returning good for evil, 21  
Revenge, 357  
Revenge and counter-revenge, 19, 105, 374  
Revolutions and nuclear weapons, 100  
Rwandan genocide, 81  
Rewards and punishments of scientists, 86  
Reza Shah, 212  
Right hand, left hand, 28  
Righteousness, 34  
Rights of animals, 23  
Rise like lions, 389  
Rising sea levels, 142  
Ritual scarification, 39  
Rituals, 40  
RNA, 21  
Robotic arms race, 87  
Roman Catholics, 372  
Rome, 267  
Rosa, Antonio C.S., 285  
Rotblat, Sir Joseph, 282  
Round Table Conference, 364  
Royal College of Science, 129  
Rumsfeld, Donald, 74, 209  
Rushed nature of the process, 102  
Ruskin, 362  
Russell-Einstein Manifesto, 330  
Russia, 77  
Russian Orthodox Church, 359  
Russian peasants, 358  
Rwandan Genocide, 79  
  
Sabotaging Jeremy Corbyn, 228  
Sacred duty, 34  
Sacred fire of the gods, 124  
Saddam Hussien's atrocities, 42  
Saddam invaded Kuwait, 209  
Sagas, 369, 370  
Saint Francis, 21  
Saint Paul, 43  
Sakharov, Andrei, 272  
Salt march, 363  
Salt tax, 363  
Sanctions led to 500,000 deaths of children, 210  
Sand, Georges, 127  
Sanders, Senator Bernie, 219  
Satyagraha, 362  
Savage attacks on civilians, 79  
Savages allowed to live viviperously, 140  
Saving the biosphere, 114  
Saving the future, 94  
Scandalized English tourists, 124  
Scandinavia, 369, 370  
Scarce resources, 74  
Scent organs, 141  
Schmidt, Troels Peter, 337  
Schrödinger, 25  
Schrödinger equation, 14  
Schweitzer, Albert, 21, 245  
Science, 13, 325  
Science and ethics, 18  
Science and religion, 27

- Science and society, 86, 334  
 Science and world affairs, 331  
 Science as soma, 16, 86  
 Science double edged, 28  
 Science fiction?, 123  
 Science might create life, 125  
 Science out of control, 144  
 Science pursued without regard for social consequences, 125  
 Science used in responsible ways, 85  
 Science, ethics and politics, 86, 334  
 Science, religion and war, 28  
 Science-driven technology, 16, 86  
 Science-based industry, 70  
 Scope for disaster by accident immense, 102  
 Sea level rise, 142, 158  
 Sea levels were 40 meters higher, 161  
 Second law of thermodynamics, 18  
 Secrecy and democracy incompatible, 201  
 Secrecy versus democracy, 272, 278  
 Secrecy, democracy and nuclear weapons, 204  
 Secret land purchases in Africa, 203  
 Secret trade agreements, 200  
 Secretive Shadow Government, 272  
 Security, 373  
 Segregation, 366  
 Self-congratulatory mood, 207  
 Self-consistent knowledge, 14  
 Self-destruction, 35  
 Self-fulfillment is your birthright, 242  
 Self-interest, 151, 154  
 Self-sacrificing courage, 35  
 Self-sufficiency, 363  
 Selfish motives, 35, 36  
 Selfishness and greed exalted, 156  
 Selfishness exalted as the mainspring, 154  
 Separating truth from myth, 123  
 Separation of isotopes, 97  
 Sermon on the Mount, 19, 369, 374  
 Service, 358  
 Severe droughts, 92  
 Sexual dimorphism, 56  
 Shakespeare of science fiction, 129  
 Shakespeare, William, 138, 140  
 Shamanism, 38  
 Shared knowledge, 57  
 Sharing of knowledge, 329  
 Sharing was part of their lifestyle, 156  
 Sheep eating radioactive grass, 95  
 Shelley, 389  
 Shelley, Mary, 125, 144  
 Shelley, Percy Bysshe, 124, 125  
 Shi'ites abandoned and slaughtered, 209  
 Shiite Muslims, 372  
 Shintos, 372  
 Shiver, 34  
 Shooting Santa Claus, 242  
 Siberia, 38  
 Sikhs, 372  
 Size of the Universe, 14  
 Slaughter, 355  
 Slime mold unhappiness, 54  
 Slime molds, 54  
 Slums, 359  
 Smallpox, 70  
 Smallpox as a biological weapon, 81  
 Smith's invisible hand at our throats, 151  
 Snowden's revelations, 276  
 Snowden, Edward, 202, 272  
 Social change, 49  
 Social conscience, 156  
 Social impact of science, 87  
 Social insects, 51  
 Social institutions and technology, 86  
 Social projects, 70  
 Social reform, 123, 129, 361  
 Social responsibility of scientists, 85  
 Softening ethnic boundaries, 42  
 Soka Gakkai, 285  
 Soka Gakkai International, 112  
 Sole superpower, 74  
 Solidarity, 338, 376  
 Soma, 86, 138  
 South Africa, 357, 359, 361, 364, 368  
 South Africa's nuclear weapons, 99  
 South America, 272

- Spanish Civil War, 133  
Spanish-American War, 234  
Special theory of relativity, 301  
Species, 39  
Species driven to extinction, 157  
Spinning and weaving machines, 152  
Spiritless and dejected, 153  
Sponges, 54  
Squash, 325  
St. Olaf College, 415  
Stabilizing global population, 83  
Stanley, Henry Morton, 71  
Starved to the bone, 153  
State Secrets Act, 97  
Status of soldiers, 114  
Steady-state economy, 143, 159  
Steam engine, 152  
Steel production, 71  
Stein, Jill, 219, 221  
Stone, Oliver, 285  
Stories of immorality, 124  
Strange Gothic stories, 125  
Strength to Love, 367  
Student Peace Prizes, 329, 331  
Submission, 34  
Subsidization of nuclear power, 97  
Suffering of the poor, 123  
Summer water supplies, 142  
Sunni Muslims, 372  
Supercomputers, 48  
Supreme Court, 366  
Survelience, 134  
Survival, 36  
Sustainability, 154, 157, 159  
Sustainable Development Commission, 159  
Switzerland, 369  
Sword of Damocles, 415  
Sykes-Picot agreement, 201  
Symbiosis, 48, 51  
Symbiotic relationships between species, 54  
Symbol of the creative artist, 124  
Symbols used for accounting, 56  
Sympathy, 357  
Syria, 68  
Szent-Györgyi, Albert, 69, 379  
Targeting civilians, 78  
Tattoos, 40  
Team-spirit, 36  
Technical accident or human failure, 102  
Technical change, 49  
Technological change, 86  
Technology, 67, 370  
Technology used in responsible ways, 85  
Technology used to enforce conformity, 144  
Telescope, 264  
Television, 357  
Television as soma, 142  
Television series Dr. Who, 123  
Temperature inversion, 92  
Terp, Holger, 304, 330  
Terrorism, 373  
Terrorism is a false threat, 247  
The 2016 US presidential election, 217  
The case for economic reform, 161  
The Curse of the Factory System, 153  
The Great Transition, 160  
The History of Mr. Polly, 129  
The Invisible Man, 129  
The Island of Doctor Moreau, 129  
The Modern Prometheus, 125  
The need for a new global ethic, 328  
The task before us, 105  
The Tempest, 138  
The threat of global famine, 162  
The Time Machine, 129  
The War in the Air, 129  
The War of the Worlds, 129  
The Wealth of Nations, 151  
The World Set Free, 144  
Theosophists, 361  
There are no families, 140  
Thermal expansion of the oceans, 158  
Thermometer, 264  
Thermonuclear bombs, 99

- Thermonuclear war, 18, 43, 155, 159, 285, 325
- Thermonuclear weapons, 36, 67, 69, 88, 355, 374
- Third World War, 50, 369, 370
- Thoreau, Henry David, 252, 366
- Threat of nuclear war, 87, 88, 90, 143
- Threatened war with China, 75
- Threatened war with Russia, 75
- Threats to the environment, 142
- Thurlow, Setsuko, 103
- Tibet, 369
- Tinbergen, Nikolaas, 31
- Tipping point, 160
- Together we can do it, 83
- Tolstoy Farm, 363
- Tolstoy, Count Leo, 123, 357, 359, 360, 362, 369
- Tono.Bungay, 129
- Top Gear, 191
- Tornados, 161
- Torture, 135, 370
- Torture, murder and genocide, 206
- Towards a Nonviolent Society, 333
- Trade, 67
- Trading in primitive societies, 56
- Traditions were forgotten, 152
- Training of scientists, 16
- Traitors to life, 19
- Trans-Pacific Partnership, 203
- Transition to 100% renewable energy, 160
- Transnational Foundation, 285
- Transportation, 67
- Treasure of human culture, 329
- Treaty of Versailles, 375
- Treaty on the Prohibition of Nuclear Weapons, 103
- Trench warfare, 36
- Trevada Buddhists, 372
- Tribal emotions, 49
- Tribal markings, 38, 39
- Tribal religions, 355
- Tribalism, 35, 36, 67, 355, 379
- Tropical regions uninhabitable, 156
- Trump, Donald, 103, 223
- Truth, 362–364
- Truth about 9/11, 379
- Truth about human nature, 123
- Truth is sacred, 123
- Truth versus power, 252
- Truth, ot identity?, 379
- Truth-tellers who became martyrs, 259
- TTAPS Study, 92
- TTIP fast-tracked, 203
- Turner, Ted, 237, 251
- Twenty Thousand Leagues Under the Sea, 127
- Two sides of human nature, 58
- Ukraine, 68
- Ultracentrifuges, 98, 99
- Ultraviolet light, 92
- UN High Commissioner for Refugees, 372
- Uncomfortably close to reality, 101
- Uncontrollable escalation, 68
- Understatement of Existential Climate Risk, 409
- Unenriched uranium, 88
- UNESCO, 372
- UNESCO as the patron of science, 85
- Unilateral kindness, 357
- Unilateralism unacceptable, 372
- Unilaterally stop being nasty, 374
- Unilateral acts of kindness, 374
- United Nations, 372
- United Nations agencies, 85
- United Nations Charter, 68, 72, 74, 82, 105
- United Nations Day, 331
- United Nations General Assembly, 112
- United States, 134, 372
- Universal brotherhood, 355
- Universal code of ethics, 355
- Universal continual happiness, 138
- Universal human brotherhood, 19, 42, 43, 355
- Universal human family, 328

- Universality of religion, 42  
University of Chicago pile, 98  
Unlimited economic growth, 159  
Unlimited growth, 373  
Unlimited growth?, 82  
Unlimited material needs, 373  
Unselfishness, 326  
Unsustainable lifestyles in media, 191  
Unto the Last, 363  
Uranium-235, 88, 97  
Urban II, 268  
US military bases, 74  
US nuclear weapons in Europe, 200  
US Student Pugwash Group, 85  
Use of fossil fuels must stop, 241  
Used fuel rods, 97  
Utopian communities, 363  
Utter absence of domestic privacy, 154
- Value systems, 40  
Value-creation, 235  
Vanilla, 325  
Vanishing resources, 43  
Vanuno, Mordechi, 270  
Vanunu was subjected to torture, 270  
Vatican, 25  
Vatican Officials, 372  
Vegetarians, 361  
Veils, 40  
Venice, 264, 266  
Verne, Jules, 127, 144  
Veterans for Peace, 112  
Viceroy Lord Irwin, 363  
Vicious circle, 161  
Viet Nam War, 367  
Vietnam War civilian casualties, 79  
Vila Diodati, 124  
Violating the laws of physics, 123  
Violation of the UN Charter, 199  
Violence, 360, 369, 370  
Violence on television, 35  
Violent computer games, 235  
Violent team sports, 35
- Violent videos, 334  
Violently driven from their homes, 152  
Viviani, 262  
Voltaire's *Candide*, 138  
Von Sponeck, Hans Christian, 199  
Voyages extraordinaires, 127  
Vulnerability of modern society, 373
- Wages fell to starvation levels, 153  
War, 18, 355, 359, 360, 374  
War and Peace, 358  
War as an institution, 73  
War crimes, 78, 112  
War is now prohibitively dangerous, 85  
War on Terror, 74, 240  
War, institution of, 49  
War-addicted economic system, 154, 161  
War-free world, 83  
War-free world is not utopian, 338  
Wars of religion, 42  
Washington, Booker T., 366  
Waterbourne diseases, 143  
We are expendable, 75  
We are many, 389  
We want to protect you, 277  
Weapons manufacturers, 70  
Weapons of mass destruction, 35  
Weapons production, 69  
Wells Society, 129  
Wells, H.G., 129, 137, 144  
Western hegemony, 277, 389  
Western Sioux, 23  
Western States Legal Foundation, 112  
What is the truth about 9/11, 379  
What is to be done?, 83  
What Lies Beneath, 409  
Wheeler, John A., 98  
Whipped half-starved child workers, 154  
Whistleblowers, 272  
White Revolution, 213  
Who gave Israel a Nuclear Bomb?, 270  
Wholesale electronic spying, 272  
Widespread general war in Middle-East, 101

Wildfires, 161  
Will organized human life survive?, 415  
Wilson, E.O., 36  
Wind turbines, 173  
Wisdom of humanity, 27  
Wolfowitz Doctrine, 77  
Wolfowitz, Paul, 74, 77  
Wollstonecraft, Mary, 125  
Woman with eyes instead of breasts, 125  
Women's Action for New Directions, 112  
Women's International League for Peace and  
Freedom, 112  
Working conditions deteriorated, 153  
World Bank's warning, 160  
World Conference of Religions for Peace, 372,  
374  
World Future Council, 109  
World government, 144  
World Health Organization, 372  
World Trade Center, 277, 379, 389  
World War I, 68, 69, 138  
World War II, 72, 92, 112  
World without war, 160  
Worship of the free market, 156  
Writing, invention of, 48, 56  
  
Yasnaya Polyana, 357  
  
Zinn, Howard, 339, 341  
Zionism, 42  
Zoroastrians, 372