

COLLECTED ESSAYS, VOLUME VI

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Contents

1. A BETTER WORLD IS POSSIBLE!
2. CLIMATE: WE ARE NOT DOING ENOUGH!
3. BIDEN'S AGGRESSIVE FOREIGN POLICY
4. WATER AND LIFE
5. CRISIS MEANS DANGER AND OPPORTUNITY
6. LIVING TOGETHER IN PEACE
7. WE NEED SOLIDARITY, NOT SANCTIONS
8. ONLY IMMEDIATE CLIMATE ACTION CAN SAVE THE FUTURE
9. ATTACKING IRAN WOULD RISK GLOBAL DISASTER
10. THE JAWS OF POWER
11. WE NEED A WORLD FEDERATION
12. CHALLENGES FOR JOE BIDEN AND KAMALA HARRIS
13. OUR LIFESTYLES MUST CHANGE
14. A CRITICAL U.S. ELECTION
15. ECOLOGY AND ECONOMICS
16. PREDICTING THE FUTURE
17. THE ETHICS OF MAHATMA GANDHI
18. THE ICC'S ENORMOUS IMPORTANCE
19. WE NEED PEACE IN THE MIDDLE EAST
20. SHARING SCIENTIFIC KNOWLEDGE
21. SHORT-TERM AND LONG-TERM FUTURES
22. WHY WAR?

23. A CRITICAL DECADE
24. 67 YEARS IN THE PEACE MOVEMENT
25. WATER
26. THE WORLD AS IT IS, AND THE WORLD AS IT COULD BE
(expanded)
27. LIVES IN MATHEMATICS
28. OUR SUICIDAL WAR AGAINST NATURE
29. ADAM SMITH'S INVISIBLE HAND IS AT OUR THROATS
30. ETHICS FOR THE FUTURE
31. HUMAN SOCIETY AND THE BIOSPHERE
32. A HISTORY OF THE EARTH
33. THE ROAD NOT TAKEN
34. YE ARE MANY, THEY ARE FEW
35. OUR WORLD IS BURNING
36. THE ECOLOGICAL IMPACT OF MILITARISM
37. REMEMBERING THE 1960'S
38. SOME ASPECTS OF QUANTUM THEORY
39. LIVES IN EXPLORATION
40. HUMAN NATURE
41. MALTHUS REVISITED
42. LIVES IN EDUCATION
43. REBUILDING AFTER CORONA
44. LIVES IN POETRY

Chapter 1

ARTICLES

A BETTER WORLD IS POSSIBLE!

Tasks for the future

When we rebuild the world after the COVID-19 pandemic, we will be faced with many important challenges and tasks. 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.

We must achieve a steady-state economic system

A steady-state economic system is necessary because neither population growth nor economic growth can continue indefinitely on a finite earth. No one can maintain that exponential industrial growth is sustainable in the long run except by refusing to look more than a short distance into the future.

Of course, it is necessary to distinguish between industrial growth, and growth of culture and knowledge, which can and should continue to grow. Qualitative improvements in human society are possible and desirable, but resource-using and pollution-producing industrial growth is reaching its limits, both because of ecological constraints and because of the exhaustion of petroleum, natural gas and other non-renewable resources, such as metals. The threat of catastrophic climate change makes it imperative for us to stop using fossil fuels within very few decades.



Figure 1.1: **The Earth, seen from space.**

Today, the distinguished economist, Herman Daly, continues to write perceptive articles and books documenting the need for a steady-state economy. Among his books, the following are noteworthy: *Steady-State Economics* (1977); *For the Common Good* (1989, with John B. Cobb, Jr.); *Valuing the Earth* (1993, with Kenneth Townsend); *Beyond Growth* (1996); “Ecological Economics and the Ecology of Economics” (1999); *Local Politics of Global Sustainability* (2000, with Thomas Prugh and Robert Costanza), and *Ecological Economics: Principles and Applications* (2003, with Joshua Farley. Prof. Daly is a recipient of the Right Livelihood Award, which is sometimes called the Alternative Nobel Prize.

We must restore democracy in our own countries if it has been lost

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.

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 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.

We do not know what will happen to Julian Assange. If he dies in the hands of his captors 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.

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.

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 and elsewhere 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.

In the United States, the presidency of Donald Trump has been a continuous assault on democracy and constitutional government. He is, without question, the most dangerous and evil president in US history. His policies aim at increasing economic inequality in the United States, rather than decreasing it. Trump’s climate change denial, his support for the giant coal and oil industries and his sabotaging of renewable energy, all threaten to defeat the world’s attempts to avoid the existential threat of catastrophic climate change.

We must restore democracy in our own countries wherever it has been replaced by oligarchy. When we do so, we will free ourselves from many evils, including excessive economic inequality, violation of civil rights, and the suffering produced by perpetual wars.

We must decrease economic inequality

In his Apostolic Exhortation, “*Evangelii Gaudium*”, Pope Francis said:

“In our time humanity is experiencing a turning-point in its history, as we can see from the advances being made in so many fields. We can only praise the steps being taken to improve people’s welfare in areas such as health care, education and communications. At the same time we have to remember that the majority of our contemporaries are barely living from day to day, with dire consequences. A number of diseases are spreading. The hearts of many people are gripped by fear and desperation, even in the so-called rich countries. The joy of living frequently fades, lack of respect for others and violence are on the rise, and inequality is increasingly evident. It is a struggle to live and, often, to live with precious little dignity...

“Just as the commandment ‘Thou shalt not kill’ sets a clear limit in order to safeguard the value of human life, today we also have to say ‘thou shalt not’ to an economy of exclusion and inequality. Such an economy kills. How can it be that it is not a news item when an elderly homeless person dies of exposure, but it is news when the stock market loses two points? This is a case of exclusion. Can we continue to stand by when food is thrown away while people are starving? This is a case of inequality. Today everything comes under the laws of competition and the survival of the fittest, where the powerful feed upon the powerless. As a consequence, masses of people find themselves excluded and marginalized: without work, without possibilities, without any means of escape.

“In this context, some people continue to defend trickle-down theories which assume that economic growth, encouraged by a free market, will inevitably succeed in bringing about greater justice and inclusiveness in the world. This opinion, which has never been confirmed by the facts, expresses a crude and naive trust in the goodness of those wielding economic power and in the sacralized workings of the prevailing economic system. Meanwhile, the excluded are still waiting.”

The social epidemiologist Prof. Richard Wilkinson, has documented the ways in which societies with less economic inequality do better than more unequal societies in a number of areas, including increased rates of life expectancy, mathematical performance, literacy, trust, social mobility, together with decreased rates of infant mortality, homicides, imprisonment, teenage births, obesity and mental illness, including drug and alcohol addiction.

We must also remember that according to the economist John A. Hobson, the basic problem that led to imperialism 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.

We must break the power of corporate greed

When the United Nations was established in 1945, the purpose of the organization was to abolish the institution of war. This goal was built into many of the articles of the UN Charter. Accordingly, throughout the world, many War Departments were renamed and became Departments of Defense. But the very name is a lie. In an age of nuclear threats and counter-threats, populations are by no means protected. Ordinary citizens are just hostages in a game for power and money. It is all about greed.

Why is war continually threatened? Why is Russia threatened? Why is war with Iran threatened? Why fan the flames of conflict with China? Is it to “protect” civilians? Absolutely not! In a thermonuclear war, hundreds of millions of civilians would die horribly everywhere in the world, also in neutral countries. What is really being protected are the profits of arms manufacturers. As long as there are tensions; as long as there is a threat of war, military budgets are safe; and the profits of arms makers are safe. The people in several “democracies”, for example the United States, do not rule at the moment. Greed rules.

As Professor Noam Chomsky has pointed out, greed and lack of ethics are built into

the structure of corporations. By law, the Chief Executive Officer of a corporation must be entirely motivated by the collective greed of the stockholders. He must maximize profits. If the CEO abandons this single-minded chase after corporate profits for ethical reasons, or for the sake of humanity or the biosphere or the future, he (or she) must, by law, be fired and replaced.

We must leave fossil fuels in the ground

The threat of catastrophic climate change requires prompt and dedicated action by the global community. Unless we very quickly make the transition from fossil fuels to 100% renewable energy, we will reach a tipping point after which uncontrollable feedback loops could take over, leading to a human-caused 6th geological extinction event. This might even be comparable to the Permian-Triassic event, during which 96% of all marine species and 70% of terrestrial vertebrates became extinct.

Arctic sea-ice is melting at an increasingly rapid rate, because of several feedback loops. One of these feedback loops, called the albedo effect, is due to the fact that white snow-covered sea-ice in the Arctic reflects sunlight, while dark water absorbs it, raising the temperature and leading to more melting.

Another feedback loop is due to the fact that rising temperatures mean that more water is evaporated. The water vapor in the atmosphere acts like a greenhouse gas, and raises the temperature still further.

If we consider long-term effects, by far the most dangerous of the feedback loops is the melting of methane hydrate crystals and the release of methane into the atmosphere, where its effects as a greenhouse gas are roughly twenty times great as those of CO₂.

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 which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface.

The worrying thing about 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 in world CO₂ emissions since 1751 has been only 337 gigatons.

Despite the worrying nature of the threats that we are facing, there are reasons for hope. One reason for hope can be found in the extremely high present rate of growth of renewable energy, and in the remarkable properties of exponential growth. According to figures recently released by the Earth Policy Institute, the global installed photovoltaic capacity is currently able to deliver 242,000 megawatts, and it is increasing at the rate of 27.8% per year. Wind energy can now deliver 370,000 megawatts, and it is increasing at the rate of roughly 20% per year.

Because of the astonishing properties of exponential growth, we can calculate that if these growth rates are maintained, renewable energy can give us 24.8 terawatts within only 15 years! This is far more than the world's present use of all forms of energy. But all of us

must still work with dedication to provide the political will needed to avoid catastrophic climate change.

We must stabilize and ultimately reduce the global population

According to the World Resources Institute and the United Nations Environment Programme, "It is estimated that since World War II, 1.2 billion hectares...[of agricultural land] has suffered at least moderate degradation as a result of human activity. This is a vast area, roughly the size of China and India combined." This area is 27% of the total area currently devoted to agriculture 5 . The report goes on to say that the degradation is greatest in Africa.

David Pimental and his associates at Cornell University pointed out in 1995 that "Because of erosion-associated loss of productivity and population growth, the per capita food supply has been reduced over the past 10 years and continues to fall. The Food and Agricultural Organization reports that the per capita production of grains which make up 80% of the world's food supply, has been declining since 1984."

Pimental et al. add that "Not only is the availability of cropland per capita decreasing as the world population grows, but arable land is being lost due to excessive pressure on the environment. For instance, during the past 40 years nearly one-third of the world's cropland (1.5 billion hectares) has been abandoned because of soil erosion and degradation. Most of the replacement has come from marginal land made available by removing forests. Agriculture accounts for 80% of the annual deforestation."

The phrase "developing countries" is more than a euphemism; it expresses the hope that with the help of a transfer of technology from the industrialized nations, all parts of the world can achieve prosperity. An important factor that prevents the achievement of worldwide prosperity is population growth.

In the words of Dr. Halfdan Mahler, former Director General of the World Health Organization, "Country after country has seen painfully achieved increases in total output, food production, health and educational facilities and employment opportunities reduced or nullified by excessive population growth."

The growth of population is linked to excessive urbanization, infrastructure failures and unemployment. In rural districts in the developing countries, family farms are often divided among a growing number of heirs until they can no longer be subdivided. Those family members who are no longer needed on the land have no alternative except migration to overcrowded cities, where the infrastructure is unable to cope so many new arrivals. Often the new migrants are forced to live in excrement-filled makeshift slums, where dysentery, hepatitis and typhoid are endemic, and where the conditions for human life sink to the lowest imaginable level. In Brazil, such shanty towns are called "favelas".

If modern farming methods are introduced in rural areas while population growth continues, the exodus to cities is aggravated, since modern techniques are less labor-intensive and favor large farms. In cities, the development of adequate infrastructure requires time, and it becomes a hopeless task if populations are growing rapidly. Thus, population stabilization is a necessary first step for development.

It can be observed that birth rates fall as countries develop. However, development is sometimes blocked by the same high birth rates that economic progress might have prevented. In this situation (known as the “demographic trap”), economic gains disappear immediately because of the demands of an exploding population.

For countries caught in the demographic trap, government birth control programs are especially important, because one cannot rely on improved social conditions to slow birth rates. Since health and lowered birth rates should be linked, it is appropriate that family-planning should be an important part of programs for public health and economic development.

Education of women and higher status for women are vitally important measures, not only for their own sake, but also because in many countries these social reforms have proved to be the key to lower birth rates. As Sir Partha Dasgupta of Cambridge University has pointed out, 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 money required to make these desirable changes is a tiny fraction of the amount that is currently wasted on war.

In order to avoid a catastrophic future famine, it is vitally important that all of the countries of the world should quickly pass through a demographic transition from a situation characterized by high birth rates and high death rates to a new equilibrium, where low death rates are balanced by low birth rates.

We must eliminate the institution of war

The problem of achieving internal peace over a large geographical area is not insoluble. It has already been solved. There exist today many nations or regions within each of which there is internal peace, and some of these are so large that they are almost worlds in themselves. One thinks of China, India, Brazil, Australia, the Russian Federation, the United States, and the European Union. Many of these enormous societies contain a variety of ethnic groups, a variety of religions and a variety of languages, as well as striking contrasts between wealth and poverty. If these great land areas have been forged into peaceful and cooperative societies, cannot the same methods of government be applied globally?

But what are the methods that nations use to achieve internal peace? Firstly, every true government needs to have the power to make and enforce laws that are binding on individual citizens. Secondly the power of taxation is a necessity. Thirdly, within their own territories, almost all nations have more military power than any of their subunits. For example, the US Army is more powerful than the State Militia of Illinois.

This unbalance of power contributes to the stability of the Federal Government of the United States. When the FBI wanted to arrest Al Capone, it did not have to bomb Chicago. Agents just went into the city and arrested the gangster. Even if Capone had been enormously popular in Illinois, the the government of the state would have realized in

advance that it had no chance of resisting the US Federal Government, and it still would have allowed the “Feds” to make their arrest. Similar considerations hold for almost all nations within which there is internal peace. It is true that there are some nations within which subnational groups have more power than the national government, but these are frequently characterized by civil wars.

Of the large land areas within which internal peace has been achieved, the European Union differs from the others because its member states still maintain powerful armies. The EU forms a realistic model for what can be achieved globally in the near future by reforming and strengthening the United Nations. In the distant future, however, we can imagine a time when a world federal authority will have much more power than any of its member states, and when national armies will have only the size needed to maintain local order.

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

It is useful to consider the analogy between the institution of war and the institution of slavery. We might be tempted to say, “There has always been war, throughout human history; and war will always continue to exist.” As an antidote to this kind of pessimism, we can think of slavery, which, like war, has existed throughout most of recorded history.

Today we look with horror at drawings of slave ships, where human beings were packed together like cord-wood, and we are amazed that such cruelty could have been possible. Can we not hope for a time when our descendants, reading descriptions of the wars of our own time, will be equally amazed that such cruelty and stupidity could have been possible? If we use them constructively, the vast resources now wasted on war can initiate a new era of happiness and prosperity for the family of man. It is within our power to let this happen. The example of the men and women who worked to rid the world of slavery can give us courage as we strive for a time when war will exist only as a dark memory fading into the past.

New ethics to match new 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,

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 by an accident of birth, history has given us an enormous responsibility, and two daunting tasks: If civilization is to survive, we must not only stabilize the global population but also, even more importantly, we must eliminate the institution of war. We face these difficult tasks with an inherited emotional nature that has not changed much during the last 40,000 years. Furthermore, we face the challenges of the 21st century with an international political system based on the anachronistic concept of the absolutely sovereign nation-state. However, 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.

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, but these institutions need to be greatly strengthened and reformed.

We also need a new global ethic, where loyalty to one's family and nation is supplemented by a higher loyalty to humanity as a whole. On our small but beautiful planet - made small by technology, made beautiful by nature - there is room for one group only: the family of humankind.

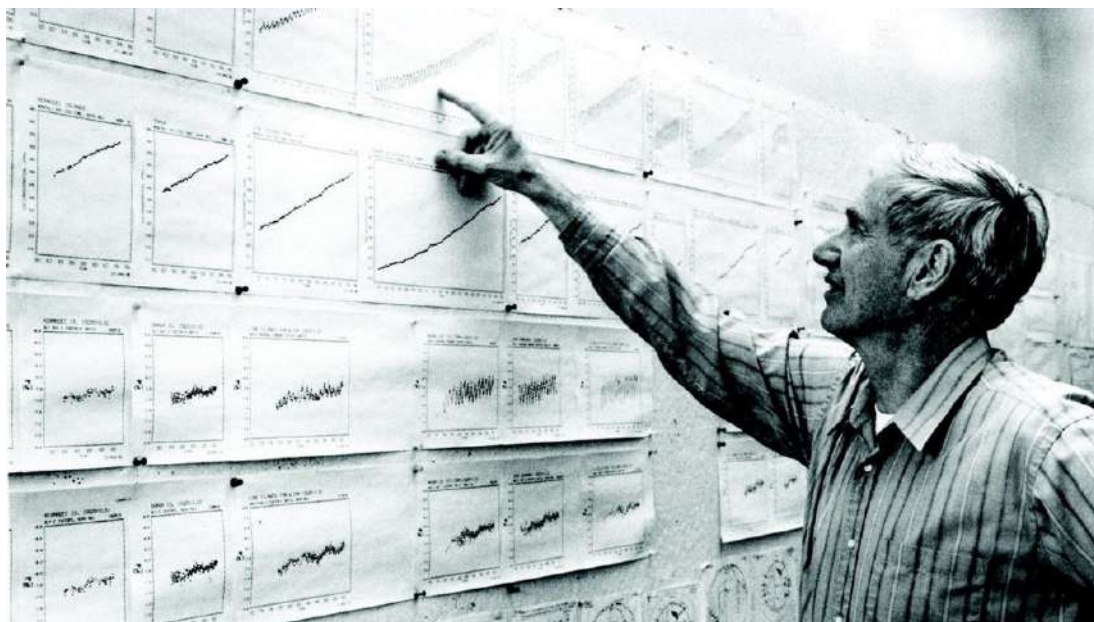


Figure 1.2: Charles David Keeling started the monitoring of the carbon dioxide content of the earth's atmosphere

CLIMATE: WE ARE NOT DOING ENOUGH!

The Keeling Curve continues to rise steadily

Measurements of the carbon dioxide content of the earth's atmosphere as a function of time have been made ever since 1958 at the Mauna Loa Observatory in Hawaii. The resulting graph is called the "Keeling Curve", in honor of Charles David Keeling, who started the monitoring and continued it until his death in 2005.

Despite promises made at the 2015 Paris Conference, despite global concern about the threat of catastrophic climate change, despite massive worldwide protests organized by Greta Thunberg and her Fridays For The Future movement, despite the reduced emissions resulting from the COVID-19 lockdown, the Keeling Curve continues to rise steadily, and the carbon dioxide content of the earth's atmosphere continues to rise steadily. The rate at which the curve is rising is even increasing. We must conclude that despite all promises of action, we are not doing enough.

Two time-scales

One important reason why it is so hard to mobilize the political will needed for effective action is a contrast between two time-scales. Immediate action is essential in order to avoid

feedback loops and tipping points which would make human efforts to avoid catastrophic climate change useless. On the other hand, the most serious effects of climate change lie in the distant future. We see what is near to us. We tend to confine our attention to problems that are close at hand.

Decisions based on economics

Economists tend to be short-sighted, or stated more accurately, they are deliberately short-sighted. Endless economic growth on a finite planet is a logical impossibility. Economists avoid confronting this impossibility by refusing to look more than a decade or two into the future. But with the threat of climate catastrophe, it is precisely the long-term future that must concern us. Therefore we cannot trust economists. or those influenced by them, to make correct decisions regarding the climate emergency.

Recent events

Two recent events have helped to make us realize the urgency of the climate crisis. The first is the leaking of a 4,000-page report by the International Panel on Climate Change (IPCC). The report was not due to be released until February, 2022, but a copy was leaked to Agence France-Presse. The report calls for a total transformation of our way of life if we wish to avoid catastrophe.

The report states that “We need transformational change operating on processes and behavior at all levels: individual, communities, business, institutions and governments. We must redefine our way of life and consumption.”

The second recent event that helped to wake us up to the seriousness of the climate emergency was a record-breaking wave of extreme heat in the western part of the United States and in south-west Canada. Unprecedented temperatures were recorded, roughly a billion tidal animals died, and many human heat-related deaths also occurred.

<https://popularresistance.org/a-deadly-summer-in-the-pacific-northwest-augurs-more-heat-waves-and-more-deaths-to-come/>

<https://countercurrents.org/2021/07/heat-dome-over-the-pacific-northwest-worst-on-record-hundreds-die/>

Extremely severe recent floods in western Europe and in China are also thought to be linked to climate change.

A worst-case scenario

Suppose that our collective efforts to avoid catastrophic climate change fail. What then? Will human society as we know it disappear? Will the human race become extinct?

Let me give you my own opinions on these questions. I think that, if catastrophic climate change is not avoided, very many species of plants and animals will become extinct. In fact, this mass extinction has already started. We are already losing species at roughly 1,000 times the natural background rate.

Will humans become extinct? What I believe will happen (if catastrophic climate change is not avoided) is the following: Most of the earth's surface will become uninhabitable, starting with tropical regions and regions that are destined to be underwater due to sea level rise. This will lead to a massive refugee crisis, which, like the extinction of animals and plants, has already started.

Although most of the earth's surface will be uninhabitable, there will still be a few regions where human life is possible, for example the Arctic and Antarctic regions, and high mountain ranges. However, these regions will be small in comparison to our present habitable world, and the global population of humans will be correspondingly reduced.

Perhaps this worst-case scenario can motivate us to act with far-sighted vision and resolution, while there is still a small window of opportunity.



Figure 1.3: We should praise Joe Biden for what he has done right, but his aggressive foreign policy is a grave threat to the world.

BIDEN'S AGGRESSIVE FOREIGN POLICY

What Joe Biden has done right

We should praise Joe Biden for the good decisions that he had made during his first few months in office. He has filled positions in his cabinet with an administration with an ethnically diverse and gender balanced group of people. For example, we can think of his new Secretary of the Interior, Deb Haaland, who is a Native American. We can also think of his choice of Kamala Harris as his running mate. These decisions are to be applauded.

We must also praise President Biden for taking the climate emergency seriously and acting to support the replacement of fossil fuels by renewable energy, as well as for rejoining the Paris Agreement.

The Biden administration has been successful in its efforts to vaccinate a large number of US citizens against COVID-19. Thus, there are many reasons for praising Joe Biden's actions during the months that he has been in office. But if we turn to foreign policy, the picture is different.

US foreign policy is essentially unchanged

Joe Biden's appointment of Antony Blinken as Secretary of State signaled that the aggressive foreign policy of the United States would remain unchanged. During the administrations of every US president, violence, war and murder have been exported to the remainder of the world, and the appointment of Blinken, who is known for advocating the invasion of Iraq, signaled that this would not change under Biden. Bombs would be dropped, and people would be murdered by drones or by the dirty tricks department of the CIA.

Insults instead of diplomacy in Alaska

A high-level meeting between diplomats from China and the United States took place in Alaska in March, but the meeting was decidedly undiplomatic. It degenerated to public name-calling by both sides, especially accusations of human rights violations. There is so much need for cooperation between the US and China on important issues, such as climate action, that one might have hoped for fewer insults and more diplomacy.

Military threats to China

In an era of all-destroying nuclear weapons, war is suicidal or perhaps omnicidal. War is unthinkable, but the profits made by arms manufacturers are so large and their political influence so great that war remains a threat. The arms manufacturers do not actually want war. They only want war to be threatened, in order to justify the obscenely large expenditures on armaments that are regularly endorsed by politicians whose votes have been bought by the arms industry.

Since the Biden administration owes its allegiance to the corporate oligarchy, it is not surprising that war with China is threatened, even though such a war would be suicidal or perhaps omnicidal.

A new cold war with Russia

Similarly, war with Russia is also threatened, and Russia is demonized by the United States under the Biden administration, just as it was under previous administrations.

Illegal bombing of Syria

According to the United Nations Charter, the use of military force, or even the threat of use of force, against a sovereign state is a violation of international law, although a nation being actively attacked has a right to defend itself until the Security Council has had time to act. Thus Biden's bombing of Syria was a violation of international law.

Sanctions are also illegal

Richard Nephew, the advisor on sanctions in Biden's State Department, is the author of a 2017 book entitled *The Art of Sanctions: A View of the Field*. He brags of the pain and suffering caused by US sanctions imposed on Iran, Venezuela and other countries. But according to international law, sanctions may not be imposed by individual countries, but only by the Security Council. They are also a violation of international laws that forbid collective punishment.

An illegal new nuclear weapons program

As mentioned above, the Biden administration owes its allegiance to the corporate oligarchy, of which the arms industry is a large part. This probably explains Biden's endorsement of a program to spend hundreds of billions of dollars on new nuclear weapons and their delivery systems. This is a violation of the Nuclear Nonproliferation Treaty's Article VI, which requires the nuclear weapons states to quickly and effectively rid themselves of their nuclear weapons. It is also a violation of the Treaty on the Prohibition of Nuclear Weapons (TPNW), which recently came into force. More importantly, it is a violation of common humanity and common sense.

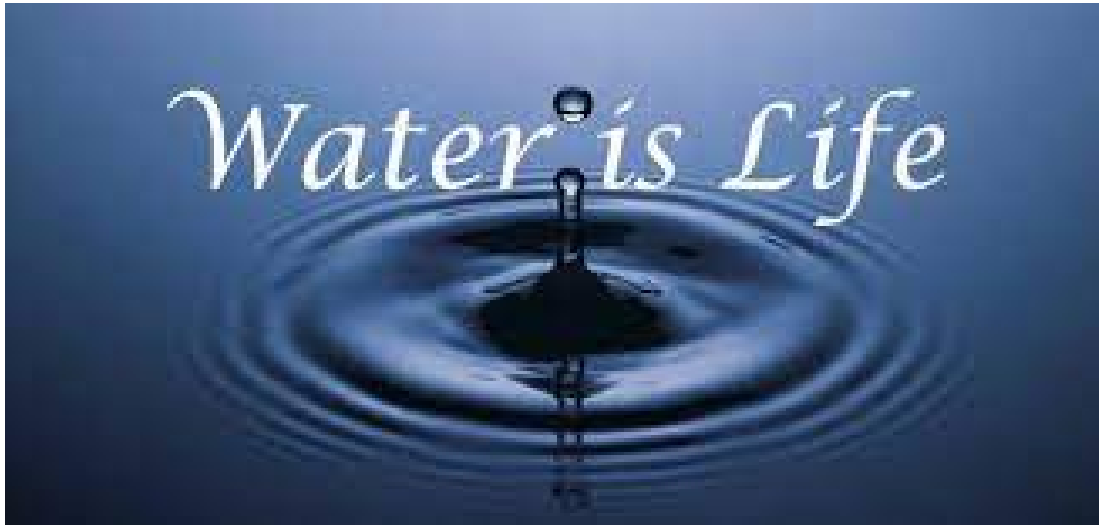


Figure 1.4: All forms of life on earth depend on water.

WATER AND LIFE

World Water Day

In its home page on World Water Day the United Nations points out the following facts:

- today, 1 in 3 people live without safe drinking water;
- by 2050, up to 5.7 billion people could be living in areas where water is scarce for at least one month a year;
- climate-resilient water supply and sanitation could save the lives of more than 360,000 infants every year;
- if we limit global warming to 1.5 degrees C above pre-industrial levels, we could cut climate-induced water stress by up to 50%;
- extreme weather has caused more than 90% of major disasters over the last decade;
- by 2040, global energy demand is projected to increase by over 25% and water demand is expected to increase by more than 50%.

A critical resource

Clearly, water is a crucial resource, and the future well-being of human society depends on how well we manage our global supply of fresh water. Because of climate change, some regions are increasingly threatened by drought, while others experience catastrophic floods.

Water tables throughout the world are falling, as aquifers are overdrawn. Falling water tables in China were the reason why that country adopted its one-child policy. Because of water shortages, China may soon be unable to feed its own population, but, as Lester R. Brown has pointed out, this will not cause a famine in China, but as China increasingly buys grain on the world market, the price will increase beyond the purchasing power of some of the poorer countries, and it is here that the Chinese water shortages will cause famine.

Countries in the Middle East and Africa have been plagued by drought in recent years. Millions of people are now threatened with starvation because of failing agriculture and deaths from lack of water among cattle herds. In Zimbabwe, grain production is down by 53%. Water levels on the Zambezi River are lower than they have been for decades, and Victoria Falls has become a trickle. Fish stocks on the river are in danger of collapsing.

Drought is also hitting the western hemisphere. Today, California and the southwestern states are plagued by drought. The Colorado River is reduced to a trickle when it reaches the Pacific, Water tables are falling. The Ogallala aquifer is overdrawn and disappears as it flows southward. Wildfires caused by extremely dry conditions have hit California and the Pacific Northwest.

The Dry Corridor

Guatemala, El Salvador, Honduras, and Nicaragua are part of an area that has come to be known as the Dry Corridor. It is particularly vulnerable to the effects of climate change and drought because a large percentage of the people in this region live in poverty and are dependent on agriculture, which, in turn, depends on adequate rainfall.

2019 was the fifth consecutive year of drought in the Dry Corridor. Because of failed crops and food insecurity, many people in the region plan to migrate, despite the hardships and risks that this entails.

During the years 2014-2017, Brazil experienced a severe drought, which affected the southeast part of the country, including the cities of Sao Paulo and Rio de Janeiro. Over half the area of Brazil was affected by the drought, which was considered to be the worst in 100 years.

The threat of widespread famine

I fear that by the middle of the present century, growing populations, water shortages, the effect of climate change on agriculture and the end of the fossil fuel era will combine to produce a famine involving billions of people, rather than millions. Today the high-yield Green Revolution crop varieties have warded off famine, but these varieties are dependent on intensive irrigation and heavy use of fertilizers (often produced today with the aid of fossil fuels). Thus, high-yield agriculture may be difficult to maintain in the future.

Corporations controlling water supplies

In many countries, large corporations have taken control of water supplies, and are now selling water at prices that poor citizens cannot afford. Maude Barlow, born in 1947 in Canada, is leading the struggle against the commodification of water. As the result of her campaign, the United Nations has declared water to be a human right. This is particularly important at a time when fresh water is becoming increasingly scarce.

Conflicts over water

Water plays a role in present conflicts, for example, in the conflict between the government of Israel and the country's Palestinian population. In the future, there may be many other conflicts over water, for example between China and India. China is building a canal to take water from the Tibetan Plateau to Beijing, thus reducing the amount of water in rivers flowing down from the plateau into India. Other dangerous water conflicts loom in regions such as Sudan.

Life in the oceans

Between 1751 and 1995 the amount of H^+ ion in ocean surface water is estimated to have increased by 35%. Living organisms are very sensitive to acidity, and today we can observe the alarming death of many forms of marine life, for example, the death of coral in the Great Barrier Reef and other coral reef systems. Over a billion people depend on fish from coral reef habitats for protein in their diets.

Our oceans are now massively polluted with carelessly discarded plastic waste. Plastic waste is found in huge quantities on the beaches of the remotest islands and in the blocked digestive systems of dead whales. A recent study found that in 2010, 8 million tonnes of plastic went into our oceans.



Figure 1.5: In written Chinese, “crisis” is represented by two characters, one meaning “danger”, and the other “opportunity”.

CRISIS MEANS DANGER AND OPPORTUNITY

Every crisis leads to change

In written Chinese, the word “crisis” is represented by two characters. One of these, taken alone, means “danger”. The other, by itself, means “opportunity”. A crisis nearly always leads to great change. There is a danger that this will be a change for the worse. But there also is the opportunity to change society for the better - to reform and improve it. Both paths are present in a crisis like our present one. We must strive with all our strength to make society take the right path.

Our present crisis

In the midst of the COVID-19 pandemic, which is in itself a crisis, many American cities have erupted in massive protests over the senseless killing by police of yet another black man - George Floyd. The country is deeply divided. Throughout the world there have been anti-racist protests, partly in sympathy with the US protesters, and partly because racism exists in many countries.

Donald Trump, who was elected on an openly racist platform, and who has been a racist in both word and deed during his term of office, has reacted by threatening to use the US army against citizens of his own country, calling the demonstrators “lowlifes and losers”, and telling governors, “If you don’t dominate, you are wasting your time”.

After hiding in a White House bunker, Donald Trump ordered officers to clear a path for him so that he could be photographed holding a Bible in front of St. John's Episcopal Church. The forces used tear gas and flash grenades against peaceful protesters in Lafayette Square.

Trump's threats to use federal troops were too much for defense secretary, Mark Esper, who insisted that military personnel "be used as a matter of last resort, and only in the most urgent and dire of situations".

Another rebuke came from Trump's former secretary of defense, James Mattis, who said, "Donald Trump is the first president in my lifetime who does not try to unite the American people. We know that we are better than the abuse of executive authority that we witnessed in Lafayette Square. We must reject and hold accountable those in office who would make a mockery of our constitution".

The Great Depression brought Hitler to power

The present COVID-19 pandemic has had an enormous economic impact. Economists fear that it will produce a depression comparable to the Great Depression of the 1939's. It is interesting to compare what happened then with what might happen today.

The Great Depression brought Hitler to power. Before the economic depression struck, the Nazis were a very minor party, winning only 3 percent of the votes to the Reichstag in the 1924 elections. But in the 1932 elections, the Nazis won 33 percent of the votes, more than any other party. In 1933, Hitler was appointed chancellor, and head of the German government.

In Denmark, the Great Depression lead to social reform

In sharp contrast to what happened in Germany, the crisis of the Great Depression led Denmark to the social reforms that have made the country so prosperous and happy as it is today.

On January 30, 1933, representatives from labor and management met in the apartment of the Danish prime minister, Thorvald Stauning. During the entire day, and late into the night, they discussed possible solutions to the economic crisis, but they could not agree. Finally, after midnight, Stauning offered his exhausted guests some whisky, so that they could relax a little. As if by magic, the whisky seemed to dissolve the differences separating the delegates, and a historic agreement was reached. It proved to be the model for the Danish welfare state.

Denmark has very high taxes, but in return for these, its citizens receive many social services, such as free health care. The taxes are sharply progressive so the rich pay very much, and the less wealthy very little. Thus the contrast between rich and poor is very much reduced in Denmark. This is a form of socialism, but at the same time, Denmark has a market economy.

If they qualify for university education, the tuition is free, and students are given an allowance for their living expenses. Mothers or alternatively fathers can take paid leave of

up to 52 weeks after the birth of a child. After that, a creche is always available, so that mothers can return to their jobs. When the child becomes too old for the creche, daycare centers are always available. For children of school age, after-school clubs are available where children can practice arts and crafts or other activities under supervision until their parents come home from work.

In 2017. Denmark ranked 2nd in the world (after Norway) in the World Happiness Report. In a number of other years, Denmark has ranked 1st. In compiling the report, researchers ask people in a given country whether they are happy, and record how many say “yes”. Interestingly, in Denmark, women are the most happy of all.

Denmark has also been one of the leaders in addressing the climate emergency, thus demonstrating that the widely discussed Green New Deal strategy can actually be put into practice.

Which path will we take?

The present crisis will undoubtedly lead to great change, but will it be takeovers by neo-fascist leaders such as Trump? Or will the change be social reforms, such as those initiated in Denmark by Stauning? Will the Green New Deal be part of our recovery from the present economic crisis? We stand at a critical point in history. Each of us has the duty to strive with all our strength to persuade our societies to make the right choice.



Figure 1.6: **We must abolish the institution of war.**

LIVING TOGETHER IN PEACE

Why war must be eliminated

The United Nations has designated the 16th of May as a day devoted to Living Together in Peace. It therefore seems appropriate to mark this day by discussing the reasons why war must be eliminated as a human institution.

Science and technology are double-edged

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 insure that our overwhelming material progress will be beneficial rather than disastrous.

Contrasting rates of change

The crisis of civilization, which we face today, has been produced by the rapidity with which science and technology have developed. Our institutions and ideas adjust too slowly to the change. The great challenge which history has given to our generation is the task of building new international political structures, which will be in harmony with modern technology. 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.

Every war is a war against children!

While in earlier epochs it may have been possible to confine the effects of war mainly to combatants, in our own century the victims of war have increasingly been civilians, and especially children. For example, according to Quincy Wright's statistics, the First and Second World Wars together cost the lives of 26 million soldiers, but the toll in civilian lives was much larger: 64 million.

Civilian casualties often occur through malnutrition and through diseases, which would be preventable in normal circumstances. Because of the social disruption caused by war, normal supplies of food, safe water and medicine are interrupted, so that populations become vulnerable to famine and epidemics. In the event of a catastrophic nuclear war, starvation and disease would add greatly to the loss of life caused by the direct effects of nuclear weapons.

Indirect damage due to wars

The indirect effects of war are also enormous. Globally, preparations for war interfere seriously with the use of tax money for constructive and peaceful purposes. During the year 2019, according to the Stockholm Peace Research Institute, the world spent 1.9 trillion (i.e. almost 2 million million) US dollars on armaments. This enormous flood of money, which is almost too large to imagine, could have been used instead for urgently needed public health measures.

The COVID-19 pandemic has shown us that "defense departments" do not really defend us. Better health care systems and more research on vaccines could have defended us against the pandemic.

Today's world is one in which roughly ten million children die each year from diseases related to poverty. Besides this enormous waste of young lives through malnutrition and preventable disease, there is a huge waste of opportunities through inadequate education. The total number of illiterates in the world is estimated to be 800 million. Meanwhile every 60 seconds the world spends roughly 2 million US dollars on armaments. It is plain that if the almost unbelievable sums now wasted on armaments were used constructively, most of the pressing problems now facing humanity could be solved.

The threat of thermonuclear war

The threat of an all-destroying nuclear war makes it clear that civilian populations are only hostages in the power-struggles of their leaders. In a thermonuclear war, hundreds of millions of civilians would die, also in neutral countries.

War as a business, war as an institution

Because the world spends almost two trillion dollars each year on armaments, it follows that very many people make their living from war. This is the reason why it is correct to speak of war as a social institution, and also the reason why war persists, although everyone realizes that it is the cause of much of the suffering that inflicts humanity. We know that war is madness, but it persists. We know that it threatens the future survival of our species, but it persists, entrenched in the attitudes of historians, newspaper editors and television producers, entrenched in the methods by which politicians finance their campaigns, and entrenched in the financial power of arms manufacturers, entrenched also in the ponderous and costly hardware of war, the fleets of warships, bombers, tanks, nuclear missiles and so on.

The responsibility of scientists and engineers

Science cannot claim to be guiltless: In Eisenhower's farewell address, he warned of the increasing power of the industrial-military complex, a threat to democratic society. If he were making the same speech today, he might speak of the industrial-military-scientific complex. Since Hiroshima, we have known that new knowledge is not always good. There is a grave danger that nuclear weapons will soon proliferate to such an extent that they will be available to terrorists and even to the Mafia. Chemical and biological weapons also constitute a grave threat. The eradication of smallpox in 1979 was a triumph of medical science combined with international cooperation. How sad it is to think that military laboratories cultivate smallpox and that the disease may be reintroduced as a biological weapon!

Tribalism

The institution of war seems to be linked to a fault in human nature, to our tendency to exhibit altruism towards members of our own group but aggression towards other groups if we perceive them to be threatening our own community. This tendency, which might be called “tribalism”, was perhaps built into human nature by evolution during the long pre-history of our species, when we lived as hunter-gatherers in small genetically homogeneous tribes, competing for territory on the grasslands of Africa. However, in an era of nerve gas and nuclear weapons, the anachronistic behavior pattern of tribal altruism and intertribal aggression now threatens our survival.

Fortunately, our behavior is only partly determined by inherited human nature. It is also, and perhaps to a larger extent, determined by education and environment; and in spite of all the difficulties just mentioned, war has been eliminated locally in several large regions of the world. Taking these regions as models, we can attempt to use the same methods to abolish war globally.

Governance at the global level

Abolition of the institution of war will require the construction of structures of international government and law to replace our present anarchy at the global level. Today’s technology has shrunk the distances, which once separated nations; and our present system of absolutely sovereign nation-states has become both obsolete and dangerous. My own belief is that our best hope for a peaceful future lies in strengthening the United Nations by converting it into a federation with the power to make and enforce laws that are binding on individuals. The amount of money available to the UN and its agencies, such as the World Health Organization and the Food and Agricultural Organization should be increased by a factor of at least 50. This goal could be achieved through the Tobin Tax, a very small tax on international currency transactions. The volume of these transactions is so great that the Tobin Tax could give a strengthened UN adequate financial resources for global governance.

The growth of global consciousness

Besides a humane, democratic and just framework of international law and governance, we urgently need a new global ethic, - an ethic where loyalty to family, community and nation will be supplemented by a strong sense of the brotherhood of all humans, regardless of race, religion or nationality. Schiller expressed this feeling in his *Ode to Joy*, 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

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



Figure 1.7: Especially during the pandemic, we need solidarity.

WE NEED SOLIDARITY NOT SANCTIONS

Sanctions are both illegal and immoral

According to the United Nations Charter, only the Security Council may impose sanctions. No individual nation may do so. Nevertheless, the United States currently imposes economic sanctions on Iran, North Korea, Sudan, Cuba, Venezuela, Belarus, Burundi, Central African Republic, China, Comoros, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Iraq, Lebanon, Libya, Mauritania, Myanmar, Nicaragua, Papua New Guinea, Russia, Somalia, South Sudan, Turkmenistan, Ukraine, Venezuela, Yemen and Zimbabwe.

Besides violating the United Nations Charter, these unilaterally imposed sanctions also violate the Fourth Geneva Convention, under which collective punishment is a war crime. Article 33 states that: “No protected person may be punished for an offense that he or she did not personally commit.”

The sanctions that are currently being imposed on Iran are also an example of collective punishment. They are damaging the health of ordinary Iranian citizens, who can in no way be blamed from the policies of their government. According to Wikipedia: “Pharmaceuticals and medical equipment do not fall under the international sanctions, but the country is facing shortages of drugs for the treatment of 30 illnesses, including cancer, heart and breathing problems, thalassemia and multiple sclerosis, because Iran is not allowed to use International payment systems... In addition, there are 40,000 hemophiliacs who can’t get anti-clotting medicines... An estimated 23,000 Iranians with HIV/Aids have had their access to the drugs they need to keep alive severely restricted.”

During the present COVID-19 pandemic, economic sanctions are particularly cruel and inhuman. They deprive the affected nations of desperately-needed face masks, respirators and medicines. During this terrible emergency, humanity must unite. We need solidarity, not sanctions!

Gestures of solidarity during the pandemic

Here are a few stories of global solidarity during the COVID-18 crisis:

According to an article by Shannon Liao, published by CNN Business on March 14, 2020, “Chinese billionaire and Alibaba co-founder Jack Ma said he will donate 500,000 Coronavirus testing kits and one million face masks to the United States... Ma has donated one million masks to Japan as of March 2 and had been attempting to ship one million masks to Iran as of March 6, according to his Weibo posts. In a March 11 post, he wrote that 1.8 million masks and 100,000 testing kits would go to Europe, with the first batch arriving in Belgium this week. He shared plans to donate to Italy and Spain, two other countries hard-hit by the virus, as well.”

Cuba has sent medical doctors and nurses to combat the COVID-19 pandemic in Italy. Cuba has also deployed doctors to Venezuela, Nicaragua, Jamaica, Suriname and Grenada.

On 3 April 2020, the World Health Organization and UNESCO “announced an agreement to work together on COVID-19 response, through the historic COVID-19 Solidarity Response Fund powered by the United Nations Foundation and Swiss Philanthropy Foundation. The COVID-19 Solidarity Response Fund has been set up to facilitate an unprecedented global response by supporting the WHO Strategic Preparedness and Response Plan. As part of the agreement, an initial portion of the money from the Fund - which currently stands at more than \$127 million - will flow to UNICEF for its work with vulnerable children and communities all over the world.”

Antonio Guterres proposes a global cease fire

On 23 March 2020, the United Nations Secretary General Antonio Guterres said: “Our world faces a common enemy: COVID-19. The virus does not care about nationality or ethnicity, faction or faith. It attacks all, relentlessly. Meanwhile, armed conflict rages on around the world. The most vulnerable - women and children, people with disabilities, the marginalized and the displaced - pay the highest price. They are also at the highest

risk of suffering devastating losses from COVID-19. Let's not forget that in war-ravaged countries, health systems have collapsed. Health professionals, already few in number, have often been targeted. Refugees and others displaced by violent conflict are doubly vulnerable. The fury of the virus illustrates the folly of war. That is why today, I am calling for an immediate global ceasefire in all corners of the world. It is time to put armed conflict on lockdown and focus together on the true fight of our lives."

We can learn from the pandemic

Terrible as it is, the COVID-19 pandemic may be able to teach us something. Humanity must work together to solve our common problems. We must abandon the folly of war, and use the vast sums of money now wasted (or worse than wasted) on armaments for constructive purposes, for example public health programs. We must work together to rebuild the world after the pandemic. The new world that we build, must be sustainable, and it must have both an environmental conscience and a social conscience.



Figure 1.8: The choice is ours

ONLY IMMEDIATE CLIMATE ACTION CAN SAVE THE FUTURE

Only immediate climate action can save the future. If we don't take action, the collapse of our civilizations and the extinction of much of the natural world is on the horizon.

A speech by Bill Moyers

At an April 30 conference entitled “Covering Climate Now”, co-sponsored by The Nation and Colombia Journalism Review, Bill Moyers made a speech which included the following remarks:

“I have been asked to bring this gathering to a close by summing up how we can do better at covering the possible ‘collapse of our civilization and extinction of much of the natural world’, to quote the noted environmentalist David Attenborough, speaking at the recent Unites Nations climate summit in Poland...

“Many of us have recognized that our coverage of global warming has fallen short. There’s been some excellent reporting by independent journalists and by enterprising reporters and photographers from legacy newspapers and other news outlets. But the Goliaths of the US news media, those with the biggest amplifiers - the corporate broadcast networks - have been shamelessly AWOL. Despite their extraordinary profits. The combined coverage of the three major networks and Fox fell from just 260 minutes in 2017 to a mere 142 minutes in 2018, a drop of 45 percent, reported by the watchdog group Media Matters.”

The Golden Rule: “Whoever has the gold makes the rules”

Network administrators have noticed that programs about climate change often have low viewer ratings. Since they see delivering high viewer ratings to their advertisers as their primary duty, these executives seldom allow programs dealing with the dangers of catastrophic climate change. The duty to save the earth from environmental catastrophe is neglected for the sake of money. As Al Gore said, “Instead of having a well-informed electorate, we have a well-amused audience”.

World-wide student strikes under-reported

On Friday, March 15, 2019, over 1.4 million students on all continents took to the streets for the first ever global climate strike. Messages in more than 40 languages were loud and clear: World leaders must act now to address the climate crisis and save our future. The school strike was the largest climate action in history. Nevertheless, it went almost unmentioned in the media.

On Friday, May 24, massive student strikes advocating rapid climate action again took place, this time in 1,351 separate locations all over the world. Again the historic and highly important event was under-reported by mainstream media. In fact, on the CNN and BBC World News broadcasts that I watched on Friday evening, the worldwide student strikes for climate action were not reported at all.

Some outstanding exceptions

There are exceptions to the general rule that the mass media downplay or completely ignore the climate emergency. The Guardian is a newspaper with absolutely superb coverage of all issues related to climate change. No praise can be high enough for the courageous environmental editorial policy of this famous old British newspaper. Here is a link to The Guardian’s report of the May 24 school strikes for climate action.

One can also mention that the National Geographic Television Channel has several times shown Leonardo DiCaprio’s important film, *Before the Flood*.

ATTACKING IRAN WOULD RISK GLOBAL DISASTER

On Monday, 13 May 2019, the New York Times posted an article with the title *White House Reviews Military Plans Against Iran. In Echoes of Iraq War*. Besides the aircraft carrier and other naval forces already sent to the Persian Gulf, plans include sending as many as 120,000 US troops to the region. There is a great danger that an attack on Iran might be sparked by a Gulf-of-Tonkin-like false flag incident involving Saudi oil ships.

On Sunday, 19 May, Donald Trump tweeted: “If Iran wants to fight, that will be the official end of Iran. Never threaten the United States again!”. He did not specify how or when Iran had threatened the US.

Why is the possibility of a military attack on Iran especially worrying? Such a war would completely destabilize the already-unstable Middle East. In Pakistan, the unpopularity of the US-Israel-Saudi alliance, as well as the memory of numerous atrocities, might lead to the overthrow of Pakistan’s less-than-stable government, putting Pakistan’s nuclear weapons into non-governmental hands. Russia and China, long-time allies of Iran, might also be drawn into the conflict. There would be a grave danger of escalation into a full-scale nuclear war.

The desire to control Iran’s oil

Iran has an ancient and beautiful civilization, which dates back to 5,000 BC, when the city of Susa was founded. Some of the earliest writing that we know of, dating 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



Figure 1.9: Reza Shah (1878-1944)

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 similarities 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.

An attack on Iran could escalate

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

The unstable government of Pakistan might be overthrown, and the revolutionary Pakistani government might enter the war on the side of Iran, thus introducing nuclear weapons into the conflict. Russia and China, firm allies of Iran, might also be drawn into a general war in the Middle East.

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

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

Recent research has shown that thick clouds of smoke from firestorms in burning cities would rise to the stratosphere, where they would spread globally and remain for a decade, blocking the hydrological cycle, and destroying the ozone layer. A decade of greatly lowered temperatures would also follow. Global agriculture would be destroyed. Human, plant and animal populations would perish.

We must also consider the very long-lasting effects of radioactive contamination. One can gain a small idea of what it would be like by thinking of the radioactive contamination that has made large areas near to Chernobyl and Fukushima permanently uninhabitable, or the testing of hydrogen bombs in the Pacific in the 1950's, which continues to cause leukemia and birth defects in the Marshall Islands more than half a century later. In the event of a thermonuclear war, the contamination would be enormously greater.

We have to remember that the total explosive power of 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 today is the complete breakdown of human civilization and the destruction of much of the biosphere.

The common human culture that we all share is a treasure to be carefully protected and handed down to our children and grandchildren. The beautiful earth, with its enormous richness of plant and animal life, is also a treasure, almost beyond our power to measure or express. What enormous arrogance and blasphemy it is for our leaders to think of risking these in a thermonuclear war!

References

1. Sir Percy Sykes, *A History of Persia*, 2nd edition, MacMillan, (1921).

2. Paula K. Byers, Reza Shah Pahlavi, *Encyclopedia of World Biography* (1998).
3. Roger Hoffman, The Origins of the Iranian Revolution, *International Affairs* 56/4, 673-7, (Autumn 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, London, (1988).
6. James Risen, Secrets of History: The C.I.A. in Iran, *The New York Times*, April 16, (2000).
7. Mark Gasiorowski and Malcolm Byrne, Mohammad Mosaddegh and the 1953 Coup in Iran, *National Security Archive*, June 22, (2004).
8. K. Roosevelt, *Countercoup: The Struggle for the Control of Iran*, McGraw- Hill, New York, (1979).
9. E. Abrahamian, *Iran Between Two Revolutions*, Princeton University Press, Princeton, (1982).
10. M.T. Klare, *Resource Wars: The New Landscape of Global Conflict*, Owl Books reprint edition, New York, (2002).
11. J.M. Blair, *The Control of Oil*, Random House, New York, (1976).



Figure 1.10: Wikileaks' Julian Assange removed from Ecuador's embassy

THE JAWS OF POWER

“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)

Secrecy versus democracy

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.

Julian Assange, a martyr to the truth

We do not know what will happen to Julian Assange. If his captors send him to the US, and if he dies in prison 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 in the future, and the shame of his captors will be remembered too.

A WORLD FEDERATION

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

The present United Nations Charter

After the unspeakable horrors of World War II, delegates from 50 Allied nations met in San Francisco California. The purpose of the conference, which took place between 25 April and 26 June, 1945, was to set up an international organization that would be able to abolish the institution of war. However, the Charter which the delegates produced was too weak to achieve this goal.

In many respects the United Nations has been highly successful. During the 73 years that have passed since its establishment, a world war has been avoided. The agencies of the United Nations, such as the World Health Organization, the Food and Agricultural Organization, UNESCO and the IPCC, have provided urgently-needed services to the international community. The Universal Declaration of Human Rights, and the Millennium Development Goals have set up norms towards which we can and should aim. Furthermore, the UN has provided a place where representatives from many nations can meet for informal diplomacy, through which many dangerous conflicts have been avoided.

Nevertheless, the United Nations, with its present Charter, has proved to be too weak to achieve the purpose for which it was established - the complete abolition of the institution of war. If civil wars are included, there are, on any given day, an average of 12 wars somewhere in the world. The task of abolishing war has become extremely urgent since the advent of thermonuclear weapons. The danger that these weapons will be used, through accident, technical or human error, or through uncontrollable escalation of a war with conventional weapons, poses an existential threat to human civilization and the biosphere.

The Russell-Einstein Manifesto of 1955 described our present situation in the following 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.”

Why call war an “institution”?

Because the world spends almost two thousand billion dollars each year on armaments, it follows that very many people make their living from war. This is the reason why it is correct to speak of war as a social institution, and also the reason why war persists, although everyone realizes that it is the cause of much of the suffering that inflicts humanity. We know that war is madness, but it persists. We know that it threatens the future survival

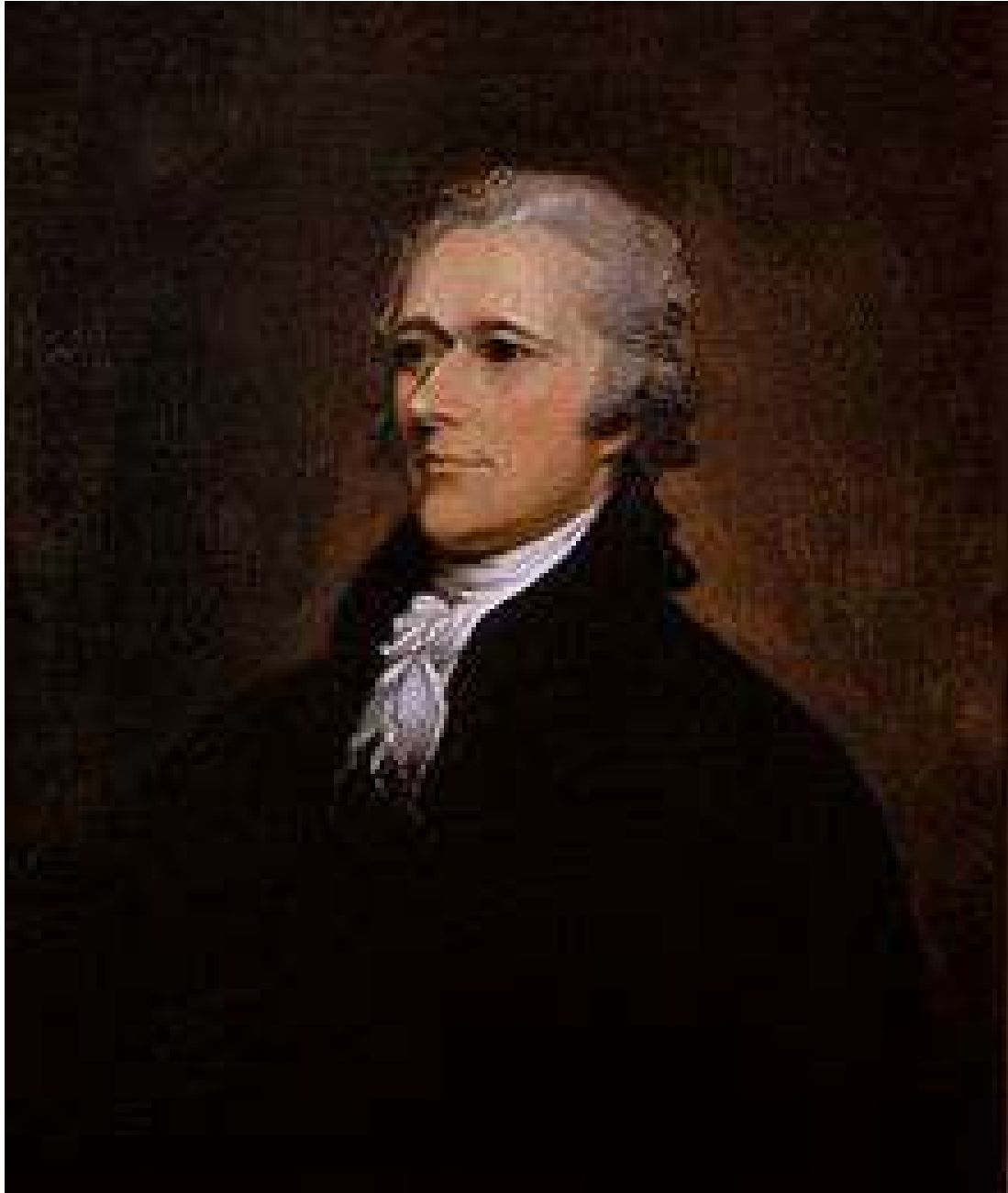


Figure 1.11: Alexander Hamilton famously said, “To coerce the states is one of the maddest projects that was ever devised... ”

of our species, but it persists, entrenched in the attitudes of historians, newspaper editors and television producers, entrenched in the methods by which politicians finance their campaigns, and entrenched in the financial power of arms manufacturers, entrenched also in the ponderous and costly hardware of war, the fleets of warships, bombers, tanks, nuclear missiles and so on.

Military-industrial complexes, throughout the world, drive and perpetuate the institution of war. Each 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.

A World Federation

In order to save the world from destruction in a thermonuclear World War III, the United Nations Charter must be reformed and strengthened. At present, the UN is a confederation of absolutely sovereign nation-states. But in a world of all-destroying modern weapons, instantaneous global communication, and economic interdependence, the absolutely sovereign nation-state has become a dangerous anachronism.

Furthermore, history has shown confederations to be fatally weak. For example, the original United States Constitution was a confederation; but it soon became apparent that this form of governance was too weak. Instead, a federation was needed. In his *Federalist Papers*, Alexander Hamilton wrote: "To coerce the states is one of the maddest projects that was ever devised... Can any reasonable man be well disposed towards a government which makes war and carnage the only means of supporting itself, a government that can exist only by the sword? Every such war must involve the innocent with the guilty. The single consideration should be enough to dispose every peaceable citizen against such government... What is the cure for this great evil? Nothing, but to enable the... laws to operate on individuals, in the same manner as those of states do."

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

At present, the United Nations attempts to coerce states through sanctions; but sanctions are a form of collective punishment, and collective punishment is expressly forbidden by the Geneva Conventions. The worst effects of sanctions are usually felt by the weakest and least guilty of the citizens, while the guilty leaders are usually unaffected. Besides being a violation of the Geneva Conventions, sanctions are ineffective, their only effect being to unite the people of a country behind its guilty leaders.

The success of federations

A federation is a union of organizations to which specific powers are granted, all other powers being retained by the subunits. Historically, federations have proved to be highly successful and durable.

Besides political federations, many other kinds exist, examples being Universal Postal Union, established by the Treaty of Bern in 1874, and the International Tennis Federation (ITF), founded in 1913.

Examples of political federations include the European Union, the Federal Republic of Germany, the Swiss Federation, the Russian Federation, the Federal Government of the United States, and the governments of Australia and Brazil.

Laws binding on individuals

In general, political federations have the power to make laws which are binding on individuals, thus avoiding the need to coerce their member states. An effective World Federation would need to have the power to make laws that act on individuals. The International Criminal Court is an important step towards the establishment of a system of international law that acts on individuals rather than on states, and the ICC deserves our wholehearted support.

Greatly increased financial support for the UN

A very important step towards strengthening the United Nations would be to give it at least 50 times the financial support that it has today. At present the entire yearly budget of the UN is only 2.7 billion US dollars, a ridiculously low figure, considering the organization's duty to ensure peace, law, human rights, social justice, respect for the environment, human health, and a safe food supply for the entire world. If the financial support of the United Nations could be greatly increased, its agencies could perform their vitally important duties much more effectively. This would give the UN increased prestige and authority, and the UN would thus be better able to resolve political disputes.

Various methods for increasing the money available to the UN have been proposed. For example, James Tobin, who was Sterling Professor of Economics at Yale University, and Nobel Laureate in Economics, proposed that international currency transactions be taxed at a small fraction of a percent. He believed that even this extremely small tax would make exchange rates much more stable. When asked what should be done with the proceeds of the tax, Tobin added, almost as an afterthought, "Give it to the United Nations". In fact, the volume of international currency transactions is so enormous that even the tiny tax proposed by Tobin would be sufficient to solve all the UN's financial problems.

A standing UN Emergency Force

The United Nations is often called on to act quickly in emergency situations, an example being the call for the UN to stop the Rwandan genocide. It would be helpful if the UN had a standing armed force which could act quickly in such emergency situations. The force could consist of volunteers from around the world, pledged to loyalty to humanity as a whole, rather than loyalty to any nation.

A reformed voting system

In the present UN General Assembly, each nation is given one vote regardless of size. This means that Monaco, Liechtenstein, Malta and Andorra have as much voting power as China, India, the United States and Russia combined. For this reason, UN resolutions are often ignored.

The voting system of the General Assembly should be reformed. One possible plan would be for final votes to be cast by regional blocks, each block having one vote. The blocks might be. 1) Latin America 2) Africa 3) Europe 4) North America 5) Russia and Central Asia 6) China 7) India and Southeast Asia 8) The Middle East and 9) Japan, Korea and Oceania.

In a reformed, democratized and possibly renamed Security Council, the veto power would be absent, and final votes would be taken between regions of roughly equal populations.

Hope for the future

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

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

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

We, the people of the world, not only have the facts on our side; we also have numbers on our side. The vast majority of the worlds peoples long for peace. The vast majority long for abolition of nuclear weapons, and for a world of kindness and cooperation, a world of respect for the environment.

No one can make these changes alone, but together we can do it. Together, we have the power to choose a future where international anarchy, chronic war and institutionalized injustice will be replaced by democratic and humane global governance, a future where the madness and immorality of war will be replaced by the rule of law.

We need a sense of the unity of all mankind to save the future, a new global ethic for a united world. We need politeness and kindness to save the future, politeness and kindness not only within nations but also between nations.

To save the future, we need a just and democratic system of international law; for with law shall our land be built up, but with lawlessness laid waste.



Figure 1.12: Joe Biden's inauguration.

CHALLENGES FOR JOE BIDEN AND KAMALA HARRIS

Rid of Trump at last!

The majority of Americans, and the vast majority of people in other countries throughout the world, heaved a sigh of relief when Joe Biden won the 2020 US presidential election. Hopes for the future soared, as the world seemed to be rid of Trump at last!

There is so much wrong with Donald Trump that one hardly knows where to start. He is a bully, braggart, narcissist, racist, misogynist, habitual liar, and tax evader, in addition to being demonstrably ignorant. He has contempt for both domestic and international law, as well as for the US Constitution. In the words of Michael Moore, he is a “part-time clown and full-time sociopath”. However, it is Trump’s climate change denial, withdrawal from the Paris agreement, and sponsorship of fossil fuels that posed the greatest threats to the future of humans society and 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 subsidized giant coal corporations. He also has sabotaged renewable energy initiatives in the United States. This is a major crime. It is a crime against humanity and a crime against the biosphere.

Other crimes committed by Donald Trump include deliberately ignoring the dangers of COVID-19, of which he was well aware, for the sake of corporate profits. At least a hundred thousand Americans died needlessly because of his deliberate suppression of the facts. This was mass murder on an enormous scale.

One should not forget the terrible cruelty of the separation of children from their families at the US border.

During his term of office, Trump has lied an average of 15 times every day, according to the Washington Post's fact checker. In this way he has cultivated a culture in which his followers came to have no regard for the truth. They live in a delusional world, believing whatever their leader tells them. In this delusional world Republicans believe in strange QAnon theories, and they believe that Trump actually won the 2020 election by a landslide.

Donald Trump is guilty of tax evasion and misuse of federal funds for personal gain; and he has violated the US Constitution, as well as international laws. He encouraged Georgia's Secretary of State Brad Raffensperger to commit fraud in a famous taped telephone conversation. And finally, on January 6, 2021, Trump incited a mob of his supporters to storm his nation's capitol in an insurrection and coup attempt, with the object of reversing the clear results of the 2020 presidential election. The fact that the large mob easily gained access to the capitol raises questions regarding police complicity, since the intentions of the mob of domestic terrorists were clearly known well in advance of the event.

An outraged House of Representatives has impeached Trump for the second time, giving him the distinction of being the only president in American history to be impeached twice. Ten Republicans broke ranks and signed the document charging Trump with inciting an insurrection. It remains to be seen what the Senate will do, but if the necessary 17 members do not cross the isle, Trump can nevertheless be prevented from holding future office through the 14th Amendment, which requires only a simple majority in both houses.

One hopes that this evil man will be prosecuted for his many serious crimes.

Congratulations on some good decisions

Joe Biden should be congratulated on some good decisions. Among these was his choice of Kamala Harris as his running mate. Because of his age, there is a danger that Joe Biden might die in office. We hope, of course, that this will not happen, but if it should, Kamala Harris would be the first woman to become President of the United States. She is well equipped for this office.

Other good decisions for which Joe Biden should be congratulated include his choice of strong teams to deal with the COVID-19 pandemic and with the climate crisis.

“Back to normal” is not good enough

Having praised Joe Biden for his good decisions, we must also notice his bad ones. Many of the people whom he has chosen for his cabinet, or for other high offices, have received large amounts of money from corporations. Many have supported war and torture. Most of Biden’s cabinet choices held posts during the Obama administration. This is not good enough! The United States must renounce its aggressive foreign wars and its attempts to achieve global hegemony through military power! It is time for the United States to renounce exceptionalism and become an equal partner with all the other nations of the world. It is time for the vast river of money now wasted, or worse than wasted, on armaments, to be used for constructive social purposes, such as creating renewable energy infrastructure, relieving students’ debt, and establishing universal health care. Finally, America’s shockingly excessive economic inequality must be reduced. Neoliberalism and corporate rule are not good enough. The people’s voice must be heard, rather than the voice of corporate greed.

The Biden-Harris Inauguration

Because of the threats of more violence from the far right, Washington D.C. was completely shut down. Bridges into the city were closed. The entire area near Capitol Hill was blocked off by high fences topped with rolls of barbed wire. Washington was guarded by more than 20,000 armed National Guard troops, who had been carefully screened by the FBI to prevent infiltration by right-wing domestic terrorists. In the Capitol’s Mall, where crowds of cheering spectators would normally stand, there instead waved 200,000 US flags. It was an Inauguration Day like no other in history.

January 20 was a cold day, but the sun was shining. On the platform before the Capitol, an array of distinguished guests were assembled, including former presidents and members of the Senate and the House of Representatives from both parties. Prominent roles in the ceremony were given to Republicans as well as to Democrats. A landmark moment occurred when Kamala Harris was sworn in as the first woman Vice President.

Then came the moment for which everyone had been waiting. Joseph R. Biden Jr. was sworn in as the 46th President of the United States. Speaking with deep sincerity and heartfelt emotion, he delivered his Inaugural Address.

Among other things, Joe Biden said:

“Few periods in our nation’s history have been more challenging or difficult than the one we’re in now. A once-in-a-century virus silently stalks the country. It’s taken as many lives in one year as America lost in all of World War II. Millions of jobs have been lost. Hundreds of thousands of businesses closed.

“A cry for racial justice some 400 years in the making moves us. The dream of justice for all will be deferred no longer.

“A cry for survival comes from the planet itself. A cry that can’t be any more desperate

or any more clear.

“And now, a rise in political extremism, white supremacy, domestic terrorism that we must confront and we will defeat.

“To overcome these challenges – to restore the soul and to secure the future of America – requires more than words. It requires that most elusive of things in a democracy: Unity.”

We wish Joe Biden and Kamala Harris success in meeting these challenges.



Figure 1.13: MEP's declare a climate emergency.

OUR LIFESTYLES MUST CHANGE

Our house is on fire!

"Our house is on fire!", said teenage climate activist Greta Thunberg at Davos last January, "According to the IPCC we are less than 12 years away from not being able to undo our mistakes. In that time, unprecedented changes in all aspects of society need to have taken place, including a reduction of our CO₂ emissions by at least 50%." She is right. Our world is on fire. The Amazon is burning. Alaska is burning. The forests of Siberia are burning, producing a plume of smoke as large as Europe.

Climate change means lifestyle change

"This changes everything!", wrote award-winning author Naomi Klein. But on the whole, little seems to be changing. There are too many vested interests - too much money to be made by inaction, and denial - too much institutional and cultural inertia. Our whole economic system is built on the extraction and use of fossil fuels, and they continue to

be extracted. Oil tankers continue to sail. Russian gas continues to heat Ukraine and Europe. Advertisers continue to urge us to buy more than we really need. including the latest fashions.

Meanwhile the world burns, sea levels rise and we face a worsening refugee crisis, driven, in part, by climate change. The problem we face in mobilizing political will to make the necessary changes in society is the slowness of effects such as sea level rise. The worst consequences of catastrophic climate change lie in the long-term future. But as the IPCC has told us, immediate action is needed to prevent feedback loops from taking control and making human efforts useless.

Will lifestyle change trigger a recession?

But what if we stop buying more than we need? What if we stop driving cars, and ride bicycles instead? What if we stop traveling by air to distant countries for vacations? What if we stop eating beef? What if we wear our clothes until they wear out, instead of buying the latest fashions? Will this not produce a recession?

There are signs that a recession is on the way in any case. The increase in debt, both individual and governmental, cannot be sustained. Furthermore, perpetual growth on a finite planet is a logical impossibility. Only a steady-state economic system is sustainable in the long run.

The Green New Deal

Even before taking her place in the US House of Representatives, with its newly-won Democratic majority, Alexandria Ocasio-Cortez became the leader of a campaign for a Green New Deal. This program takes its inspiration from the massive Federal government program by which Franklin Delano Roosevelt ended the depression of the 1930's. FDR's New Deal built dams, planted forests, and in general to create much needed infrastructure, while at the same time addressing the problem of unemployment by providing jobs.

Wikipedia describes FDR's New Deal as follows: "The New Deal was a series of programs, public work projects, financial reforms and regulations enacted by President Franklin D. Roosevelt in the United States between 1933 and 1936. It responded to needs for relief, reform and recovery from the Great Depression. Major federal programs included the Civilian Conservation Corps (CCC), the Civil Works Administration (CWA), the Farm Security Administration (FSA), the National Industrial Recovery Act of 1933 (NIRA) and the Social Security Administration (SSA). They provided support for farmers, the unemployed, youth and the elderly. The New Deal included new constraints and safeguards on the banking industry and efforts to re-inflate the economy after prices had fallen sharply. New Deal programs included both laws passed by Congress as well as presidential executive orders during the first term of the presidency of Franklin D. Roosevelt. The programs focused on what historians refer to as the "3 Rs": relief for the unemployed and poor, recovery of the economy back to normal levels and reform of the financial system to prevent a repeat depression."

Alexandria Ocasio-Cortez believes that the climate emergency that the world now faces is a much more severe emergency than the great depression. Indeed, if quick action is not taken immediately, the long-term effects of catastrophic climate change pose existential threats to human civilization and the biosphere. Therefore she advocates a massive governmental program to create renewable energy infrastructure. Such a program, like FDR's New Deal, would simultaneously solve the problem of unemployment. Money for the program could be taken from the Pentagon's obscenely bloated budget. Ocasio-Cortez has also proposed a 70% income tax for the ultra-wealthy.

According to a January 24 2019 article by Robert R. Raymond, "When polled, 92 percent of registered Democratic voters say they support the Green New Deal. But perhaps more importantly, a full 81 percent of all registered voters support it - a number that includes both Republicans and Democrats."

Youth leads the way

Over 1.4 million young students across all continents took to the streets on Friday March 15th for the first ever global climate strike. Messages in more than 40 languages were loud and clear: world leaders must act now to address the climate crisis and save our future. The school strike was the largest climate action in history.

Greta Thunberg, the teenage Swedish climate activist whose lone protest outside the Swedish Parliament inspired the worldwide youth protests, says "And yes, we do need hope. Of course, we do. But the one thing we need more than hope is action. Once we start to act, hope is everywhere. So instead of looking for hope, look for action. Then and only then, hope will come today."

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.

<http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>

Both wind and solar energy 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. A Global Green New Deal is both necessary and possible.

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/hherman-daly/>

What, then, must we do?

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 our own countries when 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.



Figure 1.14: The disaster of 2016 must not be repeated.)

A CRITICAL U.S. ELECTION

Why the 2020 election is so important

Here is a quotation from Bernie Sanders:

“Donald Trump is a pathological liar. According to documented reports he has told more than 20,000 lies and distortions since he has been president. This is, obviously, deeply disturbing behavior for anyone who is president of the United States.

“But what is even more disturbing is that Trump is now using his lies and misinformation to sow confusion and chaos in the election process and undermine American democracy. In other words, he does not intend to accept the results of the election if he loses and leave office voluntarily. This is not just a constitutional crisis. This is a threat to everything this country stands for.

“In order to be effective in combating Trump’s attempt to sabotage the November election, it is important that you, and everyone you know, recognize the warning signs as to what he and his Republican allies are doing...

“Over the course of the past few weeks, Trump has consistently sought to cast doubt on the legitimacy of the coming election. At a time when he is behind in almost every national poll and in most battleground state polls, Trump recently stated, ‘The only way they can take this election away from us is if this is a rigged election.’

“Think about what that means. What he is saying is that if he wins the election, that’s

great. But if he loses, it's rigged. And if it's rigged, then he is not leaving office. Heads I win. Tails you lose...

"Trump is not only trying to create chaos and delegitimize the election process. He and the Republican Party are now spending tens of millions of dollars in the courts to make it harder for people to vote. They are attempting to defund and destroy the U.S. Postal Service so that people will not be able to cast mail-in ballots. And their allies in state legislatures like Pennsylvania's are refusing to pass legislation to ensure all legitimate votes are counted in a timely manner."

A statement by Trump's sister

Here is a quotation from retired Federal Court of Appeals judge Maryanne Trump Barry sister of President Trump: "All he wants to do is appeal to his base. He has no principles, None NoneÂ His goddamned tweeting and lying. Oh my God I'm talking too freely, but you know. The change of stories. The lack of preparation. The lying." She added that her brother does not read and had someone take the college entrance exam in his place. She said. "It's the phoniness of it all. It's the phoniness and this cruelty. Donald is cruel." In the recordings, Barry (Judge Maryanne Trump Barry) also criticized the Trump administration family separation policy and previous bankruptcies of Trump's businesses, adding "You can't trust him."

Donald Trump's neo-fascism

According to the divorce filings of Trump's first wife, he kept a copy of translations of Hitler's speeches beside his bedside and studied them thoroughly. His 2016 campaign was openly racist, and since taking office he has been a racist in word and deed. Trump's use of unidentified troops in unmarked vehicles to tear-gas, beat and terrorize peaceful protesters is reminiscent of Hitler's Brown Shirts. We can recall that Hitler came to power legally, but retained power through illegal methods. There is a worrying similarity between what is happening in the USA today and what happened in Germany in the 1930's.

Threats of war

Donald Trump has frequently threatened foreign countries with war, even nuclear war. For example, regarding the conflict with North Korea, Trump said "Rocket man is on a suicide mission for himself and his regime. If [the US] is forced to defend itself or its allies, we will have no choice but to totally destroy North Korea". Trump has also threatened Iran with war. Such threats are a crime under both the Nuremberg Principles and the United Nations Charter.

Trump lied about COVID-19

According to a September 10, 2020, article on the World Socialist Website,

“On Wednesday, senior Washington Post reporter and establishment insider Bob Woodward released recordings of telephone calls with US President Donald Trump, making clear that the White House, despite its public efforts to downplay the threat of COVID-19, was fully aware in January of the massive danger posed by the deadly new disease.

“The tapes establish that the Trump administration lied to the public about the threat while it deliberately implemented a policy that has led to the deaths of nearly 200,000 people.

“During the critical period of January through March, when timely actions, similar to those taken in China, would have saved hundreds of thousands of lives in the United States and internationally, the White House made a cold-blooded decision to lie to the public, in an unprecedented crime.

“These words were in flagrant contradiction to the statements Trump made in public over the following weeks and months, in which he equated the pandemic with the seasonal flu, promised it would ‘disappear,’ and claimed that cases were ‘going down.’...

“Despite the extreme health danger posed by the spread of the pandemic, the ruling class was virtually exclusively concentrated on the economic impact of a pandemic, that is, how the disease would impact the stock market and the personal wealth of the richest one to five percent of society. The capitalist oligarchy feared, first of all, that unambiguous public acknowledgement of the danger would lead to a financial panic, causing the markets ‘to teeter and perhaps fall precipitously’.”

Republicans realize that they will lose if the 2020 election is fair

Donald Trump’s disastrous handling of the COVID-19 pandemic, combined with the pandemic’s terrible economic effects, have made Republicans unpopular; and this is reflected in recent polls. It seems extremely likely that if large numbers of voters participate in the November election, the Democrats will win. Realizing this, the Republicans are doing everything they can to make the election unfair, and to reduce voter participation, especially in districts with large numbers of Democrats. Part of this Republican strategy is to sabotage voting by mail, and to force voters to choose between risking their lives in the pandemic and abandoning their civic duty.

Climate ought to be a central election issue

According to the 2018 IPCC Report, the world has only a very short time left in which to stop the extraction and use of fossil fuels. If we collectively fail to do this within a decade or so, feedback loops may be initiated which will make human efforts to avoid catastrophic climate change useless. Much of the world could become uninhabitable, and a very large-scale mass extinction could be initiated. Although the worst effects of global warming lie in the long-term future, children alive today are at risk. We give our children loving care, but it makes no sense to do so unless we also do everything in our power to ensure that they, and all future generations, will inherit a world in which they can survive.

Although the worst threats from catastrophic climate change lie in the long-term future, we are starting to see the effects of climate change today.

California is burning! As of August 28, 2020, 7175 fires have burned 1,660,332 acres, according to the California Department of Forestry and Fire Protection. According to an article published in the Los Angeles Times on September 7, 2020, “Woodland Hills made national headlines with a 121-degree reading that marked the hottest temperature ever recorded at an official National Weather Service station in Los Angeles County.”

The Arctic is burning! A northeastern Siberian town, north of the Arctic Circle, is likely to have set a record for the highest temperature documented in the Arctic Circle, with a reading of 100.4 degrees (38 Celsius) recorded in June, 2020. The dangerous greenhouse gas methane is bubbling up from melting permafrost in the Arctic and from the shallow seas north of Siberia. Furthermore, wildfires in the Arctic are emitting an unprecedented amount of CO₂. Around 600 active fires have been observed in the region in late July, 2020, compared with 400 in 2019 and about 100 on average between 2003-2018.

The 2020 hurricane season has started early, notably with Laura, and it is predicted to be unusually severe. Greenland’s ice sheet is melting. Ice shelves are collapsing in the Antarctic. But despite these obvious signs of danger, the climate emergency is hardly mentioned in the 2020 political campaigns, or in U.S. mass media. It ought to be a central issue.

The U.S. election in November is critical, not just because of Donald Trump’s neo-fascism, but primarily because if the climate-change-denying and fossil-fuel-supporting Republican Party retains power, all hope of saving the world from life-destroying global warming may be lost. Those of us who have the ability to influence the election, or to vote, must work with dedication for a Democratic victory.

The disaster of 2016 must not be repeated!

Let us recall what happened in the disastrous election of 2016. 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. In 2016, 66 million people voted for Clinton, and 63 million for Trump. But the number of disillusioned voters who stayed away from the polls was far larger than either of these figures: 100 million! This must not happen again! Although the corporate-controlled Democratic National Committee has again sabotaged the progressive wing of the party and given us two charming but non-progressive candidates, Biden and Harris, progressives and idealistic young voters must not fail to vote against Trump. The stakes are too high for a repeat of the 2016 disaster. Failure to get rid of Trump and the Republican Party would mean the end of democracy in the United States. It would mean a burning, uninhabitable

future world, the end of much of human civilization, and the end of much of the biosphere.



Figure 1.15: The distinguished economist, Professor Herman E. Daly, has studied and advocated steady-state economics for many years.

ECOLOGY AND ECONOMICS

Humanity has reached a critical decade

A new report, published on 14 March, 2021 in the Royal Swedish Academy of Sciences' journal *Ambio*, points out that humanity is hurtling towards destruction unless we have the collective wisdom to change course quickly. Here is a link to the article:

<https://link.springer.com/article/10.1007/s13280-021-01544-8>

The *Ambio* article was written as part of the preparation for a meeting of Nobel Prize winners to discuss the state of the planet. The virtual meeting will be held on April 26-28, 2021.

We must achieve a steady-state economic system

A steady-state economic system is necessary because neither population growth nor economic growth can continue indefinitely on a finite earth. No one can maintain that exponential industrial growth is sustainable in the long run except by refusing to look more than a short distance into the future.

Of course, it is necessary to distinguish between industrial growth, and growth of culture and knowledge, which can and should continue to grow. Qualitative improvements in human society are possible and desirable, but resource-using and pollution-producing industrial growth is reaching its limits, both because of ecological constraints and because of the exhaustion of petroleum, natural gas and other non-renewable resources, such as metals. The threat of catastrophic climate change makes it imperative for us to stop using fossil fuels within very few years.

Entropy is a measure of disorder. Our present economic system is unidirectional and entropic: Low-entropy resources are converted into high-entropy waste, a unidirectional process. By contrast, to be sustainable in the long run, a process must be cyclic, like the growth and regeneration of a forest.

We must decrease economic inequality

In his Apostolic Exhortation, “*Evangelii Gaudium*” Pope Francis said:

“In our time humanity is experiencing a turning-point in its history, as we can see from the advances being made in so many fields. We can only praise the steps being taken to improve people’s welfare in areas such as health care, education and communications. At the same time we have to remember that the majority of our contemporaries are barely living from day to day, with dire consequences. A number of diseases are spreading. The hearts of many people are gripped by fear and desperation, even in the so-called rich countries. The joy of living frequently fades, lack of respect for others and violence are on the rise, and inequality is increasingly evident. It is a struggle to live and, often, to live with precious little dignity.

“Just as the commandment ‘Thou shalt not kill’ sets a clear limit in order to safeguard the value of human life, today we also have to say ‘thou shalt not’ to an economy of exclusion and inequality. Such an economy kills. How can it be that it is not a news item when an elderly homeless person dies of exposure, but it is news when the stock market loses two points? This is a case of exclusion. Can we continue to stand by when food is thrown away while people are starving? This is a case of inequality. Today everything comes under the laws of competition and the survival of the fittest, where the powerful feed upon the powerless. As a consequence, masses of people find themselves excluded and marginalized: without work, without possibilities, without any means of escape.”

The social epidemiologist Prof. Richard Wilkinson, has documented the ways in which societies with less economic inequality do better than more unequal societies in a number of areas, including increased rates of life expectancy, mathematical performance, literacy, trust, social mobility, together with decreased rates of infant mortality, homicides, imprisonment, teenage births, obesity and mental illness, as well as drug and alcohol addiction.

We must also remember that according to the economist John A. Hobson, the basic problem that led to imperialism 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. Thus governments were forced to look for markets in the less developed parts of the world.

We must break the power of corporate greed

When the United Nations was established in 1945, the purpose of the organization was to abolish the institution of war. This goal was built into many of the articles of the UN Charter. Accordingly, throughout the world, many War Departments were renamed and became Departments of Defense. But the very name is a lie. In an age of nuclear threats and counter-threats, populations are by no means protected. Ordinary citizens are just hostages in a game for power and money. It is all about greed.

Why is war continually threatened? Why is Russia threatened? Why is war with Iran threatened? Why fan the flames of conflict with China? Is it to “protect” civilians? Absolutely not! In a thermonuclear war, hundreds of millions of civilians would die horribly everywhere in the world, also in neutral countries. What is really being protected are the profits of arms manufacturers. As long as there are tensions; as long as there is a threat of war, military budgets are safe; and the profits of arms makers are safe. The people in several “democracies”, for example the United States, do not rule at the moment. Greed rules.

As Professor Noam Chomsky has pointed out, greed and lack of ethics are built into the structure of corporations. By law, the Chief Executive Officer of a corporation must be entirely motivated by the collective greed of the stockholders. He must maximize profits. If the CEO abandons this single-minded chase after corporate profits for ethical reasons, or for the sake of humanity or the biosphere or the future, he (or she) must, by law, be fired and replaced.

We must leave fossil fuels in the ground

The threat of catastrophic climate change requires prompt and dedicated action by the global community. Unless we very quickly make the transition from fossil fuels to 100% renewable energy, we will reach a tipping point after which uncontrollable feedback loops could take over, leading to a human-caused 6th geological extinction event. This might even be comparable to the Permian-Triassic event, during which 96% of all marine species and 70% of terrestrial vertebrates became extinct.

Arctic sea-ice is melting at an increasingly rapid rate, because of several feedback loops. One of these feedback loops, called the albedo effect, is due to the fact that white snow-covered sea-ice in the Arctic reflects sunlight, while dark water absorbs it, raising the temperature and leading to more melting.

Another feedback loop is due to the fact that rising temperatures mean that more water is evaporated. The water vapor in the atmosphere acts like a greenhouse gas, and raises the temperature still further.

If we consider long-term effects, by far the most dangerous of the feedback loops is the melting of methane hydrate crystals and the release of methane into the atmosphere, where its effects as a greenhouse gas are roughly twenty times great as those of CO₂.

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 which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface.

The worrying thing about 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 in world CO₂ emissions since 1751 has been only 337 gigatons.

Hope for the future comes from the exponential growth of renewable energy. Governments and banks must aid this growth, and they must end the support that they give to fossil fuel corporations.

Ecological Economics

In the future, ecology must be incorporated into economic theory. The human economy is a part of the global environment, rather than the reverse. Human society cannot prosper while the environment suffers. Economists must acknowledge this fact. We need a new economic system, one that has both a social conscience and an ecological conscience.

PREDICTING THE FUTURE

H.G. Wells

The enormously prolific English writer, Herbert George Wells (1866-1946), who also wrote novels, short stories, history books, biology textbooks, utopias, and so on, has been called “The Shakespeare of Science Fiction”. During his writing career, he made a number of predictions about the future, many of which were astonishingly accurate. He foresaw the advent of aircraft, tanks, space travel, nuclear weapons, satellite television and something resembling the World Wide Web.

George Orwell and Aldous Huxley

George Orwell’s famous dystopian book, *Nineteen Eighty-Four*, warned the world of the dangers of totalitarianism. In Orwell’s book, people are terrorized into submission. Orwell had Stalinist Russia in mind when he wrote the book, but sadly, it seems to describe the situation in a large number of countries today.

Aldous Huxley has given us an equally famous and equally dystopian vision of the future, but in Huxley’s *Brave New World*, the enslaved peoples gladly accept their slavery in exchange for the mood-elevating narcotic, “soma”.

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 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, 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.”

The crisis of civilization

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

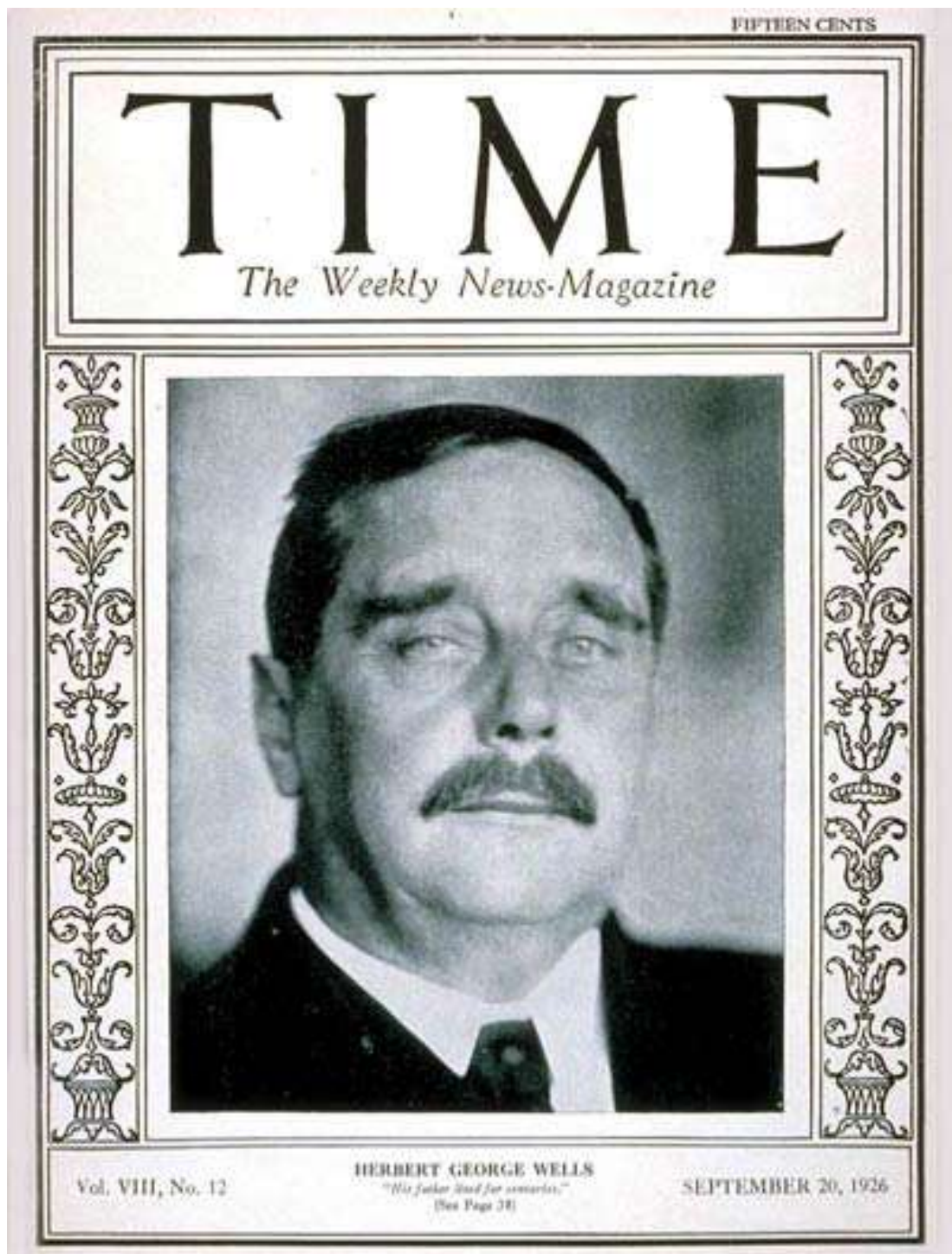


Figure 1.16: H. G. Wells, one day before his 60th birthday, on the front cover of Time magazine, 20 September 1926.

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. Ultimately, if not avoided, catastrophic climate change could make most of the earth's surface uninhabitable, and the global population of humans would be correspondingly reduced.

- **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 will be produced by climate change. Overdrawn, 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.
- **INTOLERABLE ECONOMIC INEQUALITY:** Today 2.7 billion people live on less than *2aday – 1.1billiononlessthan1* 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.
- **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 subnational groups. Against nuclear terrorism there is no effective defense.

- **THE MILITARY-INDUSTRIAL COMPLEX:** In 2020, world military budgets reached a total of roughly two trillion dollars (i.e. two 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 is 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 H.G. Wells, George Orwell and Aldous Huxley predict these current dangers to human civilization and the biosphere? George Orwell and Aldous Huxley both foresaw that science and technology might not always be beneficial to society. 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*, predicted 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. To ensure

the safety of the world, the United Nations must be reformed and greatly strengthened. I believe that it should be converted into a federation, with the power to make laws that are binding on individuals, and a greatly/increased budget.

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 Henry 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.



Figure 1.17: Gandhi spinning yarn, in the late 1920s.

THE ETHICS OF MAHATMA GANDHI

If humans are ever to achieve a stable global society in the future, they will have to become much more modest in their economic behavior and much more peaceful in their politics. For both modesty and peace, Gandhi is a useful source of ideas. The problems with which he struggled during his lifetime are extremely relevant to us in the 21st Century, when both nuclear and ecological catastrophes threaten the world.

Avoiding escalation of conflicts

Today we read almost every day of killings that are part of escalating cycles of revenge and counter-revenge, for example in the Middle East. Gandhi's experiences both in South Africa and in India convinced him that such cycles could only be ended by unilateral acts of kindness and understanding from one of the parties in a conflict. He said, "An eye for an eye makes the whole world blind".

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."

Gandhi's advocacy of non-violence is closely connected to his attitude towards ends and means. He believed that violent methods for achieving a desired social result would inevitably result in an escalation of violence. The end achieved would always be contaminated by the methods used. He was influenced by Leo Tolstoy with whom he exchanged many letters, and he in turn influenced Martin Luther King and Nelson Mandela

Harmony between religious groups

Gandhi believed that at their core, all religions are based on the concepts of truth, love, compassion, nonviolence and the Golden Rule. When asked whether he was a Hindu, Gandhi answered, "Yes I am. I am also a Christian, a Muslim, a Buddhist and a Jew." When praying at his ashram, Gandhi made a point of including prayers from many religions. One of the most serious problems that he had to face in his efforts to free India from British rule was disunity and distrust, even hate, between the Hindu and Muslim communities. Each community felt that with the British gone, they might face violence and repression from the other. Gandhi made every effort to bridge the differences and to create unity and harmony. His struggles with this problem are highly relevant to us today, when the world is split by religious and ethnic differences.

Solidarity with the poor

Today's world is characterized by intolerable economic inequalities, both between nations and within nations. 8 million children die each year from poverty-related causes. 1.3 billion people live on less than 1.25 dollars a day. Gandhi's concern for the poor can serve as an example to us today, as we work to achieve a more equal world. He said, "There is enough for every man's need, but not for every man's greed."

Voluntary reduction of consumption

After Gandhi's death, someone took a photograph of all his worldly possessions. It was a tiny heap, consisting of his glasses, a pair of sandals, a homespun cloth (his only garment) and a watch. That was all. By reducing his own needs and possessions to an absolute minimum, Gandhi had tried to demonstrate that the commonly assumed connection between wealth and merit is false. This is relevant today, in a world where we face a crisis of diminishing resources. Not only fossil fuels, but also metals and arable land per capita will become scarce in the future. This will force a change in lifestyle, particularly in the industrialized countries, away from consumerism and towards simplicity. Gandhi's example can teach us that we must cease to use wealth and "conspicuous consumption" as a measure of merit.



Figure 1.18: Official logo of International Criminal Court.

THE ICC'S ENORMOUS IMPORTANCE

The power to make and enforce laws acting on individuals

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

George Mason, one of the drafters of the Federal Constitution, believed that “such a government was necessary as could directly operate on individuals, and would punish those only whose guilt required it”, while another drafter, James Madison, wrote that the more

he reflected on the use of force, the more he doubted “the practicality, the justice and the efficacy of it when applied to people collectively, and not individually.”

Finally, Alexander Hamilton, in his *Federalist Papers*, discussed the Articles of Confederation with the following words: “To coerce the states is one of the maddest projects that was ever devised... Can any reasonable man be well disposed towards a government which makes war and carnage the only means of supporting itself, a government that can exist only by the sword? Every such war must involve the innocent with the guilty. The single consideration should be enough to dispose every peaceable citizen against such government... What is the cure for this great evil? Nothing, but to enable the... laws to operate on individuals, in the same manner as those of states do.”

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

Establishment of the International Criminal Court

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

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

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

Trump's attacks on the ICC

In a 15 June, 2020, article entitled *Trump Authorizes Sanctions against the International Criminal Court*

<https://www.transcend.org/tms/2020/06/trump-authorizes-sanctions-against-the-international-criminal-court/>

Nahal Toosi and Natasha Bertrand wrote: "The efforts come amid Trump administration anger over the ICC's efforts to look into alleged war crimes by U.S. troops in Afghanistan."

"President Donald Trump today moved to further punish officials of the International Criminal Court, authorizing economic sanctions against them as well as the expansion of visa restrictions on the officials and their families. The president also declared a national emergency with respect to the 'threat' he says the ICC poses, a move that lays legal groundwork to impose future sanctions."

The International Criminal Court responded with the following statement:

<https://popularresistance.org/the-international-criminal-court-responds-to-recent-measures-announced-by-the-us/>

"The International Criminal Court... expresses profound regret at the announcement of further threats and coercive actions, including financial measures, against the Court and its officials, made earlier today by the Government of the United States.

"The ICC stands firmly by its staff and officials and remains unwavering in its commitment to discharging, independently and impartially, the mandate bestowed upon it by the Rome Statute and the States that are party to it.

"These are the latest in a series of unprecedented attacks on the ICC, an independent international judicial institution, as well as on the Rome Statute system of international criminal justice, which reflects the commitment and cooperation of the ICC's 123 States Parties, representing all regions of the world."

The ICC and UN Charter reform

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

The Preamble to the United Nations Charter starts with the words: "We, the peoples of the United Nations, determined to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind; and to unite our strength to maintain international peace and security; and to ensure, by the acceptance of principles

and the institution of methods, that armed force shall not be used, save in the common interest; and to employ international machinery for the promotion of the economic and social advancement of all peoples, have resolved to combine our efforts to accomplish these aims.”

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

Thus, in general, war is illegal under the UN Charter. Self-defense against an armed attack is permitted, but only for a limited time, until the Security Council has had time to act. The United Nations Charter does not permit the threat or use of force in pre-emptive wars, or to produce regime changes, or for so-called “democratization”, or for the domination of regions that are rich in oil.

Clearly, the United Nations Charter aims at abolishing the institution of war once and for all; but the present Charter has proved to be much too weak to accomplish this purpose, since it is a confederation of the member states rather than a federation. This does not mean that that our present United Nations is a failure. Far from it! The UN has achieved almost universal membership, which the League of Nations failed to do. The Preamble to the Charter speaks of “the promotion of the economic and social advancement of all peoples”, and UN agencies, such as the World Health Organization, the Food and Agricultural Organization and UNESCO, have worked very effectively to improve the lives of people throughout the world. Furthermore, the UN has served as a meeting place for diplomats from all countries, and many potentially serious conflicts have been resolved by informal conversations behind the scenes at the UN. Finally, although often unenforceable, resolutions of the UN General Assembly and declarations by the Secretary General have great normative value.

I believe that the elimination of the institution of war can only be achieved by reforming and strengthening the United Nations, and converting it into a federation. As a first step in this direction, the International Criminal Court has enormous importance.



Figure 1.19: Map of the Middle East between Africa, Europe, Central Asia, and South Asia.

WE NEED PEACE IN THE MIDDLE EAST

We need solidarity to face future stress

Stress can produce conflict. For example shortages of food or water can lead to regional wars. But wars only make original problems worse. Today the world is facing a number of severe problems, and solidarity will be needed to minimize the suffering with which we and future generations are threatened. The problems include shortages of fresh water, rising temperatures due to climate change, and food insecurity. These problems are especially

acute in the Middle East, a region that is already torn by bitter conflicts and wars. In order to successfully minimize suffering, it is vital that peace be achieved in the Middle East. Let us look at some of the problems in detail:

Shortages of fresh water

It is estimated that two thirds of the world's peoples currently live under water stress for at least one month each year. Half a billion people now suffer from water shortages and stress for the entire year. Half of the world's large cities are currently plagued by water scarcity, and the situation is expected to get worse.

Under many desert areas of the world are deeply buried water tables formed during glacial periods when the climate of these regions was wetter. These regions include the Middle East and large parts of Africa. Water can be withdrawn from such ancient reservoirs by deep wells and pumping, but only for a limited amount of time.

In oil-rich Saudi Arabia, petroenergy is used to drill wells for ancient water and to bring it to the surface. Much of this water is used to irrigate wheat fields, and this is done to such an extent that Saudi Arabia exports wheat. The country is, in effect, exporting its ancient heritage of water, a policy that it may, in time, regret.

Lethal heat events

A new study by C. Mora et al., "Global Risk of Deadly Heat², published in *Nature: Climate Change*, on 19 June, 2017, has warned that up to 75% of the world's population could face deadly heat waves by 2100 unless greenhouse gas emissions are rapidly controlled. The following is an excerpt from the article:

"Based on the climatic conditions of those lethal heat events [studied], we identified a global threshold beyond which daily mean surface air temperature and relative humidity become deadly. Around 30% of the world's population is currently exposed to climatic conditions exceeding this deadly threshold for at least 20 days a year.

"By 2100, this percentage is projected to increase to 48% under a scenario with drastic reductions of greenhouse gas emissions and 74% under a scenario of growing emissions. An increasing threat to human life from excess heat now seems almost inevitable, but will be greatly aggravated if greenhouse gases are not considerably reduced."

Food insecurity

Unless efforts are made to stabilize and ultimately reduce global population, there is a serious threat that climate change, population growth, and the end of the fossil fuel era could combine to produce a large-scale famine by the middle of the 21st century.

As drought reduces food production, as groundwater levels fall in China, India, the Middle East and the United States; and as high-yield modern agriculture becomes less possible because fossil fuel inputs are lacking, the 800 million people who are currently undernourished may not survive at all.

According to a report presented to the Oxford Institute of Economic Policy by Sir Nicholas Stern on 31 January, 2006, areas likely to lose up to 30% of their rainfall by the 2050's because of climate change include much of the United States, Brazil, the Mediterranean region, Eastern Russia and Belarus, the Middle East, Southern Africa and Southern Australia.

Modern agriculture has become highly dependent on fossil fuels, especially on petroleum and natural gas. This is especially true of production of the high-yield grain varieties introduced in the Green Revolution, since these require especially large inputs of fertilizers, pesticides and irrigation.

Today, fertilizers are produced using oil and natural gas, while pesticides are synthesized from petroleum feedstocks, and irrigation is driven by fossil fuel energy. Thus agriculture in the developed countries has become a process where inputs of fossil fuel energy are converted into food calories. Therefore there is a threat that the end of the fossil fuel era may produce a very large-scale famine.

The end of the fossil fuel era

The fossil fuel era is ending. The extraction and use of petroleum and natural gas must certainly end within a century because these resources will be exhausted within a hundred years. However, we must remember that human society and the biosphere are threatened by the existential risk of catastrophic climate change unless immediate steps are taken to stop the extraction and burning of fossil fuels. Therefore, one way or another, the fossil fuel era will end. On hopes, for the sake of future generations, that it will end very quickly. The end of the fossil fuel era will have an especially great impact on the Middle East because so many economies of the region are based on oil. Ways must be found to diversify these economies.

Steps towards peace in the Middle East

A nuclear-free Middle East would be highly desirable, but difficult to achieve.

An embargo forbidding the shipment of arms to the Middle East would also be very desirable but difficult to achieve. The Arms Trade Treaty of 2014 could provide a framework for such an embargo.

Palestinians who wish to leave Israel or Lebanon should be allowed to do so, and they should be welcomed by the Arab states of the region, where jobs for them should be provided.

These steps could help the Middle East to achieve the peace which is urgently needed so that the serious problems mentioned above can be faced with solidarity.

SHARING SCIENTIFIC KNOWLEDGE

We stand on each other's shoulders

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.

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 of 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 collective human consciousness

No man is an island entire of itself; every man is a piece of the continent, a part of the main, John Donne (1572-1631)

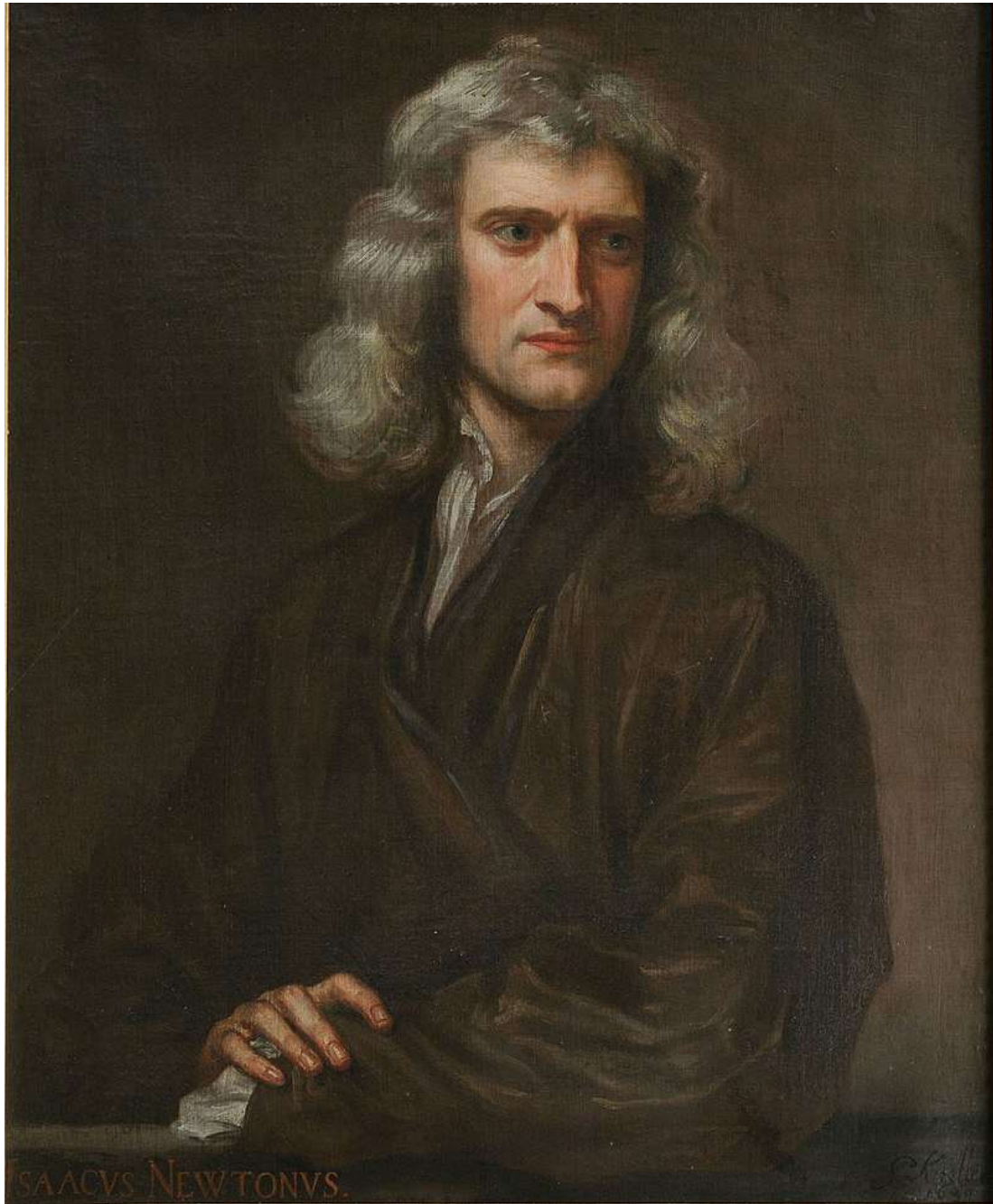


Figure 1.20: Portrait of Isaac Newton (1642-1727). Newton said, “If I have seen farther than other men, it is because I have stood on the shoulders of giants”. He was referring to Copernicus, Galileo, Brahe, and Kepler, whose work he used when formulating his universal laws of motion and gravitation. Science is not competitive. It is cooperative!

The Open Access Movement has fought valiantly to ensure that scientists do not sign their copyrights away but instead ensure their work is published on the Internet, under terms that allow anyone to access it. Aaron Schwartz (1986-2013)

The whole is greater than the sum of its parts. Human society is a superorganism, far greater than any individual in history or in the present. The human superorganism has a supermind, a collective consciousness far greater than the consciousness of individuals. Each individual contributes a stone to the cairn of civilization, but our astonishing understanding of the universe is a collective achievement.

Scientists of all nations pool their knowledge at international conferences and through international publications. Scientists stand on each other's shoulders. Their shared knowledge is far greater than the fragments that each contributes.

Other aspects of culture are also cooperative and global. For example, Japanese woodblock prints influenced the French Impressionists. The nonviolent tradition of Shelly, Thoreau, Tolstoy, Gandhi, Martin Luther King and Nelson Mandela is international. Culture is cooperative. It is not competitive. Global cultural cooperation can lead us to a sustainable and peaceful society. Our almost miraculous modern communications media, if properly used, can give us a stable, prosperous and cooperative future society.

Pasteur's unselfish gifts of knowledge

Louis Pasteur, the great pioneer of modern medical science, made many inventions during his lifetime, for example the processes of pasteurization for milk, wine and cheese. He always patented his inventions, to prevent others from doing so, but he then gave the patents freely to the general public. His lifelong search for knowledge was not motivated by a desire to make money but rather by his wish to serve the general welfare of humanity.

Getting rich from vaccines during a pandemic?

Pharmaceutical corporations, with the help of the World Trade Organization, seem intent on making as much money as possible from vaccines during the COVID-19 pandemic. They greedily embrace their "intellectual property rights", despite the fact their vaccine research was supported by government funds, and despite the fact that if vaccines are not rapidly made available to poor countries, mutant viruses may arise which will threaten all nations, rich and poor alike. Is this not another case where scientific knowledge should be shared for the general good of humanity?



Figure 1.21: A sign usually used for traffic management displays a public health warning in Belfast during the COVID-19 pandemic.

SHORT-TERM AND LONG-TERM FUTURES

We see clearly what is near to us

There is a remarkable contrast in the way that governments around the world have responded to the COVID-19 pandemic and the way that they have responded to the climate emergency. The pandemic, which indeed represents an extremely grave danger to humanity, has produced a massive global response. Borders have been closed, airlines have become virtually inoperative, industries, restaurants and entertainments have been closed, sporting events have been cancelled or postponed, people have been asked to stay at home and practice social distancing, and the everyday life of citizens around the world has been drastically changed.

By contrast, let us consider the threat that if immediate action is not taken to halt the extraction and use of fossil fuels, irreversible feedback loops will be initiated which will make catastrophic climate change inevitable despite human any human efforts to prevent it. This threat is even more serious than the COVID-19 pandemic. Climate change could

make much of the earth too hot for human life. It could produce a famine involving billions of people, rather than millions. My own belief is that catastrophic climate change would not lead to the extinction of the human species; but I think that because much of the world would become uninhabitable, the global population of humans would be very much reduced.

How have governments responded to the climate emergency? A minority, for example the Scandinavian countries, have taken appropriate action. Most governments pay lip service to the emergency, but do not take effective action; and a few countries, such as the United States under Donald Trump, Bolsonaro's Brazil, and Saudi Arabia, deny that there is a climate emergency and actively sabotage action. The world's net response has been totally inadequate. The Keeling curve, which measures CO₂ concentrations in the atmosphere, continues to rise, and the rate of rise is even increasing.

What is the reason for this remarkable contrast in our response to two serious emergencies? We see clearly and respond to what is close to us, and are relatively indifferent to what is far away. We hear of people dying every day from the COVID-19 pandemic, and there is a danger that as many as 100 million people could die before it is over. By contrast, although immediate climate action is needed today to avoid disaster, the worst consequences of climate change lie in the long-term future. Old people, like me, will not live to see massive deaths from starvation and overheating. However, we have a responsibility to our children and grandchildren, and to all future generations. A large-scale global famine could occur by the middle of the present century, and children who are alive today could experience it.

Recovery from the pandemic offers climate action opportunities

When the COVID-19 pandemic is over, governments will be faced by the task of repairing the enormous economic damage that it has caused. The situation will be similar to the crisis that faced US President Franklin D. Roosevelt when he took office during the Great Depression of the 1930's. Roosevelt, encouraged by John Maynard Keynes, used federal funds to build much-needed infrastructure around the United States. His programs, the New Deal, ended the Great Depression in his country.

Today, the concept of a similar Green New Deal is being put forward globally. This concept visualizes government-sponsored programs aimed at simultaneously creating both jobs and urgently-needed renewable energy infrastructure. The Green New Deal programs could be administered in such a way as to correct social injustices.

A sustainable economic system

Economists, with a few notable exceptions such as Nicholas Georgescu-Roegen, Aurelio Peccei and Herman Daly, have a cynical tendency to confine their discussions to the short-term future. With self-imposed myopia, they refuse to look more than a few decades into the future. This allows them to worship growth, and to advocate perpetual growth. Of course, they realize that perpetual growth of anything physical on a finite planet is a logical

impossibility. They realize that present growth implies future collapse. But before that collapse happens, they plan to sell their stocks and bonds and buy large estates to which they can retire.

Our present financial system is unsustainable, and it works for the interests of a few very rich people. For the sake of the long-term future, we must build a sustainable, steady-state economic system, an economic system which reduces inequality, and which serves the broad public interest.

Chapter 2

BOOK ANNOUNCEMENTS

WHY WAR?

<https://eacpe.org/app/wp-content/uploads/2021/06/Why-War-by-John-Scales-Avery.pdf>

Albert Einstein's letter to Sigmund Freud

Why War?, the title of this book, was also the title of a famous letter written to Sigmund Freud by Albert Einstein.

In 1931, the International Institute for Intellectual Cooperation invited Albert Einstein to enter correspondence with a prominent person of his own choosing on a subject of importance to society. The Institute planned to publish a collection of such dialogues. Einstein accepted at once, and decided to write to Sigmund Freud to ask his opinion about how humanity could free itself from the curse of war. Here are some quotations from Einstein's letter, translated from the original German:

“Dear Professor Freud,

“Is there any way of delivering mankind from the menace of war?

“It is common knowledge that, with the advance of modern science, this issue has come to mean a matter of life and death for civilization as we know it; nevertheless, for all the zeal displayed, every attempt at its solution has ended in a lamentable breakdown.

“I believe, moreover, that those whose duty it is to tackle the problem professionally and practically are growing only too aware of their impotence to deal with it, and have now a very lively desire to learn the views of men who, absorbed in the pursuit of science, can see world-problems in the perspective distance lends. As for me, the normal objective of my thought affords no insight into the dark places of human will and feeling. Thus, in the enquiry now proposed, I can do little more than seek to clarify the question at issue and, clearing the ground of the more obvious solutions, enable you to bring

the light of your far-reaching knowledge of man's instinctive life to bear upon the problem...

“As one immune from nationalist bias, I personally see a simple way of dealing with the superficial (i.e. administrative) aspect of the problem: the setting up, by international consent, of a legislative and judicial body to settle every conflict arising between nations. Each nation would undertake to abide by the orders issued by this legislative body, to invoke its decision in every dispute, to accept its judgments unreservedly and to carry out every measure the tribunal deems necessary for the execution of its decrees. But here, at the outset, I come up against a difficulty; a tribunal is a human institution which, in proportion as the power at its disposal is inadequate to enforce its verdicts, is all the more prone to suffer these to be deflected by extrajudicial pressure... ”

Freud replied with a long and thoughtful letter in which he said that a tendency towards conflict is an intrinsic part of human emotional nature, but that emotions can be overridden by rationality, and that rational behavior is the only hope for humankind.

Tribalism, and its relationship to nationalism

Can we give better answers today to the questions raised by the exchange of letters between Albert Einstein and Sigmund Freud?

Charles Darwin's observations convinced him that in humans, just as in other mammals, the emotions and their expression are to a very large extent inherited universal characteristics of the species.

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 Physiology or Medicine in 1973.

The third of the 1973 prizewinners, Konrad Lorenz, is the most 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 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 an essay entitled *The Urge to Self-Destruction*¹, 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.

Population genetics

Human emotions evolved during the long period when our ancestors lived in small, genetically homogeneous tribes, competing for territory on the grasslands of Africa.

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 first proposed by J.B.S. Haldane and R.A. Fischer, and more recently it has been discussed by

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

W.D. Hamilton and E.O. Wilson.

Military-industrial complexes

In his farewell address, US President Dwight D. Eisenhower warned his nation against the excessive power that had been acquired during World War II by the military-industrial complex: "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."

Because the world spends roughly two trillion dollars each year on armaments, it follows that very many people make their living from war. This is the reason why it is correct to speak of war as a social, political and economic institution, and also one of the main reasons why war persists, although everyone realizes that it is the cause of much of the suffering of humanity.

We know that war is madness, but it persists. We know that it threatens the survival of our species, but it persists, entrenched in the attitudes of historians, newspaper editors and television producers, entrenched in the methods by which politicians finance their campaigns, and entrenched in the financial power of arms manufacturers - entrenched also in the ponderous and costly hardware of war, the fleets of warships, bombers, tanks, nuclear missiles and so on.

Colonialism

The Industrial Revolution opened up an enormous gap in military strength between the industrialized nations and the rest of the world. Taking advantage of their superior weaponry, Europe, the United States and Japan rapidly carved up the remainder of the world into colonies, which acted as sources of raw materials and food, and as markets for manufactured goods. Between 1800 and 1914, the percentage of the earth under the domination of colonial powers increased to 85 percent, if former colonies are included.

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

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. The cure that he recommended was a more equal distribution of incomes in the manufacturing countries.

Nuclear war

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.

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 thermonuclear weapons has put war completely beyond the bounds of sanity and elementary humanity.

Can we not rid the world of these insane and antihuman weapons before everything of value in our beautiful world is reduced to radioactive ashes?

A CRITICAL DECADE

<http://eacpe.org/app/wp-content/uploads/2021/06/A-Critical-Decade-by-John-Scales-Avery.pdf>

Humanity has reached a critical decade

A new report, published on 14 March, 2021 in the Royal Swedish Academy of Sciences' journal *Ambio*, points out that humanity is hurtling towards destruction unless we have the collective wisdom to change course quickly. Here is a link to the article:

<https://link.springer.com/article/10.1007/s13280-021-01544-8>

The *Ambio* article was written as part of the preparation for a meeting of Nobel Prize winners to discuss the state of the planet. The virtual meeting was held on April 26-28, 2021.

We must achieve a steady-state economic system

A steady-state economic system is necessary because neither population growth nor economic growth can continue indefinitely on a finite earth. No one can maintain that exponential industrial growth is sustainable in the long run except by refusing to look more than a short distance into the future.

Of course, it is necessary to distinguish between industrial growth, and growth of culture and knowledge, which can and should continue to grow. Qualitative improvements in human society are possible and desirable, but resource-using and pollution-producing industrial growth is reaching its limits, both because of ecological constraints and because of the exhaustion of petroleum, natural gas and other non-renewable resources, such as metals. The threat of catastrophic climate change makes it imperative for us to stop using fossil fuels within very few years.

Entropy is a measure of disorder. Our present economic system is unidirectional and entropic: Low-entropy resources are converted into high-entropy waste, a unidirectional process. By contrast, to be sustainable in the long run, a process must be cyclic, like the growth and regeneration of a forest.

We must decrease economic inequality

In his Apostolic Exhortation, "Evangelii Gaudium" Pope Francis said: "In our time humanity is experiencing a turning-point in its history, as we can see from the advances being made in so many fields. We can only praise the steps being taken to improve people's welfare in areas such as health care, education and communications. At the same time we have to remember that the majority of our contemporaries are barely living from day to day, with dire consequences. A number of diseases are spreading. The hearts of many people are gripped by fear and desperation, even in the so-called rich countries. The joy of living

frequently fades, lack of respect for others and violence are on the rise, and inequality is increasingly evident. It is a struggle to live and, often, to live with precious little dignity.

“Just as the commandment ‘Thou shalt not kill’ sets a clear limit in order to safeguard the value of human life, today we also have to say ‘thou shalt not’ to an economy of exclusion and inequality. Such an economy kills. How can it be that it is not a news item when an elderly homeless person dies of exposure, but it is news when the stock market loses two points? This is a case of exclusion.

“Can we continue to stand by when food is thrown away while people are starving? This is a case of inequality. Today everything comes under the laws of competition and the survival of the fittest, where the powerful feed upon the powerless. As a consequence, masses of people find themselves excluded and marginalized: without work, without possibilities, without any means of escape.”

The social epidemiologist Prof. Richard Wilkinson, has documented the ways in which societies with less economic inequality do better than more unequal societies in a number of areas, including increased rates of life expectancy, mathematical performance, literacy, trust, social mobility, together with decreased rates of infant mortality, homicides, imprisonment, teenage births, obesity and mental illness, as well as drug and alcohol addiction.

We must also remember that according to the economist John A. Hobson, the basic problem that led to imperialism 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. Thus governments were forced to look for markets in the less developed parts of the world.

We must break the power of corporate greed

When the United Nations was established in 1945, the purpose of the organization was to abolish the institution of war. This goal was built into many of the articles of the UN Charter. Accordingly, throughout the world, many War Departments were renamed and became Departments of Defense. But the very name is a lie. In an age of nuclear threats and counter-threats, populations are by no means protected. Ordinary citizens are just hostages in a game for power and money. It is all about greed.

Why is war continually threatened? Why is Russia threatened? Why is war with Iran threatened? Why fan the flames of conflict with China? Is it to “protect” civilians? Absolutely not! In a thermonuclear war, hundreds of millions of civilians would die horribly everywhere in the world, also in neutral countries. What is really being protected are the profits of arms manufacturers. As long as there are tensions; as long as there is a threat of war, military budgets are safe; and the profits of arms makers are safe. The people in several “democracies”, for example the United States, do not rule at the moment. Greed rules.

As Professor Noam Chomsky has pointed out, greed and lack of ethics are built into the structure of corporations. By law, the Chief Executive Officer of a corporation must be

entirely motivated by the collective greed of the stockholders. He must maximize profits. If the CEO abandons this single-minded chase after corporate profits for ethical reasons, or for the sake of humanity or the biosphere or the future, he (or she) must, by law, be fired and replaced.

We must leave fossil fuels in the ground

The threat of catastrophic climate change requires prompt and dedicated action by the global community. Unless we very quickly make the transition from fossil fuels to 100% renewable energy, we will reach a tipping point after which uncontrollable feedback loops could take over, leading to a human-caused 6th geological extinction event. This might even be comparable to the Permian-Triassic event, during which 96% of all marine species and 70% of terrestrial vertebrates became extinct.

Arctic sea-ice is melting at an increasingly rapid rate, because of several feedback loops. One of these feedback loops, called the albedo effect, is due to the fact that white snow-covered sea-ice in the Arctic reflects sunlight, while dark water absorbs it, raising the temperature and leading to more melting.

Another feedback loop is due to the fact that rising temperatures mean that more water is evaporated. The water vapor in the atmosphere acts like a greenhouse gas, and raises the temperature still further.

If we consider long-term effects, by far the most dangerous of the feedback loops is the melting of methane hydrate crystals and the release of methane into the atmosphere, where its effects as a greenhouse gas are roughly twenty times great as those of CO₂.

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 which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface.

The worrying thing about 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 in world CO₂ emissions since 1751 has been only 337 gigatons.

Hope for the future comes from the exponential growth of renewable energy. Governments and banks must aid this growth, and they must end the support that they give to fossil fuel corporations.

Ecological Economics

In the future, ecology must be incorporated into economic theory. The human economy is a part of the global environment, rather than the reverse. Human society cannot prosper while the environment suffers. Economists must acknowledge this fact. We need a new economic system, one that has both a social conscience and an ecological conscience.

Our Planet, Our Future. An Urgent Call to Action

Here is a link to the full statement, signed by 126 Nobel Laureates and other experts:

<https://www.nationalacademies.org/news/2021/04/nobel-prize-laureates-and-other-experts-issue-urgent-call-for-action-after-our-planet-our-future-summit>

67 YEARS IN THE PEACE MOVEMENT

<https://eacpe.org/app/wp-content/uploads/2021/05/67-years-in-the-peace-movement-by-John-Scales-Avery.pdf>

Holger Terp's invitation

Seven years ago, Holger Terp, the founder and web editor of the Danish Peace Academy, invited me to write something about my 60 years of work in the peace movement. I gladly accepted his invitation, because I was 81 years old, and in poor health. I thought that I might not have another opportunity to write about my experiences the peace movement. The most rewarding thing about working for peace is that it allows you to meet really wonderful people, and what I wrote at Holger's invitation is mainly about the fantastic friends with whom I was privileged to work.

Seven years later

Now, seven years later, I am 88 years old, still with serious health problems, and during the last two years, also with failing eyesight, but miraculously still alive. I have written a great deal during the last seven years, and almost all has been about the serious problems that are facing the world today.

Between 2014 and 2018, I wrote primarily articles and essays for Countercurrents, TMS Weekly Digest and Human Wrongs Watch. The editors of these important alternative news sites, Binu Mathiew, Antonio C.S. Rosa and Baher Kamal, whose heroic and dedicated work I very greatly admire, accepted my work, and so I wrote almost one article every week for them. I also wrote longer essays for the two journals of the World Academy of Art and Science, Cadmus and Erudito.

Later, from 2019 until 2021, I wrote fewer articles and essays, and more books. The extremely distinguished theoretical physicist, Professor Pervez Hoodbhoy, has an educational website:

<https://eacpe.org/about-eacpe/>

I knew Professor Hoodbhoy a little because we had both attended many meetings of Pugwash Conferences, and through him I became aware of his splendid website dedicated to public education. I began to submit my books on serious global problems to this website and they can be downloaded free of charge and circulated from the following address:

<http://eacpe.org/about-john-scales-avery/>

Many of my articles are also available from this website, and some of my scientific books and articles can be found there too.

WATER

<http://eacpe.org/app/wp-content/uploads/2021/04/Water-by-John-Scales-Avery.pdf>

In its home-page on World Water Day the United Nations points out the following facts:

- **Today, 1 in 3 people live without safe drinking water.**
- **By 2050, up to 5.7 billion people could be living in areas where water is scarce for at least one month a year.**
- **Climate-resilient water supply and sanitation could save the lives of more than 360,000 infants every year.**
- **If we limit global warming to 1.5°C above pre-industrial levels, we could cut climate-induced water stress by up to 50%.**
- **Extreme weather has caused more than 90% of major disasters over the last decade.**
- **By 2040, global energy demand is projected to increase by over 25% and water demand is expected to increase by more than 50%.**

Clearly, water is a crucial resource, and the future well-being of human society depends on how well we manage our global supply of fresh water.

This book discusses various aspects of the relationship of water with human society, and with all life on planet earth. Because of climate change, some regions are increasingly threatened by drought, while others experience catastrophic floods.

Water tables throughout the world are falling, as aquifers are overdrawn. Falling water tables in China were the reason why that country adopted its one-child policy. Because of water shortages, China may soon be unable to feed its own population, but, as Lester R. Brown has pointed out, this will not cause a famine in China, but as China increasingly buys grain on the world market, the price will increase beyond the purchasing power of some of the poorer countries, and it is here that the Chinese water shortages will cause famine.

I fear that by the middle of the present century, growing populations, water shortages, the effect of climate change on agriculture and the end of the fossil fuel era will combine to produce a famine involving billions of people, rather than millions. Today the high-yield Green Revolution crop varieties have warded off famine, but these varieties are dependent on intensive irrigation and heavy use of fertilizers (often produced today with the aid of fossil fuels). Thus, high-yield agriculture may be difficult to maintain in the future.

The last two chapters of this book are devoted to the role of water in biological specificity, upon which life depends, and the role of water in the origin of life, both on earth, and elsewhere in the universe.

THE WORLD AS IT IS AND THE WORLD AS IT COULD BE

<http://eacpe.org/app/wp-content/uploads/2021/03/The-World-as-it-is-and-the-World-as-it-could-be.pdf>

“THE WORLD AS IT IS AND THE WORLD AS IT COULD BE”, in its original form, dates from 1983, and it was the first piece that I ever wrote about global problems. My close friend, Keld Helmer-Petersen, an important pioneer of photography as an art form, helped me by improving it and making a Danish translation. We had several hundred 5-page pamphlets printed both in Danish and in English, and we distributed them to our friends. This brought me into contact with a number of important Danish peace activists.

Later, I thought of making an illustrated version of the booklet, and asked several of my friends, who were artists, whether they might be willing to make the illustrations. But before any of my artist friends started on this project, I was able to find images on the Internet that worked quite well. The result was the 32-page version that appears at the end of this book.

Recently the famous Iranian scientist and author, Hassan Fattahi, suggested to me that the small book should be very much enlarged. His idea was the the enlarged book should contain 12 chapters and 365 images, one for each day of the year. The present book is the result of his excellent suggestion. I have approximately, although not completely strictly, followed his plan.

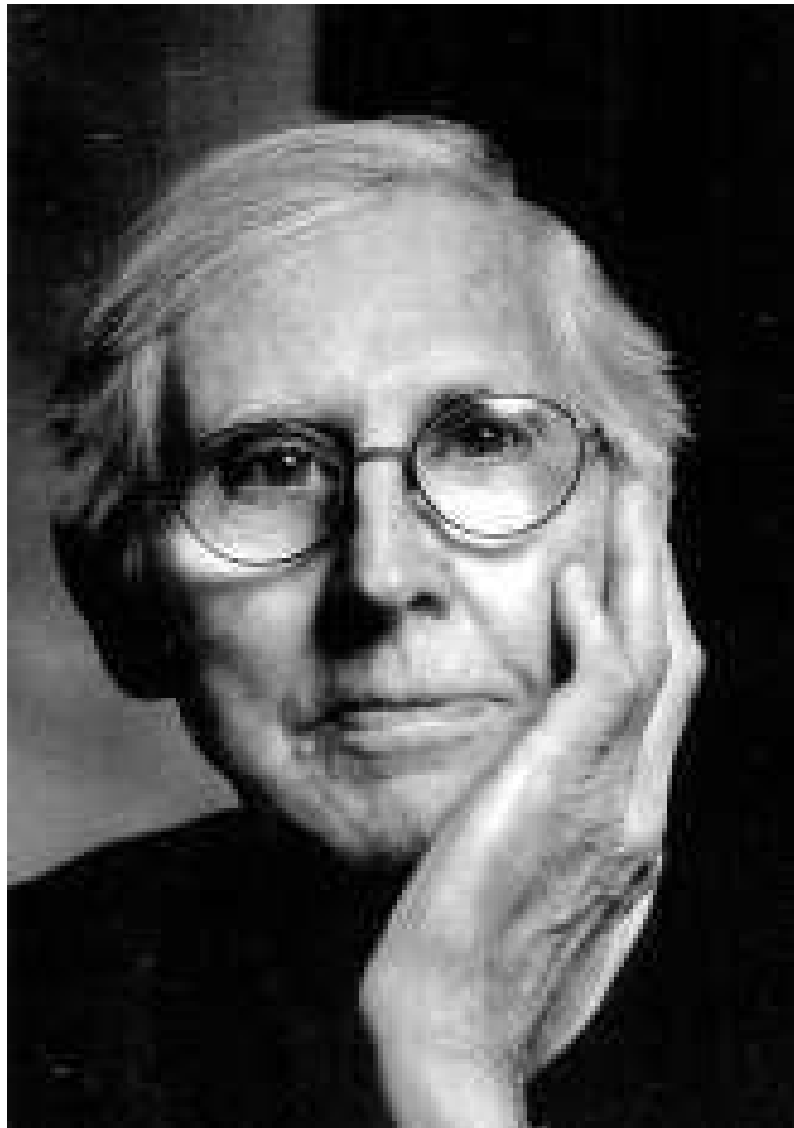


Figure 2.1: My close friend Keld Helmer-Petersen (1920-2013) was a famous pioneer of modern photography as an art-form. Besides his visual genius, he also had extraordinarily wide-ranging interests and human understanding.



Figure 2.2: The renowned Iranian writer and scientist, Hassan Fattahi, and his wife, Zoha

LIVES IN MATHEMATICS

<http://eacpe.org/app/wp-content/uploads/2021/02/Lives-in-Mathematics-John-Scales-Avery.pdf>

An apology

I must apologize for the fact that the level of the book is uneven. Chapters 1-8, as well as Appendices A and B, are suitable for students who would like to learn calculus and differential equations. However, the remainder of the book is more demanding, and is suitable for more advanced students.

Cultural history

This book is part of a series on cultural history. We need to reform our teaching of history so that the emphasis will be placed on the gradual growth of human culture and knowledge, a growth to which all nations and ethnic groups have contributed.

Chapters

1. Pythagoras
2. Euclid
3. Archimedes
4. Alkhwarizmi
5. Omar Khayam
6. Descartes
7. Newton
8. The Bernoulis and Euler
9. Fourier
10. Lagrange
11. Condorcet
12. Hamilton
13. Abel and Galois
14. Gauss and Riemann
15. Hilbert
16. Emmy Noether
17. Einstein
18. Schrödinger

19. Dirac

20. Maryam Mirzakhani

Appendices

- Tables of differentials, integrals and series
- The history of computers
- Group theory
- Sturmian basis sets
- Angular and hyperangular integrations
- Harmonic functions
- Generalized Sturmians applied to atoms
- The d-dimensional harmonic oscillator

OUR SUICIDAL WAR AGAINST NATURE

<http://eacpe.org/app/wp-content/uploads/2021/01/Our-Suicidal-War-Against-Nature-by-John-Scales-Avery.pdf>

Ceasefire in our suicidal war against nature

“Our planet is broken,” the Secretary General of the United Nations, Antonio Guterres, has warned.

Humanity is waging what he describes as a “suicidal” war on the natural world.

“Nature always strikes back, and is doing so with gathering force and fury,” he told a BBC special event on the environment.

Mr Guterres wants to put tackling climate change at the heart of the UN’s global mission.

In a speech entitled State of the Planet, he announced that its “central objective” next year will be to build a global coalition around the need to reduce emissions to net zero.

Net zero refers to cutting greenhouse gas emissions as far as possible and balancing any further releases by removing an equivalent amount from the atmosphere.

Mr Guterres said that every country, city, financial institution and company “should adopt plans for a transition to net zero emissions by 2050”. In his view, they will also need to take decisive action now to put themselves on the path towards achieving this vision.

The objective, said the UN secretary general, will be to cut global emissions by 45% by 2030 compared with 2010 levels.

Here’s what Mr Guterres demanded the nations of the world do:

- Put a price on carbon
- Phase out fossil fuel finance and end fossil fuel subsidies
- Shift the tax burden from income to carbon, and from tax payers to polluters
- Integrate the goal of carbon neutrality (a similar concept to net zero) into all economic and fiscal policies and decisions
- Help those around the world who are already facing the dire impacts of climate change

ADAM SMITH'S INVISIBLE HAND IS AT OUR THROATS

<http://eacpe.org/app/wp-content/uploads/2020/12/Adam-Smiths-Invisible-Hand-is-at-Our-Throats-by-John-Scales-Avery.pdf>

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

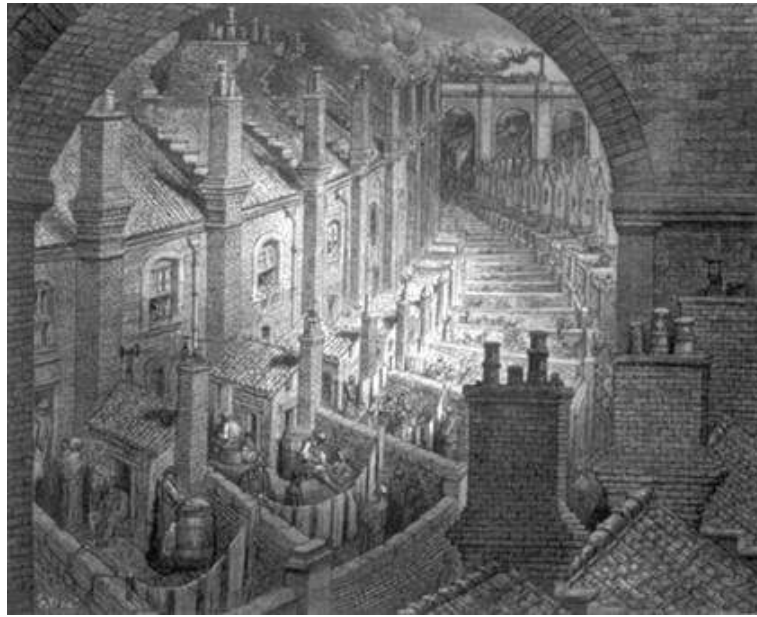


Figure 2.3: *London during the industrial revolution*

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

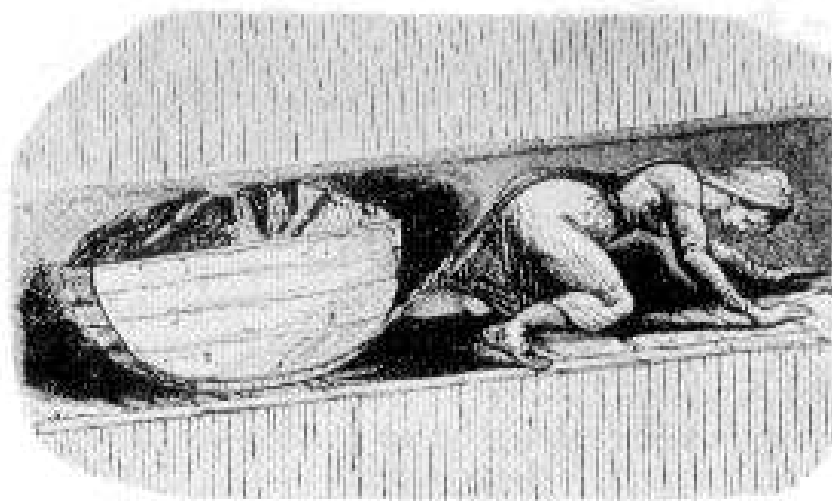


Figure 2.4: *A girl pulling a coaltub through the narrow space left by removal of coal from a seam.*

from one o'clock till eight or nine, with the exception of twenty minutes, this being allowed for tea. During the whole of this long period, they are actively and unremittingly engaged in a crowded room at an elevated temperature."

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

"It frequently happens that one tenement is held by several families... The demoralizing effects of this utter absence of domestic privacy must be seen before they can be thoroughly appreciated. By laying bare all the wants and actions of the sexes, it strips them of outward regard for decency - modesty is annihilated - the father and the mother, the brother and the sister, the male and female lodger, do not scruple to commit acts in front of each other which even the savage keeps hid from his fellows."

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

and sustainability

Our greed-based economic system today

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

According to a recently-published study by Oxfam, just 1 percent of the world's population controls nearly half of the planet's wealth. The study says that this tiny slice of humanity controls 110 trillion US dollars, or 65 times the total wealth of the poorest 3.5 billion people. The world's 85 richest people own as much as the poorest 50 percent of humanity. 70 percent of the world's people live in a country where income inequality has increased in the past three decades.

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

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

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

Today the world spends roughly 1,700,000,000,000 US dollars on armaments, almost 2 trillion. This vast river of money, almost too great to be imagined, flows into the pockets of arms manufacturers, and is used by them to control governments, which in turn vote for bloated military budgets and aggressive foreign policies which provoke the endless crises and conflicts that are necessary to justify the diversion of such vast sums of money from urgently-needed social goals into the bottomless pit of war.

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

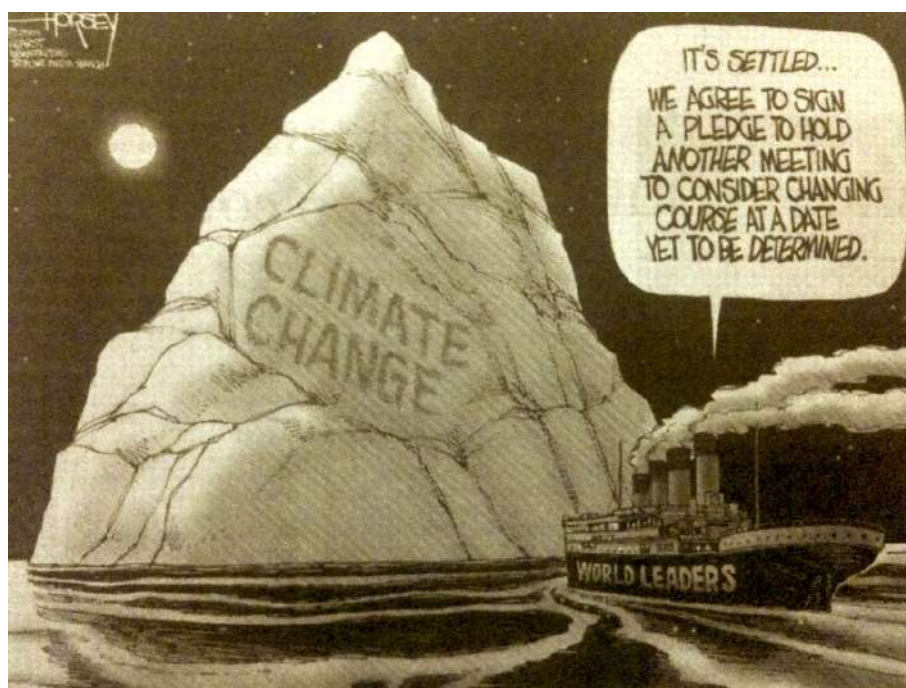


Figure 2.5: *The ship in the cartoon is drawn so as to resemble the Titanic.*

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

Besides supporting the appalling war machine, our bought-and-paid-for politicians also fail to take the actions that would be needed to prevent the worst effects of climate change. The owners of the fossil fuel industries have even mounted advertising campaigns to convince the public that the threat of anthropogenic climate change is not real. Sadly, the threat of catastrophic climate change is all too real, as 99 percent the world's climate scientists have warned. The world has recently passed a dangerous landmark in atmospheric CO₂ concentration, 400 ppm. The last time that the earth experienced such high concentrations of this greenhouse gas were several million years ago. At that time the Arctic was free from ice, and sea levels were 40 meters higher than they are today.

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

There are several very dangerous feedback loops that may cause the earth's tempera-

tures 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.

ETHICS FOR THE FUTURE

<http://eacpe.org/app/wp-content/uploads/2020/12/Ethics-for-the-Future-by-John-Scales-Avery.pdf>

Cultural evolution

In all terrestrial organisms, information is transmitted between generations by means of the genetic code; and genetic evolution takes place through natural selection acting on modifications of this code. In human cultural evolution, information is also transmitted between generations by means of language and writing. This second mode of evolution gave our species enormous adaptive advantages. While genetic changes are random and slow, cultural changes are purposeful and rapid. For example, when our ancestors moved out of Africa and spread over Europe and Asia, they did not adapt to the colder climate by growing long fur, but instead invented clothing.

Anachronistic human emotions

Our emotions have an extremely long evolutionary history. Both lust and rage are emotions that we share with many animals. 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.

After the invention of agriculture, roughly 10,000 years ago, humans began to live in societies which were sometimes multi-ethnic. In order to make towns, cities and finally nations function without excessive injustice and violence, both ethical and legal systems were needed.

The very long childhood of humans allows learned behavior to overwrite instinctive behavior.

Humans are capable of tribalistic inter-group atrocities such as genocides and wars, but they also have a genius for cooperation. Cultural evolution implies inter-group exchange of ideas and techniques. It is a cooperative enterprise in which all humans participate. It is cultural evolution that has given our special dominance. But cultural evolution depends on overwriting destructive tribalism with the principles of law, ethics, politeness and kindness. The success of human cultural evolution demonstrates that this is possible. Ethics can overwrite tribalism!

It is no accident that the great historical pioneers of ethics lived at a time when the agricultural revolution had made it possible for humans to abandon their hunter-gather lifestyle and to live in settled communities. Neolithic villages appeared in Europe, India, Egypt, China, and Mesoamerica. As agricultural civilization progresses, the political units that had to be held together by ethics and laws became still larger - cities, and then nations. Our early hunter-gatherer ancestors had long practiced fierce inter-tribal warfare as they

competed for territory on the grasslands of Africa. However, after the neolithic agricultural revolution, the settlement of multi-ethnic communities required new ethics to overwrite our anachronistic tribal emotions and behavior patterns. Thus we see the appearance of great social philosophers and religious leaders who developed ethical principles at precisely the time when they were needed.

Science and technology have changed our world

During the initial stages of human cultural evolution, the rate of change was slow enough for genetic adaptation to keep pace. The co-evolution of speech, tool use, and an enlarged brain in hominids took place over a period of several million years, and there was ample time for cultural evolution and genetic adaptation to follow each other. The prolonged childhood that characterizes our species, and the behavior patterns of familial and tribal solidarity, were built into the genomes of our ancestors during the era of slow change, when cultural and genetic evolution moved together in equilibrium. However, as the pace of cultural information accumulation quickened, genetic change could no longer keep up.

Genetically we are almost identical with our Neolithic ancestors; but their world has been replaced by a world of quantum theory, relativity, supercomputers, antibiotics, genetic engineering and space telescopes - unfortunately also a world of nuclear weapons and nerve-gas. Because of the slowness of genetic evolution in comparison to the rapid and constantly-accelerating rate of cultural change, our bodies and emotions are not adapted to our new way of life. They still reflect the way of life of our hunter-gatherer ancestors. Luckily, education in ethical principles is able to overwrite our anachronistic emotions and behavior patterns.

Global ethics

Today we live in a society where global communication is instantaneous, and where countries throughout the world interact economically. We need a global ethical system to match our technologically advanced global society. A society that is technologically advanced, but ethically primitive, will destroy itself. To avert the twin threats of catastrophic climate change and an all-destroying nuclear war, our economic system must be given both an ecological conscience and a social conscience. We must construct a system of international law and governance that is appropriate for a united world. And finally, we need an ethical system in which loyalty to our own family and nation is broadened into loyalty to the large human family that includes all nations and all ethnic groups.

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

HUMAN SOCIETY AND THE BIOSPHERE

<http://www.fredsakademiet.dk/library/ecosoc.pdf>

Mass extinctions due to humans activities

According to a recent United Nations report², more than a million species of plants and animals are currently threatened with extinction because of human activities. Rates of extinction today are as much as 1,000 times greater than the normal background rate.

As the greenhouse gas emissions of human society push the earth towards catastrophic climate change, rates of extinction in the biosphere will certainly become higher.

Are humans threatened with extinction?

What about our own species? Are we too threatened with extinction? There are certainly several threatened catastrophes that might greatly reduce the global population of humans. In a thermonuclear war, followed by nuclear winter, a large part of the world's population might perish.

We must also consider the danger of an extremely large-scale famine, involving billions rather than millions of people. Such a famine might occur by the middle of our present century, as the result of population growth, combined with climate change and the end of the fossil fuel era. As glaciers melt in the Himalayas, depriving India and China of summer water supplies; as sea levels rise, drowning the fertile rice fields of Vietnam and Bangladesh; as drought threatens the productivity of grain-producing regions of North America; and as the end of the fossil fuel era impacts modern high-yield agriculture, there is a threat of wide-spread famine. There is a danger that the 1.5 billion people who are undernourished today will not survive an even more food-scarce future.

Finally, if human society fails to curb its emissions of greenhouse gases, much of the earth will become so hot as to be uninhabitable, not only for humans, but also for the plants and animals of the biosphere. This does not necessarily mean that our species will become extinct, since there will still be regions of the earth where it will be possible to survive. However, it does mean that the future population of humans will be very much reduced unless catastrophic climate change is avoided.

Links between militarism and climate change

In our efforts to avoid catastrophic climate change, we should be aware of the links between global warming and militarism. Military activities use enormous amounts of fossil fuels.

²<https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>

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.”

There is also another link between militarism and climate change: Today, both in the United States and elsewhere in the world, the Green New Deal is being considered as a means of making the urgently needed transition from fossil fuels to renewable energy.

The Green New Deal concept is inspired by the New Deal by which Franklin D. Roosevelt ended the Great Depression of the 1930’s. Like FDR’s original New Deal, it involves massive government spending to simultaneously create jobs and much-needed infrastructure. In the case of the Green New Deal, this would be renewable energy infrastructure.

But is there money enough for the Green New Deal? In order to free the necessary funds, we need to divert the vast river of money that is currently wasted - or worse than wasted - on militarism, and use it to save human society and the biosphere from catastrophic climate change. How much money is involved? According to the Stockholm International Peace Research Institute, the world currently spends 1.8 trillion dollars each year on armaments. The indirect costs of militarism are far greater.

The human footprint is too large

The total ecological footprint of humanity is a concept used to measure the relationship between the resources that humans demand from their environment, compared with the ability of nature to provide those resources. In recent years humans have been asking the earth to provide them with much more than the earth can regenerate. Our collective footprint on the face of nature has become too large. Because of the danger of environmental collapse as well as the danger of widespread famine, we must stabilize global population and end excessive consumption of goods.

Socialism and ecology in Scandinavia

Excessive contrast between the rich and the poor has become an acute problem, both within nations and between nations. It is demonstrably true that in more equal societies, economies function better and people are happier.

In this context, it is interesting to look at the Scandinavian countries, where the contrast between rich and poor has been very much reduced.

Denmark, for example, has a market economy, but a high and steeply progressive rate of taxation has essentially eliminated poverty within the country, while also making it difficult for anyone to become extremely wealthy.

Denmark has very high taxes, but in return for these, its citizens receive many social services, such as free health care. If they qualify for university education, the tuition is free, and students are given an allowance for their living expenses. Mothers or alternatively fathers, can take paid leave of up to 52 weeks after the birth of a child. After that, a *vuggestue* (cresch) is always available, so that mothers can return to their jobs. When the child become too old for the cresch, day care centers are always available. For children of school age, after-school clubs are available where children can practice arts and crafts or other activities under supervision until their parents come home from work.

Denmark has an outstanding program of renewable energy research and development. Danish wind energy design is famous throughout the world, and Danish wind turbines are exported to many countries. The Danish Technical University also has an extremely strong research program addressing the problem of intermittency. One of DTU's programs focuses on the development and use of fuel cells for energy storage.

In corporate-controlled countries like the United States, the word "socialism" is an anathema; but nations everywhere in the world might benefit from the Scandinavian model of socialism.

A HISTORY OF THE EARTH

<http://eacpe.org/app/wp-content/uploads/2020/11/A-History-of-the-Earth-by-John-Scales-Avery.pdf>

The place of humans in nature

In this book, I have tried to sketch human history, from earliest times until the present, against a cosmic backdrop. According to modern cosmology, the universe is almost unimaginably vast. It is estimated that there are 1,000,000,000,000,000,000 stars in the observable universe. Of these, many stars have planets on which life is likely to have developed. Thus our earth and its life forms are by no means unique.

We cannot claim to be “the center of the universe” with any unique justification. However, the earth is our home. It is important to us. As parents, we wish for and work for the survival of our children and grandchildren, and for all future generations of humans. We must also recognize our responsibility as custodians of the natural world. We have a duty to protect both human civilization and the biosphere. We must work with dedication to guard and protect the future of our precious and beautiful earthly home.

Cultural evolution

When humans first appeared on earth, they were not very numerous, and not conspicuously different from other animals. Then suddenly, in a brief space of geological time, they exploded in numbers, populating all parts of the world, and even setting foot on the moon. This explosive growth was driven by what might be called an “information explosion”.

All animals and plants pass on information from one generation to the next in the form of DNA, the information-bearing genetic material. Occasionally, mutations occur, and favorable mutations are preserved while the bearers unfavorable mutations die out. Evolution by this genetic mechanism proceeds very slowly. Humans too, evolve by this slow genetic method, but in addition, they have another method of passing information between generations: cultural evolution.

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.

Anachronistic human emotions

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.

Our emotions have an extremely long evolutionary history. Both lust and rage are emotions that we share with many animals. 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.

Ethics can overwrite tribalism!

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

The very long childhood of humans allows learned behavior to overwrite instinctive behavior. A newborn antelope is able to stand on its feet and follow the herd almost immediately after birth. By contrast, a newborn human is totally helpless. With cultural evolution, the period of dependence has become progressively longer. Today, advanced education often requires humans to remain dependent on parental or state support until they are in their middle 20's!

Humans are capable of tribalistic inter-group atrocities such as genocides and wars, but they also have a genius for cooperation. Cultural evolution implies inter-group exchange of ideas and techniques. It is a cooperative enterprise in which all humans participate. It is cultural evolution that has given our special dominance. But cultural evolution depends on overwriting destructive tribalism with the principles of law, ethics and politeness. The success of human cultural evolution demonstrates that this is possible. Ethics can overwrite tribalism!

Ethics for the future

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

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

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

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

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

THE ROAD NOT TAKEN

<http://eacpe.org/app/wp-content/uploads/2020/10/The-Road-Not-Taken-by-John-Scales-Avery.pdf>

Decision trees

During each human life, a child starts with many possible destinations. He or she then makes decisions, and each decision more closely defines who the person is and what it is possible for the person to become. The choice of a vocation defines who a person is, as does the choice of a husband or wife. Often chance plays a role. The decision to take a holiday at a particular place may lead to a chance meeting with a life partner. In a human life, we can observe a treelike pattern, similar to the decision tree of a person traveling through a landscape. At each forking of the path, a decision has to be made, and that decision determines more and more closely the traveler's ultimate destination. Analogously, in a human life, a tree-like series of decisions or external influences more and more closely define the person's identity and destiny. Each decision is a positive step, since it helps to define a person's character. But there is sadness too. As we step forward on the road ahead, we must renounce all other possibilities. Although we might embrace our destiny, we sometimes think with regret on the road not taken, and wonder what might have been if we had chosen other paths.

Pathfinding

The 2014 Nobel Prize in Physiology or Medicine was shared by John O'Keefe, May-Britt Moser and Edvard Moser. They received the prize for discovering the histologically observable structures in the brains of mammals which are used to remember pathways, for example the pathway through a maze. Humans also have such structures in their brains.

We can find many other examples of pathfinding in our daily lives. For example, when we send a letter or package, the address defines its path. Read backwards, it tells us first the country to which it should be sent, then the city or town, then the street, then the house or building, and finally the occupant.

We can also recognize similar pathfinding in pattern abstraction, in computer memories, and in programs of the brain.

The evolution of human languages

According to the famous linguistic scientist Noam Chomsky, the astonishing linguistic abilities of humans are qualitatively different from the far more limited abilities of other animals. Furthermore, Prof. Chomsky maintains that these abilities were not acquired gradually, over many hundreds of thousands of years, but rapidly - almost suddenly. We

owe it to his high reputation as a scientist to ask how this could have happened. After all, Darwinian evolution usually proceeds very slowly, which many intermediate steps.

There are many cases where a single mutation seems to have produced duplication of a structure. For example, we sometimes see the birth of an animal with two heads, or supernumerary legs. In the light of Professor Chomsky's observations, we ought to investigate the possibility that a single mutation caused a duplication of the pathfinding neural networks studied by Edvard Moser, May-Britt Moser, and John O'Keefe. We can then imagine that one copy of this duplicated pathfinding neural network system was modified to serve as the basis of human languages, in which the classification of words is closely analogous to the tree-like branching choice-pathways of an animal finding its way through a forest or maze.

Existentialism

According to existentialist philosophy, a person's identity is gradually developed during the course of the person's life, by a series of events and decisions. These events or decisions form tree-like patterns (decision trees) similar to the classification trees which Linnaeus used to define relationships between living organisms. or the grammatical classification trees in languages. We see this reflected in Jean-Paul Sartre's famous maxim, "Existence is prior to essence".

Positional number systems

In the decimal system, we start by asking: How many times does the number contain $10^0 = 1$? Then we ask: How many times does the number contain $10^1 = 10$? The next step is to ask: How many times does the number contain $10^2 = 100$, and so on. Continuing in this way, we can obtain a decimal representation of any non-negative integer, no matter how large it is. We can recognize here a decision tree of the same kind that Linnaeus used to classify living organisms.

Had we been using a base-2 (binary) representation, the decision tree would have been as follows: We would first have asked: How many times does the number contain $2^0 = 1$?; then How many times does it contain $2^1 = 2$?; then How many times does it contain $2^2 = 4$?, and so on. For example the number which is written as 65 in the decimal system becomes 100001 in the binary system. It contains 1×2^6 , 1×10^0 , and 0 times all other powers of 2. The number written as 66 in the decimal system becomes 100010 in the binary system, while 67 becomes 100011, and 68 is represented by 100100.

The history of computers

If civilization survives, historians in the distant future will undoubtedly regard the invention of computers as one of the most important steps in human cultural evolution - as important as the invention of writing or the invention of printing. The possibilities of ar-

tificial intelligence have barely begun to be explored, but already the impact of computers on society is enormous.

The Internet has changed our lives completely. It is interesting to notice that the Internet is based on a package address system, and hence on decision trees. In fact, decision trees play an important role in many aspects of computing, for example the organization of computer memories.

The mechanism of cell differentiation

An embryonic stem cell is like a child at birth. The child's destiny is not yet determined. All possibilities are open. As the child grows to be an adolescent and later an adult, his or her identity becomes gradually more and more closely defined. Choices and events begin to restrict the range of possibilities, and the person's identity becomes more and more clear. In a closely analogous way, in the growing embryo, the cell's identity becomes progressively more and more closely defined. In both the case of the person and that of the cell, we can recognize the operation of decision trees, like those of Linnaeus, or those of grammatical classification in languages.

Can the mechanism of cell differentiation be understood in terms of molecular biology? The final chapter of this book points to some answers.

YE ARE MANY THEY ARE FEW

<http://eacpe.org/app/wp-content/uploads/2020/10/Ye-are-Many-They-are-Few-by-John-Scales-Avery.pdf>

*Rise, like lions after slumber
In unvanquishable number!
Shake your chains to earth like dew
Which in sleep had fallen on you:
Ye are many, they are few!*

Percy Bysshe Shelley wrote his poem *The Masque of Anarchy*, from which the above quotation is taken, in response to the Peterloo Massacre, which took place at St. Peter's field, Manchester on the 16th of August 1819. Cavalry soldiers of the government charged a crowd of 60,000 citizens who were peacefully assembled to ask for better representation in Parliament. They were suffering from unemployment and from famine produced by the Corn Laws. The cavalry slashed down hundreds of the protesters with their sabres, including women and children. Shelley's poem advocating non-violent resistance to tyranny was an inspiration to Thoreau, Tolstoy and Gandhi.

How do elites keep their monopoly on wealth and power?

This book tries to address the question of how oligarchs maintain their grasp on an excessive share of wealth and power when, as Shelley points out, the have-nots are many, while the powerholders are few. In trying to answer this question, it is interesting to look at the lives of some of the heroic figures who sympathized with the suffering of the poor and who have tried to make the world more equal. Out of the many possible choices, I have focused on Voltaire, Rousseau, John Locke, Joseph Johnson, Mary Wollstonecraft, William Godwin, the Marquis de Condorcet, William Blake, Thomas Paine, Percy Bysshe Shelley, Robert Owen, Henry David Thoreau, Count Leo Tolstoy, Mahatma Gandhi and Martin Luther King, Jr.

Why did British aristocrats support Hitler?

One of the chapters in this book examines the question of why so many members of the British "establishment" supported Hitler's rise to power. The evidence presented in the chapter points to the conclusion that they did so out of fear that the Russian revolution, or a similar socialist movement, would be repeated in the west, and that it would lead to a more equal society, thus robbing them of their power and wealth.

Racism

The recent worldwide protests following the murder of George Floyd have focused attention on the injustice of racism. Chapter 11 examines some horrifying historical examples.

Secrecy versus democracy

Can a government, many of whose operations are secret, be a democracy? Obviously this is impossible.

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.

The recent extradition trial of Julian Assange for publishing government secrets has focused attention on this question. It is not only the freedom of Assange that is at stake, but the freedom of all journalists. These questions are discussed in Chapter 12 of the book.

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OUR WORLD IS BURNING

<http://eacpe.org/app/wp-content/uploads/2020/09/Our-World-is-Burning-by-John-Scales-Avery.pdf>

Two time scales

The central problem which the world faces in its attempts to avoid catastrophic climate change is a contrast of time scales. In order to save human civilization and the biosphere from the most catastrophic effects of climate change we need to act immediately, Fossil fuels must be left in the ground. Forests must be saved from destruction by beef or palm oil production.

These vitally necessary actions are opposed by powerful economic interests, by powerful fossil fuel corporations desperate to monetize their underground “assets”, and by corrupt politicians receiving money the beef or palm oil industries.

However, although some disastrous effects climate change are already visible, the worst of these calamities lie in the distant future. Therefore it is difficult to mobilize the political will for quick action. We need to act immediately, because of the danger of passing tipping points beyond which climate change will become irreversible despite human efforts to control it.

Tipping points are associated with feedback loops, such as the albedo effect and the methane hydrate feedback loop. The albedo effect is important in connection with whether the sunlight falling on polar seas is reflected or absorbed. While ice remains, most of the sunlight is reflected, but as areas of sea surface become ice-free, more sunlight is absorbed, leading to rising temperatures and further melting of sea ice, and so on, in a loop.

The methane hydrate feedback loop involves vast quantities of the powerful greenhouse gas methane, CH_4 , frozen in a crystalline form surrounded by water molecules. 10,000 gigatons of methane hydrates are at present locked in Arctic tundra or the continental shelves of the world’s oceans. Although oceans warm very slowly because of thermal inertia, the long-term dangers from the initiation of a methane-hydrate feedback loop are very great. There is a danger that a very large-scale anthropogenic extinction event could be initiated unless immediate steps are taken to drastically reduce the release of greenhouse cases.

Only immediate climate action can save the future

Immediate action to halt the extraction of fossil fuels and greatly reduce the emission of CO_2 and other greenhouse gasses is needed to save the long-term future of human civilization and the biosphere.

At the opening ceremony of United Nations-sponsored climate talks in Katowice, Poland, Sir David Attenborough said “Right now, we are facing a man-made disaster of global scale. Our greatest threat in thousands of years. Climate change. If we don’t take action, the

collapse of our civilizations and the extinction of much of the natural world is on the horizon. The world's people have spoken. Their message is clear. Time is running out. They want you, the decision-makers, to act now."

Antonio Guterres, UN Secretary-General, said climate change was already "a matter of life and death" for many countries. He added that the world is "nowhere near where it needs to be" on the transition to a low-carbon economy.

The world is burning!

Although the worst threats from catastrophic climate change lie in the long-term future, we are starting to see the effects of climate change today.

California is burning! As of August 28, 2020, 7175 fires have burned 1,660,332 acres, according to the California Department of Forestry and Fire Protection.

The Arctic is burning! A northeastern Siberian town, north of the Arctic Circle, is likely to have set a record for the highest temperature documented in the Arctic Circle, with a reading of 100.4 degrees (38 Celsius) recorded in June, 2020. The dangerous greenhouse gas methane is bubbling up from melting permafrost in the Arctic and from the shallow seas north of Siberia. Furthermore, wildfires in the Arctic are emitting an unprecedented amount of CO₂.

The 2020 hurricane season has started early, notably with Laura, and it is predicted to be unusually severe. Greenland's ice sheet is melting. Ice shelves are collapsing in the Antarctic. But despite these obvious signs of danger, the climate emergency is hardly mentioned in the 2020 political campaigns, or in U.S. mass media. It ought to be a central issue.

Greta Thunberg's 2019 speech at Davos

Here are some quotations from the speech of world-famous teenage climate activist Greta:

"Our house is on fire. I am here to say, our house is on fire. According to the IPCC, we are less than 12 years away from not being able to undo our mistakes. In that time, unprecedented changes in all aspects of society need to have taken place, including a reduction of our CO₂ emissions by at least 50%...

"Here in Davos - just like everywhere else - everyone is talking about money. It seems money and growth are our only main concerns.

"And since the climate crisis has never once been treated as a crisis, people are simply not aware of the full consequences on our everyday life. People are not aware that there is such a thing as a carbon budget, and just how incredibly small that remaining carbon budget is. That needs to change today.

"No other current challenge can match the importance of establishing a wide, public awareness and understanding of our rapidly disappearing carbon

budget, that should and must become our new global currency and the very heart of our future and present economics.

“We are at a time in history where everyone with any insight of the climate crisis that threatens our civilization - and the entire biosphere - must speak out in clear language, no matter how uncomfortable and unprofitable that may be.

“We must change almost everything in our current societies. The bigger your carbon footprint, the bigger your moral duty. The bigger your platform, the bigger your responsibility.”

THE ECOLOGICAL IMPACT OF MILITARISM

<http://eacpe.org/app/wp-content/uploads/2020/09/The-Ecological-Impact-of-Militarism-by-John-Scales-Avery.pdf>

Against the Institution of 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.

The crisis of civilization, which we face today, has been produced by the rapidity with which science and technology have developed. Our institutions and ideas adjust too slowly to the change. The great challenge which history has given to our generation is the task of building new international political structures, which will be in harmony with modern technology. 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.

Because the world spends 1.8 trillion dollars each year on armaments, it follows that very many people make their living from war. This is the reason why it is correct to speak of war as a social institution, and also the reason why war persists, although everyone realizes that it is the cause of much of the suffering that inflicts humanity. We know that war is madness, but it persists. We know that it threatens the future survival of our species, but it persists, entrenched in the attitudes of historians, newspaper editors and television producers, entrenched in the methods by which politicians finance their campaigns, and entrenched in the financial power of arms manufacturers, entrenched also in the ponderous and costly hardware of war, the fleets of warships, bombers, tanks, nuclear missiles and so on.

Science cannot claim to be guiltless: In Eisenhower's farewell address, he warned of the increasing power of the industrial-military complex, a threat to democratic society. If he were making the same speech today, he might speak of the industrial-military-scientific complex. Since Hiroshima, we have known that new knowledge is not always good. There is a grave danger that nuclear weapons will soon proliferate to such an extent that they

will be available to terrorists and even to the Mafia. Chemical and biological weapons also constitute a grave threat.

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

No Warming, No War: How Militarism Fuels the Climate Crisis and Visa Versa

Here is a quotation from an article by Lorah Steichen and Lindsay Koshgarian³:

“In this report, we’ll lay out how militarism and the climate crisis are deeply intertwined and mutually reinforcing. The military itself, we explain, is a huge polluter - and is often deployed to sustain the very extractive industries that destabilize our climate. This climate chaos, in turn, leads to massive displacement, militarized borders, and the prospect of further conflict.

“True climate solutions, we argue, must have antimilitarism at their core.

“In the face of both COVID-19 and the climate crisis, we urgently need to shift from a culture of war to a culture of care. Funneling trillions into the military to wage endless wars and project military dominance has prevented us from investing in true security and cooperation. If we don’t transform our society and the way we confront crises, we will face even more unjust and inhumane realities in a climate-changed future.”

Rebuilding after the pandemic

The COVID-19 pandemic has thrown light on the shortcomings of our militaristic concept of security. Our military establishments could not protect us from the virus. Indeed, even without the pandemic, our “defense departments” do not really defend us. This is most obvious when we think of a nuclear war, in which hundreds of millions of innocent civilians might be killed. At present, civilians are hostages in the power struggles of politicians. When we rebuild the world after the pandemic, it must not merely be “back to normal”.

³<https://ips-dc.org/climate-militarism-primer/>

The old normal was part of the problem. We must build a new world in which the climate emergency is addressed, and rapid action is taken to prevent it. The Green New Deal, in which jobs are created producing urgently-needed renewable energy infrastructure, offers the best model for the new world that we want. Those who say that there is not enough money to finance the Green New Deal, forget the unimaginable amounts of money wasted, or worse than wasted, on militarism. We must divert this vast river of money from its present evil use, to the constructive task of saving our planet from the existential threat of catastrophic climate change.

REMEMBERING THE 1960'S

<http://eacpe.org/app/wp-content/uploads/2020/09/Remembering-the-1960s-by-John-Scales-Avery.pdf>

Lessons for today from the 1960's

Everyone agrees that the 1960's were very special. Those of us who lived through that era remember it as a time when the danger of a nuclear war between the United States and the Soviet Union was very real indeed. The world came extremely close to disaster during the Cuban Missile Crisis. In response to the threat of nuclear destruction, there were massive public protests against nuclear weapons. Millions of people all over the world took to the streets.

Where is that passion and engagement today? When the Cold War supposedly ended with the fall of the Berlin Wall, everyone heaved a sigh of relief, and decided that the threat of global nuclear annihilation had gone away. But it has not gone away. It is still with us, and is perhaps greater today than ever before. Why do we not protest? Where are the millions of protesters that we saw in the 1960's?

A time of change; A time of hope

The 1960's were characterized by revolutionary conflicts, often suppressed with great violence, and by great hopes for change. The Civil Rights Movement in the United States was opposed by forces using vicious dogs, violent beatings and jailings of protesters, and even assassinations. At the same time there was hope that equal rights under the law would eventually be won.

Enthusiasm and dedication in protests

The great protest movements of the 1960's can inspire us today. We can remember Bob Dylan, Pete Seeger and Joan Baez. We can remember the protests against the Vietnam War. We can remember Woodstock and the musical, *Hair*. We can remember the women of Greenham Common in England, who were ultimately victorious in their protests against the Greenham nuclear weapons base.

Renunciation of wars

We can learn much by remembering in detail the horrors of the Vietnam War. If we had learned our lessons properly, we might have been spared the destruction and the terrible loss of life that has characterized recent wars in the Middle East and Afghanistan, not to mention trillions of dollars wasted. The Vietnam War was based on governmental lies, and a close examination of recent wars shows that they too were also based on lies.

Awareness of nuclear dangers

In the 1960's, everyone was acutely aware of the danger of an all-destroying thermonuclear war. The massive anti-nuclear protests of the 1960's are proof of this awareness. Then, when the Cold War supposedly ended with the fall of the Berlin Wall, everyone heaved a sigh of relief and concluded that the danger had gone away. But it has not gone away. Despite the recent Treaty on the Prohibition of Nuclear Weapons, the arsenals and missiles are still there. They have spread to more nations. There is a black market in fissionable materials, and it is possible that subnational criminal or terrorist organizations may acquire nuclear weapons. There is a danger that a nuclear weapons state with an unstable government may undergo a revolutions which will put nuclear weapons into terrorist hands. All in all, the danger of a cataclysmic nuclear war is perhaps even greater today than it was in the 1960's. We need to make the younger generation more aware of these dangers. We need to revive the anti-nuclear protest movements of the 1960's.

Awareness of the history of racism

Recently the murder of George Floyd by police officers, as well as the similar police murders of many other people of color, sparked world-wide protests. In the United States, Donald Trump was elected on an overtly racist platform, and he continues to be a racist in both word and deed. Thus the issue of racism is very much in our minds today. Against this backdrop, it is useful to remember the passion and dedication of the Civil Rights Movement of the 1960's. The protests of that era, as well as the non-violent methods used, can inspire us today.

Optimism

The 1960's can inspire us today because as well as being a period of change, the decade was characterized by hope and optimism. We need hope. We need optimism. Without hope, all is lost. As 15-year-old Greta Thunberg said in her Stockholm Tedx talk, "And yes, we do need hope, of course we do. But the one thing we need more than hope is action. Once we start to act, hope is everywhere. So instead of looking for hope, look for action. Then, and only then, hope will come."

SOME ASPECTS OF QUANTUM THEORY

<http://eacpe.org/app/wp-content/uploads/2020/08/Some-Aspects-of-Quantum-Theory-by-John-Scales-Avery.pdf>

I hope that this book will be of interest to students and researchers in mathematics, physics and theoretical chemistry. The first few chapters can be read with ease by anyone with a knowledge of calculus and differential equations. However, some later chapters, and most of the appendices, are more demanding..

Chapter 10 deals with resonance energy transfer and especially with the relativistic treatment of this phenomenon. My fascination with this topic dates back to my Ph.D. thesis work in the early 1960's at Imperial College, which was then a part of the University of London. I had previously been working at the laboratory of Prof. Albert Szent-Györgyi and the Marine Biological Laboratory at Woods Hole, Massachusetts. The problem on which we had been working was a quantum mechanical treatment of the primary process in photosynthesis, where a photon is absorbed, and its energy stabilized. Resonance energy transfer plays a large role in this process⁴. When I started my Ph.D. work in London, I decided to see whether relativistic corrections made a difference⁵.

My calculations⁶ showed that while the usual non-relativistic treatment leads to transition probabilities that fall off as $1/R^6$, the calculated relativistic transition probabilities had a long-range component that fell off as $1/R^2$. Thus, if we imagine a very large sphere around an excited atom or molecule, the probability that the excitation energy will be transferred to one or another of the acceptors is independent of the size of the sphere! Is this a process that competes with spontaneous photon emission? Or is it an alternative way of treating the joint process of emission and absorption?⁷

Today, sixty years later, I continue to be fascinated by this question. In Chapter 10 experiments are proposed which could demonstrate that resonance energy transfer over macroscopic distance is possible. I am grateful to my son, Associate Professor James Emil Avery of the Niels Bohr Institute, University of Copenhagen, for his help and advice. He deserves to be listed as co-author of this book. However, I don't want him to be blamed for the book's shortcomings, for example, in case the discussion section of Chapter 10 is seen to be too speculative.

Besides the usual topics, the book also focuses on some aspects of quantum theory that have been of special interest to myself and to my son, James. Among these special areas of

⁴J.S. Avery, Z. Bay and A. Szent-Györgyi, *On the Energy Transfer in Biological Systems*, Proc. Nat. Acad. Sci. (US), **47**, 1742-1744, (1961)

⁵J.S. Avery, *Resonance energy transfer and related phenomena*, Ph.D. thesis, Imperial College of Science and Technology, University of London, (1965)

⁶J.S. Avery, *Resonance energy transfer and spontaneous photon emission*, Proc. Phys. Soc. (London) **88**, Part 1, (1966)

⁷J.S. Avery, *Use of the S-Matrix in the Relativistic Treatment of Resonance Energy Transfer*. Int. J. Quantum Chemistry, **XXV**, 79-96, (1984)

interest is the use of 4-dimensional hyperspherical harmonics in reciprocal-space quantum chemistry. We share this interest with Professor Vincenzo Aquilanti and his group at the University of Perugia in Italy⁸. Both James and I have made numerous research visits to Perugia, where we have enjoyed both the wonderful hospitality and great mathematical knowledge of Prof. Aquilanti and his co-workers. I should mention that James has a number of important papers in which he uses hyperspherical harmonics to calculate 3-center and 4-center interelectron repulsion integrals for exponential-type basis sets (ETO's).⁹ James and I are also co-authors of several books on hyperspherical harmonics.^{10 11 12}

My interest in many-dimensional spaces brought me into contact with Professor Dudley R. Herschbach of Harvard University. I have been privileged to visit his brilliant research group many times, and to work closely with Prof. Herschbach and his colleagues for many years.^{13 14}

⁸Aquilanti, V. and Avery, J., *Sturmian expansions for quantum mechanical many-body problems and hyperspherical harmonics*, Adv. Quant. Chem., **39** 72-101, (2001)

⁹*4-center STO interelectron repulsion integrals with Coulomb Sturmians* Avery, James Emil & Avery, J. S., (2018), In : *Advances in Quantum Chemistry*. 76, p. 133-146

¹⁰*Generalized Sturmians and Atomic Spectra*, by J.E. Avery and J.S. Avery, World Scientific Publishing (2006)

¹¹*Symmetry-Adapted Basis Sets*, by J.S. Avery, S. Rettrup and J.E. Avery, World Scientific Publishing Co, (2012)

¹²*Hyperspherical Harmonics and their Physical Applications*, by J.E. Avery and J.S. Avery, World Scientific Publishing Co. (2017)

¹³Avery, J. and Herschbach, D. R., *Hyperspherical Sturmian basis functions*, Int. J. Quantum Chem., **41** 673, (1992)

¹⁴J. Avery, *D-Dimensional Hydrogenlike Orbitals*, in *Dimensional Scaling in Chemical Physics*, D.R. Herschbach, J. Avery, and O. Goscinski editors, Kluwer Academic Publishers, Dordrecht, Netherlands, (1992), pages 139-164



Figure 2.6: **Professor Dudley R. Herschbach** accepting the American Institute of Chemistry's gold medal in 2011. He shared the 1986 Nobel Prize in Chemistry for his pioneering contributions to our understanding of the mechanisms of chemical reactions.

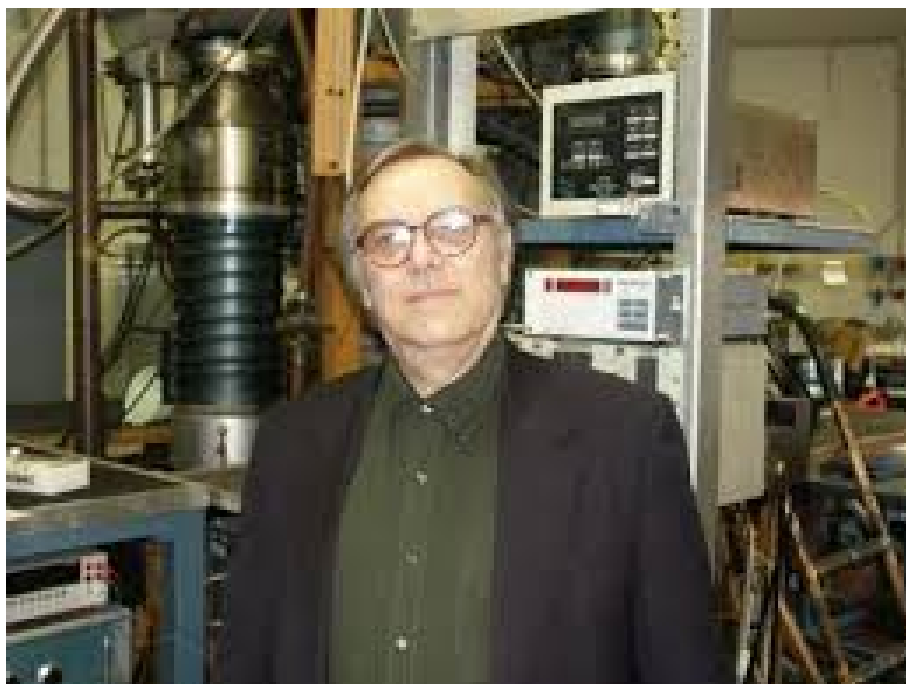


Figure 2.7: Professor Vincenzo Aquilanti (born in 1939). After working at Harvard with Dudley Herschbach, he returned to Italy, where he became the head of the chemistry department at the University of Perugia. He and his group have done pioneering theoretical and experimental work on the mechanism of chemical reactions, using molecular beam techniques. Professor Aquilanti and his group have also developed the use of 4-dimensional hyperspherical harmonics in momentum-space quantum theory, an interest which they share with my son James and myself.



Figure 2.8: Associate Professor James Emil Avery of the Niels Bohr Institute, University of Copenhagen. He is the author of a number of important papers that uses hyperspherical harmonics to calculate difficult 3-center and 4-center interelectron repulsion integrals for exponential-type orbitals, and is also the co-author of several books on hyperspherical harmonics and generalized Sturmians.

LIVES IN EXPLORATION

<http://eacpe.org/app/wp-content/uploads/2020/07/Lives-in-Exploration-John-Scales-Avery.pdf>

Epic journeys of humankind

This book traces the history of how humans explored and settled in the entire earth, and in our own times even reached out farther, exploring the outermost parts of the solar system.

Out of Africa

Human history began in Africa. One of the first of our remote ancestors to leave the continent was *Pithocanthropos Erectus*, a species whose remains were discovered in Java by Eugène Dubois in 1894. Remains of members of the species *Homo Erectus* were discovered in China and these early hominids, known as “Peking Man”, were also among the first to leave Africa.

Neanderthals left Africa before modern humans. Their presence outside Africa may have frustrated the first attempts of modern humans to explore and populate the regions outside Africa. *Homo sapiens neanderthalensis* lived side by side with *Homo sapiens sapiens* (modern man) in Europe, for a hundred thousand years. In relatively recent times, only 30,000 years ago, the Neanderthals disappeared. However, modern humans outside Africa intermixed with Neanderthals, and carry a significant amount of the Neanderthal genome.

About 70,000 years before the present, a small band of modern humans left Africa and succeeded in exploring and populating the world outside.

Humans reach Australia

Early humans reached Australia about 50,000 years ago, after intermixing with the Denisovans (the eastern cousins of the Neanderthals). At that time, much water was locked in the ice of a glacial period, and the ocean level was much lower than it is today. The first people in Australia were probably able to see land on the other side whenever they crossed open water. Nevertheless, highly developed sailing skills were still required to make the journey.

Crossing the Bering Strait to the Americas

During another ice age, about 20,000 years ago there was a land bridge across what is now the Bering Strait. Humans took advantage of this land bridge, and they reached North America. Travel through the North American continent was impossible at that time, because it was covered with ice. However, much evidence shows that the first humans to arrive there traveled southward along the coast in small boats, living off fish and shellfish.

In this way they travelled as far as South America. Traces of very early human habitation have been found on an island off the coast of South America, demonstrating that these pioneering settlers were proficient in the use of boats.

Alexander of Macedon: conqueror or explorer?

In another chapter, we look at the amazing journey through the known world of Alexander of Macedon. Was this purely motivated by a warlike desire for conquest? Or was there a strong element of curiosity behind the young leader's efforts to reach the sea beyond India? In his youth, he had been tutored by Aristotle. Whatever its main motivation was, Alexander's tour through the known world of the time had the effect of blending the cultures of regions through which he passed and creating the cosmopolitan and advanced civilization that we call the Hellenistic Era.

Viking explorers change the world

Between the 8th and 11th centuries AD, Viking conquests and explorations helped to create the modern world. Not only Scandinavia, the Viking heartland, but also Russia, England, France, Germany, Spain and Italy, owe much of their present character to Viking exploration and conquest. Russia takes its name from the Rus Vikings who ruled the region near to Kiev.

Marco Polo

In 1271 AD the 17-year-old Marco Polo set off on a journey to the court of the Mongol emperor, Kublai Khan together with his father and uncle, who were successful Venetian traders, and who had previously visited the great Khan. Arriving at Kublai Khan's summer palace, Shangdu (Xanadu) after four years of travel, they were warmly welcomed by the emperor. Marco Polo found special favor with Kublai Khan because of his intelligence and humility, and because he told the emperor entertaining stories of other countries. Marco Polo became an ambassador in the service of Kublai Khan and remained so for many years. When he finally returned to Venice in 1295, his city was at war with Genoa. Marco Polo was captured and imprisoned by the Genoans, and while in prison, he dictated his recollections to a cell-mate who happened to be an author of colorful romances. The resulting book became immensely popular in Europe. It made Europeans aware of the great wealth and knowledge of Asian civilizations, and it did much to initiate the Age of Exploration.

European voyages of discovery

During the Age of Exploration, initiated by Marco Polo's book, Christopher Columbus rediscovered the American continent in an effort to reach India and China. Columbus has been much honored in America, but today, his reputation has been re-evaluated, and he is criticized for his cruel treatment of the people whom he found living on the Caribbean

islands. Indeed, cruelty and greed characterized many of the European explorers of the New World.

Other notable voyages of exploration

Among the other famous voyages of exploration, we can think of explorers, such as Henry Hudson, Samuel de Champlain, Vitus Bering, Meriwether Lewis and William Clark, who increased our knowledge of North America. The Voyage of the Beagle circumnavigated the globe, and led to Darwin's revolutionary theory of evolution through natural selection. Other famous voyages have explored the Arctic and the Antarctic.

Exploration of the solar system

Remarkably, in modern times, humans have extended their explorations into space, setting foot on the moon, and sending unmanned exploratory missions to the farthest planets. The spirit of curiosity and discovery that has motivated these journeys into space is the same as the spirit that has motivated human voyages of discovery throughout history.

HUMAN NATURE

<http://eacpe.org/app/wp-content/uploads/2020/07/Human-Nature-John-Scales-Avery.pdf>

Human nature as a central theme of philosophy

What is human nature? Are we humans good or evil? To what extent is the character of a person produced by heredity, and to what extent by environment? Is competition more central to our existence than cooperation, or is it the other way around? How can a happy, peaceful and stable society be created? Are humans essentially the same as other animals, or are we fundamentally different? Should humans dominate and control nature, or should we be the custodians of nature? These questions are central to philosophy, and they will be discussed in this book. Conflicting answers have been given by philosophers, scientists and religious leaders over the centuries, from earliest times until the present. These answers will be reviewed and discussed.

The chemistry and physiology of emotions

Human emotions have a long evolutionary history. We share many emotions with our animal relatives - for example, mother love, fear and anger. Modern science has given us an insight into the chemistry and physiology of emotions. In our human brains, and in those of animals, there are billions of chemically moderated connections between neurons. These are called synapses. Whether or not a synapse “fires” and transmits its message to the next neuron depends on the chemical environment of the synapse, and this environment changes under the influence of hormones released by our glands, which are in turn influenced by our emotions.

Ethology: the science of inherited behavior patterns

Charles Darwin’s book *The Expression of Emotions in Man and Animals* (1871) shows that he was aware that behavior patterns are just as reliably inherited as physical characteristics, and that they are similar within related groups of animals. For example, all members of the cat family show similar cat-like behavior. Because of this pioneering book, Darwin is considered to be the founder of the science of ethology, the study of inherited behavior patterns.

More recently, in 1973, Karl von Frisch (1886-1982), Nikolaas Tinbergen (1907-1988), and Konrad Lorenz (1903-1989), shared a Nobel Prize in Physiology or Medicine. Karl von Frisch won his share of the prize for his studies of the waggle dance by which bees transmit information to their hive-mates. Tinbergen, who is famous for his studies of the instincts of birds, has pointed out that no modern ethologist would debate the question of whether heredity or environment plays a greater role in forming the character of an

individual, since all learning is built upon a base of genetic predisposition without which it would be impossible.

The third 1973 laureate, Konrad Lorenz, is most controversial, but also the most interesting of the three, since his famous book *On Aggression* casts light on why humans are so susceptible to militarism.

The dark side of human nature

Are humans good or evil? We can find evidence for both sides of human nature. It seems that humans can behave in both ways, depending on the circumstances in which they find themselves. In this book, a chapter is devoted to *Neoliberalism, Racism and Neo-Fascism*, where we see in detail the dark side of human nature. In the recent killing of George Floyd, we see both sides of human nature. The brutal killing, and Donald Trump's reaction show the dark side, while the worldwide anti-racist protests show human nature at its compassionate best.

Our collective shortsightedness: The climate emergency

There is a remarkable contrast in the way that governments around the world have responded to the COVID-19 pandemic and the way that they have responded to the climate emergency. The pandemic, which indeed represents an extremely grave danger to humanity, has produced a massive global response. Borders have been closed, airlines have become virtually inoperative, industries, restaurants and entertainments have been closed, sporting events have been cancelled or postponed, people have been asked to stay at home and practice social distancing, and the everyday life of citizens around the world has been drastically changed.

By contrast, let us consider the threat that if immediate action is not taken to halt the extraction and use of fossil fuels, irreversible feedback loops will be initiated which will make catastrophic climate change inevitable despite human any human efforts to prevent it.

This threat is even more serious than the COVID-19 pandemic. Climate change could make much of the earth too hot for human life. It could produce a famine involving billions of people, rather than millions. And yet the world has hardly reacted at all.

A minority, for example the Scandinavian countries, have taken appropriate action. Most governments pay lip service to the emergency, but do not take effective action; and a few countries, such as the United States under Donald Trump, Bolsonaro's Brazil, and Saudi Arabia, deny that there is a climate emergency and actively sabotage action.

The world's net response has been totally inadequate. The Keeling Curve, which measures CO₂ concentrations in the atmosphere, continues to rise, and the rate of rising is even increasing. What is the reason for this remarkable contrast between our strong reaction to the pandemic and our neglect of the climate crisis? Is it because we see clearly what is near to us and neglect whatever is far away? Or are powerful financial forces at work, controlling the mass media?

Sex and overconsumption

If we are to have a chance of avoiding catastrophic climate change, each of us must reduce his or her carbon footprint. Particularly in the wealthy parts of the world, we must simplify our lives and renounce overconsumption. Humans must stop using material goods as a means of social competition.

Human nature is best suited to sharing societies

What kind of society will make us happy and safe? What kind of society is sustainable? What kind of society is most in harmony with human nature? Our emotions have not changed much since the time when humans were hunter-gatherers, living in egalitarian groups that shared food whenever they were able to find it. There is much evidence that also today sharing and egalitarian societies are more happy than those with excessive individualism and competition.

MALTHUS REVISITED

<http://eacpe.org/app/wp-content/uploads/2020/05/Malthus-Revisited-by-John-Scales-Avery.pdf>

Malthus' *Essay on The Principle of Population*

T.R. Malthus' *Essay on The Principle of Population*, the first edition of which was published in 1798, was one of the the first systematic studies of the problem of population in relation to resources. Earlier discussions of the problem had been published by Botterro in Italy, Robert Wallace in England, and Benjamin Franklin in America. However Malthus' *Essay* was the first to stress the fact that, in general, powerful checks operate continuously to keep human populations from increasing beyond their available food supply. In a later edition, published in 1803, he buttressed this assertion with carefully collected demographic and sociological data from many societies at various periods of their histories.

The publication of Malthus' *Essay* coincided with a wave of disillusionment which followed the optimism of the Enlightenment. The utopian societies predicted by the philosophers of the Enlightenment were compared with reign of terror in Robespierre's France and with the miseries of industrial workers in England; and the discrepancy required an explanation.

The optimism which preceded the French Revolution, and the disappointment which followed a few years later, closely paralleled the optimistic expectations of our own century, in the period after the Second World War, when it was thought that the transfer of technology to the less developed parts of the world would eliminate poverty, and the subsequent disappointment when poverty persisted.

Science and technology developed rapidly in the second half of the twentieth century, but the benefits which they conferred were just as rapidly consumed by a global population which today is increasing at the rate of one billion people every fourteen years. Because of the close parallel between the optimism and disappointments of Malthus' time and those of our own, much light can be thrown on our present situation by rereading the debate between Malthus and his contemporaries.

Famine, disease and war

Malthus classified the checks to population growth as *preventative* and *positive*. Among the preventative checks he mentioned late marriage, and what he called "vice". This included birth control, of which he disapproved. If he had been living today, I think that Malthus would consider birth control to be the most humane method for preventing excessive growth of population.

Among the positive checks to population growth, are the three terrible Malthusian forces, famine, disease and war. Today, each of these has taken on new and terrifying dimensions, and in this book, a chapter is devoted to each.

Was Malthus wrong?

Many people maintain that because both our food supply and the global population of humans have grown so enormously, Malthus was wrong. However, I believe that we still must listen to the warning voice of Malthus. The fossil fuel era is ending, and with it, the possibility of Green Revolution agriculture. Population growth, climate change and the end of the fossil fuel era may combine to produce a famine of completely unprecedented proportions by the middle of the present century.

The climate emergency

The threat of catastrophic climate change came to the attention of scientists after the time of Malthus. However, this existential threat to the future of human civilization is connected to Malthus' work by the fact that one of the driving forces behind climate change is population growth.

Our footprint on Nature's face has grown too large

At present, the total human economy is demanding more from the environment than the environment can regenerate. If we go on with business as usual, then within a decade it would take two Earths to regenerate the resources that we collectively demand. Most economists are focused on growth, but endless growth of anything physical on a finite planet is a logical impossibility. We need a new economic system, a new social contract, and a new and more considerate relationship with our environment.

BENEFITS OF EQUALITY

<http://eacpe.org/app/wp-content/uploads/2020/05/Benefits-of-Equality-by-John-Scales-Avery.pdf>

“If Trump is a symptom, what is the disease?” One often encounters this interesting question in alternative media articles. I think that at least part of the answer is “Excessive economic inequality”.

Hobson’s explanation of imperialism

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 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.

Interestingly, TED Talks (ideas worth spreading) was recently under fire from many progressive groups for censoring a short talk by the adventure capitalist, Nick Hanauer, entitled “Income Inequality”. In this talk, Hanauer said exactly the same thing as John Hobson, but he applied the ideas, not to colonialism, but to current unemployment in the United States. Hanauer said that the rich are unable to consume the products of society because they are too few in number. To make an economy work, demand must be increased, and for this to happen, the distribution of incomes must become much more equal than it is today in the United States.

TED has now posted Hanauer’s talk, and the interested reader can find another wonderful TED talk dealing with the same issues from the standpoint of health and social problems. In a splendid lecture entitled *How economic inequality harms societies*, Richard Wilkinson demonstrates that there is almost no correlation between gross national product and a number of indicators of the quality of life, such as physical health, mental health, drug abuse, education, imprisonment, obesity, social mobility, trust, violence, teenage pregnancies and child well-being. On the other hand he offers comprehensive statistical evidence that these indicators are strongly correlated with the degree of inequality within coun-

tries, the outcomes being uniformly much better in nations where income is more equally distributed.

Warren Buffet famously remarked, “There’s class warfare, all right. But it’s my class, the rich class, that’s making war, and we’re winning.” However, the evidence presented by Hobson, Hanauer and Wilkinson shows conclusively that no one wins in a society where inequality is too great, and everyone wins when incomes are more evenly distributed.

Extreme inequality today

Here are two quotations from a report by the Global Inequality organization:¹⁵

“Inequality has been on the rise across the globe for several decades. Some countries have reduced the numbers of people living in extreme poverty. But economic gaps have continued to grow as the very richest amass unprecedented levels of wealth. Among industrial nations, the United States is by far the most top-heavy, with much greater shares of national wealth and income going to the richest 1 percent than any other country.”

“The world’s 10 richest billionaires, according to Forbes, own \$745 billion in combined wealth, a sum greater than the total goods and services most nations produce on an annual basis. The globe is home to 2,208 billionaires, according to the 2018 Forbes ranking.”

Corporate oligarchs control governments and the mainstream media

Today, the world faces two existential threats, the threat of an all-destroying thermonuclear war, and the threat of uncontrollable catastrophic climate change. In the United States, and several other countries, immensely rich corporate oligarchies use money to control both the mass media and politics, and the result is that no action is taken to save the future of the earth for our children and grandchildren.

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.

Our military-industrial complexes maintain the threat of thermonuclear war, as well as spending vast amounts of government money that could alternatively be used for social programs or renewable energy infrastructure. A 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.

¹⁵<https://inequality.org/facts/global-inequality/>

Excessive economic inequality is at the root of the decay of democracy and the drift towards neofascism in a number of countries. It is not a coincidence that the United States and Brazil, two of the countries where inequality is the greatest, now have governments characterized by racism, militarism, cruelty, misogyny, decay of democracy and climate change denial.

Economic equality and climate action in Scandinavia

Senator Bernie Sanders, a popular reformist candidate for the US Presidency in 2016 and 2020, has said that he is a socialist. When asked to explain in detail what he meant by that, Sanders said that he believed that the US would benefit from having a social and economic system similar to those of Scandinavia.

The Green New Deal can simultaneously address the climate crisis and the problem of excessive economic inequality. In this context, it is interesting to look at the social and economic systems of the Scandinavian countries, Norway, Sweden, Finland, Denmark and Iceland. In these countries the contrast between the rich and poor has been very much reduced. It is almost true to say that poverty has been eliminated in these countries. At the same time, the Scandinavians have strong policies to address the climate emergency. Thus Scandinavian successes are a counter-argument to those who say that the Green New Deal cannot be put into practice.

Renewable energy in Denmark

Here are some excerpts from a recent report by the Danish Ministry of Energy, Utilities and Climate:

“Denmark’s success in transforming into a sustainable, green society is widely recognized. Denmark is at the forefront of numerous international initiatives and collaborative endeavors. In 2017, for the second consecutive year in a row, Denmark won the World Energy Council award for the world’s best energy system.”

“In 2017, Denmark achieved a world record of 43.4% power produced solely by wind turbines. Denmark can cover the largest share of its electricity production with green power from wind turbines. Denmark is also a European leader in the export of energy technology, as exports of energy equipment account for a larger share of total exports than in any other EU country.”

“The government has set ambitious goals that few other countries can match: At least 50% of Denmark’s energy needs must be covered by renewable energy by 2030. Coal must be completely phased out of the power supply by 2030. Moratorium on all exploration and drilling activities for oil, gas and shale gas on land and inland waters of Denmark. Denmark must be a low-emission society independent of fossil fuels in 2050.”

Eliminating excessive economic inequality increases happiness

For many years, the Scandinavian countries have ranked as the best places to live, according to the World Happiness Report. Perhaps these countries can serve as models, if we wish the future of human society to be a happy one. A step towards both happiness and sustainability must be the elimination of excessive economic inequality.

LIVES IN EDUCATION

<http://eacpe.org/app/wp-content/uploads/2020/05/Lives-in-Education-by-John-Scales-Avery.pdf>

The long human childhood

When a baby antelope is born, it staggers unsteadily to its feet, but after a few minutes it is able to follow its mother and the herd. Contrast this with the complete helplessness of a human baby! As our society becomes more and more complex and knowledge-based, the period of dependency of young humans has become almost absurdly long. In medicine and the sciences, many years of postgraduate training are required, and often young people are in their early thirties before they are fully qualified.

But education is an investment that gives dividends. The life of a “knowledge worker” is extremely interesting and rewarding.

Knowledge-based economies

Economic activity is usually divided into two categories, 1) production of goods and 2) provision of services. It is the rate of production of goods that will be limited by the carrying capacity of the global environment. Services that have no environmental impact will not be constrained in this way. Thus a smooth transition to a sustainable economy will involve a shift of a large fraction the work force from the production of goods to the provision of services.

Within the service sector, many jobs involve a high degree of education. “Knowledge workers”, for example computer programmers, physicians, pharmacists, architects, engineers, scientists, design thinkers, public accountants, lawyers, and academics, are those whose personal capital consists of a high degree of education. They think for a living; and their activities have very small ecological footprints.

In his recent popular book *The Rise of the Creative Class*, the economist Richard Florida points out that in a number of prosperous cities - for example Stockholm - a large fraction of the population is already engaged in what might be called creative work - a type of work that uses few resources, and produces few waste products - work which develops knowledge and culture rather than producing material goods. For example, producing computer software requires few resources and results in few waste products. Thus it is an activity with a very small ecological footprint. Similarly, education, research, music, literature and art are all activities that do not weigh heavily on the carrying capacity of the global environment. Florida sees this as a pattern for the future, and maintains that everyone is capable of creativity. He visualizes the transition to a sustainable future economy as one in which a large fraction of the work force moves from industrial jobs to information-related work.

Culture, education and human solidarity

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.

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.

In the teaching of history, 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 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.

REBUILDING AFTER CORONA

<http://eacpe.org/app/wp-content/uploads/2020/04/Rebuilding-After-Corona-by-John-Scales-Avery.pdf>

A better world is possible!

It is hard to predict how long the terrible COVID-19 pandemic will last, but at some time in the future it will end, and we will be faced with the problem of rebuilding the world after the enormous economic and human destruction which the disease left in its wake. The pandemic has thrown light onto the world's political and economic systems, and has shown them to be wanting. Most people today do not wish to return to the old normal. That "normal" was part of the problem. The post-pandemic world must be a new and changed world!

Is a better world possible? Of course it is! Our present world is filled with an almost unimaginable amount of injustice, greed and folly. Why is our present world so full of glaring faults? One reason can be found in the slow rate of change of genetic evolution, compared with the lightning-like rate of cultural evolution. We face the problems of the 21st century with an emotional nature that has not changed much since our ancestors lived in small tribes, competing for territory on the grasslands of Africa. Our emotional nature contains an element of tribalism to which militarists can all too easily appeal.

The human tendency towards tribalism evolved when our remote ancestors lived in small, genetically homogeneous tribes, competing for territory on the grasslands of Africa. Because marriage within a tribe was much more common than marriage outside it, genes were shared within the tribe. The tribe as a whole either survived or perished. The tribe, rather than the individual was the unit upon which the Darwinian forces of natural selection acted.

Although it was a survival trait 100,000 years ago, tribalism threatens our human civilization of today with thermonuclear annihilation. As Konrad Lorenz put it, "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."

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.

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.

Here are some words from 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.

“his is but a beginning, with endless possibilities in both directions; a building of a human life of undreamt of wealth and dignity, or a sudden end in utmost misery. 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.

“Modern science has abolished time and distance as factors separating nations. On our shrunken globe today, there is room for one group only: the family of man.”

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

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.

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.

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. Our almost miraculous means of communication, if properly used, offer us the possibility of welding humanity into a single cooperative society.

We see clearly what is near to us

There is a remarkable contrast in the way that governments around the world have responded to the COVID-19 pandemic and the way that they have responded to the climate emergency. The pandemic, which indeed represents an extremely grave danger to humanity, has produced a massive global response. Borders have been closed, airlines have become virtually inoperative, industries, restaurants and entertainments have been closed, sporting events have been cancelled or postponed, people have been asked to stay at home and practice social distancing, and the everyday life of citizens around the world has been drastically changed.

By contrast, let us consider the threat that if immediate action is not taken to halt the extraction and use of fossil fuels, irreversible feedback loops will be initiated which will make catastrophic climate change inevitable despite human any human efforts to prevent it. This threat is even more serious than the COVID-19 pandemic. Climate change could make much of the earth too hot for human life. It could produce a famine involving billions of people, rather than millions. My own belief is that catastrophic climate change would not lead to the extinction of the human species; but I think that because much of the world would become uninhabitable, the global population of humans would be very much reduced.

How have governments responded to the climate emergency? A minority, for example the Scandinavian countries, have taken appropriate action. Most governments pay lip service to the emergency, but do not take effective action; and a few countries, such as the United States under Donald Trump, Bolsonaro's Brazil, and Saudi Arabia, deny that there is a climate emergency and actively sabotage action. The world's net response has been totally inadequate. The Keeling curve, which measures CO₂ concentrations in the atmosphere, continues to rise, and the rate of rise is even increasing.

What is the reason for this remarkable contrast in our response to two serious emergencies? We see clearly and respond to what is close to us, and are relatively indifferent to what is far away. We hear of people dying every day from the COVID-19 pandemic, and there is a danger that as many as 100 million people could die before it is over. By contrast, although immediate climate action is needed today to avoid disaster, the worst consequences of climate change lie in the long-term future. Old people, like me, will not live to see massive deaths from starvation and overheating. However, we have a responsi-

bility to our children and grandchildren, and to all future generations. A large-scale global famine could occur by the middle of the present century, and children who are alive today could experience it.

Recovery offers climate action opportunities

When the COVID-19 pandemic is over, governments will be faced by the task of repairing the enormous economic damage that it has caused. The situation will be similar to the crisis that faced US President Franklin D. Roosevelt when he took office during the Great Depression of the 1930's. Roosevelt, encouraged by John Maynard Keynes, used federal funds to build much-needed infrastructure around the United States. His programs, the New Deal, ended the Great Depression in his country.

Today, the similar concept of a Green New Deal is being put forward globally. This concept visualizes government-sponsored programs aimed at simultaneously creating both jobs and urgently-needed renewable energy infrastructure. The Green New Deal programs could be administered in such a way as to correct social injustices.

A sustainable economic system

Economists, with a few notable exceptions, have a cynical tendency to confine their discussions to the short-term future. With self-imposed myopia, they refuse to look more than a few decades into the future. This allows them to worship growth, and to advocate perpetual growth. Our present financial system is unsustainable, and it works for the interests of a few very rich people. For the sake of the long-term future, we must build a sustainable, steady-state economic system, an economic system which reduces inequality, and which serves the broad public interest.

We can learn from the pandemic

Terrible as it is, the COVID-19 pandemic may be able to teach us something. Humanity must work together to solve our common problems. We must abandon the folly of war, and use the vast sums of money now wasted (or worse than wasted) on armaments for constructive purposes, for example public health programs. We must work together to rebuild the world after the pandemic. The new world that we build, must be sustainable, and it must have both an environmental conscience and a social conscience.

LIVES IN POETRY

<http://eacpe.org/app/wp-content/uploads/2020/03/Lives-in-Poetry-by-John-Scales-Avery.pdf>

The roots of poetry in oral traditions

Because writing, paper and literacy have not always been widely available, information has traditionally been passed on from one generation to the next by means of recitation and song. Rhythm, rhyme and alliteration are aids to memory, and increase the impact and appeal of a recitation or song. Histories, law and religions have all been propagated through oral traditions, and in many cultures, these traditions still live today.

Biblical scholars agree that the Judeo-Christian Bible has its roots in oral recitation of stories and songs and poetry. Likewise, Buddhism, Hinduism and Jainism in their early stages made use of oral recitation. In Islam, memorizing many verses of the Quran, and reciting them is considered to be a great virtue.

The native populations of Australia and North America had no writing, and they relied on oral recitations to propagate their cultural traditions of history, law and ethics between generations.

Historians also agree that the Homeric epics were recited orally for many years before being written down. In ancient Greece, drama was used to convey ethics to the public, and attendance at dramatic performances was a civic duty.

In Europe, during the Middle Ages, a troubadour was a composer and performer of lyric poetry. The earliest troubadour whose work still survives was William IX, Duke of Aquitaine (1071-1127).

In all these very old oral traditions we can see the roots of poetry.

An anthology including some of the world's great poets

In this book, I have tried to present an historical anthology of the poems of some of the world's great poets, from very early times until the present, and from many countries and cultures. I have made use of two chapters that I have previously written about William Blake and Percy Bysshe Shelley, and therefore their lives are described in more detail than the lives of other poets.

I very much hope that you will enjoy reading this historical and multi-cultural anthology.