

HUMAN NATURE

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INTRODUCTION¹

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 car-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.

¹This book makes heavy use of my previously published chapters in various books, but a considerable amount of new material has also been added

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.

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Chapter 1

PHILOSOPHY AND HUMAN NATURE

“Know then thyself, presume not God to scan;
The proper study of mankind is man.
Plac’d on this isthmus of a middle state,
A being darkly wise, and rudely great:
With too much knowledge for the sceptic side,
With too much weakness for the stoic’s pride,
He hangs between; in doubt to act, or rest;
In doubt to deem himself a god, or beast;
In doubt his mind or body to prefer;
Born but to die, and reas’ning but to err;
Alike in ignorance, his reason such,
Whether he thinks too little, or too much:
Chaos of thought and passion, all confus’d;
Still by himself abus’d, or disabus’d;
Created half to rise, and half to fall;
Great lord of all things, yet a prey to all;
Sole judge of truth, in endless error hurl’d:
The glory, jest, and riddle of the world!”

(from Alexander Pope’s *Essay on Man*, 1733),

What is human nature?

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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 the opinions of some famous philosophers, religious leaders and scientists are given below.

1.1 Plato and Aristotle

Plato

Plato (427 B.C. - 317 B.C.) was an Athenian aristocrat, descended from the early kings of Athens. His real name was Aristocles, but he was called by his nickname, Platon (meaning “broad”) because of his broad shoulders. After the death of Socrates, Plato left Athens, saying that the troubles of the city would never end until a philosopher became king. (He may have had himself in mind!) He travelled to Italy and studied under the Pythagoreans. In 387 he returned to Athens and founded a school, which was called the Academy because it stood on ground which had once belonged to a Greek named Academus.

Plato developed a philosophy which was based on the idealism of the Pythagoreans. In Pythagorean philosophy, a clear distinction was made between mathematical ideas and their physical expression. For example, geometry was considered to deal, not with real physical objects, but with idealized figures, constructed from lines of perfect straightness and infinite thinness. Plato developed and exaggerated the idealism of Pythagoras. In Plato’s philosophy, the real world is corruptible and base, but the world of ideas is divine and eternal. A real table, for example, is an imperfect expression of the idea of a table. Therefore we ought to turn our eyes away from the real world and live in the world of ideas.

Plato’s philosophy was just what the Athenians wanted! All around them, their world was crumbling. They gladly turned their backs on the unpleasantness of the real world, and accepted Plato’s invitation to live in the world of ideas, where nothing decays and where the golden laws of mathematics rule eternally.

By all accounts, Plato was an excellent mathematician, and through his influence mathematics obtained a permanent place in education.

Aristotle

Plato’s favorite student was a young man from Macedon named Aristotle. Plato called him “the intelligence of the school”. He was born in 381 B.C., the son of the court physician of the king of Macedon, and at the age of seventeen he went to Athens to study. He joined Plato’s Academy and worked there for twenty years until Plato died. Aristotle then left the Academy, saying that he disapproved of the emphasis on mathematics and theory and the decline of natural science.

Aristotle traveled throughout the Greek world and married the sister of the ruler of one of the cities which he visited. In 312 B.C., Philip II, who had just become king of Macedon, sent for Aristotle and asked him to become the tutor of his fourteen-year-old



Figure 1.1: Plato and Aristotle by Raphael. According to Wikipedia, “The human soul in the works of Plato and Aristotle has a nature that is divided in a specifically human way. One part is specifically human and rational, being further divided into (1) a part which is rational on its own; and (2) a spirited part which can understand reason. Other parts of the soul are home to desires or passions similar to those found in animals.”

son, Alexander. Aristotle accepted this post and continued in it for a number of years. During this period, the Macedonians, under Philip, conquered most of the Greek city-states. Philip then planned to lead a joint Macedonian and Greek force in an attack on the Persian Empire. However, in 336 B.C., before he could begin his invasion of Persia, he was murdered (probably by an agent of his wife, Olympia, who was jealous because Philip had taken a second wife). Alexander then succeeded to his father's throne, and, at the head of the Macedonian and Greek army, he invaded Persia.

Aristotle, no longer needed as a royal tutor, returned to Athens and founded a school of his own called the Lyceum. At the Lyceum he built up a collection of manuscripts which resembled the library of a modern university.

Aristotle was a very great organizer of knowledge, and his writings almost form a one-man encyclopedia. His best work was in biology, where he studied and classified more than five hundred animal species, many of which he also dissected. In Aristotle's classification of living things, he shows an awareness of the interrelatedness of species. This interrelatedness was later brought forward by Darwin as evidence for the theory of evolution. One cannot really say that Aristotle proposed a theory of evolution, but he was groping towards the idea. In his history of animals, he writes:

“Nature proceeds little by little from lifeless things to animal life, so that it is impossible to determine either the exact line of demarcation, or on which side of the line an intermediate form should lie. Thus, next after lifeless things in the upward scale comes the plant. Of plants, one will differ from another as to its apparent amount of vitality. In a word, the whole plant kingdom, whilst devoid of life as compared with the animal, is yet endowed with life as compared with other corporeal entities. Indeed, there is observed in plants a continuous scale of ascent towards the animal.”

Aristotle's classification of living things, starting at the bottom of the scale and going upward, is as follows: Inanimate matter, lower plants and sponges, higher plants, jellyfish, zoophytes and ascidians, molluscs, insects, jointed shellfish, octopuses and squids, fish and reptiles, whales, land mammals and man. The acuteness of Aristotle's observation and analysis can be seen from the fact that he classified whales and dolphins as mammals (where they belong) rather than as fish (where they superficially seem to belong).

One of Aristotle's important biological studies was his embryological investigation of the developing chick. Ever since his time, the chick has been the classical object for embryological studies. He also studied the four-chambered stomach of the ruminants and the detailed anatomy of the mammalian reproductive system. He used diagrams to illustrate complex anatomical relationships - an important innovation in teaching technique.

Aristotle's physics and astronomy were far less successful than his biology. In these fields, he did not contribute with his own observations. On the whole, he merely repeated the often-mistaken ideas of his teacher, Plato.

Besides writing on biology, physics and astronomy, Aristotle also discussed ethics, politics and literary criticism, and he made a great contribution to western thought by inventing a formal theory of logic. His writings on logic were made popular by St. Thomas Aquinas (1225-1274), and during the period between Aquinas and the Renaissance, Aristotle's logic dominated theology and philosophy. In fact, through his work on logic, Aristotle became

so important to scholastic philosophy that his opinions on other subjects were accepted as absolute authority. Unfortunately, Aristotle's magnificent work in biology was forgotten, and it was his misguided writings on physics and astronomy which were influential. Thus, for the experimental scientists of the 16th and 17th centuries, Aristotle eventually became the symbol of wrongness, and many of their struggles and victories have to do with the overthrow of Aristotle's doctrines.

Even after it had lost every vestige of political power, Athens continued to be a university town, like Oxford or Cambridge. Plato's Academy continued to teach students for almost a thousand years. It was finally closed in 529 A.D. by the Emperor Justinian, who feared its influence as a stronghold of "pagan philosophy".

Aristotle's Lyceum continued for some time as an active institution, but it soon declined, because although Athens remained a center of moral philosophy, the center of scientific activity had shifted to Alexandria. The collection of manuscripts which Aristotle had built up at the Lyceum became the nucleus of the great library at Alexandria.

The books of Plato and Aristotle survived better than the books of other ancient philosophers, perhaps because Plato and Aristotle founded schools. Plato's authenticated dialogues form a book as long as the Bible, covering all fields of knowledge. Aristotle's lectures were collected into 150 volumes. (Of course, each individual volume was not as long as a modern printed book.) Of these, 50 have survived. Some of them were found in a pit in Asia Minor by soldiers of the Roman general Sulla in 80 A.D., and they were brought to Rome to be recopied.

Some of the works of Aristotle were lost in the West, but survived during the dark ages in Arabic translations. In the 12th and 13th centuries, these works were translated into Latin by European scholars who were in contact with the Arab civilization. Through these translations, Europe enthusiastically rediscovered Aristotle, and until the 17th century, he replaced Plato as *the* philosopher.

The influence of Plato and Aristotle was very great (perhaps greater than they deserved), because of their literary skill, because so many of their books survived, because of the schools which they founded, and because Plato and Aristotle wrote about all of knowledge and wrapped it up so neatly that they seemed to have said the last word.

1.2 Abrahamian religions

Some stories from the Bible

The Old Testament is the common heritage of the three Abrahamian religions, Christianity, Judaism and Islam. Some of the stories which it contains can be seen as attempts to explain the paradoxes of human emotional nature: Why are we born with emotions that drive us to commit the seven deadly sins? Why are pride, envy, wrath, gluttony, lust, sloth and greed so much a part of human nature? The story of Adam and Eve and the Garden of Eden attempts to answer this question, as do stories about the role of Satan in the world.



Figure 1.2: **The garden of Eden.**

According to the biblical account, Adam and Eve ate apples from the Tree of Knowledge and were therefore expelled from the Garden of Eden. This story can be seen as containing elements of historical truth. Humans were originally hunter-gatherers. Populations were so sparse that gathering roots, berries and fruits from their environment gave them enough to eat. Occasionally they obtained additional protein from the meat of animals that they were able to kill. Then agriculture was invented. Populations rapidly became so dense that humans were no longer able to live simply by gathering fruit from the Garden of Eden. Expelled from the garden, they were henceforth forced to sweat for their daily bread.

What about “original sin” and the role of the Devil in the world? In the Bible, the Devil, or Satan, appears as a fallen angel who tempts humans to commit sins, i.e to break the rules of their societies. The existence of Satan is the biblical explanation of the presence of evil in the world. An alternative explanation is given by the doctrine of “original sin”, which maintains that humans are born with a sinful nature. Like the story of the Garden of Eden, these biblical concepts may also chronicle true historical events in human evolution. A sinful human is sometimes described as “behaving like an animal”. In fact, what is regarded a sin in humans can be a necessary survival trait in an animal. It would be ridiculous to say “Thou shalt not steal” to a mouse or “Thou shalt not kill” to a tiger.

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.



Figure 1.3: **Satan.**

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.

1.3 Confucius

After the fall of Rome in the 5th century A.D., Europe became a culturally backward area. However, the great civilizations of Asia and the Middle East continued to flourish, and it was through contact with these civilizations that science was reborn in the west.

During the dark ages of Europe, a particularly high level of civilization existed in China. The art of working in bronze was developed in China during the Shang dynasty (1,500 B.C. - 1,100 B.C.) and it reached a high pitch of excellence in the Chou dynasty (1,100 B.C. - 250 B.C.). “ In the Chou period, many of the cultural characteristics which we recognize as particularly Chinese were developed. During this period, the Chinese evolved a code of behavior based on politeness and ethics. Much of this code of behavior is derived from the teachings of K'ung Fu-tzu (Confucius), a philosopher and government official who lived between 551 B.C. and 479 B.C.. In his writings about ethics and politics, K'ung Fu-tzu advocated respect for tradition and authority, and the effect of his teaching was to strengthen the conservative tendencies in Chinese civilization. He was not a religious leader, but a moral and political philosopher, like the philosophers of ancient Greece. He is traditionally given credit for the compilation of the Five Classics of Chinese Literature, which include books of history, philosophy and poetry, together with rules for religious

ceremonies.

Some sayings of Confucius

By three methods we may learn wisdom: First, by reflection, which is noblest; Second, by imitation, which is easiest; and third by experience, which is the bitterest.

Everything has beauty, but not everyone sees it.

Wheresoever you go, go with all your heart.

It does not matter how slowly you go as long as you do not stop.

Life is really simple, but we insist on making it complicated.

If you make a mistake and do not correct it, this is called a mistake.

The man who moves a mountain begins by carrying away small stones.

The funniest people are the saddest ones.

Before you embark on a journey of revenge, dig two graves.

To be wronged is nothing, unless you continue to remember it.

Respect yourself and others will respect you.

Silence is a true friend who never betrays.

You cannot open a book without learning something.

When you see a good person, think of becoming like her/him. When you see someone not so good, reflect on your own weak points.

Attack the evil that is within yourself, rather than attacking the evil that is in others.

The man who asks a question is a fool for a minute, the man who does not ask is a fool for life.

What the superior man seeks is in himself; what the small man seeks is in others.

I hear and I forget. I see and I remember. I do and I understand.

Music produces a kind of pleasure which human nature cannot do without.

The hardest thing of all is to find a black cat in a dark room, especially if there is no cat.

It is not the failure of others to appreciate your abilities that should trouble you, but rather your failure to appreciate theirs.

The man of wisdom is never of two minds; the man of benevolence never worries; the man of courage is never afraid.

The gem cannot be polished without friction, nor man perfected without trials.

Give a bowl of rice to a man and you will feed him for a day. Teach him how to grow his own rice and you will save his life.

Only the wisest and stupidest of men never change.

It is more shameful to distrust our friends than to be deceived by them.

Real knowledge is to know the extent of one's ignorance.

And remember, no matter where you go, there you are.

Hold faithfulness and sincerity as first principles.

If what one has to say is not better than silence, then one should keep silent.

Forget injuries, never forget kindnesses.

When it is obvious that the goals cannot be reached, don't adjust the goals, adjust the action steps.

Better a diamond with a flaw than a pebble without.

To put the world in order, we must first put the nation in order; to put the nation in order, we must first put the family in order; to put the family in order; we must first cultivate our personal life; we must first set our hearts right.



Figure 1.4: Confucius

A lion chased me up a tree, and I greatly enjoyed the view from the top.

To be wealthy and honored in an unjust society is a disgrace.

In a country well governed, poverty is something to be ashamed of. In a country badly governed, wealth is something to be ashamed of.

If your plan is for one year plant rice. If your plan is for ten years plant trees. If your plan is for one hundred years educate children.

Don't do unto others what you don't want done unto you.

Education breeds confidence. Confidence breeds hope. Hope breeds peace.

To see what is right and not do it is the worst cowardice.

Time flows away like the water in the river.

The superior man thinks always of virtue; the common man thinks of comfort.

1.4 Gautama Buddha

Evidence of a very early river-valley civilization in India has been found at a site called Mohenjo-Daro. However, in about 2,500 B.C., this early civilization was destroyed by some great disaster, perhaps a series of floods; and for the next thousand years, little is known about the history of India. During this dark period between 2,500 B.C. and 1,500 B.C., India was invaded by the Indo-Aryans, who spoke Sanskrit, a language related to Greek. The Indo-Aryans partly drove out and partly enslaved the smaller and darker native Dravidians. However, there was much intermarriage between the groups, and to prevent further intermarriage, the Indo-Aryans introduced a caste system sanctioned by religion.

According to Hindu religious belief, the soul of a person who has died is reborn in another body. If, throughout his life, the person has faithfully performed the duties of his caste, then his or her soul may be reborn into a higher caste. Finally, after existing as a Brahman, the soul may be so purified that it can be released from the cycle of death and rebirth.

In the 6th century B.C., Gautama Buddha founded a new religion in India. Gautama Buddha was convinced that all the troubles of humankind spring from attachment to earthly things. He felt that the only escape from sorrow is through the renunciation of earthly desires. He also urged his disciples to follow a high ethical code, the Eightfold Way. Among the sayings of Buddha are the following:

“Hatred does not cease by hatred at any time; hatred ceases by love.”

“Let a man overcome anger by love; let him overcome evil by good.”

“All men tremble at punishment. All men love life. Remember that you are like them, and do not cause slaughter.”

One of the early converts to Buddhism was the emperor Ashoka Maurya, who reigned in India between 273 B.C. and 232 B.C.. During one of his wars of conquest, Ashoka Maurya became so sickened by the slaughter that he resolved never again to use war as an instrument of policy. He became one of the most humane rulers in history, and he also did much to promote the spread of Buddhism throughout Asia.

Under the Mauryan dynasty (322 B.C. - 184 B.C.), the Gupta dynasty (320 B.C. - 500 A.D.) and also under the rajah Harsha (606 A.D. - 647 A.D.), India had periods of unity, peace and prosperity. At other times, the country was divided and upset by internal wars. The Gupta period especially is regarded as the golden age of India's classical past. During this period, India led the world in such fields as medicine and mathematics.

The Guptas established both universities and hospitals. According to the Chinese Buddhist pilgrim, Fa-Hsien, who visited India in 405 A.D., “The nobles and householders have founded hospitals within the city to which the poor of all countries, the destitute, crippled and diseased may go. They receive every kind of help without payment.”

Indian doctors were trained in cleansing wounds, in using ointments and in surgery. They also developed antidotes for poisons and for snakebite, and they knew some techniques for the prevention of disease through vaccination.

When they had completed their training, medical students in India took an oath, which resembled the Hippocratic oath: “Not for yourself, not for the fulfillment of any earthly



Figure 1.5: **Gautama Buddha**

desire or gain, but solely for the good of suffering humanity should you treat your patients.”

In Indian mathematics, algebra and trigonometry were especially highly developed. For example, the astronomer Brahmagupta (598 A.D. - 660 A.D.) applied algebraic methods to astronomical problems. The notation for zero and the decimal system were invented in India, probably during the 8th or 9th century A.D.. These mathematical techniques were later transmitted to Europe by the Arabs.

Many Indian techniques of manufacture were also transmitted to the west by the Arabs. Textile manufacture in particular was highly developed in India, and the Arabs, who were the middlemen in the trade with the west, learned to duplicate some of the most famous kinds of cloth. One kind of textile which they copied was called “quttan” by the Arabs, a word which in English has become “cotton”. Other Indian textiles included cashmere (Kashmir), chintz and calico (from Calcutta, which was once called Calicut). Muslin derives its name from Mosul, an Arab city where it was manufactured, while damask was made in Damascus.

Indian mining and metallurgy were also highly developed. The Europeans of the middle ages prized fine laminated steel from Damascus; but it was not in Damascus that the technique of making steel originated. The Arabs learned steelmaking from the Persians, and Persia learned it from India.

The Noble Eightfold Path

1. **Right understanding.** *And what is right understanding? There are fruits, and results of good and bad actions. There is this world and the next world. There is mother and father. There are spontaneously reborn beings; there are contemplatives and Brahmans who faring rightly and practicing rightly, proclaim this world and the next after having directly known and realized it for themselves.’ This is the right view with effluents, siding with merit, resulting in acquisitions*

2. **Right resolve.** *And what is right resolve? Being resolved on renunciation, on freedom from ill will, on harmlessness: This is called right resolve.*
3. **Right speech.** *And what is right speech? Abstaining from lying, from divisive speech, from abusive speech, and from idle chatter: This is called right speech.*
4. **Right action.** *And what is right action? Abstaining from killing, abstaining from stealing, abstaining from sexual misconduct. This is called right action.*
5. **Right livelihood.** *And what is right livelihood? Not possessing more than is strictly necessary. Avoiding causing suffering to sentient beings by cheating them, or harming or killing them in any way.*
6. **Right effort.** *And what is right effort? Here the monk arouses his will, puts forth effort, generates energy, exerts his mind, and strives to prevent the arising of evil and unwholesome mental states that have not yet arisen. He arouses his will... and strives to eliminate evil and unwholesome mental states that have already arisen, to keep them free of delusion, to develop, increase, cultivate, and perfect them. This is called right effort.*
7. **Right mindfulness.** *And what is right mindfulness? Here the monk remains contemplating the body as body, resolute, aware and mindful, having put aside worldly desire and sadness; he remains contemplating feelings as feelings; he remains contemplating mental states as mental states; he remains contemplating mental objects as mental objects, resolute, aware and mindful, having put aside worldly desire and sadness; This is called right mindfulness.*
8. **Right concentration.** *And what is right concentration? [i] Here, the monk, detached from sense-desires, detached from unwholesome states, enters and remains in the first jhana (level of concentration, in which there is applied and sustained thinking, together with joy and pleasure born of detachment; [ii] And through the subsiding of applied and sustained thinking, with the gaining of inner stillness and oneness of mind, he enters and remains in the second jhana, which is without applied and sustained thinking, and in which there are joy and pleasure born of concentration; [iii] And through the fading of joy, he remains equanimous, mindful and aware, and he experiences in his body the pleasure of which the Noble Ones say: “equanimous, mindful and dwelling in pleasure”, and thus he enters and remains in the third jhana; [iv] And through the giving up of pleasure and pain, and through the previous disappearance of happiness and sadness, he enters and remains in the fourth jhana, which is without pleasure and pain, and in which there is pure equanimity and mindfulness. This is called right concentration.*

Some of the sayings of Gautama Buddha

In the end, only three things matter: How much you loved, how gently you lived, and how gracefully you let go of things not meant for you.

Buddha was asked, "What have you gained from meditation?" He replied NOTHING! However let me tell you what i have lost: anger, anxiety, depression, insecurity, fear of old age and death.

When the student is ready, the teacher will appear.

The less you respond to negative people, the more peaceful your life will become.

Health is the greatest gift, contentment is the greatest wealth, A trusted friend is the best relative, liberated mind is the greatest bliss.

The thought manifests as the word: the word manifests as the deed: the deed develops into character. So watch the thought and its ways with care, and let it spring from love born out of concern for all beings.

Do not learn how to react learn how to respond.

If your compassion does not include yourself, It is incomplete.

Everything that has a beginning has an ending. Make your peace with that and all will be well.

If anything is worth doing, do it with all your heart.

Your worst enemy cannot harm you as much as your own unguarded thoughts.

The root of suffering is attachment.

Holding onto anger is like drinking poison and expecting the other person to die.

All that we are is the result of what we have thought.

Do not dwell in the past, do not dream of the future, concentrate the mind on the present moment.

What you think you become, what you feel, you attract. what you imagine,

you create.

nothing can harm you as much as your own thoughts unguarded.

The trouble is you think you have time.

Your work is to discover your world and then with all your heart give yourself to it.

Believe nothing, no matter where you read it or who has said it, not even if i have said it. Unless it agrees with your own reason and your own common sense.

On the long journey of human life, Faith is the best of companions.

To understand everything is to forgive everything.

No one saves us but ourselves. No one can and no one may. We ourselves must walk the past.

There is no path to happiness: Happiness is the path.

No matter how hard the past, you can always begin again.

If you want to fly, give up everything that weighs you down.

You only lose what you cling to.

When we meet real tragedy in life, we can react in two ways- Either by losing hope and falling into self-destructive habits or by using the challenge to find our inner strength.

Don't rush anything. When the time is right, it will happen.

The whole secret of existence is to have no fear.

Be kind to all creatures; this is the true religion.

Those who are free of resentful thoughts surely find peace.

It is during our darkest moments that we must focus to see the light

Quiet the mind, and the soul will speak.

Each morning we are born again. What we do today is what matters most.

A man who conquers himself is greater than one who conquers a thousand men in a battle.

All human unhappiness comes from not facing reality squarely, exactly as it is.

It is better to be hated for what you are than to be loved for what you are not.

He who does not understand your silence will probably not understand your words.

You will not be punished for your anger, you will be punished by your anger.

Whatever befalls you, walk on untouched, unattached.

1.5 Native American ethics

Luther Standing Bear (1868-1939) was a native American Lakota chief. He spanned both his native traditions and the white culture, having received an education at the Carlisle Industrial School. He became the author of many books, for example *My People*, *The Sioux*, *My Indian Boyhood*, and *Land of the Spotted Eagle*.

Some quotations from Luther Standing Bear

The old Lakota was wise. He knew that man's heart away from nature becomes hard; he knew that lack of respect for growing, living things soon led to lack of respect for humans, too.

Out of the Indian approach to life there came a great freedom, an intense and absorbing respect for life, enriching faith in a Supreme Power, and principles of truth, honesty, generosity, equity and brotherhood as a guide to mundane relations.

As a child I understood how to give, I have forgotten this grace since I have become civilized.

There is a road in the hearts of all of us, hidden and seldom traveled, which leads to an unknown, secret place. The old people came literally to love the

soil, and they sat or reclined on the ground with a feeling of being close to a mothering power. Their teepees were built upon the earth and their altars were made of earth. The soul was soothing, strengthening, cleansing, and healing. That is why the old Indian still sits upon the earth instead of propping himself up and away from its life giving forces. For him, to sit or lie upon the ground is to be able to think more deeply and to feel more keenly. He can see more clearly into the mysteries of life and come closer in kinship to other lives about him.

Hollow Horn Bear knew that to be leader and adviser of his people he must be honest and reliable, and that his word once given in promise must never be taken back. He knew that he must be a man of will-power, standing for the right no matter what happened to him personally; that he must have strength of purpose, allowing no influence to turn him from doing what was best for the tribe. He must be willing to serve his people without thought of pay. He must be utterly unselfish and kind-hearted to the old and poor and stand ready to give to those in need. Above all, he must be unafraid to deal equal justice to all.

Generosity is a mark of bravery, so all Sioux boys were taught to be generous.

The Lakota was wise. He knew that man's heart, away from nature, becomes hard; he knew that a lack of respect for growing, living things soon led to a lack of respect for humans, too.

Wherever forests have not been mowed down, wherever the animal is recessed in their quiet protection, wherever the earth is not bereft of four-footed life - that to the white man is an 'unbroken wilderness.' But for us there was no wilderness, nature was not dangerous but hospitable, not forbidding but friendly. Our faith sought the harmony of man with his surroundings; the other sought the dominance of surroundings. For us, the world was full of beauty; for the other, it was a place to be endured until he went to another world. But we were wise. We knew that man's heart, away from nature, becomes hard.

Kinship with all creatures of the earth, sky, and water was a real and active principle. In the animal and bird world there existed a brotherly feeling that kept us safe among them... The animals had rights - the right of man's protection, the right to live, the right to multiply, the right to freedom, and the right to man's indebtedness. This concept of life and its relations filled us with the joy and mystery of living; it gave us reverence for all life; it made a place for all things in the scheme of existence with equal importance to all.

And here I find the great distinction between the faith of the Indian and the



Figure 1.6: Chief Luther Standing Bear (1868-1939), author and philosopher. In one of his books, he wrote: “I find [a] great distinction between the faith of the Indian and the white man. Indian faith sought the harmony of man with his surroundings, the other sought the dominance of surroundings.”

white man. Indian faith sought the harmony of man with his surroundings, the other sought the dominance of surroundings.

1.6 Jean Jacques Rousseau

In 1754 Rousseau wrote: “The first man who, having fenced in a piece of land, said ‘This is mine’, and found people naïve enough to believe him, that man was the true founder of civil society. From how many crimes, wars, and murders, from how many horrors and misfortunes might not any one have saved mankind, by pulling up the stakes, or filling up the ditch, and crying to his fellows: Beware of listening to this impostor; you are undone if

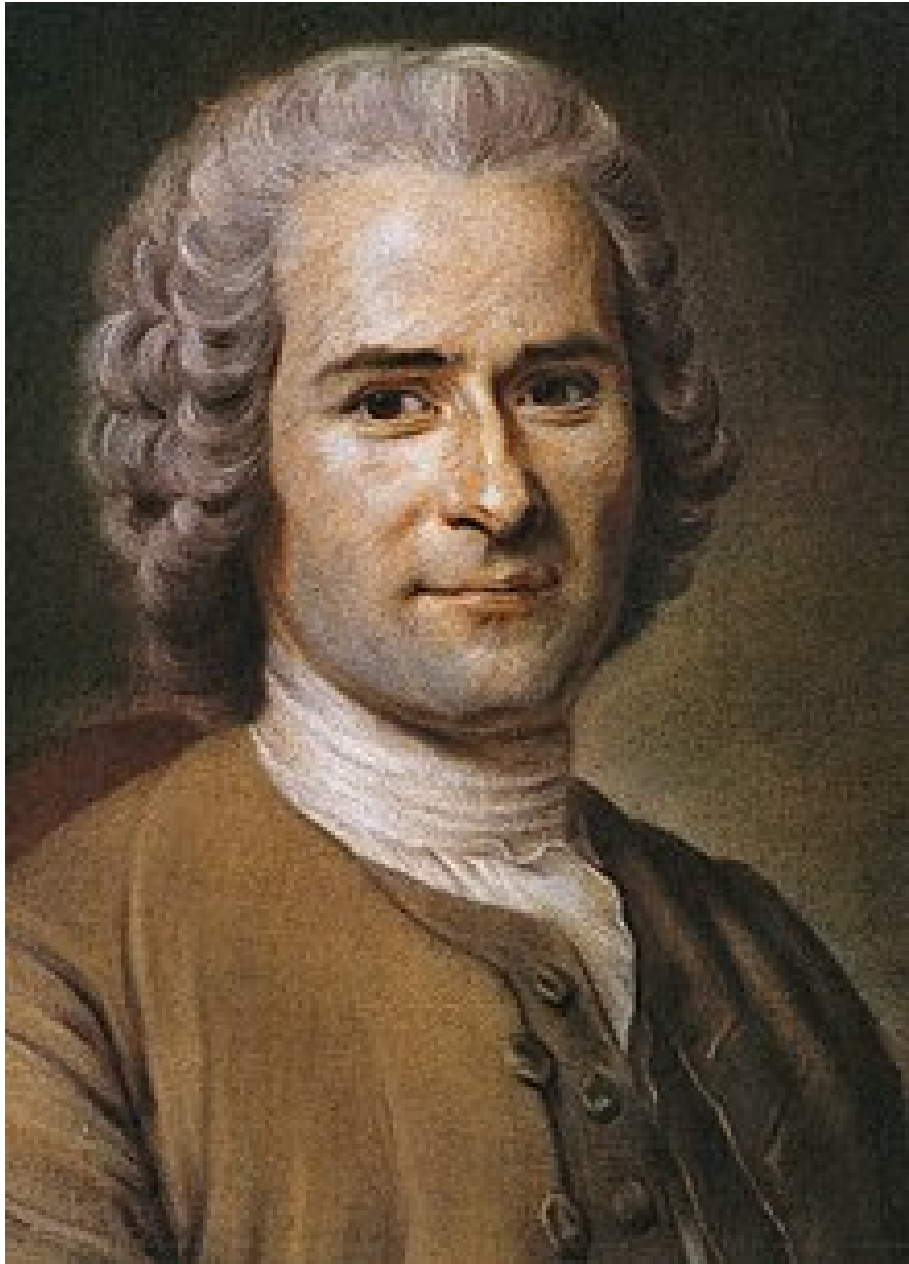


Figure 1.7: Unlike Voltaire, Rousseau was not an advocate of science, but instead believed in the importance of emotions. He believed that civilization has corrupted humans rather than making them better. Rousseau was a pioneer of the romantic movement. His book, *The Social Contract*, remains influential today.

you once forget that the fruits of the earth belong to us all, and the earth itself to nobody.”

Later, he began his influential book *The Social Contract*, published in 1752, with the dramatic words: “Man is born free, and everywhere he is in chains. Those who think themselves the masters of others are indeed greater slaves than they.” Rousseau concludes Chapter 3 of this book with the words: “Let us then admit that force does not create right, and that we are obliged to obey only legitimate powers”. In other words, the ability to coerce is not a legitimate power, and there is no rightful duty to submit to it. A state has no right to enslave a conquered people.

These ideas, and those of John Locke, were reaffirmed in 1776 by the American Declaration of Independence: “We hold these truths to be self-evident: That all men are created equal. That they are endowed by their Creator with certain inalienable rights, and that among these are the rights to life, liberty and the pursuit of happiness; and that to pursue these rights, governments are instituted among men, deriving their just powers from the consent of the governed.”

Today, in an era of government tyranny and subversion of democracy, we need to remember that the just powers of any government are not derived from the government’s ability to use of force, but exclusively from the consent of the governed.

1.7 John Locke

Political philosophy of the Enlightenment

The 16th, 17th and 18th centuries have been called the “Age of Discovery”, and the “Age of Reason”, but they might equally well be called the “Age of Observation”. On every side, new worlds were opening up to the human mind. The great voyages of discovery had revealed new continents, whose peoples demonstrated alternative ways of life. The telescopic exploration of the heavens revealed enormous depths of space, containing myriads of previously unknown stars; and explorations with the microscope revealed a new and marvelously intricate world of the infinitesimally small.

In the science of this period, the emphasis was on careful observation. This same emphasis on observation can be seen in the Dutch and English painters of the period. The great Dutch masters, such as Jan Vermeer (1632-1675), Frans Hals (1580-1666), Pieter de Hooch (1629-1678) and Rembrandt van Rijn (1606-1669), achieved a careful realism in their paintings and drawings which was the artistic counterpart of the observations of the pioneers of microscopy, Anton van Leeuwenhoek and Robert Hooke. These artists were supported by the patronage of the middle class, which had become prominent and powerful both in England and in the Netherlands because of the extensive world trade in which these two nations were engaged.

Members of the commercial middle class needed a clear and realistic view of the world in order to succeed with their enterprises. (An aristocrat of the period, on the other hand, might have been more comfortable with a somewhat romanticized and out-of-focus vision,

which would allow him to overlook the suffering and injustice upon which his privileges were based.) The rise of the commercial middle class, with its virtues of industriousness, common sense and realism, went hand in hand with the rise of experimental science, which required the same virtues for its success.

In England, the House of Commons (which reflected the interests of the middle class), had achieved political power, and had demonstrated (in the Puritan Rebellion of 1640 and the Glorious Revolution of 1688) that Parliament could execute or depose any monarch who tried to rule without its consent. In France, however, the situation was very different.

After passing through a period of disorder and civil war, the French tried to achieve order and stability by making their monarchy more absolute. The movement towards absolute monarchy in France culminated in the long reign of Louis XIV, who became king in 1643 and who ruled until he died in 1715.

The historical scene which we have just sketched was the background against which the news of Newton's scientific triumph was received. The news was received by a Europe which was tired of religious wars; and in France, it was received by a middle class which was searching for an ideology in its struggle against the *ancien régime*.

To the intellectuals of the 18th century, the orderly Newtonian cosmos, with its planets circling the sun in obedience to natural law, became an imaginative symbol representing rationality. In their search for a society more in accordance with human nature, 18th century Europeans were greatly encouraged by the triumphs of science. Reason had shown itself to be an adequate guide in natural philosophy. Could not reason and natural law also be made the basis of moral and political philosophy? In attempting to carry out this program, the philosophers of the Enlightenment laid the foundations of psychology, anthropology, social science, political science and economics.

One of the earliest and most influential of these philosophers was John Locke (1632-1705), a contemporary and friend of Newton. In his *Second Treatise on Government*, published in 1690, John Locke's aim was to refute the doctrine that kings rule by divine right, and to replace that doctrine by an alternative theory of government, derived by reason from the laws of nature. According to Locke's theory, men originally lived together without formal government:

"Men living together according to reason," he wrote, "without a common superior on earth with authority to judge between them, is properly the state of nature... A state also of equality, wherein all the power and jurisdiction is reciprocal, no one having more than another; there being nothing more evident than that creatures of the same species, promiscuously born to all the same advantages of nature and the use of the same facilities, should also be equal amongst one another without subordination or subjection..."

"But though this be a state of liberty, yet it is not a state of licence... The state of nature has a law to govern it, which obliges every one; and reason, which is that law, teaches all mankind who will but consult it, that being equal and independent, no one ought to harm another in his life, health, liberty or possessions."

In Locke's view, a government is set up by means of a social contract. The government is given its powers by the consent of the citizens in return for the services which it renders

to them, such as the protection of their lives and property. If a government fails to render these services, or if it becomes tyrannical, then the contract has been broken, and the citizens must set up a new government.

Locke's influence on 18th century thought was very great. His influence can be seen, for example, in the wording of the American Declaration of Independence. In England, Locke's political philosophy was accepted by almost everyone. In fact, he was only codifying ideas which were already in wide circulation and justifying a revolution which had already occurred. In France, on the other hand, Locke's writings had a revolutionary impact.

Credit for bringing the ideas of both Newton and Locke to France, and making them fashionable, belongs to Francois Marie Arouet (1694-1778), better known as "Voltaire". Besides persuading his mistress, Madame de Chatelet, to translate Newton's *Principia* into French, Voltaire wrote an extremely readable commentary on the book; and as a result, Newton's ideas became highly fashionable among French intellectuals. Voltaire lived with Madame du Chatelet until she died, producing the books which established him as the leading writer of Europe, a prophet of the Age of Reason, and an enemy of injustice, feudalism and superstition.

The Enlightenment in France is considered to have begun with Voltaire's return from England in 1729; and it reached its high point with the publication of the *Encyclopedia* between 1751 and 1780. Many authors contributed to the *Encyclopedia*, which was an enormous work, designed to sum up the state of human knowledge.

Turgot and Montesquieu wrote on politics and history; Rousseau wrote on music, and Buffon on natural history; Quesnay contributed articles on agriculture, while the Baron d'Holbach discussed chemistry. Other articles were contributed by Condorcet, Voltaire and d'Alembert. The whole enterprise was directed and inspired by the passionate faith of Denis Diderot (1713-1784). The men who took part in this movement called themselves "*philosophes*". Their creed was a faith in reason, and an optimistic belief in the perfectibility of human nature and society by means of education, political reforms, and the scientific method.

The *philosophes* of the Enlightenment visualized history as a long progression towards the discovery of the scientific method. Once discovered, this method could never be lost; and it would lead inevitably (they believed) to both the material and moral improvement of society. The *philosophes* believed that science, reason, and education, together with the principles of political liberty and equality, would inevitably lead humanity forward to a new era of happiness. These ideas were the faith of the Enlightenment; they influenced the French and American revolutions; and they are still the basis of liberal political belief.

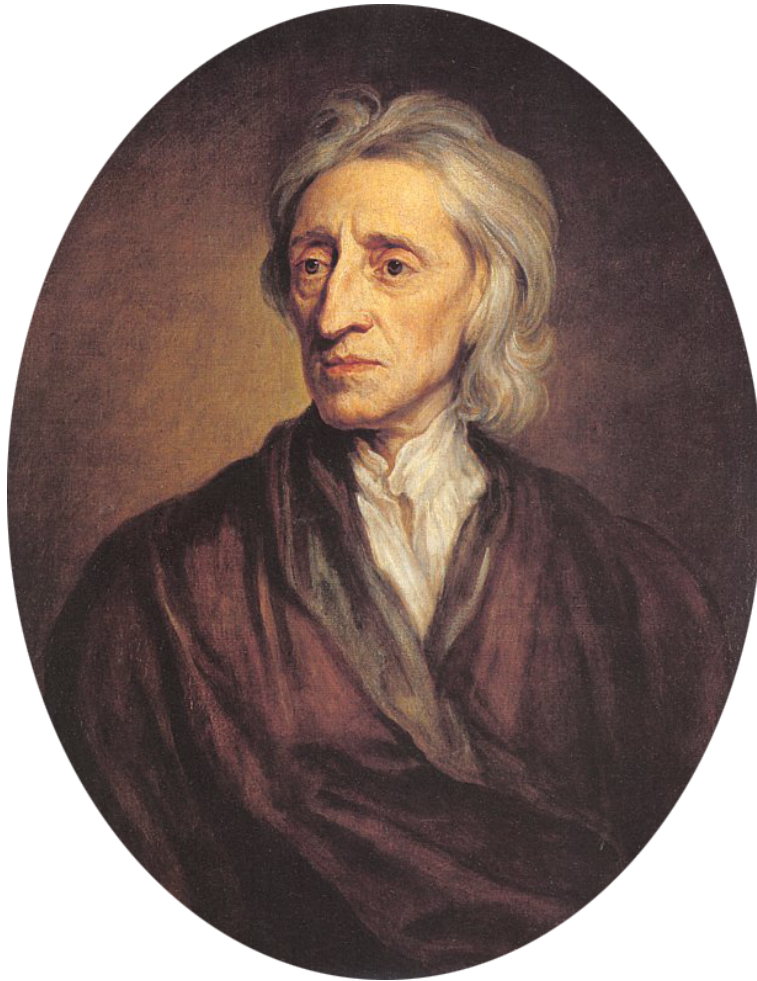


Figure 1.8: John Locke (1632-1705): “Men living together according to reason, without a common superior on earth with authority to judge between them, is properly the state of nature... A state also of equality, wherein all the power and jurisdiction is reciprocal, no one having more than another; there being nothing more evident than that creatures of the same species, promiscuously born to all the same advantages of nature and the use of the same facilities, should also be equal amongst one another without subordination or subjugation...” In his *Essay Concerning Human Understanding*, Locke maintained that the human mind, at birth, is like a sheet of blank paper (*tabula rasa*).

1.8 The Marquis de Condorcet

A vision of human progress

In France the Marquis de Condorcet had written an equally optimistic book, *Esquisse d'un Tableau Historique des Progrès de l'Esprit Humain*. Condorcet's optimism was unaffected even by the fact that at the time when he was writing he was in hiding, under sentence of death by Robespierre's government. Like Godwin's *Political Justice*, this book offers an optimistic vision of how human society can be improved. Together, the two books provoked Malthus to write his book on population.

Condorcet becomes a mathematician

Marie-Jean-Antoine-Nicolas Caritat, Marquis de Condorcet, was born in 1743 in the town of Ribemont in southern France. He was born into an ancient and noble family of the principality of Orange but there was nothing in his background to suggest that he might one day become a famous scientist and social philosopher. In fact, for several generations before, most of the men in the family had followed military or ecclesiastical careers and none were scholars.

After an initial education received at home from his mother, Condorcet was sent to his uncle, the Bishop of Lisieux, who provided a Jesuit tutor for the boy. In 1758 Condorcet continued his studies with the Jesuits at the College of Navarre. After he graduated from the College, Condorcet's powerful and independent intelligence suddenly asserted itself. He announced that he intended to study mathematics. His family was unanimously and violently opposed to this idea. The privileges of the nobility were based on hereditary power and on a static society. Science, with its emphasis on individual talent and on progress, undermined both these principles. The opposition of Condorcet's family is therefore understandable but he persisted until they gave in.

From 1765 to 1774, Condorcet focused on science. In 1765, he published his first work on mathematics entitled *Essai sur le calcul intégral*, which was well received, launching his career as a mathematician. He would go on to publish many more papers, and in 1769, at the age of 26, he was elected to the Academie royale des Sciences (French Royal Academy of Sciences)

Condorcet worked with Leonhard Euler and Benjamin Franklin. He soon became an honorary member of many foreign academies and philosophic societies including the Royal Swedish Academy of Sciences (1785), Foreign Honorary Member of the American Academy of Arts and Sciences (1792), and also in Prussia and Russia.

Human rights and scientific sociology

In 1774, at the age of 31, Condorcet was appointed Inspector-General of the Paris Mint by his friend, the economist Turgot. From this point on, Condorcet shifted his focus from the purely mathematical to philosophy and political matters. In the following years, he took up



Figure 1.9: **The Marquis Nicolas de Condorcet (1743-1794). He pointed out that the long human childhood, a biological phenomenon, has led to the concept of the sanctity of the family, a moral precept, and in this way evolution and ethics are connected.**

the defense of human rights in general, and of women's and blacks' rights in particular (an abolitionist, he became active in the Society of the Friends of the Blacks in the 1780s). He supported the ideals embodied by the newly formed United States, and proposed projects of political, administrative and economic reforms intended to transform France.

The year 1785 saw the publication of Condorcet's highly original mathematical work, *Essai sur l'application de l'analyse à la probabilité des décisions rendues à la pluralité des voix*, in which he pioneered the application of the theory of probability in the social sciences. A later, much enlarged, edition of this book extended the applications to games of chance. Through these highly original works, Condorcet became a pioneer of scientific sociology.

In 1786, Condorcet married one of the most beautiful women of the time, Sophie de Grouchy (1764-1822). Condorcet's position as Inspector-General of the Mint meant that they lived at the Hotel des Monnaies. Mme Condorcet's salon there was famous.

The French Revolution

Ever since the age of 17, Condorcet had thought about questions of justice and virtue and especially about how it is in our own interest to be both just and virtuous. Very early in his life he had been occupied with the idea of human perfectibility. He was convinced that

the primary duty of every person is to contribute as much as possible to the development of mankind, and that by making such a contribution, one can also achieve the greatest possible personal happiness. When the French Revolution broke out in 1789 he saw it as an unprecedented opportunity to do his part in the cause of progress and he entered the arena wholeheartedly.

Condorcet was first elected as a member of the Municipality of Paris; and then, in 1791, he became one of the six Commissioners of the Treasury. Soon afterwards he was elected to the Legislative Assembly, of which he became first the Secretary and finally the President. In 1792, Condorcet proposed to the Assembly that all patents of nobility should be burned. The motion was carried unanimously; and on 19 June his own documents were thrown on a fire with the others at the foot of a statue of Louis XIV.

Condorcet was one of the chief authors of the proclamation which declared France to be a republic and which summoned a National Convention. As he remained above the personal political quarrels that were raging at the time, Condorcet was elected to the National Convention by five different constituencies. When the Convention brought Louis XVI to trial, Condorcet maintained that, according to the constitution, the monarch was inviolable and that the Convention therefore had no legal right to try the King. When the King was tried despite these protests, Condorcet voted in favor of an appeal to the people.

Drafting a new constitution for France

In October 1792, when the Convention set up a Committee of Nine to draft a new constitution for France, Condorcet sat on this committee as did the Englishman, Thomas Paine. Under sentence of death in England for publishing his pamphlet *The Rights of Man*, Paine had fled to France and had become a French citizen. He and Condorcet were the chief authors of a moderate (Gerondist) draft of the constitution. However, the Jacobin leader, Robespierre, bitterly resented being excluded from the Committee of Nine and, when the Convention then gave the responsibility for drafting the new constitution to the Committee for Public Safety, which was enlarged for this purpose by five additional members. The result was a hastily produced document with many glaring defects. When it was presented to the Convention, however, it was accepted almost without discussion. This was too much for Condorcet to stomach and he published anonymously a letter entitled *Advice to the French on the New Constitution*, in which he exposed the defects of the Jacobin constitution and urged all Frenchmen to reject it.

Hiding from Robespierre's Terror

Condorcet's authorship of this letter was discovered and treated as an act of treason. On 8 July 1793, Condorcet was denounced in the Convention; and an order was sent out for his arrest. The officers tried to find him, first at his town house and then at his house in the country but, warned by a friend, Condorcet had gone into hiding.

The house where Condorcet took refuge was at Rue Servandoni, a small street in Paris leading down to the Luxembourg Gardens, and it was owned by Madame Vernet, the widow of a sculptor. Madame Vernet, who sometimes kept lodgings for students, had been asked by Condorcet's friends whether she would be willing to shelter a proscribed man. 'Is he a good man?', she had asked; and when assured that this was the case, she had said, 'Then let him come at once. You can tell me his name later. Don't waste even a moment. While we are speaking, he may be arrested.' She did not hesitate, although she knew that she risked death, the penalty imposed by the Convention for sheltering a proscribed man.

Condorcet writes the *Esquisse*

Although Robespierre's agents had been unable to arrest him, Condorcet was sentenced to the guillotine *in absentia*. He knew that in all probability he had only a few weeks or months to live and he began to write his last thoughts, racing against time. Hidden in the house at Rue Servandoni, and cared for by Madame Vernet, Condorcet returned to a project which he had begun in 1772, a history of the progress of human thought, stretching from the remote past to the distant future. Guessing that he would not have time to complete the full-scale work he had once planned, he began a sketch or outline: *Esquisse d'un Tableau Historique des progrès de l'Esprit Humain*.

Condorcet's *Esquisse*, is an enthusiastic endorsement of the idea of infinite human perfectibility which was current among the philosophers of the 18th century, and in this book, Condorcet anticipated many of the evolutionary ideas of Charles Darwin. He compared humans with animals, and found many common traits. Condorcet believed that animals are able to think, and even to think rationally, although their thoughts are extremely simple compared with those of humans. He also asserted that humans historically began their existence on the same level as animals and gradually developed to their present state.

Since this evolution took place historically, he reasoned, it is probable, or even inevitable, that a similar evolution in the future will bring mankind to a level of physical, mental and moral development which will be as superior to our own present state as we are now superior to animals.

In his *Esquisse*, Condorcet called attention to the unusually long period of dependency which characterize the growth and education of human offspring. This prolonged childhood is unique among living beings. It is needed for the high level of mental development of the human species; but it requires a stable family structure to protect the young during their long upbringing. Thus, according to Condorcet, biological evolution brought into existence a moral precept, the sanctity of the family.

Similarly, Condorcet maintained, larger associations of humans would have been impossible without some degree of altruism and sensitivity to the suffering of others incorporated into human behavior, either as instincts or as moral precepts or both; and thus the evolution of organized society entailed the development of sensibility and morality.

Condorcet believed that ignorance and error are responsible for vice; and he listed what he regarded as the main mistakes of civilization: hereditary transmission of power, inequality between men and women, religious bigotry, disease, war, slavery, economic inequality,

and the division of humanity into mutually exclusive linguistic groups.

Condorcet believed the hereditary transmission of power to be the source of much of the tyranny under which humans suffer; and he looked forward to an era when republican governments would be established throughout the world. Turning to the inequality between men and women, Condorcet wrote that he could see no moral, physical or intellectual basis for it. He called for complete social, legal, and educational equality between the sexes.

Condorcet predicted that the progress of medical science would free humans from the worst ravages of disease. Furthermore, he maintained that since perfectibility (i.e. evolution) operates throughout the biological world, there is no reason why mankind's physical structure might not gradually improve, with the result that human life in the remote future could be greatly prolonged. Condorcet believed that the intellectual and moral facilities of man are capable of continuous and steady improvement; and he thought that one of the most important results of this improvement will be the abolition of war.

At the end of his *Esquisse*, Condorcet said that any person who has contributed to the progress of mankind to the best of his ability becomes immune to personal disaster and suffering. He knows that human progress is inevitable and can take comfort and courage from his inner picture of the epic march of mankind, through history, towards a better future.

Shortly after Condorcet completed the *Esquisse*, he received a mysterious warning that soldiers of the Convention were on their way to inspect Madame Vernet's house. Wishing to spare his generous hostess from danger, he disguised himself as well as he could and slipped past the portress. However, Condorcet had only gone a few steps outside the house when he was recognized by Madame Verdet's cousin, who risked his life to guide Condorcet past the sentinels at the gates of Paris, and into the open country beyond.

Condorcet wandered for several days without food or shelter, hiding himself in quarries and thickets. Finally, on 27 March 1794, hunger forced him to enter a tavern at the village of Clamart, where he ordered an omelette. When asked how many eggs it should contain, the exhausted and starving philosopher replied without thinking, 'twelve'. This reply, together with his appearance, excited suspicion. He was asked for his papers and, when it was found that he had none, soldiers were sent for and he was arrested. He was taken to a prison at Bourg-la-Reine, but he was so weak that he was unable to walk there, and had to be carried in a cart. The next morning, Condorcet was found dead on the floor of his cell. The cause of his death is not known with certainty. It was listed in official documents as congestion sanguine, congestion of the blood but the real cause may have been cold, hunger, exhaustion or poison. Many historians believe that Condorcet was murdered by Robespierre's agents, since he was so popular that a public execution would have been impossible.

After Condorcet's death the currents of revolutionary politics shifted direction. Robespierre, the leader of the Terror, was himself soon arrested. The execution of Robespierre took place on 25 July 1794, only a few months after the death of Condorcet.

Condorcet's *Esquisse d'un Tableau Historique des Progrès de l'Esprit Humain* was published posthumously in 1795. In the post-Thermidor reconstruction, the Convention voted funds to have it printed in a large edition and distributed throughout France, thus adopt-

ing the *Esquisse* as its official manifesto. Condorcet's name will always be linked with this small prophetic book. It was destined to establish the form in which the eighteenth-century idea of progress was incorporated into Western thought, and (as we shall see) it provoked Robert Malthus to write *An Essay on the Principle of Population*.

1.9 William Godwin

Political Justice

In 1793 the English novelist and philosopher William Godwin published an enormously optimistic book, *Political Justice*. As the eighteenth century neared its end, this book became the focus of hopes for political reform and the center of the debate on human progress. Godwin was lifted briefly to enormous heights of fame and adulation, from which he plunged, a few years later, into relative obscurity.

In *Political Justice*, Godwin predicted a future society where scientific progress would liberate humans from material want. Godwin predicted that in the future, with the institution of war abolished, with a more equal distribution of property, and with the help of scientific improvements in agriculture and industry, much less labor would be needed to support life. Luxuries are at present used to maintain artificial distinctions between the classes of society, Godwin wrote, but in the future values will change; humans will live more simply, and their efforts will be devoted to self-fulfillment and to intellectual and moral improvement, rather than to material possessions. With the help of automated agriculture, the citizens of a future society will need only a few hours a day to earn their bread.

Godwin went on to say, "The spirit of oppression, the spirit of servility and the spirit of fraud - these are the immediate growth of the established administration of property. They are alike hostile to intellectual improvement. The other vices of envy, malice, and revenge are their inseparable companions. In a state of society where men lived in the midst of plenty, and where all shared alike the bounties of nature, these sentiments would inevitably expire. The narrow principle of selfishness would vanish. No man being obliged to guard his little store, or provide with anxiety and pain for his restless wants, each would lose his own individual existence in the thought of the general good. No man would be the enemy of his neighbor, for they would have nothing to contend; and of consequence philanthropy would resume the empire which reason assigns her. Mind would be delivered from her perpetual anxiety about corporal support, and free to expatiate in the field of thought which is congenial to her. Each man would assist the inquiries of all."

Godwin insisted that there is an indissoluble link between politics, ethics and knowledge. *Political Justice* is an enthusiastic vision of what humans could be like at some future period when the trend towards moral and intellectual improvement has lifted men and women above their their present state of ignorance and vice. Much of the savage structure of the penal system would then be unnecessary, Godwin believed. (At the time

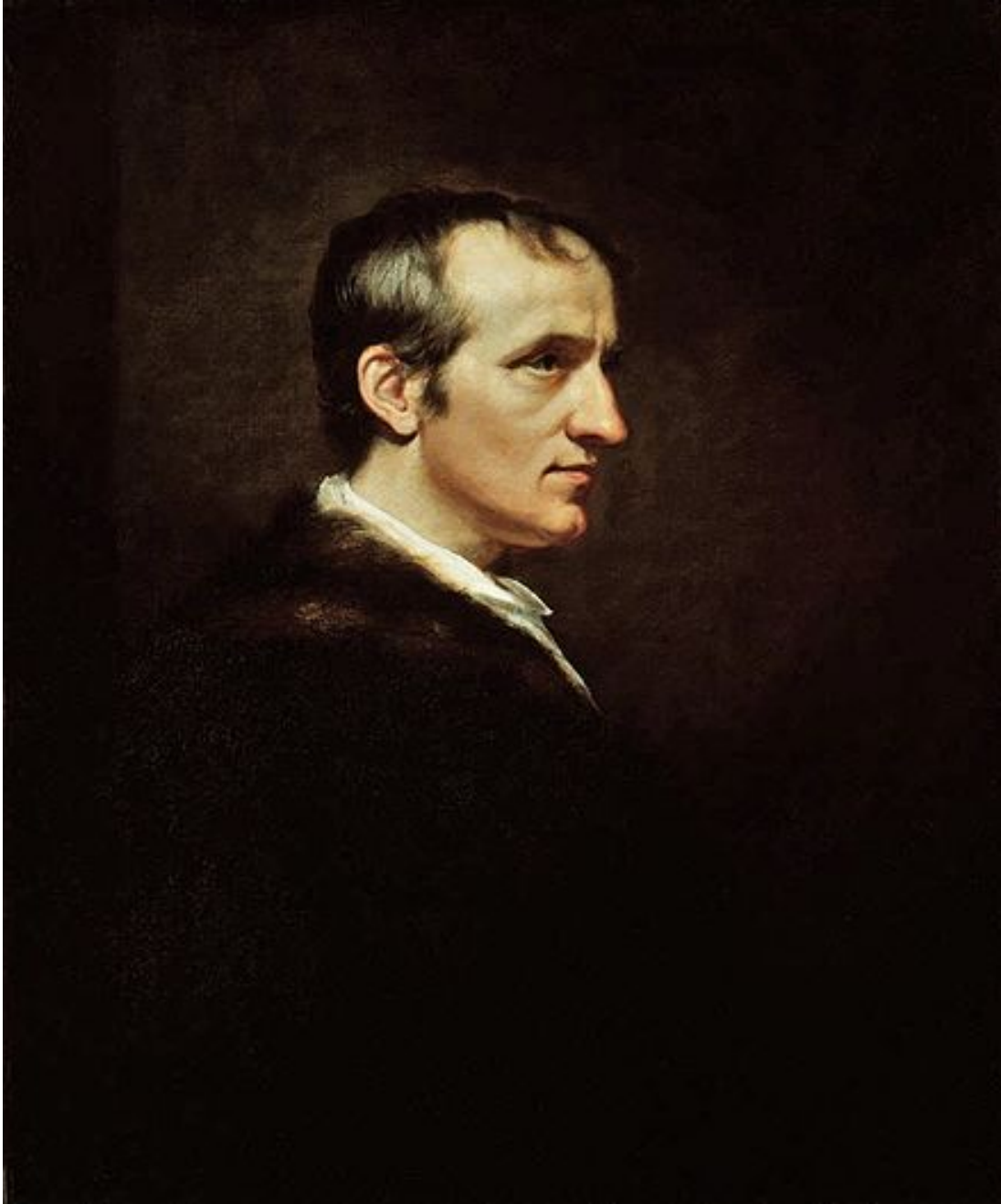


Figure 1.10: William Godwin in a painting by James Northcote. He believed that the development of an individual's character is very strongly influenced by environment.

when he was writing, there were more than a hundred capital offenses in England, and this number had soon increased to almost two hundred. The theft of any object of greater value than ten shillings was punishable by hanging.)

In its present state, Godwin wrote, society decrees that the majority of its citizens “should be kept in abject penury, rendered stupid with ignorance and disgusting with vice, perpetuated in nakedness and hunger, goaded to the commission of crimes, and made victims to the merciless laws which the rich have instituted to oppress them”. But human behavior is produced by environment and education, Godwin pointed out. If the conditions of upbringing were improved, behavior would also improve. In fact, Godwin believed that men and women are subject to natural laws no less than the planets of Newton’s solar system. “In the life of every human”, Godwin wrote, “there is a chain of causes, generated in that eternity which preceded his birth, and going on in regular procession through the whole period of his existence, in consequence of which it was impossible for him to act in any instance otherwise than he has acted.”

The chain of causality in human affairs implies that vice and crime should be regarded with the same attitude with which we regard disease. The causes of poverty, ignorance, vice and crime should be removed. Human failings should be cured rather than punished. With this in mind, Godwin wrote, “our disapprobation of vice will be of the same nature as our disapprobation of an infectious distemper.”

With improved environment and education, humans will reach a higher moral level. But what is morality? Here Godwin draws heavily on his Christian background, especially on the moral principles of the Dissenting community. The Parable of the Good Samaritan illustrates the central principle of Christian ethics: We must love our neighbor as much as we love ourselves; but our neighbor is not necessarily a member of our immediate circle. He or she may be distant from us, in culture, in ethnic background or in geographical distance. Nevertheless, that person is still our neighbor, a member of the human family, and our duty to him or her is no less than our duty to those who are closest to us. It follows that narrow loyalties must be replaced or supplemented by loyalty to the interests of humanity as a whole.

Judging the benevolence of our actions is the responsibility of each individual conscience, Godwin says, not the responsibility of the State, and the individual must follow his or her conscience even if it conflicts with the dictates of the State. Each individual case should be judged by itself. If our institutions and laws meet the criteria of benevolence, justice and truth, we should give them our enthusiastic support; if not, we should struggle to change them. In giving personal judgement such a dominant role, Godwin anticipates the ideas of Thoreau, Tolstoy and Gandhi.

The exercise of individual judgement requires great honesty and objectivity. In order for the power of truth and reason to overcome prejudice and error, Godwin says, it is necessary for each person always to speak and act with complete sincerity. Even the degree of insincerity necessary for elegant manners is wrong in Godwin’s opinion.

Starting with these ethical principles, Godwin proceeds with almost mathematical logic to deduce the consequences, intoxicated by his enthusiasm and not stopping even when the conclusions to which he is driven conflict with conventional wisdom and intuition. For

example, he denies that humans have rights and maintains that they only have duties.

Regarding the right to dispose of private property as one chooses, Godwin says: “To whom does any article, suppose a loaf of bread, justly belong? I have an hundred loaves in my possession, and in the next street there is a poor man expiring with hunger, to whom one of these loaves would be a means of preserving his life. If I withhold this loaf from him, am I not unjust? If I impart it, am I not complying with what justice demands?”

In other words, according to Godwin, our duty to act for the benefit of humanity implies a sacrifice of our private rights as individuals. Private property is not really our own, to be used as we wish; it is held in trust, to be used where it will do the greatest amount of good for humanity as a whole.

Godwin also denies that several commonly admired virtues really are virtues. Keeping promises, he says, is not a virtue because at any given moment we have a duty to do the greatest possible good through our actions. If an act is good, we should do it because we believe it to be good, not because we have promised to do it; and a promise should not force us to perform an act which we believe to be bad. A virtuous person therefore does not make promises. Similarly, Godwin maintains that gratitude is a vice since it distorts our judgement of the benevolence of our actions. When he heard of Godwin’s doctrine on gratitude, Edmund Burke remarked “I would save him from that vice by not doing him any service!”

Godwin saw the system of promises, loyalty, and gratitude as a means by which individual judgement can be suspended and tyranny maintained. People can be forced to act against their consciences because of promises which they have made or services which they have received. An example of this is the suspension of private ethical judgement which follows a soldier’s induction into an army. We should perform an act, Godwin maintains, not because of fear of punishment or hope of reward or in return for favors that we have received, but rather because we believe the act to be of the highest benefit to humanity as a whole.

Many of our political institutions may be needed now, Godwin said, because of mankind’s present faults; but in the future, when humanity has reached a higher level of perfection, they will be needed less and less. The system of nation states might then be replaced by a loose federation of small communities, within each of which problems could be resolved by face-to-face discussion. Regarding this future ideal system, Godwin writes: “It is earnestly to be desired that each man was wise enough to govern himself without the interference of any compulsory restraint; and since government in its best state is an evil, the object principally to be aimed at is, that we should have as little of it as the general peace of human society will permit.”

Political Justice is a vision or prophesy of what human life might be like, not in the world as it is but in an ideal world of the future. As Godwin’s disciple, Percy Bysshe Shelley, later expressed it in his verse-drama *Prometheus Unbound*,

*The loathsome mask has fallen, the man remains
Sceptreless, free, uncircumscribed, but man
Equal, unclassed, tribeless, and nationless,*

*Exempt from awe, worship, degree, the king
Over himself; just, gentle, wise...*

Enormous instant fame; The New Philosophy

The quarto edition of *Political Justice* was a best seller and the book was soon republished in a less expensive octavo edition which sold equally well. It was pirated in Ireland, Scotland, and America and hundreds of groups of workers who could not afford to buy the book individually bought joint copies, which then circulated among the subscribers or were read aloud to groups. The doctrines advocated in *Political Justice* were soon being called the “New Philosophy”.

Godwin became famous overnight: “I was nowhere a stranger”, he wrote later, “...I was everywhere received with curiosity and kindness. If temporary fame ever was an object worthy to be coveted by the human mind, I certainly obtained it in a degree that has seldom been exceeded.”

Godwin’s friend, the essayist William Hazlitt, described this sudden burst of fame in the following words: “... he blazed as a sun in the firmament of reputation; no-one was more talked of, more looked up to, more sought after, and wherever liberty, truth, justice was the theme, his name was not far off”.

William Wordsworth read *Political Justice* in 1794 and was greatly influenced by it. Between February and August 1795, Wordsworth met Godwin seven times for long private discussions. Much of Wordsworth’s writing from the Great Decade shows the mark of Godwin’s ideas, as can be seen, for example in the following lines from *The Prelude*:

*How glorious! in self-knowledge and self-rule,
To look through all the frailties of the world,
And, with a resolute mastery shaking off
Infirmities of nature, time and place,
Build social upon personal Liberty,
Which, to the blind restraints of general laws
Superior, magisterially adopts
One guide, the light of circumstances, flashed
Upon an independent intellect*

Things as they are

On 26 May 1794, Godwin added to his already great reputation by publishing a powerful and original psychological novel, *Things as They Are*, later renamed *Caleb Williams*. Godwin’s purpose in writing this novel was to illustrate some of the themes of *Political Justice* and to bring his ideas to readers who might not be directly interested in philosophy.

In *Caleb Williams*, Godwin makes several literary innovations which were to influence such writers as Edgar Allan Poe, Charles Dickens, Balzac, and Victor Hugo. *Caleb Williams* is, in fact, the ancestor of the modern thriller and detective story.

1.10 Charles Darwin

Linnaeus, Lamarck and E. Darwin

During the 17th and 18th centuries, naturalists had been gathering information on thousands of species of plants and animals. This huge, undigested heap of information was put into some order by the great Swedish naturalist, Carl von Linné (1707-1778), who is usually called by his Latin name, Carolus Linnaeus.

Linnaeus reclassified all living things, and he introduced a binomial nomenclature, so that each plant or animal became known by two names - the name of its genus, and the name of its species. In the classification of Linnaeus, the species within a given genus resemble each other very closely. Linnaeus also grouped related genera into classes, and related classes into orders. Later, the French anatomist, Cuvier (1769-1832), grouped related orders into phyla.

In France, the Chevalier J.B. de Lamarck (1744-1829), was struck by the close relationships between various animal species; and in 1809 he published a book entitled *Philosophie Zoologique*, in which he tried to explain this interrelatedness in terms of a theory of evolution. Lamarck explained the close similarity of the species within a genus by supposing these species to have evolved from a common ancestor. However, the mechanism of evolution which he postulated was seriously wrong, since he believed that acquired characteristics could be inherited.

Lamarck believed, for example, that giraffes stretched their necks slightly by reaching upward to eat the leaves of high trees. He believed that these slightly-stretched necks could be inherited; and in this way, Lamarck thought, the necks of giraffes have gradually become longer over many generations. Although his belief in the inheritability of acquired characteristics was a serious mistake, Lamarck deserves much credit for correctly maintaining that the close similarity between the species of a genus is due to their descent from a common ancestral species.

Meanwhile, in England, the brilliant physician-poet, Erasmus Darwin (1731-1802), who was considered by Coleridge to have "...a greater range of knowledge than any other man in Europe", had published *The Botanic Garden* and *Zoonomia* (1794). Darwin's first book, *The Botanic Garden*, was written in verse, and in the preface he stated that his purpose was "...to inlist imagination under the banner of science.." and to call the reader's attention to "the immortal works of the celebrated Swedish naturalist, Linnaeus". This book was immensely popular during Darwin's lifetime, but modern readers might find themselves wishing that he had used prose instead of poetry.

Darwin's second book, *Zoonomia*, is more interesting, since it contains a clear statement of the theory of evolution:

“...When we think over the great changes introduced into various animals”, Darwin wrote, “as in horses, which we have exercised for different purposes of strength and swiftness, carrying burthens or in running races; or in dogs, which have been cultivated for strength and courage, as the bull-dog; or for acuteness of his sense of smell, as in the hound and spaniel; or for the swiftness of his feet, as the greyhound; or for his swimming in the water, or for drawing snow-sledges, as the rough-haired dogs of the north... and add to these the great change of shape and colour which we daily see produced in smaller animals from our domestication of them, as rabbits or pigeons;... when we revolve in our minds the great similarity of structure which obtains in all the warm-blooded animals, as well as quadrupeds, birds and amphibious animals, as in mankind, from the mouse and the bat to the elephant and whale; we are led to conclude that they have alike been produced from a similar living filament.”

Erasmus Darwin’s son, Robert, married Suzannah Wedgwood, the pretty and talented daughter of the famous potter, Josiah Wedgwood; and in 1809, (the same year in which Lamarck published his *Philosophie Zoologique*), she became the mother of Charles Darwin.

Charles Darwin

As a boy, Charles Darwin was fond of collecting and hunting, but he showed no special ability in school. His father, disappointed by his mediocre performance, once said to him: “You care for nothing but shooting, dogs and rat-catching; and you will be a disgrace to yourself, and to all your family.”

Robert Darwin was determined that his son should not turn into an idle, sporting man, as he seemed to be doing, and when Charles was sixteen, he was sent to the University of Edinburgh to study medicine. However, Charles Darwin had such a sensitive and gentle disposition that he could not stand to see operations (performed, in those days, without chloroform). Besides, he had found out that his father planned to leave him enough money to live on comfortably; and consequently he didn’t take his medical studies very seriously. However, some of his friends were scientists, and through them, Darwin became interested in geology and zoology.

Robert Darwin realized that his son did not want to become a physician, and, as an alternative, he sent Charles to Cambridge to prepare for the clergy. At Cambridge, Charles Darwin was very popular because of his cheerful, kind and honest character; but he was not a very serious student. Among his many friends, however, there were a few scientists, and they had a strong influence on him. The most important of Darwin’s scientific friends were John Stevens Henslow, the Professor of Botany at Cambridge, and Adam Sedgwick, the Professor of Geology.

Remembering the things which influenced him at that time, Darwin wrote:

“During my last year at Cambridge, I read with care and profound interest Humboldt’s *Personal Narritive of Travels to the Equinoctal Regions of America*. This work, and Sir J. Hirschel’s *Introduction to the Study of Natural Philosophy*, stirred up in me a burning desire to add even the most humble contribution to the noble structure of Natural Science. No one of a dozen books influenced me nearly so much as these. I copied out from Humboldt

long passages about Teneriffe, and read them aloud to Henslow, Ramsay and Dawes... and some of the party declared that they would endeavour to go there; but I think they were only half in earnest. I was, however, quite in earnest, and got an introduction to a merchant in London to enquire about ships.”

During the summer of 1831, Charles Darwin went to Wales to help Professor Sedgwick, who was studying the extremely ancient rock formations found there. When he returned to his father’s house after this geological expedition, he found a letter from Henslow. This letter offered Darwin the post of unpaid naturalist on the *Beagle*, a small brig which was being sent by the British government to survey the coast of South America and to carry a chain of chronological measurements around the world.

Darwin was delighted and thrilled by this offer. He had a burning desire both to visit the glorious, almost-unknown regions described by his hero, Alexander von Humboldt, and to “add even the most humble contribution to the noble structure of Natural Science”. His hopes and plans were blocked, however, by the opposition of his father, who felt that Charles was once again changing his vocation and drifting towards a life of sport and idleness. “If you can find any man of common sense who advises you to go”, Robert Darwin told his son, “I will give my consent”.

Deeply depressed by his father’s words, Charles Darwin went to visit the estate of his uncle, Josiah Wedgwood, at Maer, where he always felt more comfortable than he did at home. In Darwin’s words what happened next was the following:

“...My uncle sent for me, offering to drive me over to Shrewsbury and talk with my father, as my uncle thought that it would be wise in me to accept the offer. My father always maintained that my uncle was one of the most sensible men in the world, and he at once consented in the kindest possible manner. I had been rather extravagant while at Cambridge, and to console my father, I said that ‘I should be deuced clever to spend more than my allowance whilst on board the *Beagle*’, but he answered with a smile, ‘But they tell me you are very clever!’.”

Thus, on December 27, 1831, Charles Darwin started on a five-year voyage around the world. Not only was this voyage destined to change Darwin’s life, but also, more importantly, it was destined to change man’s view of his place in nature.

Lyell’s hypothesis

As the *Beagle* sailed out of Devonport in gloomy winter weather, Darwin lay in his hammock, 22 years old, miserably seasick and homesick, knowing that he would not see his family and friends for many years. To take his mind away from his troubles, Darwin read a new book, which Henslow had recommended: Sir Charles Lyell’s *Principles of Geology*. “Read it by all means”, Henslow had written, “for it is very interesting; but do not pay any attention to it except in regard to facts, for it is altogether wild as far as theory goes.”

Reading Lyell’s book with increasing excitement and absorption, Darwin could easily see what Henslow found objectionable: Lyell, a follower of the great Scottish geologist, James Hutton (1726-1797), introduced a revolutionary hypothesis into geology. According to Lyell, “No causes whatever have, from the earliest times to which we can look back, to

the present, ever acted, but those now acting; and they have never acted with different degrees of energy from those which they now exert”.

This idea seemed dangerous and heretical to deeply religious men like Henslow and Sedgwick. They believed that the earth’s geology had been shaped by Noah’s flood, and perhaps by other floods and catastrophes which had occurred before the time of Noah. The great geological features of the earth, its mountains, valleys and planes, they viewed as marks left behind by the various catastrophes through which the earth had passed.

All this was now denied by Lyell. He believed the earth to be enormously old - thousands of millions of years old. Over this vast period of time, Lyell believed, the long-continued action of slow forces had produced the geological features of the earth. Great valleys had been carved out by glaciers and by the slow action of rain and frost; and gradual changes in the level of the land, continued over enormous periods of time, had built up towering mountain ranges.

Lyell’s belief in the immense age of the earth, based on geological evidence, made the evolutionary theories of Darwin’s grandfather suddenly seem more plausible. Given such vast quantities of time, the long-continued action of small forces might produce great changes in biology as well as in geology!

By the time the *Beagle* had reached San Thiago in the Cape Verde Islands, Darwin had thoroughly digested Lyell’s book, with its dizzying prospects. Looking at the geology of San Thiago, he realized “the wonderful superiority of Lyell’s manner of treating geology”. Features of the island which would have been incomprehensible on the basis of the usual Catastrophist theories were clearly understandable on the basis of Lyell’s hypothesis.

As the *Beagle* slowly made its way southward along the South American coast, Darwin went on several expeditions to explore the interior. On one of these trips, he discovered some fossil bones in the red mud of a river bed. He carefully excavated the area around them, and found the remains of nine huge extinct quadrupeds. Some of them were as large as elephants, and yet in structure they seemed closely related to living South American species. For example, one of the extinct animals which Darwin discovered resembled an armadillo except for its gigantic size.

The *Beagle* rounded Cape Horn, lashed by freezing waves so huge that it almost floundered. After the storm, when the brig was anchored safely in the channel of Tierra del Fuego, Darwin noticed how a Fuegian woman stood for hours and watched the ship, while sleet fell and melted on her naked breast, and on the new-born baby she was nursing. He was struck by the remarkable degree to which the Fuegians had adapted to their frigid environment, so that they were able to survive with almost no shelter, and with no clothes except a few stiff animal skins, which hardly covered them, in weather which would have killed ordinary people.

In 1835, as the *Beagle* made its way slowly northward, Darwin had many chances to explore the Chilean coast - a spectacularly beautiful country, shadowed by towering ranges of the Andes. One day, near Concepcion Bay, he experienced the shocks of a severe earthquake.

“It came on suddenly, and lasted two minutes”, Darwin wrote, “The town of Concepcion is now nothing more than piles and lines of bricks, tiles and timbers.”

Measurements which Darwin made showed him that the shoreline near Concepcion had risen at least three feet during the quake; and thirty miles away, Fitzroy, the captain of the *Beagle*, discovered banks of mussels ten feet above the new high-water mark. This was dramatic confirmation of Lyell's theories! After having seen how much the level of the land was changed by a single earthquake, it was easy for Darwin to imagine that similar events, in the course of many millions of years, could have raised the huge wall of the Andes mountains.

In September, 1835, the *Beagle* sailed westward to the Galapagos Islands, a group of small rocky volcanic islands off the coast of Peru. On these islands, Darwin found new species of plants and animals which did not exist anywhere else in the world. In fact, he discovered that each of the islands had its own species, similar to the species found on the other islands, but different enough to be classified separately.

The Galapagos Islands contained thirteen species of finches, found nowhere else in the world, all basically alike in appearance, but differing in certain features especially related to their habits and diet. As he turned these facts over in his mind, it seemed to Darwin that the only explanation was that the thirteen species of Galapagos finches were descended from a single species, a few members of which had been carried to the islands by strong winds blowing from the South American mainland.

"Seeing this gradation and diversity of structure in one small, intimately related group of birds", Darwin wrote, "one might really fancy that from an original paucity of birds in this archipelago, one species had been taken and modified for different ends... Facts such as these might well undermine the stability of species."

As Darwin closely examined the plants and animals of the Galapagos Islands, he could see that although they were not quite the same as the corresponding South American species, they were so strongly similar that it seemed most likely that all the Galapagos plants and animals had reached the islands from the South American mainland, and had since been modified to their present form.

The idea of the gradual modification of species could also explain the fact, observed by Darwin, that the fossil animals of South America were more closely related to African and Eurasian animals than were the living South American species. In other words, the fossil animals of South America formed a link between the living South American species and the corresponding animals of Europe, Asia and Africa. The most likely explanation for this was that the animals had crossed to America on a land bridge which had since been lost, and that they had afterwards been modified.

The *Beagle* continued its voyage westward, and Darwin had a chance to study the plants and animals of the Pacific Islands. He noticed that there were no mammals on these islands, except bats and a few mammals brought by sailors. It seemed likely to Darwin that all the species of the Pacific Islands had reached them by crossing large stretches of water after the volcanic islands had risen from the ocean floor; and this accounted for the fact that so many classes were missing. The fact that each group of islands had its own particular species, found nowhere else in the world, seemed to Darwin to be strong evidence that the species had been modified after their arrival. The strange marsupials of the isolated Australian continent also made a deep impression on Darwin.

The Origin of Species

Darwin had left England on the *Beagle* in 1831, an immature young man of 22, with no real idea of what he wanted to do with his life. He returned from the five-year voyage in 1836, a mature man, confirmed in his dedication to science, and with formidable powers of observation, deduction and generalization. Writing of the voyage, Darwin says:

“I have always felt that I owe to the voyage the first real education of my mind... Everything about which I thought or read was made to bear directly on what I had seen, or was likely to see, and this habit was continued during the five years of the voyage. I feel sure that it was this training which has enabled me to do whatever I have done in science.”

Darwin returned to England convinced by what he had seen on the voyage that plant and animal species had not been independently and miraculously created, but that they had been gradually modified to their present form over millions of years of geological time.

Darwin was delighted to be home and to see his family and friends once again. To his uncle, Josiah Wedgwood, he wrote:

“My head is quite confused from so much delight, but I cannot allow my sister to tell you first how happy I am to see all my dear friends again... I am most anxious once again to see Maer and all its inhabitants.”

In a letter to Henslow, he said:

“My dear Henslow, I do long to see you. You have been the kindest friend to me that ever man possessed. I can write no more, for I am giddy with joy and confusion.”

In 1837, Darwin took lodgings at Great Marlborough Street in London, where he could work on his geological and fossil collections. He was helped in his work by Sir Charles Lyell, who became Darwin's close friend. In 1837 Darwin also began a notebook on *Transmutation of Species*. His *Journal of researches into the geology and natural history of the various countries visited by the H.M.S. Beagle* was published in 1839, and it quickly became a best-seller. It is one of the most interesting travel books ever written, and since its publication it has been reissued more than a hundred times.

These were very productive years for Darwin, but he was homesick, both for his father's home at the Mount and for his uncle's nearby estate at Maer, with its galaxy of attractive daughters. Remembering his many happy visits to Maer, he wrote:

“In the summer, the whole family used often to sit on the steps of the old portico, with the flower-garden in front, and with the steep, wooded bank opposite the house reflected in the lake, with here and there a fish rising, or a water-bird paddling about. Nothing has left a more vivid picture in my mind than these evenings at Maer.”

In the summer of 1838, tired of his bachelor life in London, Darwin wrote in his diary:

“My God, it is intolerable to think of spending one's whole life like a neuter bee, working, working, and nothing after all! Imagine living all one's days in smoky, dirty London! Only picture to yourself a nice soft wife on a sofa with a good fire, and books and music perhaps.. Marry! Marry! Marry! Q.E.D.”

Having made this decision, Darwin went straight to Maer and proposed to his pretty cousin, Emma Wedgwood, who accepted him at once, to the joy of both families. Charles and Emma Darwin bought a large and pleasant country house at Down, fifteen miles south



Figure 1.11: A young Charles Darwin after the Beagle voyage, in a portrait by George Richmond. By this time, he had already joined the scientific elite.

of London; and there, in December, 1839, the first of their ten children was born.

Darwin chose this somewhat isolated place for his home because he was beginning to show signs of a chronic illness, from which he suffered for the rest of his life. His strength was very limited, and he saved it for his work by avoiding social obligations. His illness was never accurately diagnosed during his own lifetime, but the best guess of modern doctors is that he had Chagas' disease, a trypanosome infection transmitted by the bite of a South American blood-sucking bug.

Darwin was already convinced that species had changed over long periods of time, but what were the forces which caused this change? In 1838 he found the answer:

"I happened to read for amusement Malthus on *Population*", he wrote, "and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favorable variations would tend to be preserved, and unfavorable ones destroyed. The result would be the formation of new species"

"Here, then, I had at last got a theory by which to work; but I was so anxious to avoid prejudice that I determined not for some time to write down even the briefest sketch of it. In June, 1842, I first allowed myself the satisfaction of writing a very brief abstract of my theory in pencil in 33 pages; and this was enlarged during the summer of 1844 into one of 230 pages".

All of Darwin's revolutionary ideas were contained in the 1844 abstract, but he did not publish it! Instead, in an incredible Copernicus-like procrastination, he began a massive treatise on barnacles, which took him eight years to finish! Probably Darwin had a premonition of the furious storm of hatred and bigotry which would be caused by the publication of his heretical ideas.

Finally, in 1854, he wrote to his friend, Sir Joseph Hooker (the director of Kew Botanical Gardens), to say that he was at last resuming his work on the origin of species. Both Hooker and Lyell knew of Darwin's work on evolution, and for many years they had been urging him to publish it. By 1835, he had written eleven chapters of a book on the origin of species through natural selection; but he had begun writing on such a vast scale that the book might have run to four or five heavy volumes, which could have taken Darwin the rest of his life to complete.

Fortunately, this was prevented by the arrival at Down House of a bombshell in the form of a letter from a young naturalist named Alfred Russell Wallace. Like Darwin, Wallace had read Malthus' book *On Population*, and in a flash of insight during a period of fever in Malaya, he had arrived at a theory of evolution through natural selection which was precisely the same as the theory on which Darwin had been working for twenty years! Wallace enclosed with his letter a short paper entitled *On the Tendency of Varieties to Depart Indefinitely From the Original Type*. It was a perfect summary of Darwin's theory of evolution!

"I never saw a more striking coincidence", the stunned Darwin wrote to Lyell, "If Wallace had my MS. sketch, written in 1842, he could not have made a better short abstract! Even his terms now stand as heads of my chapters... I should be extremely glad now to publish a sketch of my general views in about a dozen pages or so; but I cannot

persuade myself that I can do so honourably... I would far rather burn my whole book than that he or any other man should think that I have behaved in a paltry spirit.”

Both Lyell and Hooker acted quickly and firmly to prevent Darwin from suppressing his own work, as he was inclined to do. In the end, they found a happy solution: Wallace’s paper was read to the Linnean Society together with a short abstract of Darwin’s work, and the two papers were published together in the proceedings of the society. The members of the Society listened in stunned silence. As Hooker wrote to Darwin the next day, the subject was “too novel and too ominous for the old school to enter the lists before armouring.”

Lyell and Hooker then persuaded Darwin to write a book of moderate size on evolution through natural selection. As a result, in 1859, he published *The Origin of Species*, which ranks, together with Newton’s *Principia* as one of the two greatest scientific books of all time. What Newton did for physics, Darwin did for biology: He discovered the basic theoretical principle which brings together all the experimentally-observed facts and makes them comprehensible; and he showed in detail how this basic principle can account for the facts in a very large number of applications.

Darwin’s *Origin of Species* can still be read with enjoyment and fascination by a modern reader. His style is vivid and easy to read, and almost all of his conclusions are still believed to be true. He begins by discussing the variation of plants and animals under domestication, and he points out that the key to the changes produced by breeders is selection: If we want to breed fast horses, we select the fastest in each generation, and use them as parents for the next generation.

Darwin then points out that a closely similar process occurs in nature: Every plant or animal species produces so many offspring that if all of them survived and reproduced, the population would soon reach astronomical numbers. This cannot happen, since the space and food supply are limited; and therefore, in nature there is always a struggle for survival. Accidental variations which increase an organism’s chance of survival are more likely to be propagated to subsequent generations than are harmful variations. By this mechanism, which Darwin called “natural selection”, changes in plants and animals occur in nature just as they do under domestication.

If we imagine a volcanic island, pushed up from the ocean floor and completely uninhabited, we can ask what will happen as plants and animals begin to arrive. Suppose, for example, that a single species of bird arrives on the island. The population will first increase until the environment cannot support larger numbers, and it will then remain constant at this level. Over a long period of time, however, variations may accidentally occur in the bird population which allow the variant individuals to make use of new types of food; and thus, through variation, the population may be further increased. In this way, a single species “radiates” into a number of sub-species which fill every available ecological niche. The new species produced in this way will be similar to the original ancestor species, although they may be greatly modified in features which are related to their new diet and habits. Thus, for example, whales, otters and seals retain the general structure of land-going mammals, although they are greatly modified in features which are related to their aquatic way of life. This is the reason, according to Darwin, why vestigial organs

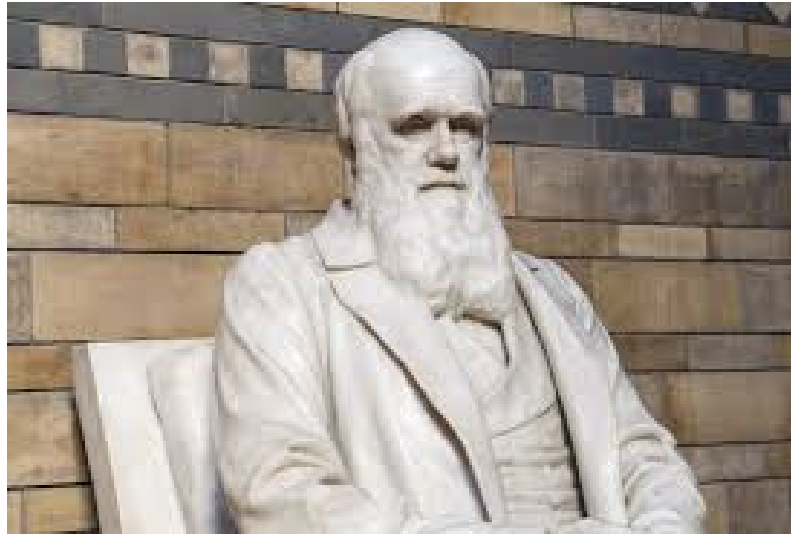


Figure 1.12: A statue of Charles Darwin, “the Newton of biology”, in the Natural History Museum, London. Darwin’s theory of evolution gives us an alternative explanation of the tendency of humans to sin. Our emotions are very similar to those of our remote ancestors, but cultural evolution has led to drastic changes in the societies in which we live. Our inherited emotions drive us to behave in ways that are no longer appropriate.

are so useful in the classification of plant and animal species.

The classification of species is seen by Darwin as a genealogical classification. All living organisms are seen, in his theory, as branches of a single family tree! This is a truly remarkable assertion, since the common ancestors of all living things must have been extremely simple and primitive; and it follows that the marvelous structures of the higher animals and plants, whose complexity and elegance utterly surpasses the products of human intelligence, were all produced, over thousands of millions of years, by random variation and natural selection!

Each structure and attribute of a living creature can therefore be seen as having a long history; and a knowledge of the evolutionary history of the organs and attributes of living creatures can contribute much to our understanding of them. For instance, studies of the evolutionary history of the brain and of instincts can contribute greatly to our understanding of psychology, as Darwin pointed out.

Among the many striking observations presented by Darwin to support his theory, are facts related to morphology and embryology. For example, Darwin includes the following quotation from the naturalist, von Baer:

“In my possession are two little embryos in spirit, whose names I have omitted to attach, and at present I am quite unable to say to what class they belong. They may be lizards or small birds, or very young mammalia, so complete is the similarity in the mode of formation of the head and trunk in these animals. The extremities, however, are

still absent in these embryos. But even if they had existed in the earliest stage of their development, we should learn nothing, for the feet of lizards and mammals, the wings and feet of birds, no less than the hands and feet of man, all arise from the same fundamental form.”

Darwin also quotes the following passage from G.H. Lewis:

“The tadpole of the common Salamander has gills, and passes its existence in the water; but the *Salamandra atra*, which lives high up in the mountains, brings forth its young full-formed. This animal never lives in the water. Yet if we open a gravid female, we find tadpoles inside her with exquisitely feathered gills; and when placed in water, they swim about like the tadpoles of the common Salamander or water-newt. Obviously this aquatic organization has no reference to the future life of the animal, nor has it any adaptation to its embryonic condition; it has solely reference to ancestral adaptations; it repeats a phase in the development of its progenitors.”

Darwin points out that, “...As the embryo often shows us more or less plainly the structure of the less modified and ancient progenitor of the group, we can see why ancient and extinct forms so often resemble in their adult state the embryos of existing species.”

No abstract of Darwin’s book can do justice to it. One must read it in the original. He brings forward an overwhelming body of evidence to support his theory of evolution through natural selection; and he closes with the following words:

“It is interesting to contemplate a tangled bank, clothed with many plants of many different kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependant upon each other in so complex a manner, have all been produced by laws acting around us... There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning, endless forms most beautiful and wonderful have been and are being evolved.”

1.11 Peter Kropotkin

The activist, writer, revolutionary, scientist, economist, sociologist, historian, essayist, researcher, political scientist, biologist, geographer and philosophe Prince Peter Kropotkin (1842-1921) was born into an ancient dynasty that had ruled Russia before the Romanoffs came to power. However, at the age of 12 he renounced his princely title, and rebuked his friends when they used it.

He was arrested for his revolutionary views, both in Russia and in France, but finally found refuge in England. Returning to Russia after the 1917 Russian Revolution, he was welcomed by cheering crowds numbering 10,000 or more, and offered the post of Minister of Education. He refused this post, however, and he criticized the dictatorial government that had come to power.

As a biologist, Kropotkin believed that cooperation is a more important evolutionary

force than competition. In his book, *Mutual Aid: A Factor in Evolution*, he wrote:

“In the animal world we have seen that the vast majority of species live in societies, and that they find in association the best arms for the struggle for life: understood, of course, in its wide Darwinian sense - not as a struggle for the sheer means of existence, but as a struggle against all natural conditions unfavourable to the species. The animal species... in which individual struggle has been reduced to its narrowest limits[...] and the practice of mutual aid has attained the greatest development... are invariably the most numerous, the most prosperous, and the most open to further progress. The mutual protection which is obtained in this case, the possibility of attaining old age and of accumulating experience, the higher intellectual development, and the further growth of sociable habits, secure the maintenance of the species, its extension, and its further progressive evolution. The unsociable species, on the contrary, are doomed to decay.”

Peter Kropotkin’s books

- In Russian and French Prisons, London: Ward and Downey; 1887.
- The Conquest of Bread (Paris, 1892) Project Gutenberg e-text, Project LibriVox audiobook
- The Great French Revolution, 1789-1793 (French original: Paris, 1893; English translation: London, 1909). e-text (in French), Anarchist Library e-text (in English)
- The Terror in Russia, 1909, RevoltLib e-text Words of a Rebel, 1885,
- Fields, Factories and Workshops (London and New York, 1898).
- Memoirs of a Revolutionist, London : Smith, Elder; 1899. Anarchist Library e-text, Anarchy Archives e-text
- Mutual Aid: A Factor of Evolution (London, 1902) Project Gutenberg e-text, Project LibriVox audiobook Russian Literature: Ideals and Realities (New York: A. A. Knopf, 1905). Anarchy Archives e-text
- The State: Its Historic Role, published 1946, Ethics: Origin and Development (unfinished). Included as first part of Origen y evolución de la moral (Spanish e-text)
- Modern Science and Anarchism, 1930,

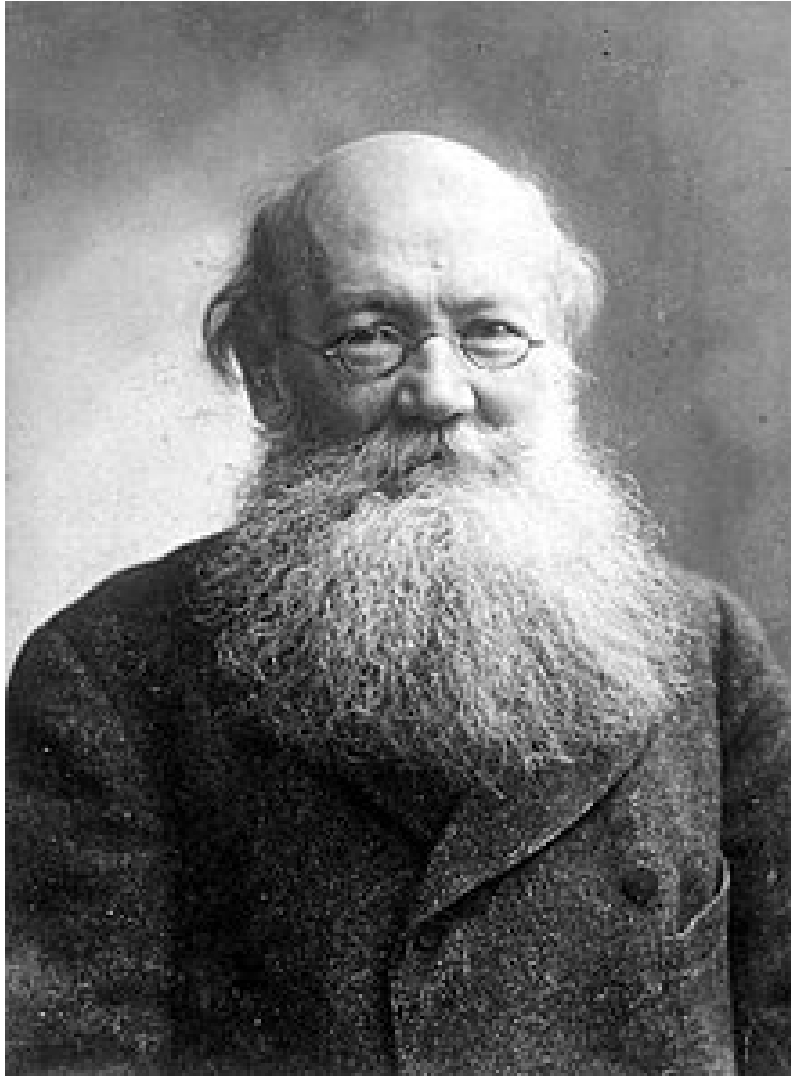


Figure 1.13: Peter Kropotkin (1842-1921). He was a prince of an ancient Russian dynasty by birth, but renounced his title. In Kropotkin's view, cooperation is more important than competition as an evolutionary force, and human nature is best suited to societies based on sharing rather than competitive individualism.

1.12 Sigmund Freud

Freud's family and education

Sigmund Freud (1856-1939) was born to Jewish parents in Moravia, which was then a part of the Austro-Hungarian Empire. He received a medical education at the University of Vienna, qualifying as a doctor in 1881. In 1885, he was appointed a docent in neuropathology and became an affiliated professor in 1902.

Starting in 1886, Freud set up a clinical practice in Vienna, treating patients with his radically new methods of psychoanalysis, free association and analysis of dreams. Freud considered dreams to be "...a royal road to the unconscious mind".

The id, the ego and the superego

The *id*, *the ego* and *the superego* were new concepts introduced by Freud.

According to Wikipedia,

"...the id is the set of uncoordinated instinctual desires; the super-ego plays the critical and moralizing role; and the ego is the organized, realistic agent that mediates, between the instinctual desires of the id and the critical super-ego."

Freud explained the relationship between the ego and the id as follows:

"The functional importance of the ego is manifested in the fact that, normally, control over the approaches to motility devolves upon it. Thus, in its relation to the id, [the ego] is like a man on horseback, who has to hold in check the superior strength of the horse; with this difference, that the rider tries to do so with his own strength, while the ego uses borrowed forces. The analogy may be carried a little further. Often, a rider, if he is not to be parted from his horse, is obliged to guide [the horse] where it wants to go; so, in the same way, the ego is in the habit of transforming the id's will into action, as if it were its own."

"...nor must it be forgotten that a child has a different estimate of his parents at different periods of his life. At the time at which the Oedipus complex gives place to the super-ego they are something quite magnificent; but later, they lose much of this. Identifications then come about with these later parents as well, and indeed they regularly make important contributions to the formation of character; but in that case they only affect the ego, they no longer influence the super-ego, which has been determined by the earliest parental images."

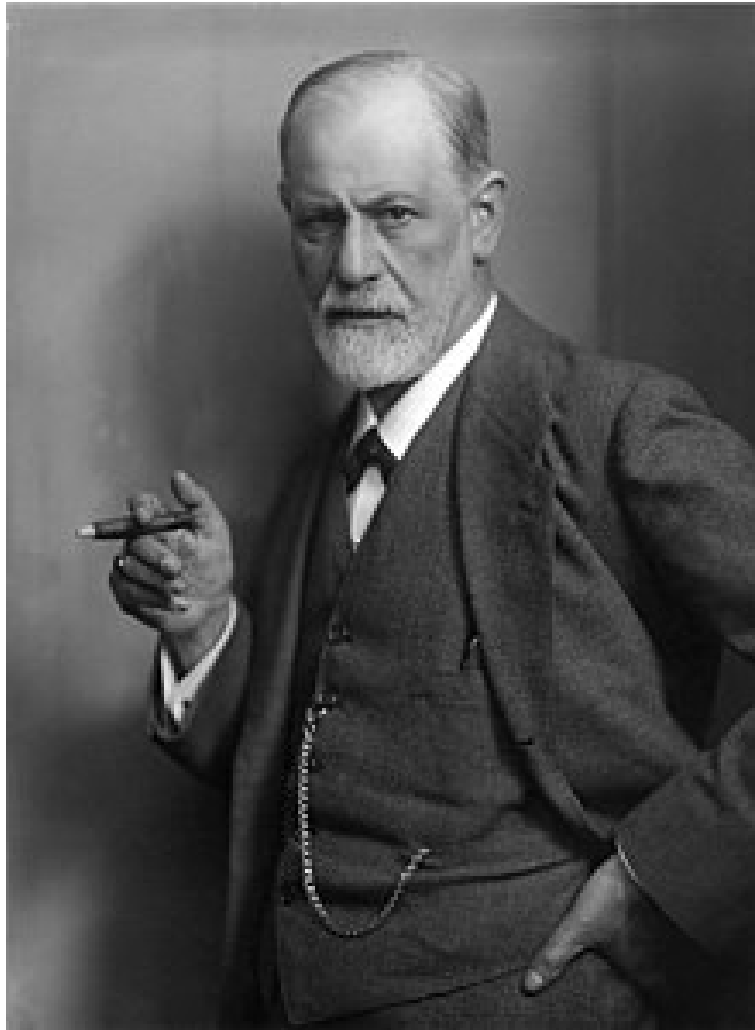


Figure 1.14: Sigmund Freud (1856-1939) in a 1921 photograph by Max Halberstadt. Freud and his family were forced to flee from Austria in 1938 because of Nazi persecution of Jews. They found refuge in England, where Freud died in 1939 of a cancer, which was probably caused by his habit of heavy smoking. In Freud's view, human nature is like an iceberg, only a small part of which, the conscious mind, is visible. The much larger part, the unconscious, is hidden below the surface, but it may be accessed through the analysis of dreams.

Some quotations from Sigmund Freud

One day, in retrospect, the years of struggle will strike you as the most beautiful.

Unexpressed emotions will never die. They are buried alive and will come forth later in uglier ways.

Human beings are funny. They long to be with the person they love but refuse to admit openly. Some are afraid to show even the slightest sign of affection because of fear. Fear that their feelings may not be recognized, or even worse, returned. But one thing about human beings puzzles me the most is their conscious effort to be connected with the object of their affection even if it kills them slowly within.

In the small matters trust the mind, in the large ones the heart.

Most people do not really want freedom, because freedom involves responsibility, and most people are frightened of responsibility.

Out of your vulnerabilities will come your strength.

We are what we are because we have been what we have been.

All family life is organized around the most damaged person in it.

Words have a magical power. They can bring either the greatest happiness or deepest despair; they can transfer knowledge from teacher to student; words enable the orator to sway his audience and dictate its decisions. Words are capable of arousing the strongest emotions and prompting all men's actions.

Love is a state of temporary psychosis.

The aim of psychoanalysis is to relieve people of their neurotic unhappiness so that they can be normally unhappy.

History is just new people making old mistakes.

The mind is like an iceberg, it floats with one-seventh of its bulk above water.

Life, as we find it, is too hard for us; it brings us too many pains, disappointments and impossible tasks. In order to bear it we cannot dispense with palliative measures... There are perhaps three such measures: powerful deflec-

tions, which cause us to make light of our misery; substitutive satisfactions, which diminish it; and intoxicating substances, which make us insensible to it.

The paranoid is never entirely mistaken.

When inspiration does not come to me, I go halfway to meet it.

I became aware of my destiny: to belong to the critical minority as opposed to the unquestioning majority.

1.13 Bertrand Russell

Bertrand Arthur William Russell, 3rd Earl Russell, OM, FRS, (1872-1970), was born into a wealthy and influential English family, whose members had been active in politics since the time of the Tudors. Bertrand Russell's grandfather, Lord John Russell, the third son of the Duke of Bedford and 1st Earl Russell, had twice served as Prime Minister during Queen Victoria's reign.

Because of the early death of his parents (Viscount and Viscountess Amberly) Bertrand Russell was brought up by his grandparents, Lord John Russell and Lady Russell, who lived at Pembroke Lodge near Richmond Park, about fifteen miles west of London. Bertrand Russell's grandfather soon died too, and his grandmother became the dominant influence on the boy's early life. Although she was a religious conservative, Russell's grandmother nevertheless believed in independence of thought, accepted Darwinism, and supporter Irish Home Rule. She also had the motto (taken from the Bible) "Thou shalt not follow a multitude to do evil."

Bertrand Russell and his elder brother Frank were educated at home by tutors, and they had rather lonely and unhappy childhoods in the emotionally repressed atmosphere of Pembroke Lodge. However, when Bertrand was eleven years old, Frank introduced him to the work of Euclid. Bertrand Russell later described this event in his autobiography as "one of the great events of my life, as dazzling as first love". It is interesting that Albert Einstein had similar feelings when he encountered the works of Euclid at almost the same age.

During these early years Russell also discovered the writings of the poet Shelley, and he later wrote: "I spent all my spare time reading him, and learning him by heart, knowing no one to whom I could speak of what I thought or felt, I used to reflect how wonderful it would have been to know Shelley, and to wonder whether I should meet any live human being with whom I should feel so much sympathy".

In 1890, when Bertrand Russell was 18, he started his studies in mathematics at Trinity College, Cambridge University. He graduated with distinction, but because of his agnostic religious beliefs, he encountered difficulties. Nevertheless he continued to teach at Cambridge University, his most notable student being the Austrian-British philosopher Ludwig

Wittgenstein (1889-1951).

During the years 1910-1913, Russell collaborated with his former teacher, Alfred North Whitehead (1861-1947) to write a 3-volume treatise entitled *Principia Mathematica*, which dealt with the logical foundations of mathematics and languages. At the end of the huge effort which he had devoted to writing this enormous work, Russell underwent a sudden conversion, during which all the aims of his life changed completely. Observing the terrible isolation of Whitehead's wife while she suffered an attack of angina, he had a sudden insight into the isolation of each human being and the need for better communication to break this isolation. As a result of this moment of intuition, Bertrand Russell resolved to abandon mathematics, and instead devote his life to making human existence happier and better.

Russell's idealism, honesty and humor shine from the pages of the enormous number of books, articles and letters that he wrote during the remainder of his life. His wide-ranging and influential writing won him not only great fame, but also the 1950 Nobel Prize in Literature.

Bertrand Russell was the author of the Russell-Einstein Declaration of 1955, the founding document of Pugwash Conferences on Science and World Affairs, an organization which won the Nobel Peace Prize in 1995. Russell devoted much of the last part of his life to working for the complete abolition of nuclear weapons.

Here are a few things that Bertrand Russell said:

War does not determine who is right, but only who is left.

The world is full of magical things patiently waiting for our wits to become sharper.

Men are born ignorant, not stupid. They are made stupid by education.

To fear love is to fear life, and those who fear life are already three parts dead.

The only thing that will redeem mankind is cooperation.

The trouble with the world is that the stupid are cocksure, and the intelligent are full of doubt.

Love is something more than desire for sexual intercourse; it is the principle means of escape from the loneliness which afflicts men and women throughout the greater part of their lives.

The good life is one inspired by love and guided by knowledge.

Those who have never known the deep intimacy and the intense companionship of mutual love have missed the best thing that life has to give.

Science is what you know, philosophy is what you don't know.

I would never die for my beliefs, because I might be wrong.

Extreme hopes are born from extreme misery.

To conquer fear is the beginning of wisdom.

The fact that an opinion has been widely held is no evidence whatever that it is not utterly absurd.

I have made an odd discovery. Every time I talk with a savant, I am convinced that happiness is no longer possible. Yet when I talk with my gardener, I'm convinced of the opposite.

Patriotism is the willingness to kill and be killed for trivial reasons.

Three passions, simple but overwhelmingly strong, have governed my life: the longing for love, the search for knowledge, and unbearable pity for the suffering of mankind.

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.



Figure 1.15: Pembroke Lodge, near Richmond Park, Bertrand Russell's childhood home.



Figure 1.16: Russell at the age of four.



Figure 1.17: Russell at Trinity College Cambridge in 1893.



Figure 1.18: Russell with two of his children, John and Kate. His second son, Conrad (1937-2004, not shown here) became the 5th Earl Russell, and had a very distinguished career as a liberal parliamentarian and historian. Bertrand Russell believed that the lives of humans can be made very much happier by reforming our educational systems.



Figure 1.19: The world-famous linguist, Professor Noam Chomsky, believes that human languages are qualitatively different from animal languages. He has discovered evidence that humans are born with an inbuilt grammatical system pre-wired in their brains. This contradicts John Locke's "blank paper" model of the human mind at birth.

1.14 Noam Chomsky

Institute Professor Noam Chomsky of MIT, and more recently the University of Arizona, was born in 1928 in Philadelphia. Today he is considered to be the world's greatest public intellectual, and is famed as a linguist, philosopher, cognitive scientist, historian, social critic, and political activist. The author of more than 100 books, Prof. Chomsky has been called "the father of modern linguistics".

Noam Chomsky began studies at the University of Pennsylvania at the age of 16. His courses there included linguistics, mathematics, and philosophy.

The Wikipedia article on Prof. Chomsky states that "From 1951 to 1955 he was appointed to Harvard University's Society of Fellows, where he developed the theory of transformational grammar for which he was awarded his doctorate in 1955. That year he began teaching at MIT, in 1957 emerging as a significant figure in the field of linguistics for his landmark work *Syntactic Structures*, which remodeled the scientific study of language, while from 1958 to 1959 he was a National Science Foundation fellow at the Institute for Advanced Study. He is credited as the creator or co-creator of the universal grammar theory, the generative grammar theory, the Chomsky hierarchy, and the minimalist program.

"Since the 1960s, Chomsky has maintained that syntactic knowledge is at least partially inborn, implying that children need only learn certain parochial features of their native languages. Chomsky based his argument on observations about human language acquisition, noting that there is an enormous gap between the linguistic stimuli to which children are exposed and the rich linguistic knowledge they attain (see: 'poverty of the stimulus' argument). For example, although children are exposed to only a finite subset of the allowable syntactic variants within their first language, they somehow acquire the ability to understand and produce an infinite number of sentences, including ones that have never before been uttered.

"To explain this, Chomsky reasoned that the primary linguistic data (PLD) must be supplemented by an innate linguistic capacity. Furthermore, while a human baby and a kitten are both capable of inductive reasoning, if they are exposed to exactly the same linguistic data, the human will always acquire the ability to understand and produce language, while the kitten will never acquire either ability.

"Chomsky labeled whatever relevant capacity the human has that the cat lacks as the language acquisition device (LAD), and he suggested that one of the tasks for linguistics should be to determine what the LAD is and what constraints it imposes on the range of possible human languages. The universal features that would result from these constraints constitute 'universal grammar'."

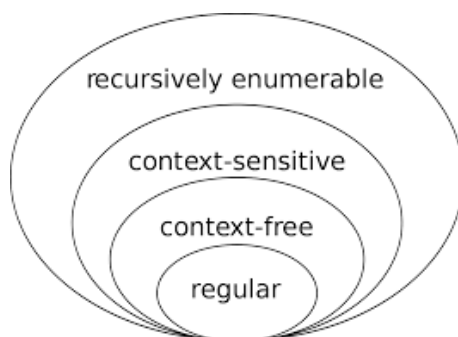


Figure 1.20: The Chomsky hierarchy. In the formal languages of computer science and linguistics, the Chomsky hierarchy is a containment hierarchy of classes of formal grammars. This hierarchy of grammars was described by Noam Chomsky in 1956. It is sometimes also called the Chomsky-Schützenberger hierarchy after Marcel-Paul Schützenberger, who played a crucial role in the development of the theory of formal languages.

Suggestions for further reading

1. Phillip Bricker and R.I.G. Hughs, *Philosophical Perspectives on Newtonian Science*, M.I.T. Press, Cambridge, Mass., (1990).
2. Zev Bechler, *Newton's Physics and the Conceptual Structure of the Scientific Revolution*, Kluwer, Dordrecht, (1991).
3. Zev Bechler, *Contemporary Newtonian Research*, Reidel, Dordrecht, (1982).
4. I. Bernard Cohen, *The Newtonian Revolution*, Cambridge University Press, (1980).
5. B.J.T. Dobbs, *The Janus Face of Genius; The Role of Alchemy in Newton's Thought*, Cambridge University Press, (1991).
6. Paul B. Scheurer and G. Debrock, *Newton's Scientific and Philosophical Legacy*, Kluwer, Dordrecht, (1988).
7. A. Rupert Hall, *Isaac Newton, Adventurer in Thought*, Blackwell, Oxford, (1992).
8. Frank Durham and Robert D. Purrington, *Some Truer Method; Reflections on the Heritage of Newton*, Columbia University Press, New York, (1990).
9. John Fauvel, *Let Newton Be*, Oxford University Press, (1989).
10. René Taton and Curtis Wilson, *Planetary Astronomy from the Renaissance to the Rise of Astrophysics*, Cambridge University Press, (1989).
11. Brian Vickers, *English Science, Bacon to Newton*, Cambridge University Press, (1989).
12. John G. Burke, *The Uses of Science in the Age of Newton*, University of California Press, (1983).
13. A.I. Sabra, *Theories of Light from Descartes to Newton*, Cambridge University Press, (1991).
14. E.N. da Costa Andrade, *Isaac Newton*, Folcroft Library Editions, (1979).
15. Gideon Freudenthal, *Atom and Individual in the Age of Newton*, Reidel, Dordrecht, (1986).
16. Henry Guerlac, *Newton on the Continent*, Cornell University Press, (1981).

17. A.R. Hall, *Philosophers at War; the Quarrel Between Newton and Leibnitz*, Cambridge University Press, (1980).
18. Gale E. Christianson, *In the Presence of the Creator; Isaac Newton and his Times*, Free Press, New York, (1984).
19. Lesley Murdin, *Under Newton's Shadow; Astronomical Practices in the Seventeenth Century*, Hilger, Bristol, (1985).
20. H.D. Anthony, *Sir Isaac Newton*, Collier, New York (1961).
21. Sir Oliver Lodge, *Pioneers of Science*, Dover, New York (1960).
22. Sir Julian Huxley and H.B.D. Kettlewell, *Charles Darwin and his World*, Thames and Hudson, London (1965).
23. Allan Moorehead, *Darwin and the Beagle*, Penguin Books Ltd. (1971).
24. Francis Darwin (editor), *The Autobiography of Charles Darwin and Selected Letters*, Dover, New York (1958).
25. Charles Darwin, *The Voyage of the Beagle*, J.M. Dent and Sons Ltd., London (1975).
26. Charles Darwin, *The Origin of Species*, Collier MacMillan, London (1974).
27. Charles Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
28. D.W. Forest, *Francis Galton, The Life and Work of a Victorian Genius*, Paul Elek, London (1974).
29. Ruth Moore, *Evolution*, Time-Life Books (1962).

Chapter 2

THE CHEMISTRY OF EMOTIONS

2.1 Darwin's book on emotions

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

Behind Darwin's work in this field is the observation that instinctive behavior patterns are just as reliably inherited as morphological characteristics. Darwin was also impressed by the fact that within a given species, behavior patterns have some degree of uniformity, and the fact that the different species within a family are related by similarities of instinctive behavior, just as they are related by similarities of bodily form. For example, certain elements of cat-like behavior can be found among all members of the cat family; and certain elements of dog-like or wolf-like behavior can be found among all members of the dog family. On the other hand, there are small variations in instinct among the members of a given species. For example, not all domestic dogs behave in the same way.

"Let us look at the familiar case of breeds of dogs", Darwin wrote in *The Origin of Species*, "It cannot be doubted that young pointers will sometimes point and even back other dogs the very first time they are taken out; retrieving is certainly in some degree inherited by retrievers; and a tendency to run round, instead of at, a flock of sheep by shepherd dogs. I cannot see that these actions, performed without experience by the young, and in nearly the same manner by each individual, and without the end being known - for the young pointer can no more know that he points to aid his master than the white butterfly knows why she lays her eggs on the leaf of the cabbage - I cannot see that these actions differ essentially from true instincts..."

"How strongly these domestic instincts habits and dispositions are inherited, and how curiously they become mingled, is well shown when different breeds of dogs are crossed. Thus it is known that a cross with a bulldog has affected for many generations the courage and obstinacy of greyhounds; and a cross with a greyhound has given to a whole family of shepherd dogs a tendency to hunt hares..."

Darwin believed that in nature, desirable variations of instinct are propagated by natural selection, just as in the domestication of animals, favorable variations of instinct are selected and propagated by kennelmen and stock breeders. In this way, according to Darwin, complex and highly developed instincts, such as the comb-making instinct of honey-bees, have evolved by natural selection from simpler instincts, such as the instinct by which bumble bees use their old cocoons to hold honey and sometimes add a short wax tube.

In the introduction of his book, *The Expression of the Emotions in Man and Animals*, Darwin says "I thought it very important to ascertain whether the same expressions and gestures prevail, as has often been asserted without much evidence, with all the races of mankind, especially with those who have associated but little with Europeans. Whenever the same movements of the features or body express the same emotions in several distinct races of man, we may infer with much probability, that such expressions are true ones, - that is, are innate or instinctive."

To gather evidence on this point, Darwin sent a printed questionnaire on the expression of human emotions and sent it to missionaries and colonial administrators in many parts of the world. There were 16 questions to be answered:

1. *Is astonishment expressed by the eyes and mouth being opened wide, and by the eyebrows being raised?*
2. *Does shame excite a blush when the colour of the skin allows it to be visible? and especially how low down on the body does the blush extend?*
3. *When a man is indignant or defiant does he frown, hold his body and head erect, square his shoulders and clench his fists?*
4. *When considering deeply on any subject, or trying to understand any puzzle, does he frown, or wrinkle the skin beneath the lower eyelids?*

and so on.

Darwin received 36 replies to his questionnaire, many coming from people who were in contact with extremely distinct and isolated groups of humans. The results convinced him that our emotions and the means by which they are expressed are to a very large extent innate, rather than culturally determined, since the answers to his questionnaire were so uniform and so independent of both culture and race. In preparation for his book, he also closely observed the emotions and their expression in very young babies and children, hoping to see inherited characteristics in subjects too young to have been greatly influenced by culture. 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 Medicine and Physiology in 1973.

Karl von Frisch, the first of the three ethologists who shared the 1973 prize, is famous for his studies of the waggle-dance of honeybees. Bees guide each other to sources of food by a genetically programmed signaling method - the famous waggle dance, deciphered in 1945 by von Frisch. When a worker bee has found a promising food source, she returns to the hive and performs a complex dance, the pattern of which indicates both the direction and distance of the food. The dancer moves repeatedly in a pattern resembling the Greek letter Θ . If the food-discoverer is able to perform her dance on a horizontal flat surface in view of the sun, the line in the center of the pattern points in the direction of the food. However, if the dance is performed in the interior of the hive on a vertical surface, gravity takes the place of the sun, and the angle between the central line and the vertical represents the angle between the food source and the sun.

The central part of the dance is, in a way, a re-enactment of the excited forager's flight to the food. As she traverses the central portion of the pattern, she buzzes her wings and waggles her abdomen rapidly, the number of waggles indicating the approximate distance to the food ¹. After this central portion of the dance, she turns alternately to the left or to the right, following one or the other of the semicircles, and repeats the performance. Studies of the accuracy with which her hive-mates follow these instructions show that the waggle dance is able to convey approximately 7 bits of information - 3 bits concerning distance and 4 bits concerning direction. After making his initial discovery of the meaning of the dance, von Frisch studied the waggle dance in many species of bees. He was able to distinguish species-specific dialects, and to establish a plausible explanation for the evolution of the dance.

Among the achievements for which Tinbergen is famous are his classic studies of instinct in herring gulls. He noticed that the newly-hatched chick of a herring gull pecks at the beak of its parent, and this signal causes the parent gull to regurgitate food into the gaping beak of the chick. Tinbergen wondered what signal causes the chick to initiate this response by pecking at the beak of the parent gull. Therefore he constructed a series of models of the parent in which certain features of the adult gull were realistically represented while other features were crudely represented or left out entirely. He found by trial and error that the essential signal to which the chick responds is the red spot on the tip of its parent's beak. Models which lacked the red spot produced almost no response from the young chick, although in other respects they were realistic models; and the red spot on an otherwise crude model would make the chick peck with great regularity.

In other experiments, Tinbergen explored the response of newly-hatched chicks of the common domestic hen to models representing a hawk. Since the chicks were able to recognize a hawk immediately after hatching, he knew that the response must be genetically programmed. Just as he had done in his experiments with herring gulls, Tinbergen experimented with various models, trying to determine the crucial characteristic that was recognized by the chicks, causing them to run for cover. He discovered that a crude model in the shape of the letter T invariable caused the response if pulled across the sky with the

¹The number of waggles is largest when the source of food is near, and for extremely nearby food, the bees use another dance, the "round dance".

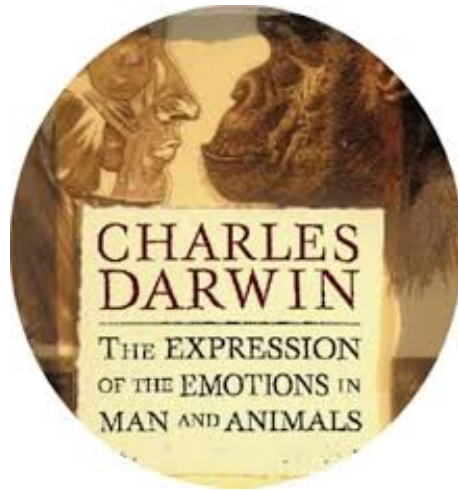


Figure 2.1: Charles Darwin discussed inherited behaviour patterns in *The Origin of Species*. He later published a separate book on this subject entitled *The Expression of Emotions in Man and Animals*.

wings first and tail last. (Pulled backwards, the T shape caused no response.)

In the case of a newly-hatched herring gull chick pecking at the red spot on the beak of its parent, the program in the chick's brain must be entirely genetically determined, without any environmental component at all. Learning cannot play a part in this behavioral pattern, since the pattern is present in the young chick from the very moment when it breaks out of the egg. On the other hand (Tinbergen pointed out) many behavioral patterns in animals and in man have both an hereditary component and an environmental component. Learning is often very important, but learning seems to be built on a foundation of genetic predisposition.

To illustrate this point, Tinbergen called attention to the case of sheep-dogs, whose remote ancestors were wolves. These dogs, Tinbergen tells us, can easily be trained to drive a flock of sheep towards the shepherd. However, it is difficult to train them to drive the sheep away from their master. Tinbergen explained this by saying that the sheep-dogs regard the shepherd as their "pack leader"; and since driving the prey towards the pack leader is part of the hunting instinct of wolves, it is easy to teach the dogs this maneuver. However, driving the prey away from the pack leader would not make sense for wolves hunting in a pack; it is not part of the instinctive makeup of wolves, nor is it a natural pattern of behavior for their remote descendants, the sheep-dogs.

As a further example of the fact that learning is usually built on a foundation of genetic predisposition, Tinbergen mentions the ease with which human babies learn languages. The language learned is determined by the baby's environment; but the astonishing ease with which a human baby learns to speak and understand implies a large degree of genetic predisposition.



Figure 2.2: A baby crying, one of the illustrations in *The Expression of Emotions in Man and Animals*.



Figure 2.3: Another illustration in Darwin's book, *The Expression of Emotions in Man and Animals* shows an expression of horror on the face of a man. This expression was induced by an electrical shock, showing the human facial musculature is capable of forming the expression of horror automatically, if properly induced.



Figure 2.4: Another illustration in Darwin's book shows a dog's face expressing threat when confronting an enemy.



Figure 2.5: An ape expressing affection.



Figure 2.6: The same animal expressing threat. Both drawings are illustrations from Darwin's book.

2.2 Brain chemistry

Emotions in humans and in animals have an extremely long evolutionary history. Chemicals that affect behaviour are present in even the most primitive forms of multicellular organisms, even in slime molds, which are at the exact borderline between single-celled multicellular organisms. Cyclic AMP has been shown to be the molecule that expresses slime mold unhappiness!

Not only do cells communicate by touching each other and recognizing each other's cell surface antigens - they also communicate by secreting and absorbing transmitter molecules. For example, the group behavior of slime mold cells is coordinated by the cyclic adenosine monophosphate molecules, which the cells secrete when distressed.

Within most multicellular organisms, cooperative behavior of cells is coordinated by molecules such as hormones - chemical messengers. These are recognized by "receptors", the mechanism of recognition once again depending on complementarity of charge distributions and shape. Receptors on the surfaces of cells are often membrane-bound proteins which reach from the exterior of the membrane to the interior. When an external transmitter molecule is bound to a receptor site on the outside part of the protein, it causes a conformational change which releases a bound molecule of a different type from a site on the inside part of the protein, thus carrying the signal to the cell's interior. In other cases the messenger molecule passes through the cell membrane.

In this way the individual cell in a society of cells (a multicellular organism) is told when to divide and when to stop dividing, and what its special role will be in the economy of the cell society (differentiation). For example, in humans, follicle-stimulating hormone, luteinizing hormone, prolactin, estrogen and progesterone are among the chemical messengers which cause the cell differentiation needed to create the secondary sexual characteristics of females.

Another role of chemical messengers in multicellular organisms is to maintain a reasonably constant internal environment in spite of drastic changes in the external environment of individual cells or of the organism as a whole (homeostasis). An example of such a homeostatic chemical messenger is the hormone insulin, which is found in humans and other mammals. The rate of its release by secretory cells in the pancreas is increased by high concentrations of glucose in the blood. Insulin carries the news of high glucose levels to target cells in the liver, where the glucose is converted to glycogen, and to other target cells in the muscles, where the glucose is burned.

2.3 Nervous systems

Hormones require a considerable amount of time to diffuse from the cells where they originate to their target cells; but animals often need to act very quickly, in fractions of seconds, to avoid danger or to obtain food. Because of the need for quick responses, a second system of communication has evolved - the system of neurons.

Neurons have a cell bodies, nuclei, mitochondria and other usual features of eukaryotic

cells, but in addition they possess extremely long and thin tubelike extensions called axons and dendrites. The axons function as informational output channels, while the dendrites are inputs. These very long extensions of neurons connect them with other neurons which can be at distant sites, to which they are able to transmit electrical signals. The complex network of neurons within a multicellular organism, its nervous system, is divided into three parts. A sensory or input part brings in signals from the organism's interior or from its external environment. An effector or output part produces a response to the input signal, for example by initiating muscular contraction.

Between the sensory and effector parts of the nervous system is a message-processing (internuncial) part, whose complexity is not great in the jellyfish or the leech. However, the complexity of the internuncial part of the nervous system increases dramatically as one goes upward in the evolutionary order of animals, and in humans it is truly astonishing.

2.4 Chemical synapses

The small button-like connections between neurons are called synapses. When an electrical signal propagating along an axon reaches a synapse, it releases a chemical transmitter substance into the tiny volume between the synapse and the next neuron (the post-synaptic cleft). Depending on the nature of the synapse, this chemical messenger may either cause the next neuron to "fire" (i.e., to produce an electrical pulse along its axon) or it may inhibit the firing of the neuron. Furthermore, the question of whether a neuron will or will not fire depends on the past history of its synapses. Because of this feature, the internuncial part of an animal's nervous system is able to learn. There are many kinds of synapses and many kinds of neurotransmitters, and the response of synapses is sensitive to the concentration of various molecules in the blood, a fact which helps to give the nervous systems of higher animals extraordinary subtlety and complexity.

2.5 Neurotransmitters

The first known neurotransmitter molecule, acetylcholine, was discovered jointly by Sir Henry Dale in England and by Otto Loewi in Germany. In 1921 Loewi was able to show that nerve endings transmit information to muscles by means of this substance.

The idea for the critical experiment occurred to him in a dream at 3 am. Otto Loewi woke up and wrote down the idea; but in the morning he could not read what he had written. Luckily he had the same dream the following night. This time he took no chances. He got up, drank some coffee, and spent the whole night working in his laboratory. By morning he had shown that nerve cells separated from the muscle of a frog's heart secrete a chemical substance when stimulated, and that this substance is able to cause contractions of the heart of another frog.

Sir Henry Dale later showed that Otto Loewi's transmitter molecule was identical to acetylcholine, which Dale had isolated from the ergot fungus in 1910. The two men shared

a Nobel Prize in 1936. Since that time, a large variety of neurotransmitter molecules have been isolated. Among the excitatory neurotransmitters (in addition to acetylcholine) are noradrenalin, norepinephrine, serotonin, dopamine, and glutamate, while gamma-aminobutyric acid is an example of an inhibitory neurotransmitter.

Some important neurotransmitters

- **Glutamate:** This is the most abundant neurotransmitter in humans, used by about half of the neurons in the human brain. It is the primary excitatory transmitter in the central nervous system. One of its functions is to help form memories.
- **GABA:** The name GABA is an acronym for Gamma-aminobutyric acid. GABA is the primary inhibitory transmitter in the vertebrate brain. It helps to control anxiety, and it is sometimes used medically to treat anxiety and the associated sleeplessness.
- **Glycine:** This neurotransmitter is a single amino acid. It is the main inhibitory neurotransmitter in the vertebrate spinal cord. Glycine is important in the central nervous system, especially in the spinal cord, brainstem, and retina.
- **Acetylcholine:** An ester (the organic analogue of a salt) formed from the reaction between choline and acetic acid, acetylcholine stimulates muscles, functions in the autonomic nervous system and sensory neurons, and is associated with REM sleep. Alzheimer's disease is associated with a significant drop in acetylcholine levels.
- **Norepinephrine:** Also known as noradrenaline, norepinephrine increases heart rate and blood pressure. It is part of the body's "fight or flight" system. Norepinephrine is also needed to form memories. Stress depletes stores of this neurotransmitter.
- **Dopamine:** Dopamine is also synthesized in plants and most animals. It is an inhibitory transmitter associated with the reward center of the brain. Low dopamine levels are associated with social anxiety and Parkinson's disease, while excess dopamine is related to schizophrenia. The brain includes several distinct dopamine pathways, one of which plays a major role in reward-motivated behavior. Most types of rewards increase the level of dopamine in the brain, and many addictive drugs increase dopamine neuronal activity.
- **Serotonin:** Biochemically derived from the amino acid tryptophan, serotonin is an inhibitory neurotransmitter involved in mood, emotion, and perception. Low serotonin levels can lead to depression, suicidal tendencies, anger management issues, difficulty sleeping, migraines, and an increased craving for carbohydrates. Its functions include the regulation of mood, appetite, and sleep. Serotonin also has some cognitive functions, including memory and learning.

- **Endorphins:** The name of this class of neurotransmitters means “a class of a morphine-like substance originating from within the body”. are a class of molecules similar to opioids (e.g., morphine, heroin) in terms of structure and function. The word “endorphin” is short for “endogenous morphine.” Endorphins are inhibitory transmitters associated with pleasure and pain relief. In other animals, these chemicals slow metabolism and permit hibernation. The treatment of pain by means of acupuncture functions by releasing endorphines.

Pleasure versus happiness

Pleasure is fleeting. Happiness lasts. Pleasure is addictive, but happiness is not. Pleasure craves more and more of everything. Happiness can be content with very little. These characteristics make happiness a better goal than pleasure. Interestingly, the neurotransmitter dopamine is associated with pleasure, while serotonin is associated with happiness.²

2.6 Oxytocin, the “love hormone”

Besides discovering acetylcholine, Sir Henry Dale also discovered, in 1906. the peptide hormone Oxytocin, which has sometimes been called the “love hormone”. Oxytocin plays a role in social bonding and sexual reproduction in both sexes. During childbirth, Oxytocin is released into the bloodstream of women in response to stretching of the cervix and uterus during labour, and also in response to breastfeeding. The hormone then facilitates the bonding between mother and child. Oxytocin is also present in men and its concentration in their bloodstream increases in response to romantic attachments and social bonding.

A very similar hormone, with similar functions, is also present in other mammals besides humans.

²See, for example, <https://gobeyondlifestyle.com/happiness-vs-pleasure-root-addiction/>

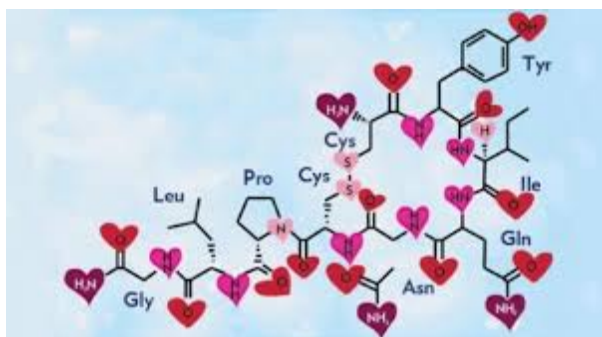


Figure 2.7: An artist’s impression of the structure of oxytocin

2.7 Mother love and rage

We can recognize many of our own emotions in other mammals. Among these are mother love and rage. Interestingly these two emotions are associated respectively with oxytocin and testosterone.

One of the most beautiful emotions is the love that women exhibit towards their children. We must all be grateful that women are willing to undergo the danger and pain of childbirth. We must be grateful for the devotion that they show to their children and families.

Both humans and most other animals compete for dominance and mating rights. In humans, mating displays and struggles for dominance lead to what the economist Thorstein Veblen called “conspicuous consumption”. Overconsumption in industrialized nations is one of the factors driving the world towards an ecological catastrophe.



Figure 2.8: Mother love: One of the most beautiful emotions.



Figure 2.9: Mother love.



Figure 2.10: Mother love



Figure 2.11: Mother love:



Figure 2.12: Mother love



Figure 2.13: Mother love



Figure 2.14: **Mother love**



Figure 2.15: **Mother love:** Although we recognize the emotions of mammals most clearly as being similar to our own, animals less closely related to ourselves also exhibit emotions that we can recognize. For example, birds are devoted to their young and make great sacrifices to help and protect them.



Figure 2.16: Male animals fighting for dominance and mating rights

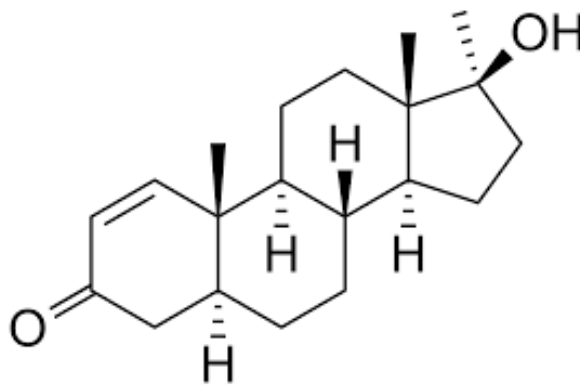


Figure 2.17: Testosterone is a hormone present in large quantities in males and much smaller amounts in females. It is involved in rank-determining fights and mating.



Figure 2.18: Male lions fighting for dominance and mating rights.



Figure 2.19: In Shakespeare's poetic tragedy, *Romeo and Juliet*, we see many human emotions on display: males fighting for dominance and mating rights (testosterone), romantic attachment (oxytocin), and tribalism (Montagues versus Capulets). The dangers of tribalism in an age of genocidal and potentially omniscient thermonuclear weapons will be discussed in another chapter.

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acetylcholine) are noradrenalin, norepinephrine, serotonin, dopamine, and glutamate, while gamma-amino-butyric acid is an example of an inhibitory neurotransmitter.

The mechanism by which electrical impulses propagate along nerve axons was clarified by the English physiologists Alan Lloyd Hodgkin and Andrew Fielding Huxley (a grandson of Darwin's defender, Thomas Henry Huxley). In 1952, working with the giant axon of the squid (which can be as large as a millimeter in diameter), they demonstrated that the electrical impulse propagating along a nerve is in no way similar to an electrical current in a conducting wire, but is more closely analogous to a row of dominoes knocking each other down. The nerve fiber, they showed, is like a long thin tube, within which there is a fluid containing K^+ , and Na^+ ions, as well as anions. Inside a resting nerve, the concentration of K^+ is higher than in the normal body fluids outside, and the concentration of Na^+ is lower. These abnormal concentrations are maintained by an "ion pump", which uses the Gibbs free energy of adenosine triphosphate (ATP) to bring potassium ions into the nerve and to expel sodium ions.

The membrane surrounding the neural axon is more permeable to potassium ions than to sodium, and the positively charged potassium ions tend to leak out of the resting nerve, producing a small difference in potential between the inside and outside. This "resting potential" helps to hold the molecules of the membrane in an orderly layer, so that the membrane's permeability to ions is low.

Hodgkin and Huxley showed that when a neuron fires, the whole situation changes dramatically. Triggered by the effects of excitatory neurotransmitter molecules, sodium ions begin to flow into the axon, destroying the electrical potential which maintained order in the membrane. A wave of depolarization passes along the axon. Like a row of dominoes falling, the disturbance propagates from one section to the next: Sodium ions flow in, the order-maintaining electrical potential disappears, the next small section of the nerve membrane becomes permeable, and so on. Thus, Hodgkin and Huxley showed that when a neuron fires, a quick pulse-like electrical and chemical disturbance is transmitted along the axon.

In 1953, Stephen W. Kuffler, working at Johns Hopkins University, made a series of discoveries which yielded much insight into the mechanisms by which the internuncial part of mammalian nervous systems processes information. Kuffler's studies showed that some degree of abstraction of patterns already takes place in the retina of the mammalian eye, before signals are passed on through the optic nerve to the visual cortex of the brain. In the mammalian retina, about 100 million light-sensitive primary light-receptor cells are connected through bipolar neurons to approximately a million retinal neurons of another type, called ganglions. Kuffler's first discovery (made using microelectrodes) was that even in total darkness, the retinal ganglions continue to fire steadily at the rate of about thirty pulses per second. He also found that diffuse light illuminating the entire retina does not change this steady rate of firing.

Kuffler's next discovery was that each ganglion is connected to an array of about 100 primary receptor cells, arranged in an inner circle surrounded by an outer ring. Kuffler found the arrays to be of two types, which he called "on center arrays" and "off center arrays". In the "on center arrays", a tiny spot of light, illuminating only the inner circle,

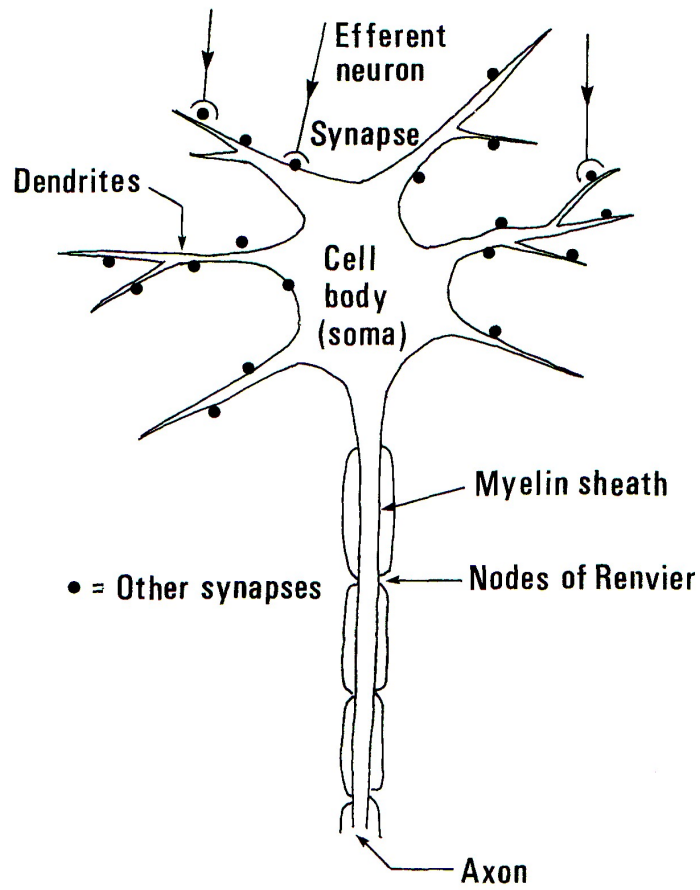


Figure 2.20: A schematic diagram of a neuron.

produces a burst of frequent firing of the associated ganglion, provided that cells in the outer ring of the array remain in darkness. However, if the cells in the outer ring are also illuminated, there is a cancellation, and there is no net effect. Exactly the opposite proved to be the case for the “off center arrays”. As before, uniform illumination of both the inner circle and outer ring of these arrays produces a cancellation and hence no net effect on the steady background rate of ganglion firing. However, if the central circle by itself is illuminated by a tiny spot of light, the ganglion firing is inhibited, whereas if the outer ring alone is illuminated, the firing is enhanced. Thus Kuffler found that both types of arrays give no response to uniform illumination, and that both types of arrays measure, in different ways, the degree of contrast in the light falling on closely neighboring regions of the retina.

Kuffler’s research was continued by his two associates, David H. Hubel and Torsten N. Wessel, at the Harvard Medical School, to which Kuffler had moved. In the late 1950’s, they found that when the signals sent through the optic nerves reach the visual cortex of the brain, a further abstraction of patterns takes place through the arrangement of connections between two successive layers of neurons. Hubel and Wessel called the cells in these two pattern-abstracting layers “simple” and “complex”. The retinal ganglions were found to be connected to the “simple” neurons in such a way that a “simple” cell responds to a line of contrasting illumination of the retina. For such a cell to respond, the line has to be at a particular position and has to have a particular direction. However, the “complex” cells in the next layer were found to be connected to the “simple” cells in such a way that they respond to a line in a particular direction, even when it is displaced parallel to itself³.

In analyzing their results, Kuffler, Hubel and Wessel concluded that pattern abstraction in the mammalian retina and visual cortex takes place through the selective destruction of information. This conclusion agrees with what we know in general about abstractions: They are always simpler than the thing which they represent.

³ Interestingly, at about the same time, the English physiologist J.Z. Young came to closely analogous conclusions regarding the mechanism of pattern abstraction in the visual cortex of the octopus brain. However, the similarity between the image-forming eye of the octopus and the image-forming vertebrate eye and the rough similarity between the mechanisms for pattern abstraction in the two cases must both be regarded as instances of convergent evolution, since the mollusc eye and the vertebrate eye have evolved independently.

Suggestions for further reading

1. S. Pinker, *The Language Instinct: How the Mind Creates Language*, Harper-Collins Publishers, New York, (1995).
2. S. Pinker, *Talk of genetics and visa versa*, *Nature*, **413**, 465-466, (2001).
3. S. Pinker, *Words and rules in the human brain*, *Nature*, **387**, 547-548, (1997).
4. R. Lee and I. DeVore, editors, *Kalahari Hunter-Gatherers*, Harvard University Press, (1975).
5. D.J. Futuyma, *Evolutionary Biology*, Sinauer Associates, Sunderland Mass., (1986).
6. B. Glass, O. Temkin, and W.L. Strauss, eds., *Forerunners of Darwin: 1745-1859*, Johns Hopkins Press, Baltimore, (1959).
7. R. Milner, *The Encyclopedia of Evolution*, an Owl Book, Henry Holt and Company, New York, (1990).
8. T.A. Appel, *The Cuvier-Geoffroy Debate: French Biology in the Decades before Darwin*, Oxford University Press, (1987).
9. P. Corsi, *The Age of Lamarck: Evolutionary Theories in France, 1790-1834*, University of California Press, Berkeley, (1988).
10. M. McNeil, *Under the Banner of Science: Erasmus Darwin and his Age*, Manchester University Press, Manchester, (1987).
11. L.G. Wilson, *Sir Charles Lyell's Scientific Journals on the Species Question*, Yale University Press, New Haven, (1970).
12. E.O. Wilson, *Sociobiology*, Harvard University Press (1975).
13. E.O. Wilson, *On Human Nature*, Bantam Books, New York, (1979).
14. A.B. Adams, *Eternal Quest: The Story of the Great Naturalists*, G.P. Putnam's Sons, New York, (1969).
15. A.S. Packard, *Lamarck, the Founder of Evolution: His Life and Work*, Longmans, Green, and Co., New York, (1901).
16. C. Darwin, *An historical sketch of the progress of opinion on the Origin of Species, previously to the publication of this work*, Appended to third and later editions of **On the Origin of Species**, (1861).
17. L. Eiseley, *Darwin's Century: Evolution and the Men who Discovered It*, Doubleday, New York, (1958).
18. Francis Darwin (editor), *The Autobiography of Charles Darwin and Selected Letters*, Dover, New York (1958).
19. Charles Darwin, *The Voyage of the Beagle*, J.M. Dent and Sons Ltd., London (1975).
20. Charles Darwin, *The Origin of Species*, Collier MacMillan, London (1974).
21. Charles Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
22. H.F. Osborne, *From the Greeks to Darwin: The Development of the Evolution Idea Through Twenty-Four Centuries*, Charles Scribner and Sons, New York, (1929).
23. Sir Julian Huxley and H.B.D. Kettlewell, *Charles Darwin and his World*, Thames and Hudson, London (1965).
24. Allan Moorehead, *Darwin and the Beagle*, Penguin Books Ltd. (1971).

25. Ruth Moore, *Evolution*, Time-Life Books (1962).
26. L. Barber, *The Heyday of Natural History: 1820-1870*, Doubleday and Co., Garden City, New York, (1980).
27. A. Desmond, *Huxley*, Addison Wesley, Reading, Mass., (1994).
28. A. Desmond and J. Moore, *Darwin*, Penguin Books, (1992).
29. R. Owen, (P.R. Sloan editor), *The Hunterian Lectures in Comparative Anatomy, May-June, 1837*, University of Chicago Press, (1992).
30. C. Nichols, *Darwinism and the social sciences*, Phil. Soc. Scient. **4**, 255-277 (1974).
31. M. Ruse, *The Darwinian Revolution*, University of Chicago Press, (1979).
32. R. Dawkins, *The Extended Phenotype*, Oxford University Press, (1982).
33. R. Dawkins, *The Blind Watchmaker*, W.W. Norton, (1987).
34. R. Dawkins, *River out of Eden: A Darwinian View of Life*, Harper Collins, (1995).
35. R. Dawkins, *Climbing Mount Improbable*, W.W. Norton, (1996).
36. R. Dawkins, *The Selfish Gene*, Oxford University Press, (1989).
37. S.J. Gould, *Ever Since Darwin*, W.W. Norton, (1977).
38. R.G.B. Reid, *Evolutionary Theory: The Unfinished Synthesis*, Croom Helm, (1985).
39. M. Ho and P.T. Saunders, editors, *Beyond Neo-Darwinism: An Introduction to a New Evolutionary Paradigm*, Academic Press, London, (1984).
40. J. Maynard Smith, *Did Darwin Get it Right? Essays on Games, Sex and Evolution*, Chapman and Hall, (1989).
41. E. Sober, *The Nature of Selection: Evolutionary Theory in Philosophical Focus*, University of Chicago Press, (1984).
42. B.K. Hall, *Evolutionary Developmental Biology*, Chapman and Hall, London, (1992).
43. J. Thompson, *Interaction and Coevolution*, Wiley and Sons, (1982).
44. R.A. Fischer, *The Genetical Theory of Natural Selection*, Clarendon, Oxford, (1930).
45. J.B.S. Haldane, *Population genetics*, New Biology **18**, 34-51, (1955).
46. N. Tinbergen, *The Study of Instinct*, Oxford University Press, (1951).
47. N. Tinbergen, *The Herring Gull's World*, Collins, London, (1953).
48. N. Tinbergen, *Social Behavior in Animals*, Methuen, London, (1953).
49. N. Tinbergen, *Curious Naturalists*, Country Life, London, (1958).
50. N. Tinbergen, *The Animal in its World: Explorations of an Ethologist*, Allan and Unwin, London, (1973).
51. K. Lorenz, *On the evolution of behavior*, Scientific American, **December**, (1958).
52. K. Lorenz, *Evolution and Modification of Behavior* Harvard University Press, Cambridge, MA, (1961).
53. K. Lorenz, *Studies in Animal and Human Behavior. I and II.*, Harvard University Press, (1970) and (1971).
54. K. Lorenz, *On Aggression*, Bantem Books, (1977).
55. P.H. Klopfer and J.P. Hailman, *An Introduction to Animal Behavior: Ethology's First Century*, Prentice-Hall, New Jersey, (1969).
56. J. Jaynes, *The historical origins of "Ethology" and "Comparative Psychology"*, Anim. Behav. **17**, 601-606 (1969).

57. W.H. Thorpe, *The Origin and Rise of Ethology: The Science of the Natural Behavior of Animals*, Heinemann, London, (1979).
58. R.A. Hinde, *Animal Behavior: A Synthesis of Ethological and Comparative Psychology*, McGraw-Hill, New York, (1970).
59. R.A. Hinde, *Biological Bases of Human Social Behavior*, McGraw-Hill, New York (1977).
60. R.A. Hinde, *Individuals, Relationships and Culture: Links Between Ethology and the Social Sciences*, Cambridge University Press, (1987).
61. R.A. Hinde, *Non-Verbal Communication*, Cambridge University Press, (1972).
62. R.A. Hinde, A.-N. Perret-Clermont and J. Stevenson-Hinde, editors, *Social Relationships and Cognitive Development*, Clarendon, Oxford, (1985).
63. R.A. Hinde and J. Stevenson-Hinde, editors, *Relationships Within Families: Mutual Influences*, Clarendon Press, Oxford, (1988).
64. J.H. Crook, editor, *Social Behavior in Birds and Mammals*, Academic Press, London, (1970).
65. P. Ekman, editor, *Darwin and Facial Expression*, Academic Press, New York, (1973).
66. P. Ekman, W.V. Friesen and P. Ekworth, *Emotions in the Human Face*, Pergamon, New York, (1972).
67. N. Blurton Jones, editor, *Ethological Studies of Child Behavior*, Cambridge University Press, (1975).
68. M. von Cranach, editor, *Methods of Inference from Animals to Human Behavior*, Chicago/Mouton, Haag, (1976); Aldine, Paris, (1976).
69. I. Eibl-Eibesfeldt, *Ethology, The Biology of Behavior*, Holt, Rinehart and Winston, New York, (1975).
70. I. Eibl-Eibesfeldt and F.K. Salter, editors, *Indoctrinability, Ideology, and Warfare: Evolutionary Perspectives*, Berghahn Books, (1998).
71. I. Eibl-Eibesfeldt, *Human Ethology*, Walter De Gruyter Inc., (1989).
72. I. Eibl-Eibesfeldt, *Love and Hate*, Walter De Gruyter Inc., (1996).
73. I. Eibl-Eibesfeldt, *The Biology of Peace and War*, Thames and Hudson, New York (1979).
74. I. Eibl-Eibesfeldt, **Der Vorprogrammiert Mensch**, Molden, Vienna, (1973).
75. I. Eibl-Eibesfeldt, *Liebe und Hass*, Molden, Vienna, (1973).
76. J. Bowlby, *By ethology out of psychoanalysis: An experiment in interbreeding*, *Animal Behavior*, **28**, 649-656 (1980).
77. B.B. Beck, *Animal Tool Behavior*, Garland STPM Press, New York, (1980).
78. R. Axelrod, *The Evolution of Cooperation*, Basic Books, New York, (1984).
79. J.D. Carthy and F.L. Ebling, *The Natural History of Aggression*, Academic Press, New York, (1964)
80. D.L. Cheney and R.M. Seyfarth, *How Monkeys See the World: Inside the Mind of Another Species*, University of Chicago Press, (1990).
81. F. De Waal, *Chimpanzee Politics*, Cape, London, (1982).
82. M. Edmunds, *Defense in Animals*, Longman, London, (1974).

83. R.D. Estes, *The Behavior Guide to African Mammals*, University of California Press, Los Angeles, (1991).
84. R.F. Ewer, **Ethology of Mammals**, Logos Press, London, (1968).
85. E. Morgan, *The Scars of Evolution*, Oxford University Press, (1990).
86. W.D. Hamilton, *The genetical theory of social behavior. I and II*, J. Theor. Biol. **7**, 1-52 (1964).
87. R.W. Sussman, *The Biological Basis of Human Behavior*, Prentice Hall, Englewood Cliffs, (1997).
88. Albert Szent-Györgyi, *The Crazy Ape*, Philosophical Library, New York (1970).
C. Zhan-Waxler, *Altruism and Aggression: Biological and Social Origins*, Cambridge University Press (1986).
89. R. Dart, *The predatory transition from ape to man*, International Anthropological and Linguistic Review, **1**, (1953).
90. R. Fox, *In the beginning: Aspects of hominid behavioral evolution*, Man, **NS 2**, 415-433 (1967).
91. R.G. Klein, *Anatomy, behavior, and modern human origins*, Journal of World Prehistory, **9 (2)**, 167-198 (1995).
92. D.R. Begun, C.V. Ward and M.D. Rose, *Function, Phylogeny and Fossils: Miocene Hominid Evolution and Adaptations*, Plenum Press, New York, (1997).
93. P.J. Bowler, *Theories of Human Evolution: A Century of Debate, 1884-1944*, Basil Blackwell, Oxford, (1986).
94. G.C. Conroy, *Primate Evolution*, W.W. Norton, New York, (1990).
95. G. Klein, *The Human Career, Human Biological and Cultural Origins*, University of Chicago Press, (1989).
96. D.P. Barash *Sociobiology and Behavior*, Elsevier, New York, (1977).
97. N.A. Chagnon and W. Irons, eds., *Evolutionary Biology and Human Social Behavior, an Anthropological Perspective*, Duxbury Press, N. Scituate, MA, (1979).
98. E. Danielson, *Vold, en Ond Arv?*, Gyldendal, Copenhagen, (1929).
99. M.R. Davie, *The Evolution of War*, Yale University Press, New Haven, CT, (1929).
100. T. Dobzhanski, *Mankind Evolving*, Yale University Press, New Haven, CT, (1962).
101. R.L. Holloway, *Primate Aggression: Territoriality and Xenophobia*, Academic Press, New York, (1974).
102. P. Kitcher, *Vaulting Ambition: Sociobiology and the Quest for Human Nature*, MIT Press, Cambridge, MA, (1985).
103. S.L.W. Mellen, *The Evolution of Love*, Freeman, Oxford, (1981).
104. A. Roe and G.G. Simpson, *Behavior and Evolution*, Yale University Press, New Haven, CT, (1958).
105. N.J. Smelser, *The Theory of Collective Behavior*, Free Press, New York, (1963).
106. R. Trivers, *Social Evolution*, Benjamin/Cummings, Menlo Park, CA, (1985).
107. W. Weiser, *Konrad Lorenz und seine Kritiker*, Piper, Munich, (1976).
108. W. Wickler, *Biologie der 10 Gebote*, Piper, Munich, (1971).
109. J. Galtung, *A structural theory of aggression*, Journal of Peace Research, **1**, 95-119, (1964).

110. G.E. Kang, *Exogamy and peace relations of social units: A cross-cultural test*, *Ethology*, **18**, 85-99, (1979).
111. A. Montagu, *Man and Aggression*, Oxford University Press, New York, (1968).
112. W.A. Nesbitt, *Human Nature and War*, State Education Department of New York, Albany, (1973).
113. W. Suttles, *Subhuman and human fighting*, *Anthropologica*, **3**, 148-163, (1961).
114. V. Vale and Andrea Juno, editors, *Modern Primitives: An Investigation of Contemporary Adornment and Ritual*, San Francisco Research, (1990).
115. P.P.G. Bateson and R.A. Hinde, editors, *Growing Points in Ethology: Based on a Conference Sponsored by St. John's College and King's College, Cambridge*, Cambridge University Press, (1976).
116. P. Bateson, editor, *The Development and Integration of Behaviour: Essays in Honour of Robert Hinde*, Cambridge University Press, (1991).
117. C. Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
118. P. Kropotkin, *Mutual Aid, A Factor in Evolution*, Walter Heinemann, London, (1902).
119. R.A. Fischer, *The Genetical Theory of Natural Selection*, Clarendon, Oxford, (1930).
120. J.B.S. Haldane, *Population genetics*, *New Biology* **18**, 34-51, (1955).
121. L. Margulis, *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis*, The MIT Press, (1991).
122. L. Margulis, *Symbiosis in Cell Evolution: Microbial Communities in the Archean and Proterozoic Eons*, W.H. Freeman, (1992).

Chapter 3

ETHOLOGY

3.1 The science of inherited behavior patterns

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

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

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

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

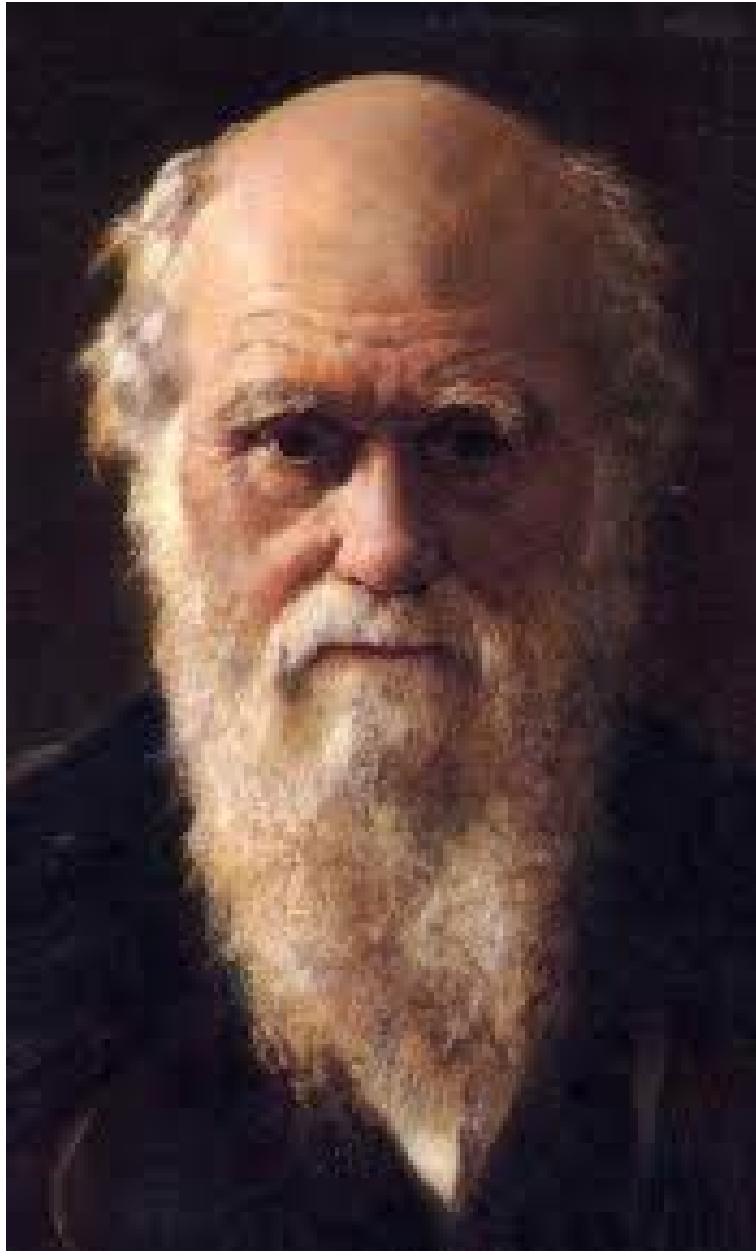


Figure 3.1: Because of Charles Darwin's book "The Expression of Emotions in Man and Animals", he is considered to be the founder of the field of Ethology, the study of inherited behavior patterns.



Figure 3.2: Nikolaas Tinbergen (1907-1988) on the left, with Konrad Lorenz (1903-1989). Together with Karl von Frisch (1886-1982) they shared the 1973 Nobel Prize in Physiology and Medicine for their pioneering work in Ethology.



Figure 3.3: Konrad Lorenz with geese who consider him to be their mother.

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

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

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

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

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

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

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

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

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

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

In an essay entitled *The Urge to Self-Destruction*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.

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

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

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

with catastrophe.

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

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

3.2 Population genetics

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

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

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



Figure 3.4: Sir Ronald Aylmer Fisher (1890-1962). Together with J.B.S Haldane he pioneered the theory of population genetics. Recent contributions to this theory have been made by W.D. Hamilton and E.O. Wilson.

3.3 Hope for the future

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

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

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

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

3.4 Religion and ethnic identity

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

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

Humans are capable of cultural evolution because it is so easy to overwrite and modify our instinctive behavior patterns with learned behavior. Within the animal kingdom,

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

humans are undoubtedly the champions in this respect. No other species is so good at learning as we are. During the early stages of cultural evolution, the tendency of humans to be religious may have facilitated the overwriting of instinctive behavior with the culture of the tribe. Since religions, like languages, are closely associated with particular cultures, they serve as marks of ethnic identity.

3.5 Tribal markings; ethnicity; pseudospeciation

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

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

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

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



Figure 3.5: Scars help to establish tribal identity

can mark a person as a member of a special “tribe”. Undoubtedly there many people in New York who would never think of marrying someone who could not appreciate the the paintings of Jasper Johns, and many in London who would consider anyone had not read all the books of Virginia Wolfe to be entirely outside the bounds of civilization.

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

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



Figure 3.6: An example of the dueling scars that Prussian army officers once used to distinguish their caste from outsiders.

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

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

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

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

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

3.6 Searching for human nature

A drop of good sense in a sea of emotion

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

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

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

Many of the great ethical teachers of history lived at a time when cultural evolution was changing humans from hunter-gatherers and pastoral peoples to farmers and city dwellers. To live and cooperate in larger groups, humans needed to overwrite their instinctive behavior patterns with culturally determined behavior involving a wider range of cooperation than previously.

This period of change is marked by the lives and ideas of a number of great ethical teachers - Moses, Buddha, Lao Tse, Confucius, Socrates, Aristotle, Jesus, and Saint Paul. Mohammed lived at a slightly later period, but it was still a period of transition for the Arab peoples, a period during which their range cooperation needed to be enlarged.

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



Figure 3.7: An illustration from Darwin's book, "The Expression of Emotions in Man and Animals". Here a cat raises its back and fur when confronting an enemy to make itself seem larger and more dangerous. This reflex was later discussed by the ethologist Konrad Lorenz.

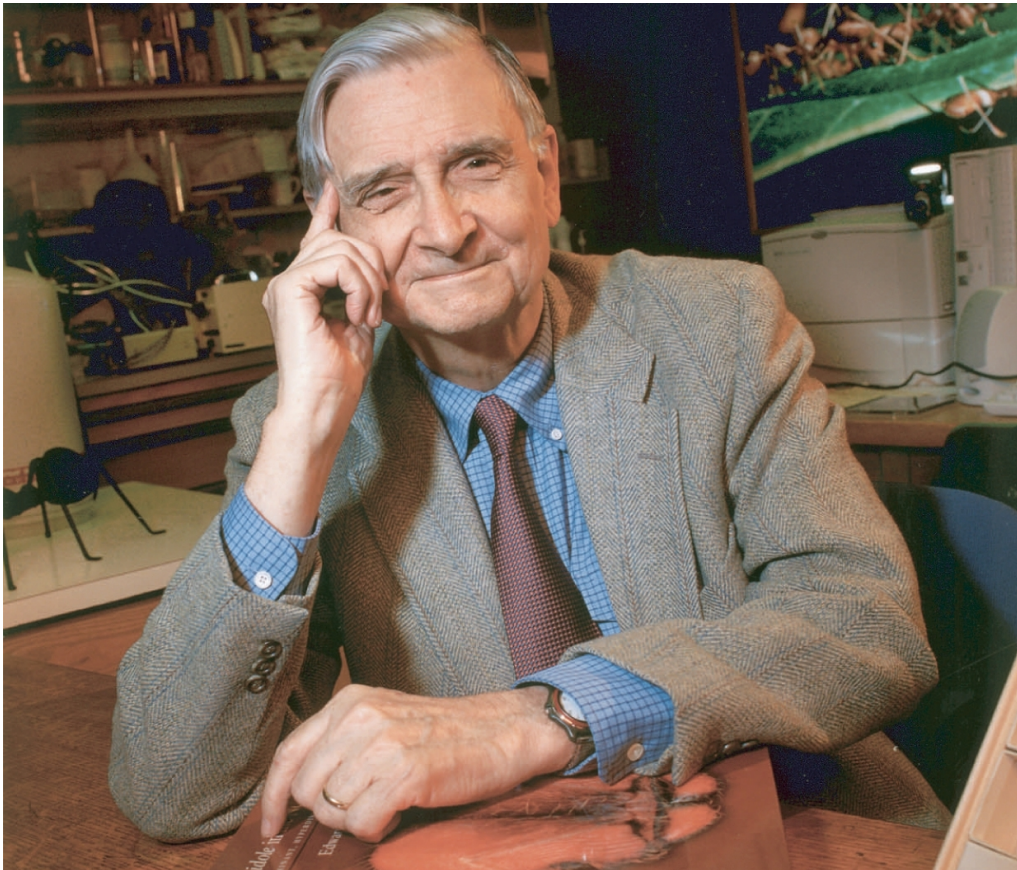


Figure 3.8: **Professor E.O. Wilson of Harvard is famous for his books on Sociobiology.**



Figure 3.9: **Professor Richard Dawkins** of Oxford, controversial author of “**The Selfish Gene**” and many other books. He has contributed much to the debate on relationships between science, religion, aggression and altruism.

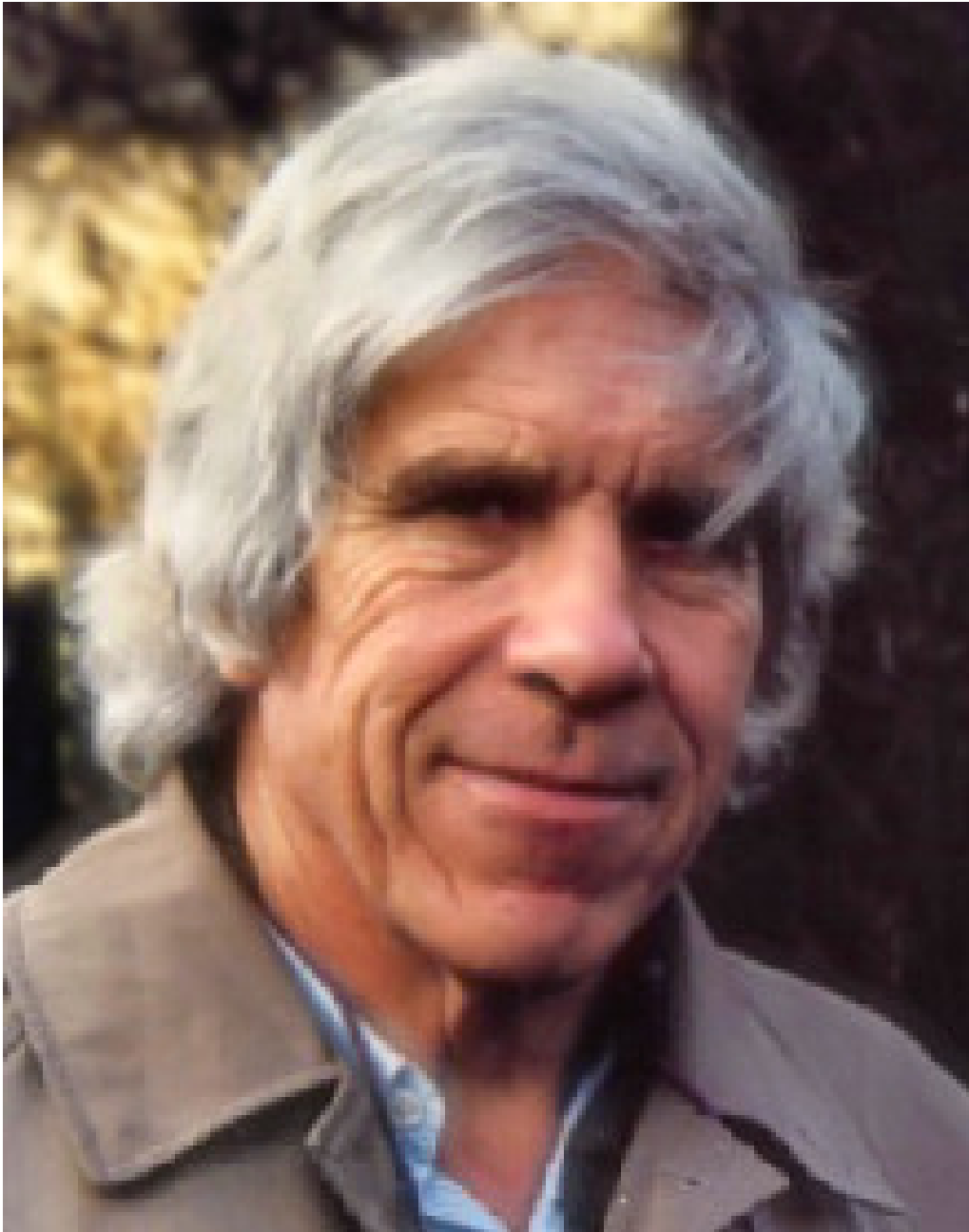


Figure 3.10: **William Donald Hamilton** was a Royal Society Research Professor at Oxford University until his death in 2000. He contributed importantly to our understanding of altruism from the standpoint of genetics.

3.7 The evolution of cooperation

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

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

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

The explosion of human knowledge

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

Every species changes gradually through genetic evolution; but with humans, cultural evolution has rushed ahead with such a speed that it has completely outstripped the slow rate of genetic change. Genetically we are quite similar to our neolithic ancestors, but their world has been replaced by a world of quantum theory, relativity, supercomputers, antibiotics, genetic engineering and space telescopes - unfortunately also a world of nuclear weapons and nerve gas.

Because of the slowness of genetic evolution in comparison to the rapid and constantly-accelerating rate of cultural change, our bodies and emotions (as Malthus put it, the "passions of mankind") are not completely adapted to our new way of life. They still reflect the way of life of our hunter-gatherer ancestors.

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

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

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

Tribal emotions and nationalism

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

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

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

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

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

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

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

Fisher, Haldane and Hamilton

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

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

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

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

The social insects

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

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

From Thomas Huxley to Lynn Margulis and symbiosis

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

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

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

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

One-celled organisms seen as examples of cooperation

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

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



Figure 3.11: Thomas Henry Huxley (1825-1895), caricatured in *Vanity Fair*. Huxley was a strong supporter of Darwin, but he placed much more emphasis on competition in evolution than Darwin did. In fact, Darwin himself was strongly aware of the great role that cooperation plays.



Figure 3.12: The biologist Lynn Margulis argued strongly that eukaryotic cells should be regarded as cooperative communities of simpler organisms that once lived independently. At first she was almost alone in this view, but today it is generally accepted. Most of the great upward steps in evolution have involved cooperation.

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

Cooperation between cells; multicellular organisms

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

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

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

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

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

Cooperation in groups of animals and human groups

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

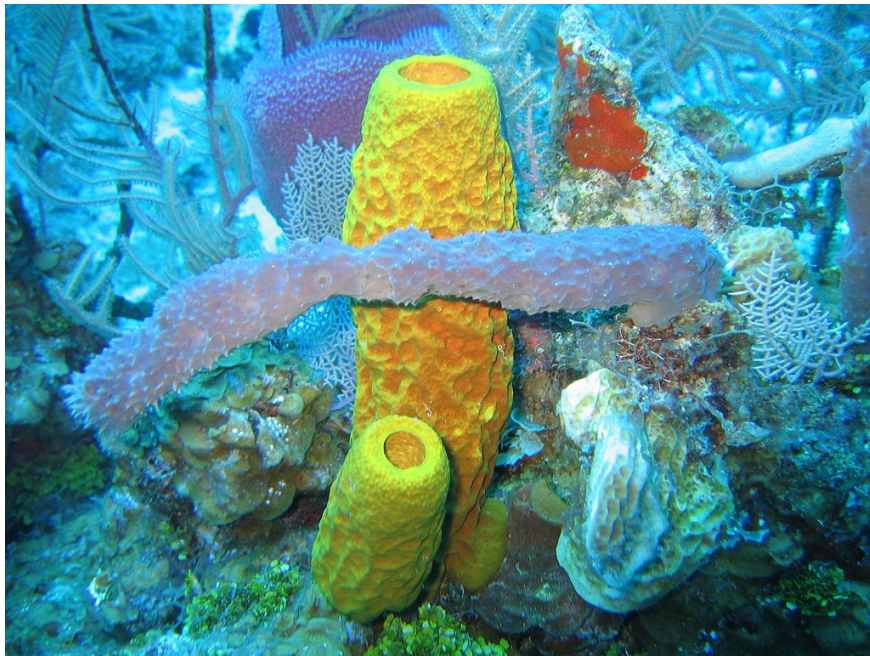


Figure 3.13: A photo showing several types of sponges. Sponges and slime molds are on the borderline between single celled organisms and multicellular ones. The single cells of these species can live independently, but they can also function as members of a cooperating colony. (Public domain)

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

Gracilization and decreasing sexual dimorphism

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

Ethics and growth of the social unit

Early religions tended to be centered on particular tribes, and the ethics associated with them were usually tribal in nature. However, the more cosmopolitan societies that began to form after the Neolithic agricultural revolution required a more universal code of ethics. It is interesting to notice that many of the great ethical teachers of human history, for example Moses, Socrates, Plato, Aristotle, Lao Tzu, Confucius, Buddha, and Jesus, lived at the time when the change to larger social units was taking place. Tribalism was no longer appropriate. A wider ethic was needed.

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

Interdependence in modern human society

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

The enormous success of humans as a species is due to their genius for cooperation. The success of humans is a success of cultural evolution, a new form of evolution in which information is passed between generations, not in the form of DNA sequences but in the

form of speech, writing, printing and finally electronic signals. Cultural evolution is built on cooperation, and has reached great heights of success as the cooperating community has become larger and larger, ultimately including the entire world.

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

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

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

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

Two sides of human nature

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

As an example of the two sides of human nature, we can think of Scandinavia. The Vikings were once feared throughout Europe. The Book of Common Prayer in England contains the phrase "Protect us from the fury of the Northmen!". Today the same people are so peaceful and law-abiding that they can be taken as an example for how we would like a future world to look. Human nature has the possibility for both kinds of behavior depending on the circumstances. This being so, there are strong reasons to enlist the help

of education and religion to make the bright side of human nature win over the dark side. Today, the mass media are an important component of education, and thus the mass media have a great responsibility for encouraging the cooperative and constructive side of human nature rather than the dark and destructive side.

Some concluding remarks

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

Suggestions for further reading

1. P.J. Bowler, *Evolution: The History of an Idea*, University of California Press, (1989).
2. D.J. Futuyma, *Evolutionary Biology*, Sinauer Associates, Sunderland Mass., (1986).
3. B. Glass, O. Temkin, and W.L. Strauss, eds., *Forerunners of Darwin: 1745-1859*, Johns Hopkins Press, Baltimore, (1959).
4. R. Milner, *The Encyclopedia of Evolution*, an Owl Book, Henry Holt and Company, New York, (1990).
5. T.A. Appel, *The Cuvier-Geoffroy Debate: French Biology in the Decades before Darwin*, Oxford University Press, (1987).
6. P.J. Bowler, *Fossils and Progress: Paleontology and the Idea of Progressive Evolution in the Nineteenth Century*, Science History Publications, New York, (1976).
7. P. Corsi, *The Age of Lamarck: Evolutionary Theories in France, 1790-1834*, University of California Press, Berkeley, (1988).
8. M. McNeil, *Under the Banner of Science: Erasmus Darwin and his Age*, Manchester University Press, Manchester, (1987).
9. L.G. Wilson, *Sir Charles Lyell's Scientific Journals on the Species Question*, Yale University Press, New Haven, (1970).
10. A.B. Adams, *Eternal Quest: The Story of the Great Naturalists*, G.P. Putnam's Sons, New York, (1969).
11. A.S. Packard, *Lamarck, the Founder of Evolution: His Life and Work*, Longmans, Green, and Co., New York, (1901).
12. C. Darwin, *An historical sketch of the progress of opinion on the Origin of Species, previously to the publication of this work*, Appended to third and later editions of *On the Origin of Species*, (1861).

13. L. Eiseley, *Darwin's Century: Evolution and the Men who Discovered It*, Doubleday, New York, (1958).
14. H.F. Osborne, *From the Greeks to Darwin: The Development of the Evolution Idea Through Twenty-Four Centuries*, Charles Scribner and Sons, New York, (1929).
15. Sir Julian Huxley and H.B.D. Kettlewell, *Charles Darwin and his World*, Thames and Hudson, London (1965).
16. Allan Moorehead, *Darwin and the Beagle*, Penguin Books Ltd. (1971).
17. Francis Darwin (editor), *The Autobiography of Charles Darwin and Selected Letters*, Dover, New York (1958).
18. Charles Darwin, *The Voyage of the Beagle*, J.M. Dent and Sons Ltd., London (1975).
19. Charles Darwin, *The Origin of Species*, Collier MacMillan, London (1974).
20. Charles Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
21. Ruth Moore, *Evolution*, Time-Life Books (1962).
22. L. Barber, *The Heyday of Natural History: 1820-1870*, Doubleday and Co., Garden City, New York, (1980).
23. A. Desmond, *Huxley*, Addison Wesley, Reading, Mass., (1994).
24. R. Owen, (P.R. Sloan editor), *The Hunterian Lectures in Comparative Anatomy, May-June, 1837*, University of Chicago Press, (1992).
25. C. Nichols, *Darwinism and the social sciences*, Phil. Soc. Scient. **4**, 255-277 (1974).
26. M. Ruse, *The Darwinian Revolution*, University of Chicago Press, (1979).
27. A. Desmond and J. Moore, *Darwin*, Penguin Books, (1992).
28. R. Dawkins, *The Extended Phenotype*, Oxford University Press, (1982).
29. R. Dawkins, *The Blind Watchmaker*, W.W. Norton, (1987).
30. R. Dawkins, *River out of Eden: A Darwinian View of Life*, Harper Collins, (1995).
31. R. Dawkins, *Climbing Mount Improbable*, W.W. Norton, (1996).
32. S.J. Gould, *Ever Since Darwin*, W.W. Norton, (1977).
33. R.G.B. Reid, *Evolutionary Theory: The Unfinished Synthesis*, Croom Helm, (1985).
34. M. Ho and P.T. Saunders, editors, *Beyond Neo-Darwinism: An Introduction to a New Evolutionary Paradigm*, Academic Press, London, (1984).
35. J. Maynard Smith, *Did Darwin Get it Right? Essays on Games, Sex and Evolution*, Chapman and Hall, (1989).
36. E. Sober, *The Nature of Selection: Evolutionary Theory in Philosophical Focus*, University of Chicago Press, (1984).
37. B.K. Hall, *Evolutionary Developmental Biology*, Chapman and Hall, London, (1992).
38. J. Thompson, *Interaction and Coevolution*, Wiley and Sons, (1982).
39. R.A. Fischer, *The Genetical Theory of Natural Selection*, Clarendon, Oxford, (1930).
40. J.B.S. Haldane, *Population genetics*, *New Biology* **18**, 34-51, (1955).
41. N. Tinbergen, *The Study of Instinct*, Oxford University Press, (1951).
42. N. Tinbergen, *The Herring Gull's World*, Collins, London, (1953).
43. N. Tinbergen, *Social Behavior in Animals*, Methuen, London, (1953).
44. N. Tinbergen, *Curious Naturalists*, Country Life, London, (1958).

45. N. Tinbergen, *The Animal in its World: Explorations of an Ethologist*, Allan and Unwin, London, (1973).
46. K. Lorenz, *On the evolution of behavior*, Scientific American, December, (1958).
47. K. Lorenz, *Evolution and Modification of Behavior* Harvard University Press, Cambridge, MA, (1961).
48. K. Lorenz, *Studies in Animal and Human Behavior. I and II.*, Harvard University Press, (1970) and (1971).
49. P.H. Klopfer and J.P. Hailman, *An Introduction to Animal Behavior: Ethology's First Century*, Prentice-Hall, New Jersey, (1969).
50. J. Jaynes, *The historical origins of "Ethology" and "Comparative Psychology"*, Anim. Behav. **17**, 601-606 (1969).
51. W.H. Thorpe, *The Origin and Rise of Ethology: The Science of the Natural Behavior of Animals*, Heinemann, London, (1979).
52. R.A. Hinde, *Animal Behavior: A Synthesis of Ethological and Comparative Psychology*, McGraw-Hill, New York, (1970).
53. J.H. Crook, editor, *Social Behavior in Birds and Mammals*, Academic Press, London, (1970).
54. P. Ekman, editor, *Darwin and Facial Expression*, Academic Press, New York, (1973).
55. P. Ekman, W.V. Friesen and P. Ekworth, *Emotions in the Human Face*, Pergamon, New York, (1972).
56. N. Blurton Jones, editor, *Ethological Studies of Child Behavior*, Cambridge University Press, (1975).
57. M. von Cranach, editor, *Methods of Inference from Animals to Human Behavior*, Chicago/Mouton, Haag, (1976); Aldine, Paris, (1976).
58. K. Lorenz, *On Aggression*, Bantem Books, (1977).
59. I. Eibl-Eibesfeldt, *Ethology, The Biology of Behavior*, Holt, Rinehart and Winston, New York, (1975).
60. I. Eibl-Eibesfeldt and F.K. Salter, editors, *Indoctrinability, Ideology, and Warfare: Evolutionary Perspectives*, Berghahn Books, (1998).
61. I. Eibl-Eibesfeldt, *Human Ethology*, Walter De Gruyter Inc., (1989).
62. I. Eibl-Eibesfeldt, *Love and Hate*, Walter De Gruyter Inc., (1996).
63. J. Bowlby, *By ethology out of psychoanalysis: An experiment in interbreeding*, Animal Behavior, **28**, 649-656 (1980).
64. B.B. Beck, *Animal Tool Behavior*, Garland STPM Press, New York, (1980).
65. R. Axelrod, *The Evolution of Cooperation*, Basic Books, New York, (1984).
66. J.D. Carthy and F.L. Ebling, *The Natural History of Aggression*, Academic Press, New York, (1964)
67. D.L. Cheney and R.M. Seyfarth, *How Monkeys See the World: Inside the Mind of Another Species*, University of Chicago Press, (1990).
68. F. De Waal, *Chimpanzee Politics*, Cape, London, (1982).
69. M. Edmunds, *Defense in Animals*, Longman, London, (1974).
70. R.D. Estes, *The Behavior Guide to African Mammals*, University of California Press, Los Angeles, (1991).

71. R.F. Ewer, *Ethology of Mammals*, Logos Press, London, (1968).
72. E. Morgan, *The Scars of Evolution*, Oxford University Press, (1990).
73. W.D. Hamilton, *The genetical theory of social behavior. I and II*, J. Theor. Biol. **7**, 1-52 (1964).
74. R. Dawkins, *The Selfish Gene*, Oxford University Press, (1989).
75. R.W. Sussman, *The Biological Basis of Human Behavior*, Prentice Hall, Englewood Cliffs, (1997).
76. Irenäus Eibl-Eibesfeldt, *The Biology of Peace and War*, Thames and Hudson, New York (1979).
77. R.A. Hinde, *Biological Bases of Human Social Behavior*, McGraw-Hill, New York (1977).
78. R.A. Hinde, *Towards Understanding Relationships*, Academic Press, London (1979).
79. Albert Szent-Györgyi, *The Crazy Ape*, Philosophical Library, New York (1970).
80. E.O. Wilson, *Sociobiology*, Harvard University Press (1975).
81. C. Zhan-Waxler, *Altruism and Aggression: Biological and Social Origins*, Cambridge University Press (1986).
82. D.R. Griffin, *Animal Mind - Human Mind*, Dahlem Konferenzen 1982, Springer, Berlin, (1982).
83. R. Dart, *The predatory transition from ape to man*, International Anthropological and Linguistic Review, **1**, (1953).
84. S. Savage-Rumbaugh, R. Lewin, et al., *Kanzi: The Ape at the Brink of the Human Mind*, John Wiley and Sons, New York, (1996).
85. R. Dunbar, *Grooming, Gossip, and the Evolution of Language*, Harvard University Press, (1998).
86. M.E. Bitterman, *The evolution of intelligence*, Scientific American, January, (1965).
87. R. Fox, *In the beginning: Aspects of hominid behavioral evolution*, Man, **NS 2**, 415-433 (1967).
88. M.S. Gazzaniga, *The split brain in man*, Scientific American, **217**, 24-29 (1967).
89. D. Kimura, *The asymmetry of the human brain*, Scientific American, **228**, 70-78 (1973).
90. R.G. Klein, *Anatomy, behavior, and modern human origins*, Journal of World Prehistory, **9 (2)**, 167-198 (1995).
91. N.G. Jablonski and L.C. Aiello, editors, *The Origin and Diversification of Language*, Wattis Symposium Series in Anthropology. Memoirs of the California Academy of Sciences, No. 24, The California Academy of Sciences, San Francisco, (1998).
92. S. Pinker, *The Language Instinct: How the Mind Creates Language*, Harper-Collins Publishers, New York, (1995).
93. J.H. Barkow, L. Cosmides and J. Tooby, editors, *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, Oxford University Press, (1995).
94. D.R. Begun, C.V. Ward and M.D. Rose, *Function, Phylogeny and Fossils: Miocene Hominid Evolution and Adaptations*, Plenum Press, New York, (1997).

95. R.W. Byrne and A.W. Whitten, *Machiavellian Intelligence: Social Expertise and the Evolution of Intellect in Monkeys, Apes and Humans*, Cambridge University Press, (1988),
96. V.P. Clark, P.A. Escholz and A.F. Rosa, editors, *Language: Readings in Language and Culture*, St Martin's Press, New York, (1997).
97. T.W. Deacon, *The Symbolic Species: The Co-evolution of Language and the Brain*, W.W. Norton and Company, New York, (1997).
98. C. Gamble, *Timewalkers: The Prehistory of Global Colonization*, Harvard University Press, (1994).
99. K.R. Gibson and T. Ingold, editors, *Tools, Language and Cognition in Human Evolution*, Cambridge University Press, (1993).
100. P. Mellers, *The Emergence of Modern Humans: An Archaeological Perspective*, Edinburgh University Press, (1990).
101. P. Mellers, *The Neanderthal Legacy: An Archaeological Perspective of Western Europe*, Princeton University Press, (1996).
102. S. Mithen, *The Prehistory of the Mind*, Thames and Hudson, London, (1996).
103. D. Haraway, *Signs of dominance: from a physiology to a cybernetics of primate biology*, *C.R. Carpenter, 1939-1970*, *Studies in History of Biology*, **6**, 129-219 (1983).
104. D. Johanson and M. Edey, *Lucy: The Beginnings of Humankind*, Simon and Schuster, New York, (1981).
105. B. Kurtén, *Our Earliest Ancestors*, Columbia University Press, New York, (1992).
106. R.E. Leakey and R. Lewin, *Origins Reconsidered*, Doubleday, New York, (1992).
107. P. Lieberman, *The Biology and Evolution of Language*, Harvard University Press, (1984).
108. J.D. Wall and M. Przeworski, *When did the human population size start increasing?*, *Genetics*, **155**, 1865-1874 (2000).
109. L. Aiello and C. Dean, *An Introduction to Human Evolutionary Anatomy*, Academic Press, London, (1990).
110. F. Ikawa-Smith, ed., *Early Paleolithic in South and East Asia*, Mouton, The Hague, (1978).
111. R.R. Baker, *Migration: Paths Through Space and Time*, Hodder and Stoughton, London, (1982).
112. P. Bellwood, *Prehistory of the Indo-Malaysian Archipelago*, Academic Press, Sidney, (1985).
113. P.J. Bowler, *Theories of Human Evolution: A Century of Debate, 1884-1944*, Basil Blackwell, Oxford, (1986).
114. G. Isaac and M. McCown, eds., *Human Origins: Louis Leaky and the East African Evidence*, Benjamin, Menlo Park, (1976).
115. F.J. Brown, R. Leaky, and A. Walker, *Early Homo erectus skeleton from west Lake Turkana, Kenya*, *Nature*, **316**, 788-92, (1985).
116. K.W. Butzer, *Archeology as Human Ecology*, Cambridge University Press, (1982).
117. A.T. Chamberlain and B.A. Wood, *Early hominid phylogeny*, *Journal of Human Evolution*, **16**, 119-33, (1987).

118. P. Mellars and C. Stringer, eds., *The Human Revolution: Behavioural and Biological Perspectives in the Origins of Modern Humans*, Edinburgh University Press, (1989).
119. G.C. Conroy, *Primate Evolution*, W.W. Norton, New York, (1990).
120. R.I.M. Dunbar, *Primate Social Systems*, Croom Helm, London, (1988).
121. B. Fagan, *The Great Journey: The Peopling of Ancient America*, Thames and Hudson, London, (1987).
122. R.A. Foley, ed., *Hominid Evolution and Community Ecology*, Academic Press, New York, (1984).
123. S.R. Binford and L.R. Binford, *Stone tools and human behavior*, Scientific American, **220**, 70-84, (1969).
124. G. Klein, *The Human Career, Human Biological and Cultural Origins*, University of Chicago Press, (1989).
125. B.F. Skinner and N. Chomsky, *Verbal behavior*, *Language*, **35** 26-58 (1959).
126. D. Bickerton, *The Roots of Language*, Karoma, Ann Arbor, Mich., (1981).
127. E. Lenneberg in *The Structure of Language: Readings in the Philosophy of Language*, J.A. Fodor and J.A. Katz editors, Prentice-Hall, Englewood Cliffs N.J., (1964).
128. S. Pinker, *Talk of genetics and visa versa*, *Nature*, **413**, 465-466, (2001).
129. S. Pinker, *Words and rules in the human brain*, *Nature*, **387**, 547-548, (1997).
130. M. Ruhelen, *The Origin of Language*, Wiley, New York, (1994).
131. C.B. Stringer and R. McKie, *African Exodus: The Origins of Modern Humanity*, Johnathan Cape, London (1996).
132. R.W. Sussman, *The Biological Basis of Human Behavior*, Prentice Hall, Englewood Cliffs, (1997).
133. D.P. Barash *Sociobiology and Behavior*, Elsevier, New York, (1977).
134. J.D. Carthy and F.J. Eblin, eds., *The Natural History of Aggression*, Academic Press, New York, (1964).
135. N.A. Chagnon and W. Irons, eds., *Evolutionary Biology and Human Social Behavior, an Anthropological Perspective*, Duxbury Press, N. Scituate, MA, (1979).
136. E. Danielson, *Vold, en Ond Arv?*, Gyldendal, Copenhagen, (1929).
137. M.R. Davie, *The Evolution of War*, Yale University Press, New Haven, CT, (1929).
138. T. Dobzhanski, *Mankind Evolving*, Yale University Press, New Haven, CT, (1962).
139. I. Eibl-Eibesfeldt, *Der Vorprogrammiert Mensch*, Molden, Vienna, (1973).
140. I. Eibl-Eibesfeldt, *Ethology, the Biology of Behavior*, Holt, Rinehart and Winston, New York, (1975).
141. I. Eibl-Eibesfeldt, *Liebe und Hass*, Molden, Vienna, (1973).
142. R.L. Holloway, *Primate Aggression: Territoriality and Xenophobia*, Academic Press, New York, (1974).
143. P. Kitcher, *Vaulting Ambition: Sociobiology and the Quest for Human Nature*, MIT Press, Cambridge, MA, (1985).
144. S.L.W. Mellen, *The Evolution of Love*, Freeman, Oxford, (1981).
145. A. Roe and G.G. Simpson, *Behavior and Evolution*, Yale University Press, New Haven, CT, (1958).
146. N.J. Smelser, *The Theory of Collective Behavior*, Free Press, New York, (1963).

147. R. Trivers, *Social Evolution*, Benjamin/Cummings, Menlo Park, CA, (1985).
148. W. Weiser, *Konrad Lorenz und seine Kritiker*, Piper, Munich, (1976).
149. W. Wickler, *Biologie der 10 Gebote*, Piper, Munich, (1971).
150. E.O. Wilson, *Sociobiology*, Harvard University Press (1975).
151. E.O. Wilson, *On Human Nature*, Bantam Books, New York, (1979).
152. C. Zahn-Waxler, *Altruism and Aggression: Biological and Social Origins*, Cambridge University Press, (1986).
153. J. Galtung, *A structural theory of aggression*, Journal of Peace Research, **1**, 95-119, (1964).
154. G.E. Kang, *Exogamy and peace relations of social units: A cross-cultural test*, Ethology, **18**, 85-99, (1979).
155. A. Montagu, *Man and Aggression*, Oxford University Press, New York, (1968).
156. W.A. Nesbitt, *Human Nature and War*, State Education Department of New York, Albany, (1973).
157. W. Suttles, *Subhuman and human fighting*, Anthropologica, **3**, 148-163, (1961).
158. V. Vale and Andrea Juno, editors, *Modern Primitives: An Investigation of Contemporary Adornment and Ritual*, San Francisco Re/Search, (1990).
159. R.A. Hinde, editor, *The Institution of War*, Cambridge University Press, (1991).
160. R.A. Hinde, *Individuals, Relationships and Culture: Links Between Ethology and the Social Sciences*, Cambridge University Press, (1987).
161. R.A. Hinde, *Ethology: Its Nature and Relationship With Other Sciences*
162. R.A. Hinde, *Animal Behaviour: A Synthesis of Ethology and Comparative Psychology*
163. R.A. Hinde, *Non-Verbal Communication*, Cambridge University Press, (1972).
164. R.A. Hinde, *Why Gods Persist: A Scientific Approach to Religion*, Routledge, London, (1999).
165. P.P.G. Bateson and R.A. Hinde, editors, *Growing Points in Ethology: Based on a Conference Sponsored by St. John's College and King's College, Cambridge*, Cambridge University Press, (1976).
166. R.A. Hinde, A.-N. Perret-Clermont and J. Stevenson-Hinde, editors, *Social Relationships and Cognitive Development*, Clarendon, Oxford, (1985).
167. R.A. Hinde and J. Stevenson-Hinde, editors, *Relationships Within Families: Mutual Influences*, Clarendon Press, Oxford, (1988).
168. P. Bateson, editor, *The Development and Integration of Behaviour: Essays in Honour of Robert Hinde*, Cambridge University Press, (1991).
169. C. Darwin, *The Expression of Emotions in Man and Animals*, The University of Chicago Press (1965).
170. P. Kropotkin, *Mutual Aid, A Factor in Evolution*, Walter Heinemann, London, (1902).
171. R.A. Fischer, *The Genetical Theory of Natural Selection*, Clarendon, Oxford, (1930).
172. J.B.S. Haldane, *Population genetics*, New Biology **18**, 34-51, (1955).
173. L. Margulis, *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis*, The MIT Press, (1991).

174. L. Margulis, *Symbiosis in Cell Evolution: Microbial Communities in the Archean and Proterozoic Eons*, W.H. Freeman, (1992).
175. N. Tinbergen, *The Study of Instinct*, Oxford University Press, (1951).
176. I. Eibl-Eibesfeldt, *The Biology of Peace and War*, Thames and Hudson, New York (1979).
177. E.O. Wilson, *On Human Nature*, Bantam Books, New York, (1979).
178. R.A. Hinde, *Biological Bases of Human Social Behavior*, McGraw-Hill, New York (1977).
179. R.A. Hinde, *Individuals, Relationships and Culture: Links Between Ethology and the Social Sciences*, Cambridge University Press, (1987).
180. W.M. Senner, editor, *The Origins of Writing*, University of Nebraska Press, Lincoln and London, (1989).

Chapter 4

FROM TRIBALISM TO NATIONALISM

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

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

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

In this chapter, we will discuss nationalism in Europe, and especially the conflicts between absolutely sovereign nation-states that led to the two World Wars. However, it is important to remember that parallel to this story, run others, equally tragic - conflicts in the Middle East, the Vietnam War, the Cuban Missile Crisis, conflicts between India and Pakistan, the Korean War, the two Gulf Wars, and so on. In all of these tragedies, the

root the trouble is that international interdependence exists in practice because of modern technology, but our political institutions, emotions and outlook are at the stunted level of the absolutely sovereign nation-state. Although we focus here on German nationalism as an example, and although historically it had terrible consequences, it is not a danger today. Germany is now one of the world's most peaceful and responsible countries, and the threats to world peace now come from nationalism outside Europe.

4.1 Nationalism in Europe

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

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

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

The early political unity of France enabled French culture to dominate Europe during the 17th and 18th centuries. Frederick the Great of Prussia and his court spoke and wrote in French. Frederick himself regarded German as a language of ignorant peasants, and on the rare occasions when he tried to speak or write in German, the result was almost incomprehensible. The same was true in the courts of Brandenburg, Saxony, Pomerania, etc. Each of them was a small-scale Versailles. Below the French-speaking aristocracy was a German-speaking middle class and a German or Slavic-speaking peasantry.

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

The answer was not hard to find. What the French had was a sense of national identity. In fact, the French Revolution had unleashed long-dormant tribal instincts in the common



Figure 4.1: A portrait of Napoleon (as he liked to see himself).

people of France. It was the fanatical support of the Marseillaise-singing masses that made the French armies invincible. The founders of the German nationalist movement concluded that if they were ever to have a chance of defeating France, they would have to inspire the same fanaticism in their own peoples. They would have to touch the same almost-forgotten cord of human nature that the French Revolution had touched.

The common soldiers who fought in the wars of Europe in the first part of the 18th century were not emotionally involved. They were recruited from the lowest ranks of society, and they joined the army of a king or prince for the sake of money. All this was changed by the French Revolution. In June, 1792, the French Legislative Assembly decreed that a Fatherland Alter be erected in each commune with the inscription, “The citizen is born, lives and dies for *la patrie*.” The idea of a “Fatherland Alter” clearly demonstrates the quasi-religious nature of French nationalism.

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



Figure 4.2: **A romantic figure representing Germany**

of mass communication.

This was the phenomenon with which the German nationalists felt they had to contend.

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

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

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

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

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

Fichte proposed a new system of education which would abolish the individual will and teach individuals to become subservient to the will of the state. “The new education must consist essentially in this”, Fichte wrote, “that it completely destroys the will in the soil that it undertakes to cultivate... If you want to influence a man at all, you must do more than merely talk to him; you must fashion him, and fashion him, and fashion him in such a way that he simply cannot will otherwise than you wish him to will.”

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

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

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

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

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

The German nationalist movement was not only quasi-religious in its tone; it also borrowed psychological techniques from religion. It aroused the emotions of the masses to large-scale political activity by the use of semi-religious political liturgy, involving myth, symbolism, and festivals. In his book “German Society” (1814), Arndt advocated the celebration of “holy festivals”. For example, he thought that the celebration of the pagan festival of the summer solstice could be combined with a celebration of the victory over Napoleon at the Battle of Leipzig.

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

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



Figure 4.3: Celebration of the “German May” at Hambrach Castle

faith, and responses between the leader and the congregation.¹

In 1832, the first mass meeting in German history took place, when 32,000 men and women gathered to celebrate the “German May”. Singing songs, wearing black, red, and gold emblems, and carrying flags, they marched to Hambrach Castle, where they were addressed by their leaders.

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

Dramas were also used to promote a feeling of cohesion and national identity. An example of this type of propagandist drama is Kleist’s play, “Hermann’s Battle”, (1808). The play deals with a Germanic chieftain who, in order to rally the tribes against the Romans, sends his own men, disguised as Roman soldiers, to commit atrocities in the neighboring German villages. At one point in the play, Hermann is told of a Roman soldier

¹ The Nazi sacred symbols and the concept of the swastika or “gamma cross”, the eagle, the red/black/white color scheme, the ancient Nordic runes (one of which became the symbol of the SS), were all adopted from esoteric traditions going back centuries, shared by Brahmins, Scottish Masons, Rosicrutians, the Knights Templars and other esoteric societies.

who risked his own life to save a German child in a burning house. Hearing this report, Hermann exclaims, "May he be cursed if he has done this! He has for a moment made my heart disloyal; he has made me for a moment betray the august cause of Germany!... I was counting, by all the gods of revenge, on fire, loot, violence, murder, and all the horrors of unbridled war! What need have I of Latins who use me well?"

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

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

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

Nationalism in England (as in Germany) was to a large extent a defensive response against French nationalism. At the end of the 18th century, the liberal ideas of the Enlightenment were widespread in England. There was much sympathy in England with the aims of the French Revolution, and a similar revolution almost took place in England. However, when Napoleon landed an army in Ireland and threatened to invade England, there was a strong reaction towards national self-defense. The war against France gave impetus to nationalism in England, and military heroes like Wellington and Nelson became objects of quasi-religious worship. British nationalism later found an outlet in colonialism.

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

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

"There will be", Heine wrote, "Kantians forthcoming who, in the world to come, will



Figure 4.4: Wagner's dramas were part of the quasi-religious cult of German nationalism

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

4.2 The two world wars

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

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

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

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

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

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



Figure 4.5: **Otto von Bismarck**

play Bismarck himself.

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

Wilhelm's government then began to build a huge modern navy, much to the consternation of the English. The government of England felt that it was necessary for their country to have control of the sea, since England was a densely-populated island, dependent on imports of food. It was not only with respect to naval power that England felt threatened: After being united in 1871, Germany had undergone an industrial revolution; and German industries were pouring out steel and high-quality manufactured goods that threatened England's dominance of world trade. Commercial and naval competition with the rising German Empire drove England into an informal alliance with Russia and France - the Triple Entente.

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

Russia were drawn into the conflict.

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

None of the people who started the First World War had the slightest idea what it would be like. The armies of Europe were dominated by the old feudal landowning class, whose warlike traditions were rooted in the Middle Ages. The counts and barons who still ruled Europe's diplomatic and military establishments knew how to drink champaign, dance elegantly, ride horses, and seduce women. They pranced off to war in high spirits, the gold on their colorful uniforms glittering in the sunshine, full of expectations of romantic cavalry charges, kisses stolen from pretty girls in captured villages, decorations, glory and promotion, like characters in "The Chocolate Soldier" or "Die Fledermaus". The romantic dreams of glory of every small boy who ever played with toy soldiers were about to become a thrilling reality!

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

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

On the western front, the opposing armies dug lines of trenches stretching from the Atlantic to the Swiss border. The two lines of trenches were separated by a tangled mass of barbed wire. Periodically the generals on one side or the other would order their armies to break through the opposing line. They would bring forward several thousand artillery pieces, fire a million or so high explosive shells to cut the barbed wire and to kill as many as possible of the defenders, and then order their men to attack. The soldiers had to climb out of the trenches and struggle forward into the smoke. There was nothing else for them to do. If they disobeyed orders, they would be court-martialed and shot as deserters. They were driven forward and slaughtered in futile attacks, none of which gained anything. Their leaders had failed them. Civilization had failed them. There was nothing for them to do



but to die, to be driven forward into the poison gas and barbed wire and to be scythed down by machine gun fire, for nothing, for the ambition, vanity and stupidity of their rulers.

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

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

For millions of Europe’s young men, the long, long trail lead only to death in the mud and smoke; and for millions of mothers and sweethearts waiting at home, dreams of the future were shattered by a telegram announcing the death of the boy for whom they were waiting.

When the war ended four years later, ten million young men had been killed and twenty million wounded, of whom six million were crippled for life. The war had cost 350,000,000,000 1919 dollars. This was a calculable cost; but the cost in human suffering and brutalization of values was incalculable. It hardly mattered whose fault the catastrophe had been. Perhaps the Austrian government had been more to blame than any other. But

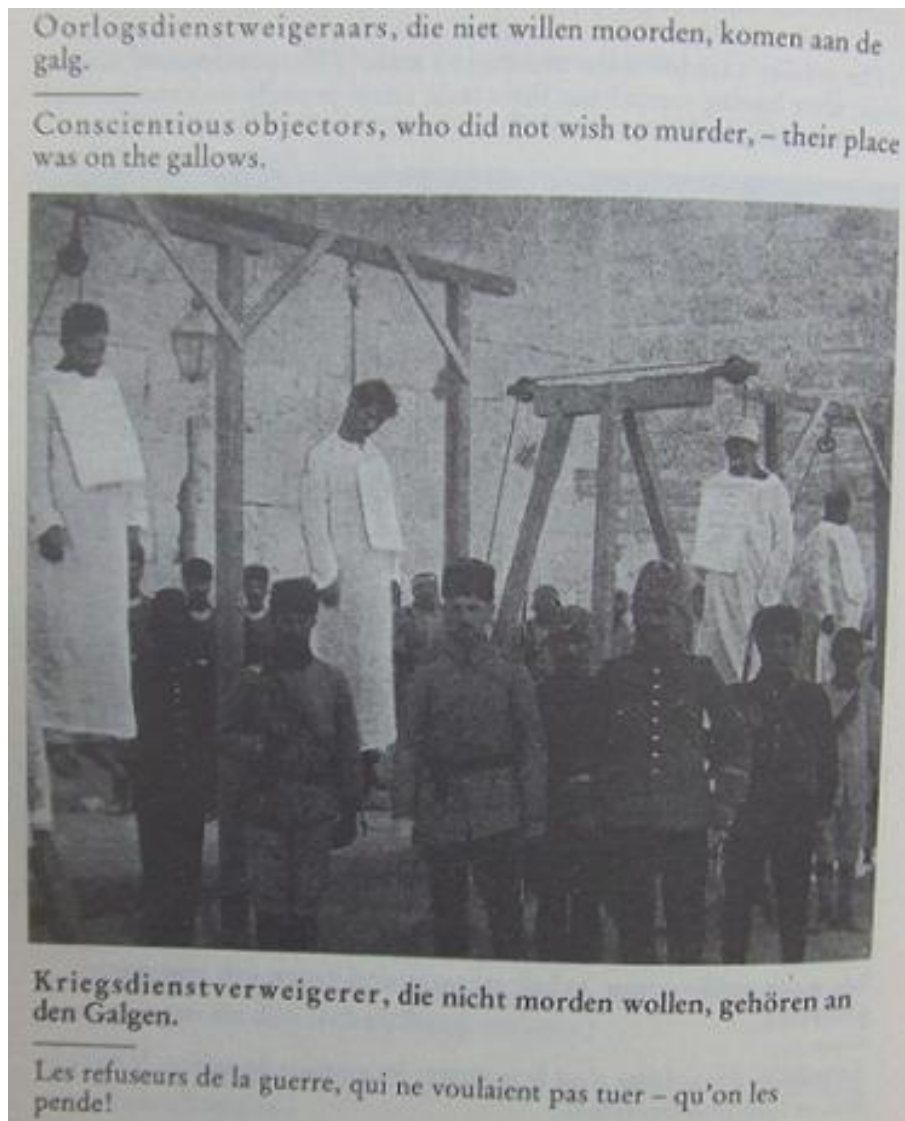


Figure 4.6: **The fate of conscientious objectors.**

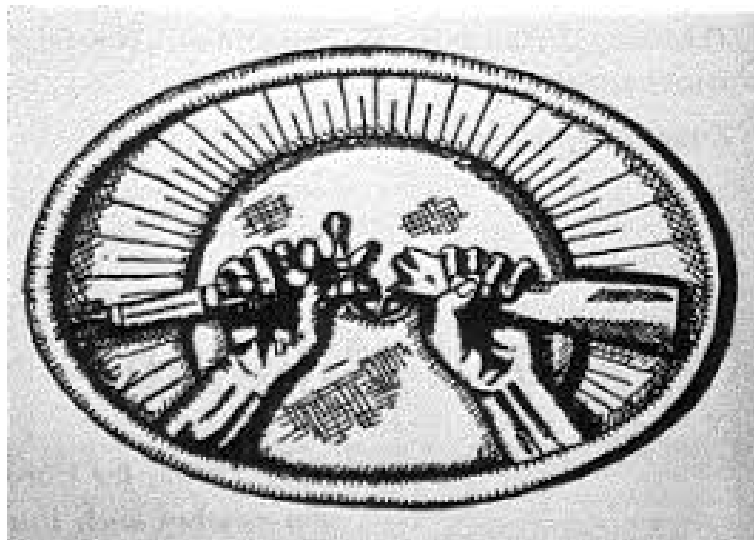










Figure 4.7: World War I casualties.

blame for the war certainly did not rest with the Austrian people nor with the young Austrians who had been forced to fight. However, the tragedy of the First World War was that it created long-lasting hatred between the nations involved; and in this way it led, only twenty years later, to an even more catastrophic global war.

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

The German Chief of Staff, General Ludendorff, then shifted all his troops to the west in an all-out offensive. In March, 1918, he threw his entire army into a gigantic offensive which he called "the Emperor's Battle". The German army drove forward, and by June they were again on the Marne, only 50 miles from Paris. However, the Allies counterattacked, strengthened by the first American troops, and using, for the first time, large numbers of tanks. The Germans fell back, and by September they had lost more than a million men in six months. Morale in the retreating German army was falling rapidly, and fresh American troops were landing in France at the rate of 250,000 per month. Ludendorff realized that the German cause was hopeless and that if peace were not made quickly, a communist revolution would take place in Germany just as it had in Russia.

The old feudal Prussian military caste, having led Germany into disaster, now unloaded responsibility onto the liberals. Ludendorff advised the Kaiser to abdicate, and a liberal leader, Prince Max of Baden, was found to head the new government. On November 9,

1918, Germany was proclaimed a republic. Two days later, an armistice was signed and the fighting stopped.

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

When Wilson arrived in Europe to attend the peace conference in Paris, he was wildly cheered by crowds of ordinary people, who saw in his idealism new hope for the world. Unfortunately, the hatred produced by four years of horrible warfare was now too great to be overcome. At the peace conference, the aged nationalist Georges Clemenceau was unswerving in his deep hatred of Germany. France had suffered greatly during the war. Half of all French males who had been between the ages of 20 and 32 in 1914 had been killed; much of the French countryside had been devastated; and the retreating German armies had destroyed the French coal mines. Clemenceau was determined to extract both revenge and financial compensation from the Germans.

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

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

French newspapers picked up the information, and at 4 a.m. one morning, a messenger knocked at the door of the Paris hotel room where Herbert Hoover (the American war relief administrator) was staying, and handed him a copy of the terms. Hoover was so upset that he could sleep no more that night. He dressed and went out into the almost deserted Paris streets, pacing up and down, trying to calm himself. “It seemed to me”, Hoover wrote later, “that the economic consequences alone would pull down all Europe and thus injure the United States.” By chance, Hoover met the British economist, John Maynard Keynes, who was walking with General Jan Smuts in the pre-dawn Paris streets. Both of them had received transcripts of the terms offered to Germany, and both were similarly upset. “We agreed that it was terrible”, Hoover wrote later, “and we agreed that we would do what

we could... to make the dangers clear.”

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

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

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

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

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

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

In 1921, the Reparations Commission fixed the amount that Germany would have to pay at 135,000,000,000 gold marks. Various western economists realized that this amount was far more than Germany would be able to pay; and in fact, French efforts to collect it proved futile. Therefore France sent army units to occupy industrial areas of the Ruhr in order to extract payment in kind. The German workers responded by sitting down at their jobs. Their salaries were paid by the Weimar government, which printed more and more paper money. The printing presses ran day and night, flooding Germany with worthless currency. By 1923, inflation had reached such ruinous proportions that baskets



Figure 4.8: **Hitler addresses a rally at Dortmund in 1932**

full of money were required to buy a loaf of bread. At one point, four trillion paper marks were equal to one dollar. This catastrophic inflation reduced the German middle class to poverty and destroyed its faith in the orderly working of society.

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

In the middle of Kahr's speech, Adolf Hitler leaped to the podium. Firing two revolver bullets into the ceiling Hitler screamed that the revolution was on - it would begin immediately! He ordered his armed troopers to bar the exits, and he went from one Bavarian leader to the other, weeping with excitement, a beer stein in one hand and a revolver in the other, pleading with them to support the revolution. At this point, the figure of General Ludendorff suddenly appeared. In full uniform, and wearing all his medals, he added his pleading to that of Hitler. The Bavarian leaders appeared to yield to Hitler and Ludendorff; and that night the Nazis went into action. Wild disorder reigned in Munich. Republican newspapers and trade union offices were smashed, Jewish homes were raided, and an attempt was made to seize the railway station and the post office. However, units of policemen and soldiers were forming to resist the Nazis. Hitler realized that the Bavarian government officials under Kahr had only pretended to go along with the revolution in order to escape from the armed troopers in the beer hall.

At dawn, Hitler grouped his followers together for a parade to show their strength and to intimidate opposition. With swastika flags flying, the Nazis marched to the main square of Munich. There they met troops of Bavarian government soldiers and policemen massed in force. A volley of shots rang out, and 18 Nazis fell dead. Many other Nazis were



Figure 4.9: A portrait of Adolf Hitler

wounded, and the remainder scattered. Hitler broke his shoulder diving for the pavement. Only General Ludendorff remained standing where he was. The half-demented old soldier, who had exercised almost dictatorial power over Germany during the last years of the war, marched straight for the Bavarian government troops. They stepped aside and let him pass.

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

4.3 Lessons from the First World War

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

As we have seen, World War I had its roots in the fanatical and quasi-religious nationalist movements that developed in Europe during the 19th century. Nationalism is still a potent force in today's world, but in an era of all-destroying weapons, instantaneous worldwide communication, and global economic interdependence, fanatical nationalism has become a dangerous anachronism. Of course, we should continue to be loyal to our families, our local groups and our nations. But this must be supplemented by a wider loyalty to the human race as a whole.

Hearing Beethoven's 9th Symphony, with Schiller's words, most of us experience a feeling that resembles patriotism, but is broader: "All men are brothers!" Not just some, but all. The choral movement of the symphony is like a national anthem of humanity. All humans are brothers and sisters! All!

All nations and races have contributed to the great monument of human civilization. It is a treasure that we all hold in common. We must join hands and work together for our common future. Human unity has become more and more essential, because of the serious problems that we are facing, for example climate change, vanishing resources, and threats to food security. The problems are soluble, but only within a framework of peace and cooperation.

Secondly, we can remember that the First World War started as a small operation by the Austrian government to punish the Serbian nationalists; but it escalated uncontrollably into a global disaster. Today, there are many parallel situations, where uncontrollable escalation might produce a world-destroying conflagration.

Israel's Prime Minister, Benjamin Netanyahu has frequently stated that, with or without US backing, Israel intends to bomb Iran, an act that would be not only criminal but also insane. Why criminal? Because it would violate both the UN Charter and the Nuremberg Principles. Why insane? Because the Middle East is already a deeply troubled region, and a military attack on Iran could escalate uncontrollably into a general war in the Middle East. Perhaps it could even escalate into World War III. Netanyahu has told

the people of Israel that the attack would involve only about 500 Israeli deaths and that it would be over in a month. One is reminded of Kaiser Wilhelm's words to his departing troops: "You will be home before the leaves are off the trees!"

In general, aggressive interventions, in Syria, Ukraine, the Korean Peninsula and elsewhere, all present dangers for uncontrollable escalation into large and disastrous conflicts, which might potentially threaten the survival of human civilization.

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

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

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

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

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

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

4.4 What is to be done?

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

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

Suggestions for further reading

1. E.J. Hobsbawn, *The Age of Empire, 1875-1914*, Vintage Books, (1989).
2. L. James, *The Rise and Fall of the British Empire*, St Martin’s Press, (1997).
3. N. Ferguson, *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power*, Basic Books, (2003).
4. S. Schama, *The Fate of Empire, 1776-2000*, Miramax, (2002).
5. A.P. Thorton, *The Imperial Idea and Its Enemies: A Study in British Power*, Palgrave Macmillan, (1985).
6. H. Mejcher, *Imperial Quest for Oil: Iraq, 1910-1928*, Ithaca Books, London, (1976).
7. P. Sluglett, *Britain in Iraq, 1914-1932*, Ithaca Press, London, (1976).
8. D.E. Omissi, *British Air Power and Colonial Control in Iraq, 1920-1925*, Manchester University Press, Manchester, (1990).
9. V.G. Kiernan, *Colonial Empires and Armies, 1815-1960*, Sutton, Stroud, (1998).
10. R. Solh, *Britain’s 2 Wars With Iraq*, Ithaca Press, Reading, (1996).
11. D. Hiro, *The Longest War: The Iran-Iraq Military Conflict*, Routledge, New York, (1991).

12. T.E. Lawrence, *A Report on Mesopotamia by T.E. Lawrence*, Sunday Times, August 22, (1920).
13. D. Fromkin, *A Peace to End All Peace: The Fall of the Ottoman Empire and the Creation of the Modern Middle East*, Owl Books, (2001).
14. T. Rajamoorthy, *Deceit and Duplicity: Some Reflections on Western Intervention in Iraq*, Third World Resurgence, March-April, (2003).
15. P. Knightley and C. Simpson, *The Secret Lives of Lawrence of Arabia*, Nelson, London, (1969).
16. G. Lenczowski, *The Middle East in World Affairs*, Cornell University Press, (1962).
17. John A. Hobson, *Imperialism; A Study*, (1902).
18. P. Cain and T. Hopkins, *British Imperialism, 1688-200*, Longman, (2000).
19. N. Ferguson, *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power*, Basic Books, (2003).
20. G. Kolko, *Another Century of War*, New Press, (2002).
21. G. Kolko, *Confronting the Third World: United States Foreign Policy, 1945-1980*, Pantheon Books, (1988).
22. M.T. Klare, *Resource Wars: The New Landscape of Global Conflict*, Owl Books reprint edition, New York, (2002).
23. Y. Nakash, *The Shi'is of Iraq*, Princeton University Press, (1994).
24. D. Fromkin, *A Peace to End All Peace: The Fall of the Ottoman Empire and the Creation of the Modern Middle East*, Owl Books, (2001).
25. S.K. Aburish, *Saddam Hussein: The Politics of Revenge*, Bloomsbury, London, (2001).
26. M. Muffti, *Sovereign Creations: Pan-Arabism and Political Order in Syria and Iraq*, Cornell University Press, (1996).
27. C. Clover, *Lessons of the 1920 Revolt Lost on Bremer*, Financial Times, November 17, (2003).
28. J. Kifner, *Britain Tried First. Iraq Was No Picnic Then*, New York Times, July 20, (2003).
29. J. Feffer, B. Eggenreich and M.T. Klare, *Power Trip: US Unilateralism and Global Strategy After September 11*, Seven Stories Press, (2003).
30. J.D. Rockefeller, *Random Reminiscences of Men and Events*, Doubleday, New York, (1909).
31. M.B. Stoff, *Oil, War and American Security: The Search for a National Policy on Oil, 1941-1947*, Yale University Press, New Haven, (1980).
32. W.D. Muscable, *George F. Kennan and the Making of American Foreign Policy*, Princeton University Press, Princeton, (1992).
33. J. Stork, *Middle East Oil and the Energy Crisis*, Monthly Review, New York, (1976).
34. F. Benn, *Oil Diplomacy in the Twentieth Century*, St. Martin's Press, New York, (1986).
35. R. Sale, *Saddam Key in Early CIA Plot*, United Press International, April 10, (2003).
36. K. Roosevelt, *Countercoup: The Struggle for the Control of Iran*, McGraw-Hill, New York, (1979).

37. J. Fitchett and D. Ignatius, *Lengthy Elf Inquiry Nears Explosive Finish*, International Herald Tribune, February 1, (2002).
38. M.T. Klare, *Resource Wars: The New Landscape of Global Conflict*, Owl Books reprint edition, New York, (2002).
39. M. Klare, *Bush-Cheney Energy Strategy: Procuring the Rest of the World's Oil*, Foreign Policy in Focus, (Interhemispheric Resource Center/Institute for Policy Studies/SEEN), Washington DC and Silver City NM, January, (2004).
40. M. Klare, *Endless Military Superiority*, The Nation magazine, July 15, (2002).
41. M.T. Klare, *Geopolitics Reborn: The Global Struggle Over Oil and Gas Pipelines*, Current History, December issue, 428-33, (2004).
42. P. Grose, *Allen Dulles: The Life of a Gentleman Spy*, Houghton Mifflin, Boston, (1994).
43. S. Warren, *Exxon's Profit Surged in 4th Quarter*, Wall Street Journal, February 12, (2004).
44. R. Suskind, *The Price of Loyalty: George W. Bush, the White House and the Education of Paul O'Neill*, Simon and Schuster, New York, (2004).
45. D. Morgan and D.B. Ottaway, *In Iraqi War Scenario, Oil is Key Issue as U.S. Drillers Eye Huge petroleum Pool*, Washington Post, September 15, (2002).
46. D. Rose, *Bush and Blair Made Secret Pact for Iraqi War*, The Observer, April 4, (2004).
47. E. Vulliamy, P. Webster and N.P. Walsh, *Scramble to Carve Up Iraqi Oil Reserves Lies Behind US Diplomacy*, The Observer, October 6, (2002).
48. Y. Ibrahim, *Bush's Iraq Adventure is Bound to Backfire*, International Herald Tribune, November 1, (2002).
49. P. Beaumont and F. Islam, *Carve-Up of Oil Riches Begins*, The Observer, November 3, (2002).
50. M. Dobbs, *US Had Key Role in Iraq Buildup*, Washington Post, December 30, (2002).
51. R. Sale, *Saddam Key in Early CIA Plot*, United Press International, April 10, (2003).
52. R. Morris, *A Tyrant Forty Years in the Making*, New York Times, March 14, (2003).
53. H. Batatu, *The Old Social Classes and the Revolutionary Movements of Iraq*, Princeton University Press, (1978).
54. D.W. Riegel, Jr., and A.M. D'Amato, *US Chemical and Biological Warfare-Related Dual Use Exports to Iraq and their Possible Impact on the Health Consequences of the Persian Gulf War*, Report to US Senate ("The Riegel Report"), May 25, (1994).
55. P.E. Tyler, *Officers Say US Aided Iraq in War Despite Use of Gas*, New York Times, August 18, (2002).
56. D. Priest, *Rumsfeld Visited Baghdad in 1984 to Reassure Iraqis, Documents Show*, Washington Post, December 19, (2003).
57. S. Zunes, *Saddam's Arrest Raises Troubling Questions*, Foreign Policy in Focus, <http://www.globalpolicy.org/>, December (2003).
58. D. Leigh and J. Hooper, *Britain's Dirty Secret*, Guardian, March 6, (2003).

59. J. Battle, (Ed.), *Shaking Hands With Saddam Hussein: The US Tilts Towards Iraq, 1980-1984*, National Security Archive Electronic Briefing Book No. 82, February 25, (2003).
60. J.R. Hiltermann, *America Didn't Seem to Mind Poison Gas*, International Herald Tribune, January 17, (2003).
61. D. Hiro, *Iraq and Poison Gas*, Nation, August 28, (2002).
62. T. Weiner, *Iraq Uses Techniques in Spying Against its Former Tutor, the US*, Philadelphia Inquirer, February 5, (1991).
63. S. Hussein and A. Glaspie, *Excerpts From Iraqi Document on Meeting with US Envoy*, The New York Times, International, September 23, (1990).
64. D. Omissi, *Baghdad and British Bombers*, Guardian, January 19, (1991).
65. D. Vernet, *Postmodern Imperialism*, Le Monde, April 24, (2003).
66. J. Buchan, *Miss Bell's Lines in the Sand*, Guardian, March 12, (2003).
67. C. Tripp, *Iraq: The Imperial Precedent*, Le Monde Diplomatique, January, (2003).
68. G.H.W. Bush and B. Scowcroft, *Why We Didn't Remove Saddam*, Time, 2 March, (1998).
69. J.A. Baker III, *The Politics of Diplomacy: Revolution, War and Peace, 1989-1992*, G.P. Putnam's Sons, New York, (1995).
70. H. Thomas, *Preventive War Sets Serious Precedent*, Seattle Post Intelligencer, March 20, (2003).
71. R.J. Barnet, *Intervention and Revolution: The United States in the Third World*, World Publishing, (1968).
72. T. Bodenheimer and R. Gould, *Rollback: Right-wing Power in U.S. Foreign Policy*, South End Press, (1989).
73. G. Guma, *Uneasy Empire: Repression, Globalization, and What We Can Do, Toward Freedom*, (2003).
74. W. Blum, *A Brief History of U.S. Interventions: 1945 to the Present*, Z magazine, June, (1999).
75. W. Blum, *Killing Hope: U.S. Military and CIA Intervention Since World War II*
76. J.M. Cypher, *The Iron Triangle: The New Military Buildup*, Dollars and Sense magazine, January/February, (2002).
77. L. Meyer, *The Power of One*, (World Press Review), Reforma, Mexico City, August 5, (1999).
78. W. Hartung, F. Berrigan and M. Ciarrocca, *Operation Endless Deployment: The War With Iraq Is Part of a Larger Plan for Global Military Dominance*, The Nation magazine, October 21, (2002).
79. I. Ramonet, *Servile States*, Le Monde diplomatique, Fromkin Paris, October (2002), World Press Review, December, (2002).
80. J.K. Galbraith, *The Unbearable Costs of Empire*, American Prospect magazine, November, (2002).
81. G. Monbiot, *The Logic of Empire*, The Guardian, August 6, (2002), World Press Review, October, (2002).
82. W.R. Pitt, *The Greatest Sedition is Silence*, Pluto Press, (2003).

83. J. Wilson, *Republic or Empire?*, The Nation magazine, March 3, (2003).
84. W.B. Gallie, *Understanding War: Points of Conflict*, Routledge, London, (1991).
85. R. Falk and S.S. Kim, eds., *The War System: An Interdisciplinary Approach*, Westview, Boulder, CO, (1980).
86. J.D. Clarkson and T.C. Cochran, eds., *War as a Social Institution*, Columbia University Press, New York, (1941).
87. S. Melman, *The Permanent War Economy*, Simon and Schuster, (1974).
88. H. Mejer, *Imperial Quest for Oil: Iraq, 1910-1928*, Ithaca Books, London, (1976).
89. D. Hiro, *The Longest War: The Iran-Iraq Military Conflict*, Routledge, New York, (1991).
90. M. Klare, *Bush-Cheney Energy Strategy: Procuring the Rest of the World's Oil*, Foreign Policy in Focus, (Interhemispheric Resource Center/Institute for Policy Studies/SEEN), Washington DC and Silver City NM, January, (2004).
91. J. Fitchett and D. Ignatius, *Lengthy Elf Inquiry Nears Explosive Finish*, International Herald Tribune, February 1, (2002).
92. T. Rajamoorthy, *Deceit and Duplicity: Some Reflections on Western Intervention in Iraq*, Third World Resurgence, March-April, (2003).
93. P. Knightley and C. Simpson, *The Secret Lives of Lawrence of Arabia*, Nelson, London, (1969).
94. G. Lenczowski, *The Middle East in World Affairs*, Cornell University Press, (1962).
95. D. Rose, *Bush and Blair Made Secret Pact for Iraq War*, Observer, April 4, (2004).
96. B. Gellman, *Allied Air War Struck Broadly in Iraq; Officials Acknowledge Strategy Went Beyond Purely Military Targets*, Washington Post, June 23, (1991).
97. M. Fletcher and M. Theodoulou, *Baker Says Sanctions Must Stay as Long as Saddam Holds Power*, Times, May 23, (1991).
98. J. Pienaar and L. Doyle, *UK Maintains Tough Line on Sanctions Against Iraq*, Independent, May 11, (1991).
99. B. Blum (translator), *Ex-National Security Chief Brzezinski Admits: Afghan Islamism Was Made in Washington*, Nouvel Observateur, January 15, (1998).
100. G. Vidal, *Dreaming War: Blood for Oil and the Bush-Cheney Junta*, Thunder's Mouth Press, (2002).
101. H. Thomas, *Preventive War Sets Serious Precedent*, Seattle Post-Intelligencer, March 20, (2003).
102. C. Johnson, *The Sorrows of Empire: Militarism, Secrecy, and the End of the Republic*, Henry Hold and Company, New York, (2004).
103. C. Johnson, *Blowback: The Costs and Consequences of American Empire*, Henry Hold and Company, New York, (2000).
104. M. Parenti, *Against Empire: The Brutal Realities of U.S. Global Domination*, City Lights Books, 261 Columbus Avenue, San Francisco, CA94133, (1995).
105. E. Ahmad, *Confronting Empire*, South End Press, (2000).
106. W. Greider, *Fortress America*, Public Affairs Press, (1998).
107. J. Pilger, *Hidden Agendas*, The New Press, (1998).
108. S.R. Shalom, *Imperial Alibis*, South End Press, (1993).

109. C. Boggs (editor), *Masters of War: Militarism and Blowback in the Era of American Empire*, Routledge, (2003).
110. J. Pilger, *The New Rulers of the World*, Verso, (2002).
111. G. Vidal, *Perpetual War for Perpetual Peace: How We Got To Be So Hated*, Thunder's Mouth Press, (2002).
112. W. Blum, *Rogue State: A Guide to the World's Only Superpower*, Common Courage Press, (2000).
113. M. Parenti, *The Sword and the Dollar*, St. Martin's Press, 175 Fifth Avenue, New York, NY 10010, (1989).
114. T. Bodenheimer and R. Gould, *Rollback: Right-wing Power in U.S. Foreign Policy*, South End Press, (1989).
115. G. Guma, *Uneasy Empire: Repression, Globalization, and What We Can Do*, Toward Freedom, (2003).
116. W. Blum, *A Brief History of U.S. Interventions: 1945 to the Present*, Z magazine, June, (1999).
117. W. Blum, *Killing Hope: U.S. Military and CIA Intervention Since World War II*
118. J.M. Cypher, *The Iron Triangle: The New Military Buildup*, Dollars and Sense magazine, January/February, (2002).
119. L. Meyer, *The Power of One*, (World Press Review), Reforma, Mexico City, August 5, (1999).
120. C. Johnson, *Time to Bring the Troops Home*, The Nation magazine, May 14, (2001).
121. W. Hartung, F. Berrigan and M. Ciarrocca, *Operation Endless Deployment: The War With Iraq Is Part of a Larger Plan for Global Military Dominance*, The Nation magazine, October 21, (2002).
122. C. Johnson, *The Sorrows of Empire: Militarism, Secrecy, and the End of the Republic*, Henry Hold and Company, New York, (2004).
123. C. Johnson, *Blowback: The Costs and Consequences of American Empire*, Henry Hold and Company, New York, (2000).
124. I. Ramonet, *Servile States*, Le Monde diplomatique, Paris, October (2002), World Press Review, December, (2002).
125. J.K. Galbraith, *The Unbearable Costs of Empire*, American Prospect magazine, November, (2002).
126. G. Monbiot, *The Logic of Empire*, The Guardian, August 6, (2002), World Press Review, October, (2002).
127. W.R. Pitt and S. Ritter, *War on Iraq*, Context Books
128. W.R. Pitt, *The Greatest Seditious Silence*, Pluto Press, (2003).
129. J. Wilson, *Republic or Empire?*, The Nation magazine, March 3, (2003).
130. R. Dreyfuss, *Just the Beginning: Is Iraq the Opening Salvo in a War to Remake the World?*, The American Prospect magazine, April, (2003).
131. D. Moberg, *The Road From Baghdad: The Bush Team Has Big Plans For the 21st Century. Can the Rest of the World Stop Them?*, These Times magazine, May, (2003).
132. J.M. Blair, *The Control of Oil*, Random House, New York, (1976).

133. R.S. Foot, S.N. MacFarlane and M. Mastanduno, *US Hegemony and International Organizations: The United States and Multilateral Institutions*, Oxford University Press, (2003).
134. P. Bennis and N. Chomsky, *Before and After: US Foreign Policy and the September 11th Crisis*, Olive Branch Press, (2002).
135. J. Garrison, *America as Empire: Global Leader or Rouge Power?*, Berrett-Koehler Publishers, (2004).
136. A.J. Bacevich, *American Empire: The Realities and Consequences of US Diplomacy*, Harvard University Press, (2002).
137. D.R. Francis, *Hidden Defense Costs Add Up to Double Trouble*, Christian Science Monitor, February 23, (2004).
138. A. Sampson, *The Seven Sisters: The Great Oil Companies of the World and How They Were Made*, Hodder and Staughton, London, (1988).
139. D. Yergin, *The Prize*, Simon and Schuster, New York, (1991).
140. E. Abrahamian, *Iran Between Two Revolutions*, Princeton University Press, Princeton, (1982).

Chapter 5

NEOLIBERALISM, RACISM AND NEO-FASCISM

5.1 Genocides in the Americas

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

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

In North America, we can recall that military commanders, such as Lord Jeffrey Amherst, deliberately inoculated the Indians with smallpox by giving them blankets from smallpox hospitals. Amherst wrote to his associate, Colonel Henry Bouquet "You will do well to try to inoculate the Indians, by means of blankets, as well as to try every other method that can serve to extirpate this execrable race." This is clearly an instance of genocide, as well as being an example of the use of biological weapons.

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



Figure 5.1: The atrocities they committed by the “conquistadors” over the course of three centuries are far too many to be listed here, but there are some that stand out. In the Caribbean, most of the native populations were completely wiped out due to Spanish rapine and diseases. In Mexico, Hernan Cortes and Pedro de Alvarado ordered the Cholula Massacre and the Temple Massacre respectively, killing thousands of unarmed men, women and children. In Peru, Francisco Pizarro captured Emperor Atahualpa in the midst of an unprovoked bloodbath at Cajamarca. Wherever the conquistadors went, death and misery for the natives followed.

or abducting people, who were often killed and buried in unmarked graves.”

5.2 Modern weapons and colonialism

In the 18th and 19th centuries, the continually accelerating development of science and science-based industry began to affect the whole world. As the factories of Europe poured out cheap manufactured goods, a change took place in the patterns of world trade: Before the Industrial Revolution, trade routes to Asia had brought Asian spices, textiles and luxury goods to Europe. For example, cotton cloth and fine textiles, woven in India, were imported to England. With the invention of spinning and weaving machines, the trade was reversed. Cheap cotton cloth, manufactured in England, began to be sold in India, and the Indian textile industry withered, just as the hand-loom industry in England itself had done a century before.

The rapid development of technology in the west also opened an enormous gap in military strength between the industrialized nations and the rest of the world. Taking advantage of their superior weaponry, the advanced industrial nations rapidly carved the

remainder of the world into colonies, which acted as sources of raw materials and food, and as markets for manufactured goods.

Throughout the American continent, the native Indian population had proved vulnerable to European diseases, such as smallpox, and large numbers of them had died. The remaining Indians were driven westward by streams of immigrants arriving from Europe.

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

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

Between 1800 and 1875, the percentage of the earth's surface under European rule increased from 35 percent to 67 percent. In the period between 1875 and 1914, there was a new wave of colonial expansion, and the fraction of the earth's surface under the domination of colonial powers (Europe, the United States and Japan) increased to 85 percent, if former colonies are included. The unequal (and unfair) contest between the industrialized countries, armed with modern weapons, and the traditional cultures with their much more primitive arms, was summarized by the English poet Hilaire Belloc in a sardonic couplet:¹

Whatever happens, we have got
The Maxim gun, and they have not.

During the period between 1880 and 1914, British industrial and colonial dominance began to be challenged. Industrialism had spread from Britain to Belgium, Germany and the United States, and, to a lesser extent, to France, Italy, Russia and Japan. By 1914, Germany was producing twice as much steel as Britain, and the United States was producing four times as much.

New techniques in weaponry were introduced, and a naval armaments race began among the major industrial powers. The English found that their old navy was obsolete, and they had to rebuild. Thus, the period of colonial expansion between 1880 and 1914 was filled with tensions, as the industrial powers raced to arm themselves in competition with each other, and raced to seize as much as possible of the rest of the world. Industrial and colonial rivalry contributed to the outbreak of the First World War, to which the Second World War can be seen as a sequel.

¹The Maxim gun was one of the world's first automatic machine guns. It was invented in the United States in 1884 by Hiram S. Maxim. The explorer and colonialist Henry Morton Stanley (1841-1904) was extremely enthusiastic about Maxim's machine gun, and during a visit to the inventor he tried firing it, demonstrating that it really could fire 600 rounds per minute. Stanley commented that the machine gun would be "a valuable tool in helping civilization to overcome barbarism".



With the founding of the United Nations at the end of the Second World War, a system of international law was set up to replace the rule of military force. Law is a mechanism for equality. Under law, the weak and the powerful are in principle equal. One of the basic purposes of the United Nations is to make war illegal, and if war is illegal, the powerful and weak are on equal footing, much to the chagrin of the powerful. How can one construct or maintain an empire if war is not allowed? It is only natural that powerful nations should be opposed to international law, since it is a curb on their power. However, despite opposition, the United Nations has been largely successful in ending the era of colonialism, perhaps because of the balance of power between East and West during the Cold War. One by one, former colonies have regained their independence.

5.3 Persistent effects of colonialism

Part of the extreme economic inequality that exists in today's world is due to colonial and neocolonial wars.

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.

5.4 Racism, colonialism and exceptionalism

It seems to be possible for nations, and the majority of their citizens, to commit the worst imaginable atrocities, including torture, murder and genocide, while feeling that what they are doing is both noble and good. Some understanding of how this is possible can be gained by watching the 3-part BBC documentary, “The History of Racism”.²

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

5.5 Leopold II and Atrocities in Belgian Congo

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

Leopold’s private army of 90,000 men were issued ammunition, and to make sure that they used it in the proper way, the army was ordered to cut off the hands of their victims and send them back as proof that the bullets had not been wasted. Human hands became a kind of currency, and hands were cut off from men, women and children when rubber quotas were not fulfilled. Sometimes more than a thousand human hands were gathered in a single day. During the rule of Leopold, roughly 10,000,000 Congolese were killed, which was approximately half the population of the region.

According to the racist theories that supported these atrocities, it was the duty of philanthropic Europeans like Leopold to bring civilization and the Christian religion to Africa. Similar theories were used to justify the genocides committed by Europeans against the native inhabitants of the Americas.

Racist theories were also used to justify enormous cruelties committed by the British colonial government in India. For example, during the great famine of 1876-1878, in which

²<https://www.youtube.com/watch?v=efI6T8lovqY>
<https://www.youtube.com/watch?v=IdBDRbjx9jo>
<https://www.youtube.com/watch?v=oCJHJWaNL-g>



Figure 5.2: **Half of the population of Belgian Congo died during the rule of Leopold II.**

ten million people died, the Viceroy, Lord Lytton, oversaw the export to England of a record 6.4 million hundredweight of wheat.

Meanwhile, in Europe, almost everyone was proud of the role which they were playing in the world. All that they read in newspapers and in books or heard from the pulpits of their churches supported the idea that they were serving the non-Europeans by bringing them the benefits of civilization and Christianity. On the whole, the mood of Europe during this orgy of external cruelty and exploitation, was self-congratulatory.

Can we not see a parallel with the self-congratulatory mood of the American people and their allies, who export violence, murder, torture and neocolonialism to the whole world, and who justify it by thinking of themselves as "exceptional"?

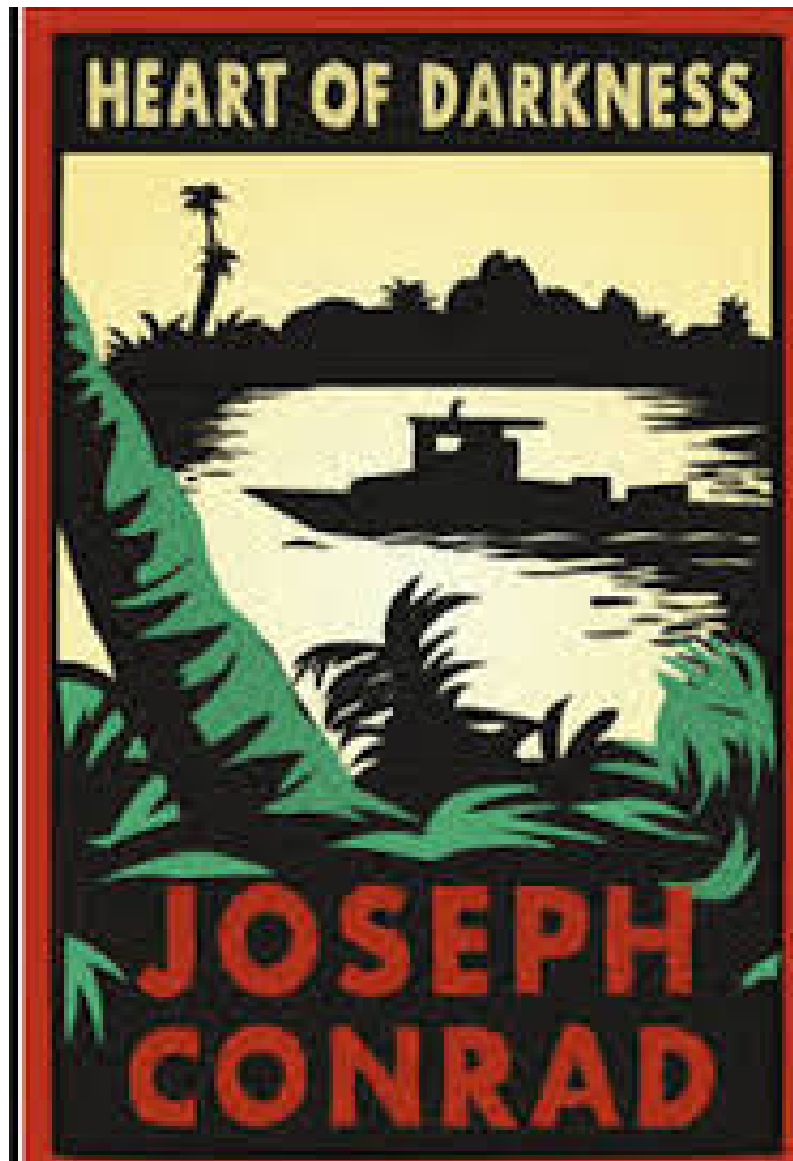


Figure 5.3: Joseph Conrad's famous book was written against the background of Leopold's atrocities.

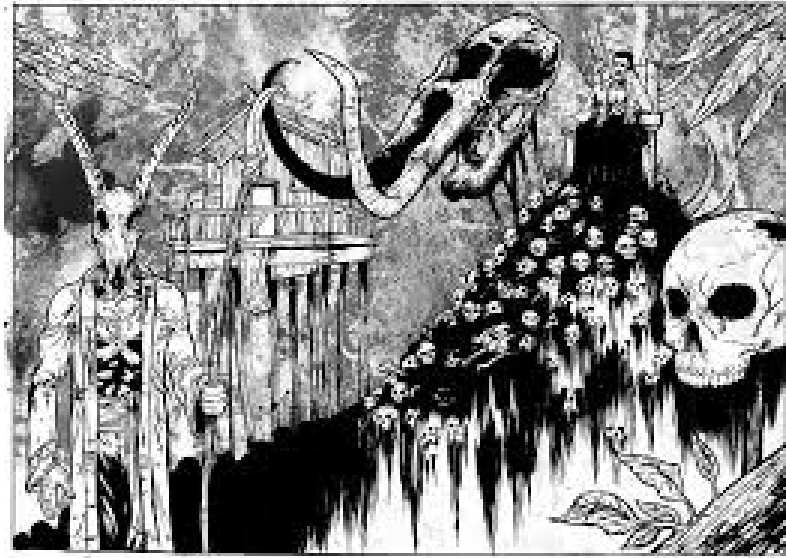


Figure 5.4: *Heart of Darkness*: An illustration for Joseph Conrad's book.



Figure 5.5: *Heart of Darkness*: Another illustration for Conrad's book.

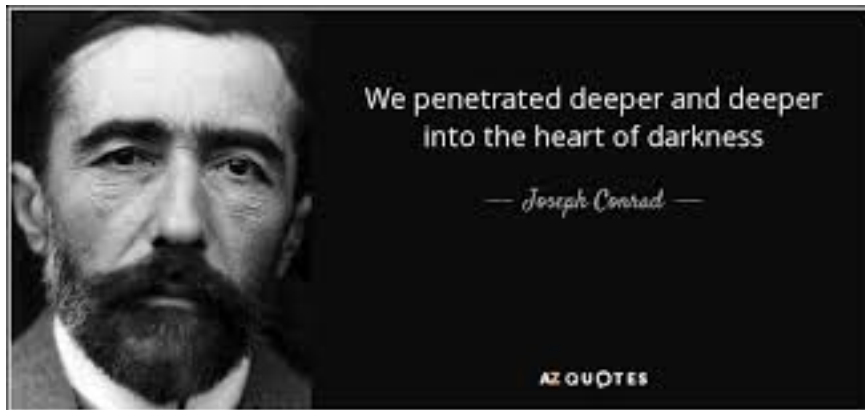


Figure 5.6: *Heart of Darkness*: Joseph Conrad.



Figure 5.7: **Heart of Darkness: King Leopold II of Belgium and some of his victims.**



Figure 5.8: **Heart of Darkness: A drawing used in the campaign to end Leopold's personal ownership of the Congo.**



Figure 5.9: **Heart of Darkness:** In Leopold’s Congo, human hands became a currency.



Figure 5.10: **Heart of Darkness:** Part of a palace built by Leopold II to glorify his “humanitarian” activities in the Congo.



Figure 5.11: **Heart of Darkness.** A statue of Leopold II.



Figure 5.12: **Bones left by the German Kaiser's African genocide.**

5.6 The Kaiser's genocide

A book entitled *The Kaiser's Holocaust: Germany's Forgotten Genocide and the Colonial Roots of Nazism*, by David Olusoga and Caspar W. Erichsen describes Germany's involvement in an African genocide. Here is Amazon's synopsis of the book: "On 12 May 1883, the German flag was raised on the coast of South-West Africa, modern Namibia - the beginnings of Germany's African Empire. As colonial forces moved in, their ruthless punitive raids became an open war of extermination. Thousands of the indigenous people were killed or driven out into the desert to die. By 1905, the survivors were interned in concentration camps, and systematically starved and worked to death. Years later, the people and ideas that drove the ethnic cleansing of German South West Africa would influence the formation of the Nazi Party. The Kaiser's Holocaust uncovers extraordinary links between the two regimes: their ideologies, personnel, even symbols and uniform. The Herero and Nama genocide was deliberately concealed for almost a century. Today, as the graves of the victims are uncovered, its re-emergence challenges the belief that Nazism was an aberration in European history. The Kaiser's Holocaust passionately narrates this harrowing story and explores one of the defining episodes of the twentieth century from a new angle. Moving, powerful and unforgettable, it is a story that needs to be told."

5.7 The racism of Cecil Rhodes

Cecil Rhodes, who was born in Bishop's Stortford in Hertfordshire, came to South Africa in the late 1800s and made his fortune in the country's diamond mines before moving into politics. He served as prime minister of the Cape Colony and later founded the southern African territory of Rhodesia, which would later become independent Zimbabwe. He was the architect of South Africa's notorious apartheid system, and a rabid advocate of British imperialism. Social Darwinism and the eugenics movement may have contributed to the racism and imperialism of Cecil Rhodes.

In a December 2015 article in *The Telegraph*, Dalia Gebrial wrote: "Cecil Rhodes was a man responsible for untold, unending devastation and violence. An architect of South African apartheid, he explicitly believed in the existence of an Anglo-Saxon master race - an ideology that drove him to not only steal approximately one [square] million miles of South African land, but to facilitate the deaths of hundreds of thousands of black South Africans.

"His establishment of a paramilitary private army, the British South Africa Company's Police (BSACP) resulted in the systematic murder of approximately 60,000 people; his amendment of the Masters and Servants Act (1890) reintroduced conditions of torture for black labourers; his infamous racist 'land grabs' set up a system in which the unlawful and illegitimate acquisition of land through armed force was routine.

"In 1887 he told the House of Assembly in Cape Town: 'The native is to be treated as a child and denied the franchise. We must adopt a system of despotism in our relations with the barbarians of South Africa.' His 1892 Franchise and Ballot Act effectively eliminated

African voting rights. He repeatedly reminded his colleagues of the ‘extreme caution’ they must exercise when it comes to ‘granting the franchise to coloured people.

Rhodes wanted to create an international movement to extend British influence. He once said: “Why should we not form a secret society with but one object, the furtherance of the British Empire and the bringing of the whole world under British rule, for the recovery of the United States, for making the Anglo-Saxon race but one Empire?”

Rhodes did, in fact, establish this secret society, and it remains very influential today. According to G. Edward Griffin³, “Financed by Nathan Rothschild and the Bank of England, he [Rhodes] established a monopoly over the diamond output of South Africa and most of the gold as well. He formed a secret society which included many of the top leaders of British government. Their elitist goal was nothing less than world domination and the establishment of a modern feudalist society controlled by themselves through the world’s central banks. In America, the Council on Foreign Relations (CFR) was an outgrowth of that group.”

5.8 Friedrich Nietzsche

The extremely influential German philosopher Friedrich Nietzsche (1844-1900), began his career as a classical philologist. At the age of 24, he became the youngest ever to hold the Chair of Classical Philology at the University of Basel. However, ten years later he was forced to resign from this position because of health problems. During the following decade, cared for by his mother, Nietzsche completed most of his writing. At the age of 44, he suffered a breakdown and the complete loss of his mental facilities. He died in 1900 at the age of 55.

Wikipedia states that “Nietzsche defined master morality as the morality of the strong-willed. Nietzsche criticizes the view, which he identifies with contemporary British ideology, that good is everything that is helpful, and bad is everything that is harmful. He argues proponents of this view have forgotten the origins of its values, and is based merely on a non-critical acceptance of habit: what is useful has always been defined as good, therefore usefulness is goodness as a value. He continues explaining, that in the prehistoric state, ‘the value or non-value of an action was derived from its consequences,’ but ultimately, ‘There are no moral phenomena at all, only moral interpretations of phenomena.’ For strong-willed men, the ‘good’ is the noble, strong, and powerful, while the ‘bad’ is the weak, cowardly, timid, and petty.”

Nietzsche states that “The noble type of man experiences itself as determining values; it does not need approval; it judges, ‘what is harmful to me is harmful in itself’; it knows itself to be that which first accords honor to things; it is value-creating.” In this sense, the master morality is the full recognition that oneself is the measure of all moral truths. Insofar as something is helpful to the strong-willed man, it is like what he values in himself; therefore, the strong-willed man values such things as good, because they aid him in a lifelong process of self-actualization through the will to power.

³in his book, *The Creature from Jeekyll Island*

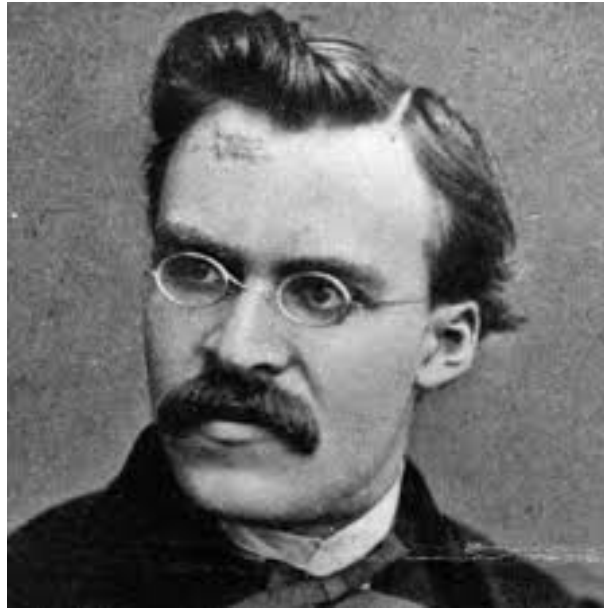


Figure 5.13: Friedrich Nietzsche (1844-1900). The posthumous editions of his works, edited by his racist sister, made his ideas even worse than they were in his original publications.

By contrast Nietzsche describes slave morality as follows: “Slave morality does not aim at exerting one’s will by strength but by careful subversion. It does not seek to transcend the masters, but to make them slaves as well. The essence of slave morality is utility:[4] the good is what is most useful for the whole community, not the strong. Nietzsche saw this as a contradiction. Since the powerful are few in number compared to the masses of the weak, the weak gain power by corrupting the strong into believing that the causes of slavery (viz., the will to power) are ‘evil’, as are the qualities they originally could not choose because of their weakness. By saying humility is voluntary, slave morality avoids admitting that their humility was in the beginning forced upon them by a master. Biblical principles of turning the other cheek, humility, charity, and pity are the result of universalizing the plight of the slave onto all humankind, and thus enslaving the masters as well. ‘The democratic movement is the heir to Christianity.’ - the political manifestation of slave morality because of its obsession with freedom and equality.”

Nazi atrocities, wars and genocides were inspired by Nietzsche’s ideas, as well as those of the Eugenics and Social Darwinist movements.

5.9 Nazi atrocities and genocides

The Eugenics movement and the ideas of Nietzsche, Galton and Spengler must bear at least part of the blame for Nazi atrocities and genocides. During the World War II Holocaust, six million Jews were systematically murdered. This amounted to two thirds of the Jewish



Figure 5.14: Nazi genocides: A pile of corpses in the Buchenwald extermination camp.

population of Europe. A broader definition of the Holocaust includes the murder of the Roma and the “incurably sick”, as well as ethnic Poles, other Slavic groups, Soviet citizens and prisoners of war, homosexuals, Jehovah’s Witnesses, black people, and political opponents.

At least three million Soviet prisoners of war died in German custody, but this figure is small compared with the total number of lives lost in the Soviet Union during World War II. Depending on which historian you believe, the USSR lost at least 11,000,000 soldiers (killed and missing) as well as somewhere between 7,000,000 and 20,000,000 million of its civilians. The total number of people killed in World War II is approximately 60,000,000. If deaths from war-related disease and famine are included, this figure becomes an estimated 80,000,000.

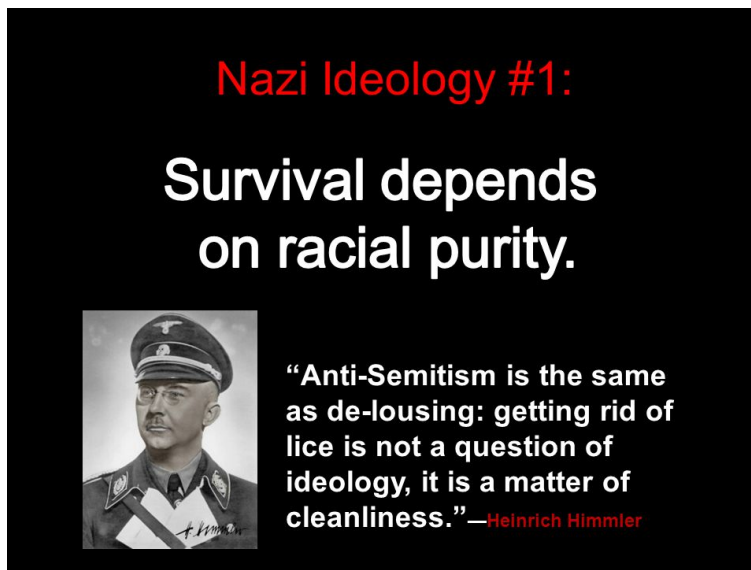


Figure 5.15: The idea of the superiority of one race over another was at the root of Nazi atrocities.



Figure 5.16: Nazi racism was built on the idea that Aryans are superior to all other races. But who is to decide? Will not each ethnic group or nation always decide that they themselves are the “chosen people”, loved by God and superior to all others?

Figure 5.17: **Baba Yar.**

5.10 Ayn Rand

Alisa Zinov'yevna Rosenbaum, who later renamed herself “Ayn Rand”, was born in St. Petersburg in 1905. After her education in Russia, she moved to the United States in 1926.

Two of her early novels were unsuccessful in the United States, but in 1943 she achieved fame with her third novel, *The Fountainhead*. Later, in 1957, she published another highly successful novel, *Atlas Struggled*. After these two novels, Rand abandoned fiction and began to publish a magazine to promote her personal philosophy. She also published collections of essays until her death in 1982.

The philosophy which she promoted in her books, magazine and essays is close to the “Will To Power” ideas of Nietzsche, which lie behind Nazi ideology and genocides. Rand’s ideas are also closely related to the neoliberal philosophy of military world dominance that we see in the Project for a New American Century.

The hero of *The Fountainhead*, is an individualistic young architect named Howard Roark, who designs uncompromisingly modernistic buildings despite the opposition of the majority of architects, who are unwilling to accept innovation. Rand presents her hero as the embodiment of the ideal man. He personifies her belief that individualism is superior to collectivism.

In *Atlas Struggled*, which Ayn Rand regarded as her *magnum opus*, she presents us with a picture of a dystopian American society in which the efficiency of private businesses is undermined by government regulations and by “looting”. As the novel ends, a new hyper-capitalist society is being planned.

Three films based on *Atlas Struggled* were produced as a series, Part I in 2011, Part II in 2012, and Part III in 2014, but they achieved neither critical nor box-office success. By contrast, the novel itself was translated into many languages, and by 1984 its sales had exceeded 5 million copies. The book continues to sell very well, especially in times of financial crisis. In 2011 it sold 445,000 copies.



Figure 5.18: Ayn Rand's version of the "Great Man Theory" has many followers today.



Figure 5.19: Neoliberalism: Economic inequality is increasing today, both within nations and between nations. One of the worst consequences is the control of governments by small oligarchies and the decay of true democracy.



Figure 5.20: Neoliberalism: A map of the world.

5.11 Revival of Nazi ideology after World War II

According to Wikipedia, “Neo-Nazism consists of post-World War II militant social or political movements seeking to revive and implement the ideology of Nazism. Neo-Nazis seek to employ their ideology to promote hatred and attack minorities, or in some cases to create a fascist political state. It is a global phenomenon, with organized representation in many countries and international networks. It borrows elements from Nazi doctrine, including ultranationalism, racism, xenophobia, ableism, homophobia, anti-Romanyism, antisemitism, anti-communism and initiating the Fourth Reich. Holocaust denial is a common feature, as is the incorporation of Nazi symbols and admiration of Adolf Hitler.

“In some European and Latin American countries, laws prohibit the expression of pro-Nazi, racist, anti-Semitic, or homophobic views. Many Nazi-related symbols are banned in many European countries - in particular Germany and Austria - in an effort to curtail neo-Nazism.

“Following the defeat of Nazi Germany, the political ideology of the ruling party, Nazism, was in complete disarray. However, conspiracy theories emerged about Hitler himself, that he had secretly survived the war and fled to South America or elsewhere.

“The Allied Control Council officially dissolved the NSDAP on 10 October 1945, marking the end of “Old” National Socialism. A process of denazification began, and the Nuremberg trials took place, where many major leaders and ideologues were condemned to death by October 1946, others committed suicide. Otto Ernst Remer, leader of the postwar Socialist Reich Party.

“In both the East and West, surviving ex-party members and military veterans assimilated to the new reality and had no interest in constructing a “neo-Nazism.” However, during the 1949 elections a number of National Socialist advocates such as Fritz Rössler had infiltrated the national conservative Deutsche Rechtspartei, which had 5 members elected. Rössler and others left to found the more radical Socialist Reich Party under Otto Ernst Remer. At the onset of the Cold War, the SRP favoured the Soviet Union over the United States.”



Figure 5.21: Otto Ernst Remer, leader of the postwar Socialist Reich Party.



Figure 5.22: Otto Strasser, leader of the German Social Union, returned from exile to Germany in the mid-1950s.



Figure 5.23: George Lincoln Rockwell, founder of the American Nazi Party and progenitor of subsequent uniformed neo-Nazi groups.



Figure 5.24: The Italian group Ordine Nuovo, banned in 1974, drew influence from the Waffen-SS and Guénonian Traditionalism via Julius Evola.



Figure 5.25: The radicalisation of Flemish activist group the Vlaamse Militanten Orde in the 1970s, energized international neo-Nazism.

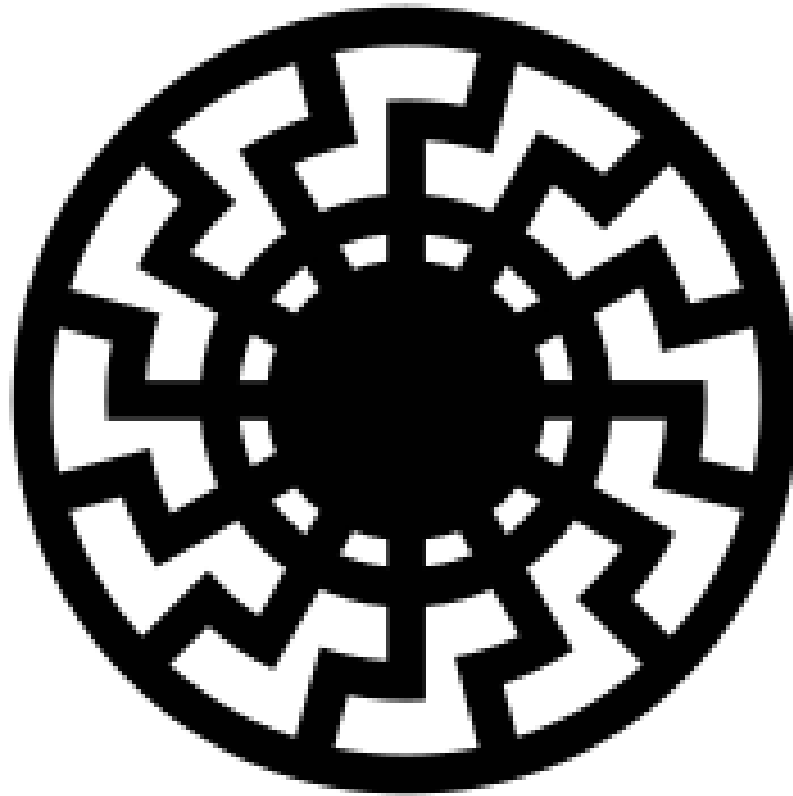


Figure 5.26: Serrano identified Aryan-Hyperborean blood as the “light of the Black Sun”, a symbol found at SS-cult site Wewelsburg Castle.



Figure 5.27: Members of the National Bolshevik Party. “Nazbols” tailor ultra-nationalist themes to a native Russian environment while still employing National Socialist aesthetics.



Figure 5.28: The nearest Italy came to returning to fascism was the 1970 Golpe Borghese of commando veteran Junio Valerio Borghese.

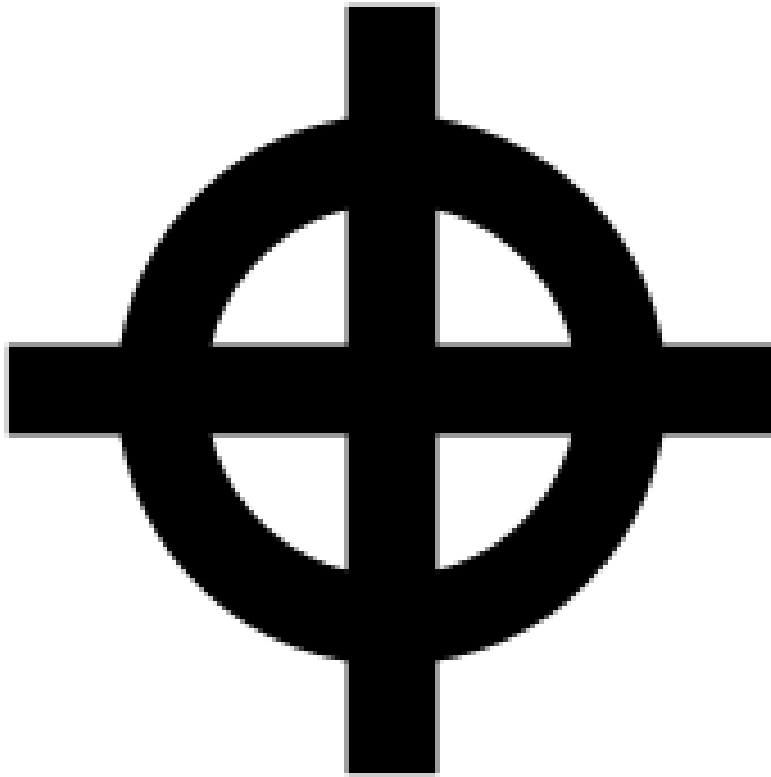


Figure 5.29: French neo-fascist groups adopted the Celtic cross as an ambiguous “Christian and pagan” symbol since the 1940s.



Figure 5.30: Young boy wearing a shirt with a Black Legion sign at a Thompson concert in Croatia.



Figure 5.31: “Hungaria Skins” with a flag evoking the Arrow Cross in 1997.



Figure 5.32: Protesters with neo-Nazi symbols - SS-Volunteer Division “Galicia” and Patriot of Ukraine flags.



Figure 5.33: Ukrainian volunteer battalion members with neo-Nazi Wolfsangel symbol, 24 July 2014.



Figure 5.34: Neo-Nazi skinheads in Spain.



Figure 5.35: Neo-Nazi demonstration in Leipzig, Germany in October 2009.

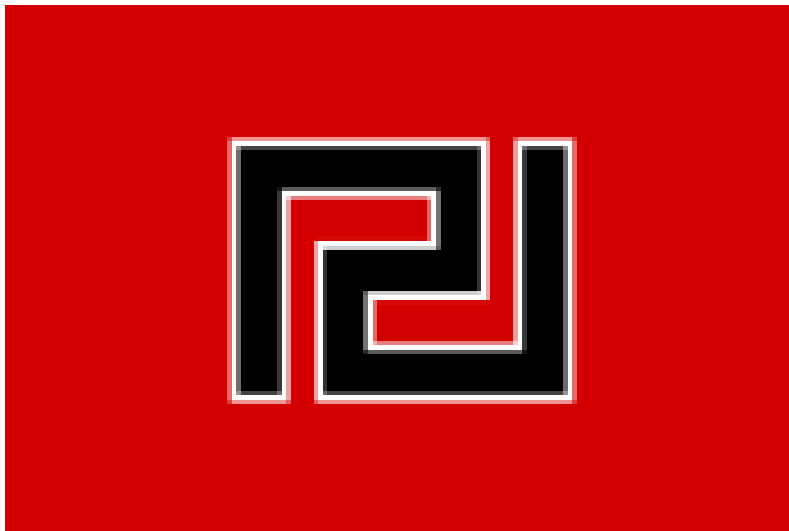


Figure 5.36: Flag of the Golden Dawn (Greece).



Figure 5.37: ONR march in Poznań in November 2015.



Figure 5.38: Neo-Nazism in Russia: The photograph was taken at an anti-gay demonstration in Moscow in October 2010.

5.12 Alt-right

The Associated Press gives the following definition of the alt-right movement:

“The ‘alt-right’ or ‘alternative right’ is a name currently embraced by some white supremacists and white nationalists to refer to themselves and their ideology, which emphasizes preserving and protecting the white race in the United States in addition to, or over, other traditional conservative positions such as limited government, low taxes and strict law-and-order. The movement has been described as a mix of racism, white nationalism and populism ... criticizes ‘multiculturalism’ and more rights for non-whites, women, Jews, Muslims, gays, immigrants and other minorities. Its members reject the American democratic ideal that all should have equality under the law regardless of creed, gender, ethnic origin or race.”

Wikipedia states that “The alt-right, an abbreviation of alternative right, is a loosely connected far-right, white supremacist, white nationalist, white separatist, anti-immigration and sometimes antisemitic movement based in the United States. A largely online phenomenon, the alt-right originated in the U.S. during the 2010s although it has since established a presence in various other countries. The term is ill-defined, having been used in different ways by various self-described ‘alt-rightists’, media commentators, and academics.

“In 2010, the American white nationalist Richard B. Spencer launched The Alternative Right webzine to disseminate his ideas. Spencer’s ‘alternative right’ was influenced by earlier forms of American white nationalism, as well as paleoconservatism, the Dark Enlightenment, and the Nouvelle Droite. Critics charged it with being a rebranding of white supremacism. His term was shortened to “alt-right” and popularized by far-right participants of /pol/, the politics board of web forum 4chan. It came to be associated with other white nationalist websites and groups, including Andrew Anglin’s Daily Stormer, Brad Griffin’s Occidental Dissent, and Matthew Heimbach’s Traditionalist Worker Party...

“The alt-right is a white nationalist, biologically racist movement. Part of its membership supports anti-immigrationist policies to ensure a continued white majority in the United States. Others call for the breakup of the country to form a white separatist ethno-state in North America. Some alt-rightists seek to make white nationalism socially respectable in the U.S., while others - known as the ‘1488’ scene - adopt openly white supremacist and neo-Nazi stances. Some alt-rightists are anti-semitic, promoting a conspiracy theory that there is a Jewish plot to bring about white genocide; other alt-rightists view most Jews as members of the white race. The alt-right is anti-feminist, advocates for a more patriarchal society, and intersects with the men’s rights movement and other sectors of the online manosphere...

“Membership was overwhelmingly white and male, with academic and anti-fascist observers linking its growth to deteriorating living standards and prospects, anxieties about the place of white masculinity, and anger at increasingly visible left-wing forms of identity politics like the Black Lives Matter movement. Constituent groups using the “alt-right” label have been characterized as hate groups,[2][3] while alt-right material has been a contributing factor in the radicalisation of young white men responsible for a range of far-right



Figure 5.39: Prominent alt-rightists were instrumental in organizing the "Unite the Right" rally in Charlottesville, Virginia in August 2017. Here, rally participants carry Confederate battle flags, Gadsden flags and a Nazi flag.

murders and terrorist attacks in the U.S. since 2014."



Figure 5.40: Heather Heyer was murdered in 2017 by a white nationalist rally participant in Charlottesville. Since then, mass shootings in Poway, Gilroy, and El Paso and elsewhere have been each linked to white nationalist beliefs.



Figure 5.41: Breitbart News amplified and popularized alt-right ideas under the editorship of “alt-lite” figure Steve Bannon.

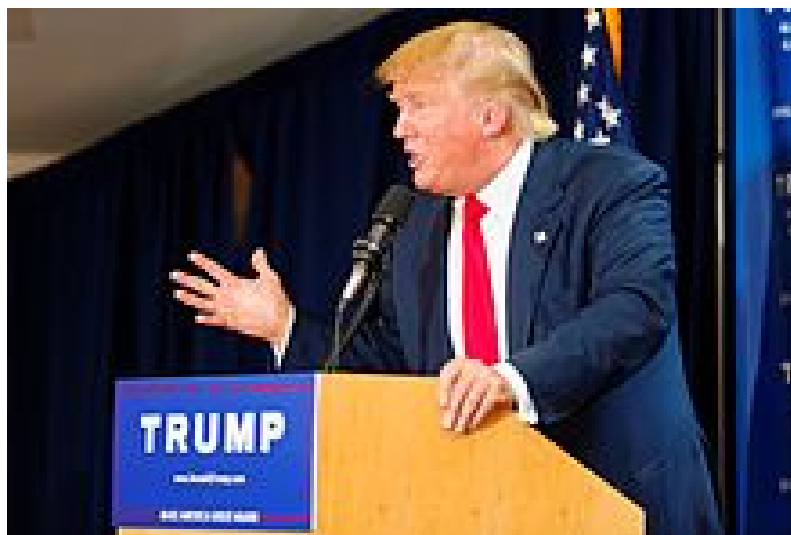


Figure 5.42: The alt-right largely rallied behind the presidential candidacy of Donald Trump, although he later distanced himself from the movement.



Figure 5.43: A participant at the Unite the Right rally giving a Nazi salute in front of counter-protesters.



Figure 5.44: The alt-rightist was then punched in an altercation with counter-protesters.



Figure 5.45: Protestors at the 2017 Unite the Right rally, which was promoted by the alt-right. One man carries the logo of Vanguard America, and another has a t-shirt praising German Nazi leader Adolf Hitler.



Figure 5.46: An attendee at the Unite the Right rally carrying a firearm and wearing a Confederate Battle Flag T-shirt.



Figure 5.47: “Trump is Alt-Right with Us.” Anti-Trump protesters highlight what they regard as his links to the alt-right and to historical fascism by dressing as Hitler and Mussolini.

5.13 The Klu Klux Klan

Following the defeat of the Confederate states in the US Civil War, the original Klu Klux Klan was established in the south to overthrow northern rule, and to terrorize freed slaves who were thought to be a threat to white womanhood. Large numbers of black people and their sympathizers were lynched and murdered by the original KKK. The organization was outlawed in 1871.

The Klu Klux Klan was revived in 1915, inspired by D.W. Griffith's influential but controversial film *The Birth of a Nation*, which depicted the original Klan in a positive light. In this second incarnation which lasted until the mid-1920's, the KKK sought to maintain Protestant white supremacy, and opposed both Roman Catholicism and the influence of Jews.

The third incarnation of the Klu Klux Klan came in the 1950's. Local groups have opposed civil rights activists, and murdered many of them. The KKK is classified as a hate group by the Anti-Defamation League.

Wikipedia states that "The second and third incarnations of the Ku Klux Klan made frequent references to America's 'Anglo-Saxon' blood, hearkening back to 19th-century nativism. Although members of the KKK swear to uphold Christian morality, virtually every Christian denomination has officially denounced the KKK".



Figure 5.48: KKK rally in Chicago, c. 1920.



Figure 5.49: Three Klu Klux Klan members at a 1922 parade. Trump's father was a well-known Klansman in New York and New Jersey in his hey days.



Figure 5.50: Cross burning was introduced by William J. Simmons, the founder of the second Klan in 1915.



Figure 5.51: Klu Klux Klan members at a cross burning in 2005.



Figure 5.52: Sheet music to “We Are All Loyal Klansmen”, 1923.



Figure 5.53: Klu Klux Klan members march down Pennsylvania Avenue in Washington, D.C. in 1928.



Figure 5.54: Historically, the Klu Klux Klan has been responsible for innumerable lynchings.

5.14 Proud Boys

Wikipedia states that “The Proud Boys is a far-right neo-fascist organization which admits only men as members and promotes political violence. It is based in the United States and has a presence in Canada, Australia, and the United Kingdom. The group was started in 2016 by Vice Media co-founder and former commentator Gavin McInnes, taking its name from the song ‘Proud of Your Boy’ from the Disney film Aladdin. Proud Boys emerged as part of the alt-right, but in early 2017, McInnes began distancing himself from the alt-right, saying the alt-right’s focus is race while his focus is what he defines as ‘Western values’. This re-branding effort intensified after the Unite the Right Rally ⁴.

“The group sees men - especially white men - and Western culture as under siege; their views have elements of white genocide conspiracy theory. While the group claims it does not support white supremacist views, its members often participate in racist rallies, events, and organizations. The organization glorifies violence, and members engage in violence at events it attends; the Southern Poverty Law Center (SPLC) has called it an ‘alt-right fight club’.

“The organization has been described as a hate group by the Southern Poverty Law Center and NPR’s The Takeaway, and Spencer, McInnes, and the Proud Boys have been described as hipster racists by Vox and Media Matters for America. McInnes says victim mentality of women and other historically oppressed groups is unhealthy: ‘There is an incentive to be a victim. It is cool to be a victim.’ He sees white men and Western culture as ‘under siege’ and described criticism of his ideas as “victim blaming”. Their views have elements of white genocide conspiracy theory. The group is part of the ‘alt lite’ and it is ‘overtly Islamophobic’...

“The organization glorifies political violence against leftists, re-enacting political assassinations, wearing shirts that praise Augusto Pinochet’s murders of leftists, and participating directly in political violence. McInnes has said ‘I want violence, I want punching in the face. I’m disappointed in Trump supporters for not punching enough.’ He stated, ‘We don’t start fights [...] but we will finish them.’ Heidi Beirich, the Intelligence Project director for the Southern Poverty Law Center, said that this form of intentional aggression was not common among far-right groups in the past; she said: ‘We’re going to show up and we’re intending to get in fights, that’s a new thing.’ In August 2018, Twitter shut down the official account for the group, as well as McInnes’ account, under its policy prohibiting violent extremist groups; at the time, the group’s profile photo was a member punching a counter-protester.

⁴Wikipedia describes this event as follows: “The Unite the Right rally was a white supremacist rally that occurred in Charlottesville, Virginia, from August 11 to 12, 2017. Protesters were members of the far-right and included self-identified members of the alt-right, neo-Confederates, neo-fascists,[13] white nationalists, neo-Nazis, Klansmen, and various right-wing militias. The marchers chanted racist and antisemitic slogans, carried semi-automatic rifles, Nazi and neo-Nazi symbols (such as the swastika, Odal rune, Black Sun, and Iron Cross), the Valknut, Confederate battle flags, Deus Vult crosses, flags and other symbols of various past and present anti-Muslim and antisemitic groups.”



Figure 5.55: Proud Boys founder Gavin McInnes.



Figure 5.56: A member of Proud Boys.

5.15 Evangelicals

Here is an excerpt from a December 31, 2018 article in the New York Times by Katherine Stewart:

The month before the 2018 midterms, a thousand theaters screened “The Trump Prophecy,” a film that tells the story of Mark Taylor, a former firefighter who claims that God told him in 2011 that Donald Trump would be elected president.

At a critical moment in the film, just after the actor representing Mr. Taylor collapses in the flashing light of an epiphany, he picks up a Bible and turns to the 45th chapter of the book of Isaiah, which describes the anointment of King Cyrus by God. In the next scene, we hear Mr. Trump being interviewed on “The 700 Club,” a popular Christian television show.

As Lance Wallnau, an evangelical author and speaker who appears in the film, once said, “I believe the 45th president is meant to be an Isaiah 45 Cyrus,” who will “restore the crumbling walls that separate us from cultural collapse.”

Cyrus, in case you’ve forgotten, was born in the sixth century B.C.E. and became the first emperor of Persia. Isaiah 45 celebrates Cyrus for freeing a population of Jews who were held captive in Babylon. Cyrus is the model for a nonbeliever appointed by God as a vessel for the purposes of the faithful.

The identification of the 45th president with an ancient Middle Eastern potentate isn’t a fringe thing. “The Trump Prophecy” was produced with the help of professors and students at Liberty University, whose president, Jerry Falwell Jr., has been instrumental in rallying evangelical support for Mr. Trump. Jeanine Pirro of Fox News has picked up on the meme, as has Ron Dermer, the Israeli ambassador to the United States, among many others.

As the Trump presidency falls under siege on multiple fronts, it has become increasingly clear that the so-called values voters will be among the last to leave the citadel. A lot of attention has been paid to the supposed paradox of evangelicals backing such an imperfect man, but the real problem is that our idea of Christian nationalism hasn’t caught up with the reality. We still buy the line that the hard core of the Christian right is just an interest group working to protect its values. But what we don’t get is that Mr. Trump’s supposedly anti-Christian attributes and anti-democratic attributes are a vital part of his attraction.

Today’s Christian nationalists talk a good game about respecting the Constitution and America’s founders, but at bottom they sound as if they prefer autocrats to democrats. In fact, what they really want is a king. “It is God that raises up a king,” according to Paula White, a prosperity gospel preacher who has advised Mr. Trump.

Ralph Drollinger, who has led weekly Bible study groups in the White House attended by Vice President Mike Pence and many other cabinet members, likes the word “king” so much that he frequently turns it into a verb. “Get ready



Figure 5.57: Apparently insanity rules the United States today. The Evangelical Right believes that Trump was sent by God to be King, despite the fact that, according to Glenn Kessler, author of the Washington Post’s Fact Checker column, Trump told an average of 15 lies per day in 2018, bringing the total number of documented lies since he took office in January 2017 to 7,645. But neither Trump’s lies, nor his racism and mysogeny, nor his cruel authorization of imprisonment of very young children and even babies, are his worst crimes. His most serious offense is a crime against human civilization and the biosphere: his support for coal, his climate change denial, his sabotaging of renewable energy, and his withdrawal from the Paris agreement. These actions, and support for them by Republicans, caused Noam Chomsky to call the Republican Party “the most dangerous organization in history”.

to king in our future lives,” he tells his followers. “Christian believers will - soon, I hope - become the consummate, perfect governing authorities!”

The great thing about kings like Cyrus, as far as today’s Christian nationalists are concerned, is that they don’t have to follow rules. They are the law. This makes them ideal leaders in paranoid times.



Figure 5.58: An artist's impression of Trump's National Security Advisor John Bolton.



Figure 5.59: Stars and stripes.



Figure 5.60: Anti-Mexican language used by Trump is very similar to the language used by the El Paso mass murderer. A recent article *Ex-FBI Official, FBI reluctant to probe white supremacists because Trump considers them his base*, quotes Dave Gomez as saying “There’s some reluctance among agents to bring forth an investigation that targets what the president perceives as his base.”



Figure 5.61: Family members mourning the victims of the El Paso murders.



Figure 5.62: A woman lights a candle at a makeshift memorial outside Walmart, near the scene of a mass shooting which left 22 people dead, on August 4, 2019, in El Paso, Texas.

5.16 The El Paso mass murders

On the morning of August 3, 2019, 21-year-old Patrick Wood Crusius, a Republican follower of Donald Trump, walked into a Walmart in El Paso Texas. carrying an AK-47 automatic weapon. He opened fire on the largely Latino customers, killing 22 people and seriously injuring 24 others. In a manifesto, which he published on the Internet just before the murders, he wrote “In general, I support the Christchurch shooter and his manifesto. This attack is a response to the Hispanic invasion of Texas. They are the instigators, not me. I am simply defending my country from cultural and ethnic replacement brought on by an invasion.” The language and ideas used by Crusius are similar to those of Donald Trump, who often speaks of a Mexican invasion.

The following day, there was another mass shooting, this time in Dayton, Ohio. Again an automatic attack rifle was used. Nine people were killed.

Between January and February, 2019, President Donald Trump’s Facebook page ran about 2,200 ads referring to immigration as an “invasion”.

5.17 The murder of George Floyd

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”.

What will happen if Trump loses the 2020 election but refuses to give up the White House, claiming that the votes were counted incorrectly? Will the military support him? This danger has to be considered. We must remember the testimony before congress of

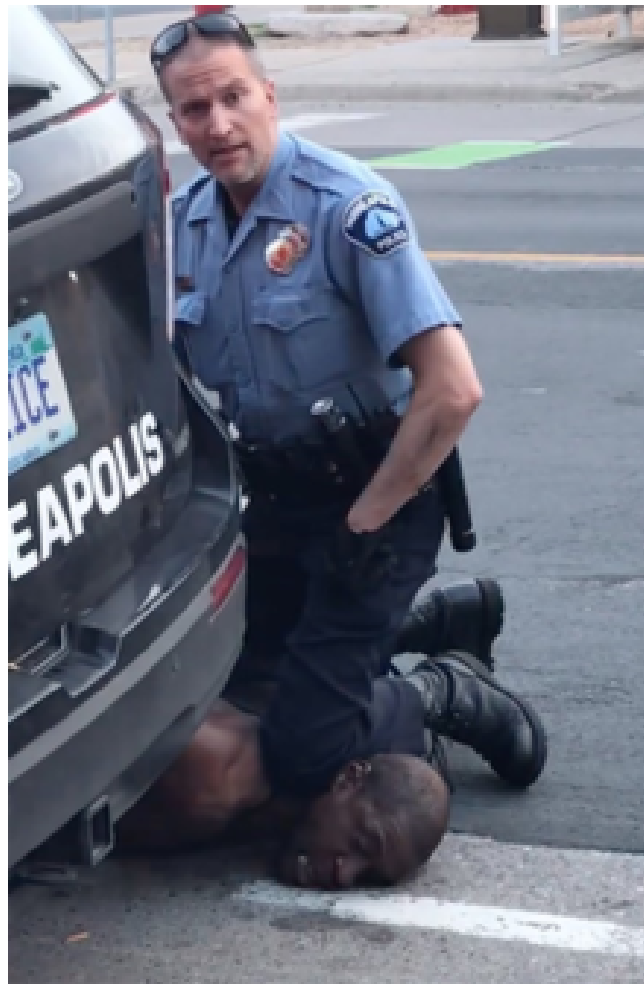


Figure 5.63: Frame from witness video, showing Derek Chauvin kneeling on George Floyd's neck.

Trump's former associate Michael Cohen, who said, "I fear that if he loses the election in 2020, there will never be a peaceful transition of power".



Figure 5.64: A makeshift memorial outside the store where Floyd was killed.



Figure 5.65: George Floyd's death changed the world.



Figure 5.66: Protests erupted throughout the world, partly in sympathy for anti-racist protests in the United States, and partly because racism exists in many countries.



Figure 5.67: An anti-racist protest march in Spain.



Figure 5.68: Donald Trump holding a Bible in front of Ashburton House, the parish house of St. John's Episcopal Church. Minutes before a speech by Trump in the White House Rose Garden, hundreds of officers in riot gear rapidly advanced on the protesters at the direction of Attorney General William Barr. Officers used chemical irritants (including tear gas and pepper balls), flash grenades, smoke canisters, rubber bullets, riot shields, and batons to disperse the crowd. By 6:30 p.m., police were pushing people off the patio of St. John's Church. Police on foot and mounted police on horses began moving the crowd west down H towards Connecticut Avenue by 6:35 p.m.



Figure 5.69: Donald Trump was elected on an openly racist platform, and he has been a racist in both word and deed during his term of office. He has shown contempt for the truth, for both domestic and international law, and for the US Constitution,

5.18 Right-wing parties in Europe and elsewhere.

Brexit

Across the developed world, the reaction to threatened migration of refugees from climate change has been less than generous, to say the least. The recent decision of Britain to leave the European Union was motivated largely by the fear of British workers that EU laws would force their country to accept large numbers of refugees.

Swings to the right in Europe

In Germany, Angela Merkel's generous policies towards refugees have cost her votes, while an openly racist party, the Alternative for Germany (AfD) party, has gained in strength. Frauke Petry, 40, the party's leader, has said border guards might need to turn guns on anyone crossing a frontier illegally. The party's policy platform says "Islam does not belong in Germany" and calls for a ban on the construction of mosques.

In September, 2017, eight people from the neo-Nazi Freital Group were put on trial in Dresden for bomb attacks on homes for asylum applicants. Hundreds of similar assaults occur in Germany every year, but they had never before been tried as terrorism in a federal court.

In the German election, which took place on Sunday, October 1, 2017, Angela Merkel won a fourth term as Chancellor, but her party won only 33% of the votes, a percentage much reduced from the 41% won in the election of 2013. Angela Merkel was paying a high price for her refugee-friendly policies.

Meanwhile the far right anti-immigration AfD party made a historic breakthrough, winning 13.5% of the vote, thus becoming the first overtly nationalist party to sit in the Bundestag in 60 years. The Greens have already complained that "Nazis have returned to parliament". In fact, members of the AfD party have begun to say that Germans should stop being ashamed of their country's Nazi past.

In France, the National Front is a nationalist party that uses populist rhetoric to promote its anti-immigration and anti-European Union positions. The party favors protectionist economic policies and would clamp down on government benefits for immigrants.

Similarly, in the Netherlands, the anti-European Union, anti-Islam Party for Freedom has called for closing all Islamic schools and recording the ethnicity of all Dutch citizens. In early November, the party was leading in polls ahead of next year's parliamentary elections.

Other far-right anti-immigrant parties in Europe include Golden Dawn (Greece), Jobbic (Hungary), Sweden Democrats (Sweden), Freedom Party (Austria), and People's Party - Our Slovakia (Slovakia). All of these parties have gained in strength because of the widespread fear of immigration.

Populism in the United States

The election of Donald Trump, who ran for President in 2016 on an openly racist and anti-immigrant platform, can also be seen as the result of fear of immigration, especially on the part of industrial workers.

A more humane response to the refugee crisis

In the long-term future, climate change will make the refugee crisis much more severe. Heat and drought will make large regions of the world uninhabitable, and will threaten many populations with famine. The severity of the refugee crisis will depend on how quickly we reduce greenhouse gas emissions.

While making many parts of the world uninhabitable, long-term climate change will make other regions more suitable for human habitation and agriculture. For example, farming will become more possible in Siberia, Greenland, the Canadian Arctic, Alaska and Patagonia. A humane response to the refugee crisis could include the generous opening of these regions to refugees.

The global population of humans is currently increasing by almost a billion people every decade. Global population must be stabilized, and in the long run, gradually reduced. Money currently wasted (or worse than wasted) on armaments could be used instead to promote universal primary health care, and with it, universal access to the knowledge and materials needed for family planning.

Finally, reduced consumption of meat, particularly beef, would shorten the food chain thus make more food available for famine relief.

5.19 Trump copies Hitler's rhetoric

Book review: *When at Times the Mob Is Swayed*

Below are some quotations from an article by Steven Rosenfeld, published by *Common Dreams* on Friday, August 9, 2019. Rosenfeld's article is a review of a book by Bert Neuborne entitled *When at Times the Mob Is Swayed: A Citizen's Guide to Defending Our Republic*.

Neuborne doesn't make this comparison [between Trump and Hitler] lightly. His 55-year career began by challenging the constitutionality of the Vietnam War in the 1960s. He became the ACLU's national legal director in the 1980s under Ronald Reagan. He was founding legal director of the Brennan Center for Justice at New York University Law School in the 1990s. He has been part of more than 200 Supreme Court cases and Holocaust reparation litigation.

"Why does an ignorant, narcissistic buffoon like Trump trigger such anxiety? Why do so many Americans feel it existentially (not just politically)

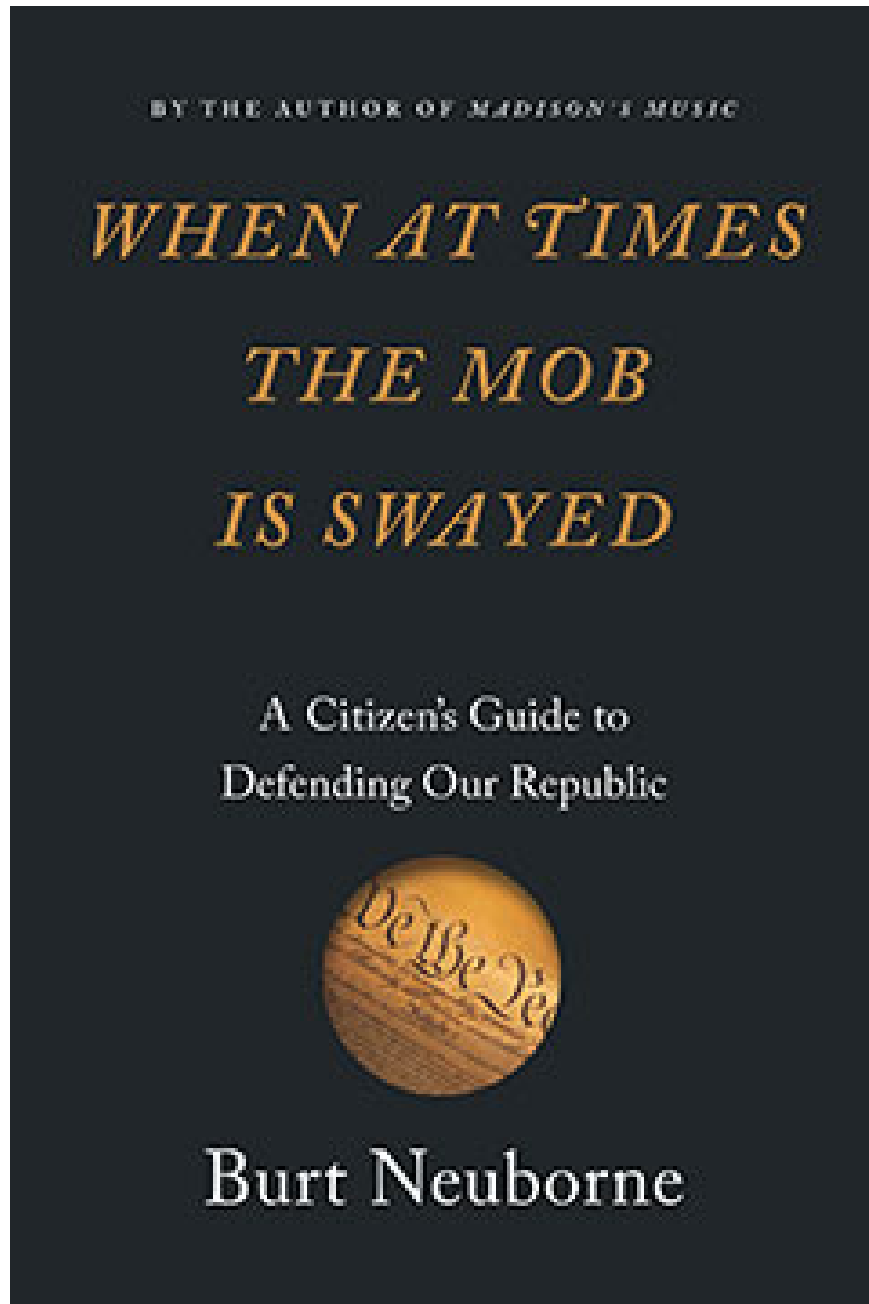


Figure 5.70: Burt Neuborne's brilliant book on the current crisis of American democracy is a warning that we must take very seriously.



important to resist our forty-fifth president?" he writes. "Partly it's just aesthetics. Trump is such a coarse and appalling man that it's hard to stomach his presence in Abraham Lincoln's house. But that's not enough to explain the intensity of my dread. LBJ was coarse. Gerald Ford and George W. Bush were dumb as rocks. Richard Nixon was an anti-Semite. Bill Clinton's mistreatment of women dishonored his office. Ronald Reagan was a dangerous ideologue. I opposed each of them when they appeared to exceed their constitutional powers. But I never felt a sense of existential dread. I never sensed that the very existence of a tolerant democracy was in play."

A younger Trump, according to his first wife's divorce filings, kept and studied a book translating and annotating Adolf Hitler's pre-World War II speeches in a locked bedside cabinet, Neuborne noted. The English edition of *My New Order*, published in 1941, also had analyses of the speeches' impact on his era's press and politics. "Ugly and appalling as they are, those speeches are masterpieces of demagogic manipulation," Neuborne says.

"Watching Trump work his crowds, though, I see a dangerously manipulative narcissist unleashing the demagogic spells that he learned from studying Hitler's speeches - spells that he cannot control and that are capable of eroding the fabric of American democracy," Neuborne says. "You see, we've seen what these rhetorical techniques can do. Much of Trump's rhetoric - as a candidate and in office - mirrors the strategies, even the language, used by Adolf Hitler in the early 1930s to erode German democracy."

Many Americans may seize or condemn Neuborne's analysis, which has more than 20 major points of comparison. The author repeatedly says his goal is not "equating" the men - as "it trivializes Hitler's obscene crimes to compare them to Trump's often pathetic foibles."

Indeed, the book has a larger frame: whether federal checks and balances - Congress, the Supreme Court, the Electoral College - can contain the havoc that Trump thrives on and the Republican Party at large has embraced. But the Trump-Hitler compilation is a stunning warning, because, as many Holocaust survivors have said, few Germans or Europeans expected what unfolded in the years after Hitler amassed power.

Here's how Neuborne introduces this section. Many recent presidents have been awful, "But then there was Donald Trump, the only president in recent American history to openly despise the twin ideals - individual dignity and fundamental equality - upon which the contemporary United States is built. When you confront the reality of a president like Trump, the state of both sets of brakes - internal [constitutional] and external [public resistance] - become hugely important because Donald Trump's political train runs on the most potent and dangerous fuel of all: a steady diet of fear, greed, loathing, lies, and envy. It's a toxic mixture that has destroyed democracies before, and can do so again.

"Give Trump credit," he continues. "He did his homework well and became

the twenty-first-century master of divisive rhetoric. We're used to thinking of Hitler's Third Reich as the incomparably evil tyranny that it undoubtedly was. But Hitler didn't take power by force. He used a set of rhetorical tropes codified in Trump's bedside reading that persuaded enough Germans to welcome Hitler as a populist leader. The Nazis did not overthrow the Weimar Republic. It fell into their hands as the fruit of Hitler's satanic ability to mesmerize enough Germans to trade their birthright for a pottage of scapegoating, short-term economic gain, xenophobia, and racism. It could happen here."

Twenty points of similarity

Neuborne lists the following points of similarity between early Hitler and Trump:

1. Neither was elected by a majority. Trump lost the popular vote by 2.9 million votes, receiving votes by 25.3 percent of all eligible American voters. "That's just a little less than the percentage of the German electorate that turned to the Nazi Party in 1932-33," Neuborne writes. "Unlike the low turnouts in the United States, turnout in Weimar Germany averaged just over 80 percent of eligible voters." He continues, "Once installed as a minority chancellor in January 1933, Hitler set about demonizing his political opponents, and no one - not the vaunted, intellectually brilliant German judiciary; not the respected, well-trained German police; not the revered, aristocratic German military; not the widely admired, efficient German government bureaucracy; not the wealthy, immensely powerful leaders of German industry; and not the powerful center-right political leaders of the Reichstag - mounted a serious effort to stop him."
2. Both found direct communication channels to their base. By 1936's Olympics, Nazi narratives dominated German cultural and political life. "How on earth did Hitler pull it off? What satanic magic did Trump find in Hitler's speeches?" Neuborne asks. He addresses Hitler's extreme rhetoric soon enough, but notes that Hitler found a direct communication pathway - the Nazi Party gave out radios with only one channel, tuned to Hitler's voice, bypassing Germany's news media. Trump has an online equivalent.

"Donald Trump's tweets, often delivered between midnight and dawn, are the twenty-first century's technological embodiment of Hitler's free plastic radios," Neuborne says. "Trump's Twitter account, like Hitler's radios, enables a charismatic leader to establish and maintain a personal, unfiltered line of communication with an adoring political base of about 30-40 percent of the population, many (but not all) of whom are only too willing, even anxious, to swallow Trump's witches' brew of falsehoods, half-truths, personal invective, threats, xenophobia, national security scares, religious

bigotry, white racism, exploitation of economic insecurity, and a never ending-search for scapegoats.”

3. Both blame others and divide on racial lines. As Neuborne notes, “Hitler used his single-frequency radios to wax hysterical to his adoring base about his pathological racial and religious fantasies glorifying Aryans and demonizing Jews, blaming Jews (among other racial and religious scapegoats) for German society’s ills.” That is comparable to “Trump’s tweets and public statements, whether dealing with black-led demonstrations against police violence, white-led racist mob violence, threats posed by undocumented aliens, immigration policy generally, protests by black and white professional athletes, college admission policies, hate speech, even response to hurricane damage in Puerto Rico,” he says. Again and again, Trump uses “racially tinged messages calculated to divide whites from people of color.”
4. Both relentlessly demonize opponents. “Hitler’s radio harangues demonized his domestic political opponents, calling them parasites, criminals, cockroaches, and various categories of leftist scum,” Neuborne notes. “Trump’s tweets and speeches similarly demonize his political opponents. Trump talks about the country being ‘infested’ with dangerous aliens of color. He fantasizes about jailing Hillary Clinton, calls Mexicans rapists, refers to ‘shithole countries,’ degrades anyone who disagrees with him, and dreams of uprooting thousands of allegedly disloyal bureaucrats in the State Department, the Environmental Protection Agency, the FBI, and the CIA, who he calls ‘the deep state’ and who, he claims, are sabotaging American greatness.”
5. They unceasingly attack objective truth. “Both Trump and Hitler maintained a relentless assault on the very idea of objective truth,” he continues. “Each began the assault by seeking to delegitimize the mainstream press. Hitler quickly coined the epithet *Lügenpresse* (literally ‘lying press’) to denigrate the mainstream press. Trump uses a paraphrase of Hitler’s lying press epithet - ‘fake news’ - cribbed, no doubt, from one of Hitler’s speeches. For Trump, the mainstream press is a ‘lying press’ that publishes ‘fake news.’” Hitler attacked his opponents as spreading false information to undermine his positions, Neuborne says, just as Trump has attacked “elites” for disseminating false news, “especially his possible links to the Kremlin.”
6. They relentlessly attack mainstream media. Trump’s assaults on the media echo Hitler’s, Neuborne says, noting that he “repeatedly attacks the ‘failing New York Times,’ leads crowds in chanting ‘CNN sucks,’ [and] is personally hostile to most reporters.” He cites the White House’s refusal

to fly the flag at half-mast after the murder of five journalists in Annapolis in June 2018, Trump's efforts to punish CNN by blocking a merger of its corporate parent, and trying to revoke federal Postal Service contracts held by Amazon, which was founded by Jeff Bezos, who also owns the Washington Post.

7. Their attacks on truth include science. Neuborne notes, "Both Trump and Hitler intensified their assault on objective truth by deriding scientific experts, especially academics who question Hitler's views on race or Trump's views on climate change, immigration, or economics. For both Trump and Hitler, the goal is (and was) to eviscerate the very idea of objective truth, turning everything into grist for a populist jury subject to manipulation by a master puppeteer. In both Trump's and Hitler's worlds, public opinion ultimately defines what is true and what is false."
8. Their lies blur reality - and supporters spread them. "Trump's pathological penchant for repeatedly lying about his behavior can only succeed in a world where his supporters feel free to embrace Trump's 'alternative facts' and treat his hyperbolic exaggerations as the gospel truth," Neuborne says. "Once Hitler had delegitimized the mainstream media by a series of systematic attacks on its integrity, he constructed a fawning alternative mass media designed to reinforce his direct radio messages and enhance his personal power. Trump is following the same path, simultaneously launching bitter attacks on the mainstream press while embracing the so-called alt-right media, co-opting both Sinclair Broadcasting and the Rupert Murdoch-owned Fox Broadcasting Company as, essentially, a Trump Broadcasting Network."
9. Both orchestrated mass rallies to show status. "Once Hitler had cemented his personal communications link with his base via free radios and a fawning media and had badly eroded the idea of objective truth, he reinforced his emotional bond with his base by holding a series of carefully orchestrated mass meetings dedicated to cementing his status as a charismatic leader, or Führer," Neuborne writes. "The powerful personal bonds nurtured by Trump's tweets and Fox's fawning are also systematically reinforced by periodic, carefully orchestrated mass rallies (even going so far as to co-opt a Boy Scout Jamboree in 2017), reinforcing Trump's insatiable narcissism and his status as a charismatic leader."
10. They embrace extreme nationalism. "Hitler's strident appeals to the base invoked an extreme version of German nationalism, extolling a brilliant German past and promising to restore Germany to its rightful place as a preeminent nation," Neuborne says. "Trump echoes Hitler's jingoistic appeal to ultranationalist fervor, extolling American exceptionalism right

down to the slogan ‘Make America Great Again,’ a paraphrase of Hitler’s promise to restore German greatness.”

11. Both made closing borders a centerpiece. “Hitler all but closed Germany’s borders, freezing non-Aryan migration into the country and rendering it impossible for Germans to escape without official permission. Like Hitler, Trump has also made closed borders a centerpiece of his administration,” Neuborne continues. “Hitler barred Jews. Trump bars Muslims and seekers of sanctuary from Central America. When the lower courts blocked Trump’s Muslim travel ban, he unilaterally issued executive orders replacing it with a thinly disguised substitute that ultimately narrowly won Supreme Court approval under a theory of extreme deference to the president.”
12. They embraced mass detention and deportations. “Hitler promised to make Germany free from Jews and Slavs. Trump promises to slow, stop, and even reverse the flow of non-white immigrants, substituting Muslims, Africans, Mexicans, and Central Americans of color for Jews and Slavs as scapegoats for the nation’s ills. Trump’s efforts to cast dragnets to arrest undocumented aliens where they work, live, and worship, followed by mass deportation... echo Hitler’s promise to defend Germany’s racial identity,” he writes, also noting that Trump has “stooped to tearing children from their parents [as Nazis in World War II would do] to punish desperate efforts by migrants to find a better life.”
13. Both used borders to protect selected industries. “Like Hitler, Trump seeks to use national borders to protect his favored national interests, threatening to ignite protectionist trade wars with Europe, China, and Japan similar to the trade wars that, in earlier incarnations, helped to ignite World War I and World War II,” Neuborne writes. “Like Hitler, Trump aggressively uses our nation’s political and economic power to favor selected American corporate interests at the expense of foreign competitors and the environment, even at the price of international conflict, massive inefficiency, and irreversible pollution [climate change].”
14. They cemented their rule by enriching elites. “Hitler’s version of fascism shifted immense power - both political and financial - to the leaders of German industry. In fact, Hitler governed Germany largely through corporate executives,” he continues. “Trump has also presided over a massive empowerment - and enrichment - of corporate America. Under Trump, large corporations exercise immense political power while receiving huge economic windfalls and freedom from regulations designed to protect consumers and the labor force. Hitler despised the German labor movement, eventually destroying it and imprisoning its leaders. Trump

also detests strong unions, seeking to undermine any effort to interfere with the 'prerogatives of management.'

15. Both rejected international norms. "Hitler's foreign policy rejected international cooperation in favor of military and economic coercion, culminating in the annexation of the Sudetenland, the phony Hitler-Stalin nonaggression pact, the invasion of Czechoslovakia, and the horrors of global war," Neuborne notes. "Like Hitler, Trump is deeply hostile to multinational cooperation, withdrawing from the Trans-Pacific Partnership, the Paris Agreement on climate change, and the nuclear agreement with Iran, threatening to withdraw from the North American Free Trade Agreement, abandoning our Kurdish allies in Syria..."
16. They attack domestic democratic processes. "Hitler attacked the legitimacy of democracy itself, purging the voting rolls, challenging the integrity of the electoral process, and questioning the ability of democratic government to solve Germany's problems," Neuborne notes. "Trump has also attacked the democratic process, declining to agree to be bound by the outcome of the 2016 elections when he thought he might lose, supporting the massive purge of the voting rolls allegedly designed to avoid (nonexistent) fraud, championing measures that make it harder to vote, tolerating - if not fomenting - massive Russian interference in the 2016 presidential election, encouraging mob violence at rallies, darkly hinting at violence if Democrats hold power, and constantly casting doubt on the legitimacy of elections unless he wins."
17. Both attack the judiciary and rule of law. "Hitler politicized and eventually destroyed the vaunted German justice system. Trump also seeks to turn the American justice system into his personal playground," Neuborne writes. "Like Hitler, Trump threatens the judicially enforced rule of law, bitterly attacking American judges who rule against him, slyly praising Andrew Jackson for defying the Supreme Court, and abusing the pardon power by pardoning an Arizona sheriff found guilty of criminal contempt of court for disobeying federal court orders to cease violating the Constitution."
18. Both glorify the military and demand loyalty oaths. "Like Hitler, Trump glorifies the military, staffing his administration with layers of retired generals (who eventually were fired or resigned), relaxing control over the use of lethal force by the military and the police, and demanding a massive increase in military spending," Neuborne writes. Just as Hitler "imposed an oath of personal loyalty on all German judges" and demanded courts defer to him, "Trump's already gotten enough deference from five Republican [Supreme Court] justices to uphold a largely Muslim travel ban that

is the epitome of racial and religious bigotry.” Trump has also demanded loyalty oaths. “He fired James Comey, a Republican appointed in 2013 as FBI director by President Obama, for refusing to swear an oath of personal loyalty to the president; excoriated and then sacked Jeff Sessions, his handpicked attorney general, for failing to suppress the criminal investigation into... Trump’s possible collusion with Russia in influencing the 2016 elections; repeatedly threatened to dismiss Robert Mueller, the special counsel carrying out the investigation; and called again and again for the jailing of Hillary Clinton, his 2016 opponent, leading crowds in chants of ‘lock her up.’” A new chant, “send her back,” has since emerged at Trump rallies directed at non-white Democratic congresswomen.

19. They proclaim unchecked power. “Like Hitler, Trump has intensified a disturbing trend that predated his administration of governing unilaterally, largely through executive orders or proclamations,” Neuborne says, citing the Muslim travel ban, trade tariffs, unraveling of health and environmental safety nets, ban on transgender military service, and efforts to end President Obama’s protection for Dreamers. “Like Hitler, Trump claims the power to overrule Congress and govern all by himself. In 1933, Hitler used the pretext of the Reichstag fire to declare a national emergency and seize the power to govern unilaterally. The German judiciary did nothing to stop him. German democracy never recovered. When Congress refused to give Trump funds for his border wall even after he threw a tantrum and shut down the government, Trump, like Hitler, declared a phony national emergency and claimed the power to ignore Congress,” Neuborne continues. “Don’t count on the Supreme Court to stop him. Five justices gave the game away on the President’s unilateral travel ban. They just might do the same thing on the border wall.” It did in late July, ruling that Trump could divert congressionally appropriated funds from the Pentagon budget - undermining constitutional separation of powers.
20. Both relegate women to subordinate roles. “Finally,” writes Neuborne, “Hitler propounded a misogynistic, stereotypical view of women, valuing them exclusively as wives and mothers while excluding them from full participation in German political and economic life. Trump may be the most openly misogynist figure ever to hold high public office in the United States, crassly treating women as sexual objects, using nondisclosure agreements and violating campaign finance laws to shield his sexual misbehavior from public knowledge, attacking women who come forward to accuse men of abusive behavior, undermining reproductive freedom, and opposing efforts by women to achieve economic equality.”

Suggestions for further reading

1. Martin A. Lee, *The Beast Reawakens*, (New York: Little, Brown and Company, (1997)
2. Roger Griffin. *Fascism*, (Oxford Readers), (1995).
3. Kurt P. Tauber. *Beyond Eagle and Swastika: German nationalism since 1945*, (Wesleyan University Press; [1st ed.] edition, (1967).
4. Philip Rees, editor, *Biographical Dictionary of the Extreme Right Since 1890*, (1991).
5. *Hitler's Priestess: Savitri Devi, the Hindu-Aryan Myth, and Neo-Nazism* by Nicholas Goodrick-Clarke (1998).
6. Kevin Coogan, *Dreamer of the Day: Francis Parker Yockey and the Postwar Fascist International*, Autonomedia, Brooklyn, NY, (1998).
7. William H. Schmaltz. *Hate: George Lincoln Rockwell and the American Nazi Party*, Potomac Books, (2000).
8. Frederick J. Simonelli. *American Fuehrer: George Lincoln Rockwell and the American Nazi Party*, University of Illinois Press, (1999).
9. Richard C. Thurlow. *Fascism in Britain: A History, 1918-1985*, Olympic Marketing Corp, (1987).
10. Angelo Del Boca and Mario Giovana. *Fascism Today: A World Survey*, Pantheon Books, 1st American edition, (1969).
11. Anglo-Jewish Association. *Germany's New Nazis*, Jewish Chronicle Publications, (1951).
12. Tete Harens Tetens. *The New Germany and the Old Nazis*, Random House, (1961).
13. Clifford L Linedecker. *Swastika and the Eagle: Neo-Naziism in America Today*, A & W Pub, (1982).
14. Kevin Flynn and Gary Gerhardt. *The Silent Brotherhood: Inside America's Racist Underground*, Signet Book; Reprint edition, (1995).
15. James Ridgeway. *Blood in the Face: The Ku Klux Klan, Aryan Nations, Nazi Skinheads, and the Rise of a New White Culture*, Thunder's Mouth Press; 2nd edition, (1995).
16. Elinor Langer. *A Hundred Little Hitlers: The Death of a Black Man, the Trial of a White Racist, and the Rise of the Neo-Nazi Movement in America*, Metropolitan Books, (2003).
17. Raphael S. Ezekiel. *The Racist Mind: Portraits of American Neo-Nazis and Klansmen*, Penguin (Non-Classics); Reprint edition, (1996).
18. Nicholas Goodrick-Clarke. *Black Sun: Aryan Cults, Esoteric Nazism and the Politics of Identity*, (2001).
19. Paul Hockenos. *Free to Hate: The Rise of the Right in Post-Communist Eastern Europe*, (Routledge; Reprint edition, (1994).
20. Geoff Harris. *The Dark Side of Europe: The Extreme Right Today*, Edinburgh University Press; New edition, (1994).
21. Luciano Cheles, Ronnie Ferguson, and Michalina Vaughan. *The Far Right in Western and Eastern Europe*, Longman Publishing Group; 2nd edition, (1995).

22. Herbert Kitschelt. *The Radical Right in Western Europe: A Comparative Analysis*, University of Michigan Press; Reprint edition, (1997).
23. Martin Schain, Aristide Zolberg, and Patrick Hossay, editors. *Shadows Over Europe: The Development and Impact of the Extreme Right in Western Europe*, Palgrave Macmillan; 1st edition, (2002).
24. Robert S. Griffin. *The Fame of a Dead Man's Deeds: An Up-Close Portrait of White Nationalist William Pierce*, Authorhouse, (2001).
25. Jeffrey Kaplan and Tore Bjorgo. *Nation and Race: The Developing Euro-American Racist Subculture*, Northeastern University Press, (1998).
26. Mattias Gardell. *Gods of the Blood: The Pagan Revival and White Separatism*, Duke University Press, (2003)
27. Kathleen Blee. *Inside Organized Racism: Women in the Hate Movement*. Berkeley, California; London: University of California Press, (2002).
28. E.J. Hobsbawn, *The Age of Empire, 1875-1914*, Vintage Books, (1989).
29. L. James, *The Rise and Fall of the British Empire*, St Martin's Press, (1997).
30. N. Ferguson, *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power*, Basic Books, (2003).
31. S. Schama, *The Fate of Empire, 1776-2000*, Miramax, (2002).
32. A.P. Thorton, *The Imperial Idea and Its Enemies: A Study in British Power*, Palgrave Macmillan, (1985).
33. H. Mejer, *Imperial Quest for Oil: Iraq, 1910-1928*, Ithaca Books, London, (1976).
34. P. Sluglett, *Britain in Iraq, 1914-1932*, Ithaca Press, London, (1976).
35. D.E. Omissi, *British Air Power and Colonial Control in Iraq, 1920-1925*, Manchester University Press, Manchester, (1990).
36. V.G. Kiernan, *Colonial Empires and Armies, 1815-1960*, Sutton, Stroud, (1998).
37. R. Solh, *Britain's 2 Wars With Iraq*, Ithaca Press, Reading, (1996).
38. D. Hiro, *The Longest War: The Iran-Iraq Military Conflict*, Routledge, New York, (1991).
39. T.E. Lawrence, *A Report on Mesopotamia by T.E. Lawrence*, Sunday Times, August 22, (1920).
40. D. Fromkin, *A Peace to End All Peace: The Fall of the Ottoman Empire and the Creation of the Modern Middle East*, Owl Books, (2001).
41. T. Rajamoorthy, *Deceit and Duplicity: Some Reflections on Western Intervention in Iraq*, Third World Resurgence, March-April, (2003).
42. P. Knightley and C. Simpson, *The Secret Lives of Lawrence of Arabia*, Nelson, London, (1969).
43. G. Lenczowski, *The Middle East in World Affairs*, Cornell University Press, (1962).
44. John A. Hobson, *Imperialism; A Study*, (1902).
45. P. Cain and T. Hopkins, *British Imperialism, 1688-200*, Longman, (2000).
46. N. Ferguson, *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power*, Basic Books, (2003).
47. G. Kolko, *Another Century of War*, New Press, (2002).

48. G. Kolko, *Confronting the Third World: United States Foreign Policy, 1945-1980*, Pantheon Books, (1988).
49. M.T. Klare, *Resource Wars: The New Landscape of Global Conflict*, Owl Books reprint edition, New York, (2002).
50. J.H. Bodley, *Cultural Anthropology: Tribes, States, and the Global System, 3rd ed.*, Mayfield, Mountain View, CA, (2000).
51. K. Raaflaub and N. Rosenstein, eds., *War and Society in the Ancient and Medieval Worlds*, Harvard University Press and Center for Hellenic Studies, (1999).
52. Elie Kedourie, *Nationalism*, Hutchison University Library, Third Edition, (1966).
53. Eugene Kamenka, editor, *Nationalism*, Edward Arnold Ltd., London, (1976).
54. Elie Kedourie, editor, *Nationalism in Asia and Africa*, New American Library, (1970).
55. G. Allport, *The Nature of Prejudice*, Doubleday Anchor Books, New York, (1958).
56. I.A. Berg and B.M. Bass, eds., *Conformity and Deviation*, Harper and Row, New York, (1961).
57. W. Buchanan and H. Cantril, *How Nations See Each Other*, University of Illinois Press, Urbana, IL, (1953).
58. H.C.J. Duijker and N.H. Frijda, *National Character and National Stereotypes*, North-Holland Publishing Co., Amsterdam, (1960).
59. S. Freud, *Warum Krieg? Das Bild vom Feind*, Arbeitsgem. Friedenspädagogik, (1983).
60. S. Freud, *Why War?*, in *The Basic Writings of Sigmund Freud*, A.A. Brill, ed., Modern Library, (1995).
61. S. Freud, *Civilization, War and Death. Psycho-analytical Epitomes No. 4*, Hogarth Press, London, (1953).
62. S. Keen, *Faces of the Enemy: Reflections of the Hostile Imagination*, Harper and Row, San Francisco, (1986).
63. W.E. Lampert, *Children's Views of Foreign Peoples*, Appleton-Century-Crofts, New York, (1967).
64. R.A. Levine and D.T. Campbell, *Ethnocentrism: Theories of Theories of Conflict, Ethnic Attitudes and Group Behavior*, Wiley, New York, (1972).
65. V.D. Volken, *Cyprus: War and Adaption: A Psychoanalytical History of Two Ethnic Groups in Conflict*, University Press of Virginia, Charlottesville, VA, (1979).
66. L. Durrell, *Bitter Lemons* (nationalism in the Cyprus conflicts), Faber and Faber, London, (1957).
67. N. Choucri and R. North, *Nations in Conflict: National Growth and International Violence*, W.H. Freeman, San Francisco, (1975).
68. R. Cohen, *Warfare and State Formation*, in *Warfare, Culture and the Environment*, B. Ferguson, ed., Academic Press, Orlando, (1984).
69. A. Giddens, *The Nation-State and Violence: Volume Two of a Contemporary Critique of Historical Materialism*, University of California, Berkeley, CA, (1985).
70. M. Haas, *Social Change and National Aggressiveness, 1900-1960*, in *Quantitative International Politics*, J.D. Singer, ed., Free Press, New York, (1968).
71. W. Schwartzwaller, *The Unknown Hitler*, Berkeley Books, (1990).

72. Francis King, *Satan and the Swastika*, Mayflower, St. Albans, (1976).
73. J.M. Angebert, *The Occult and the Third Reich*, New York, (1974).
74. J.H. Brennan, *Occult Reich*, New York, (1974).
75. N. Goodrick-Clarke, *The Occult Roots of Nazism*, Aquarium Press, Wellingborough, (1985).
76. T. Ravenscroft, *The Spear of Destiny*, Putnam's, New York, (1974).
77. D. Sklar, *The Nazis and the Occult*, Dorset Press, New York, (1977).
78. W. Schirer, *The Rise and Fall of the Third Reich*, Crest Books, New York, (1962).

Chapter 6

WE SEE ONLY WHAT IS NEAR TO US

6.1 Contrasting responses to the pandemic and the climate crisis

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 do 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 mea-

sure CO₂ concentrations in the atmosphere, continues to rise, and the rate of rising 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.

6.2 Under-reporting of the climate emergency

There is also a remarkable contrast between the massive news coverage of the COVID-19 pandemic and the shocking under-reporting of the potentially much more serious threat of catastrophic climate change.

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, 2019 conference entitled "Covering Climate Now", co-sponsored by The Nation and Columbia 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 United 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”

Mainstream media are in the grip of powerholders, which include wealthy fossil fuel oligarchs, who stand to lose immense sums if the public really starts to take the climate emergency seriously. It is therefore not surprising that the media (with a few notable exceptions such as the UK’s *Guardian* newspaper) grossly under-reports the climate crisis.

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 an expected 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.

6.3 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 1930s. 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.

6.4 Quick action is needed to save the long-term future

The worst effects of catastrophic climate change lie in the distant future, a century or even many centuries from the present; but disaster can only be avoided if quick action is taken. The nations of the world must act immediately to reduce and eventually stop the use of fossil fuels and the destruction of forests. If decisive action is not taken within the next

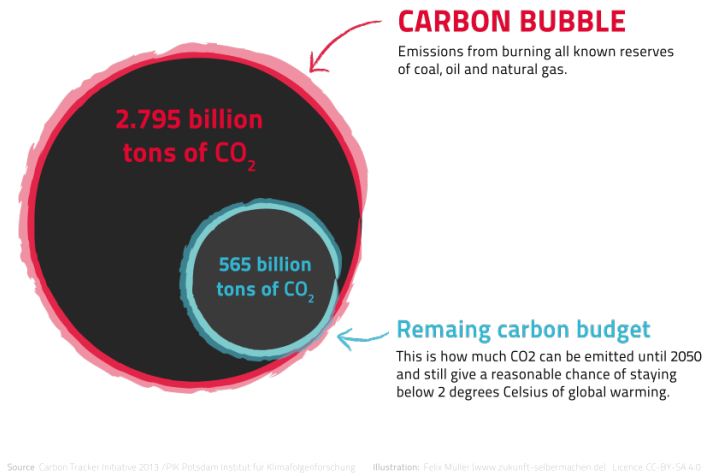


Figure 6.1: **The Carbon Bubble according to data by the Carbon Tracker Initiative 2013. In order to avoid tipping points that will make human attempts to avoid catastrophic climate change useless, we must leave most of the known fossil fuel reserves in the ground!**

few decades, feedback loops will make human intervention useless. These feedback loops include the albedo effect, the methane hydrate feedback loop, and the fact as tropical forests become drier, they become vulnerable to fires ignited by lightning. These fires accelerate the drying, and thus a feed-back loop is formed.

As time passes, and as the disastrous consequences of climate change become more apparent, the political will required for action will increase; but by that time it may be too late. We are rapidly approaching several crucial tipping points.

At present, the average global rate of use of primary energy is roughly 2 kW_t per person. In North America, the rate is 12 kW_t per capita, while in Europe, the figure is 6 kW_t. In Bangladesh, it is only 0.2 kW_t. This wide variation implies that considerable energy savings are possible, through changes in lifestyle, and through energy efficiency.

6.5 Is the transition to 100% renewable energy possible?

If we ask whether the transition to 100% renewable energy is possible, the answer is very simple: It is not only possible; it is inevitable! This is because the supply of fossil fuels is finite, and at the present rate of use they will be exhausted in less than a century. While the transition to 100% renewables is inevitable, the vitally important point to remember is that if we are to avoid disaster, the transition must come quickly.

	Reserves	2005 rate of use	Years remaining
Coal	780 TWy	3.5 TW	217 years
Oil	250 TWy	6.0 TW	42 years
Natural gas	250 TWy	3.7 TW	68 years
Total	1260 TWy	13.2 TW	(95 years)

Year	Demand	Population	Per Capita
1980	9.48 TW	4.45 bil.	2.13 kW
1985	10.3 TW	4.84 bil.	2.11 kW
1990	11.6 TW	5.99 bil.	2.20 kW
1995	12.3 TW	5.68 bil.	2.16 kW
2003	14.1 TW	6.30 bil.	2.23 kW
2010	17.1 TW	6.84 bil.	2.50 kW
2015	18.9 TW	7.23 bil.	2.58 kW
2020	20.5 TW	7.61 bil.	2.70 kW
2025	22.3 TW	7.91 bil.	2.82 kW
2030	24.2 TW	8.30 bil.	2.93 kW

In this book, we will use kilowatts (kW), megawatts (MW) and terawatts (TW) as the units in which we discuss the rate of use of energy. A megawatt is equal to a thousand kilowatts or a million watts. A terawatt is equal to a thousand megawatts, or a million kilowatts or a billion (1,000,000,000) watts. A citizen of the European Union uses energy at the rate of about 6 kilowatts, while in North America, the rate of energy use is double that amount. The global average rate of energy use is a little over 2 kilowatts. Since there are now 7.5 billion people in the world, our present rate of energy use is roughly 15 terawatts,

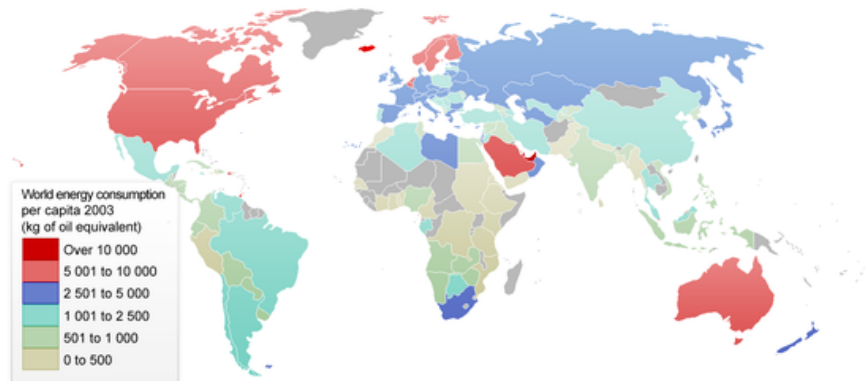


Figure 6.2: A map of the world showing per capita rates of energy use.

The total available energy from fossil fuels can be measured in terawatt.years (TWy). Rough estimates of global coal reserves of coal, oil and natural gas are given by the table shown above.

The present rate of use of fossil fuels is greater than the 2005 rate shown in the table, and the remaining reserves are smaller than those shown. It is assumed that as oil becomes exhausted, coal will be converted into liquid fuels, as was done in Germany during World War II.

A second table, shown below, illustrates the historical and projected total global energy demand as a function of time between 1980 and 2030. In this slightly out-of-date table, the last year using historical data is 2003, later years being estimates based on projections.

Notice that the per capita energy use is almost constant. Our rapidly growing demand for energy is primarily the result of the world's rapidly growing population of humans. It would be wise to stabilize human populations because of the threat of human-caused ecological catastrophes and the danger of an extremely large-scale famine, involving billions of people rather than millions. Such a famine is threatened because growing populations require a growing food supply, climate changes threaten agriculture through droughts, melting glaciers and loss of agricultural land. The end of the fossil fuel era will also mean the end of high-yield petroleum-based agriculture.

The rate of growth of renewable energy

There is reason for hope that even the high energy demands show in the second table can be met by renewables. The basis of this 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.

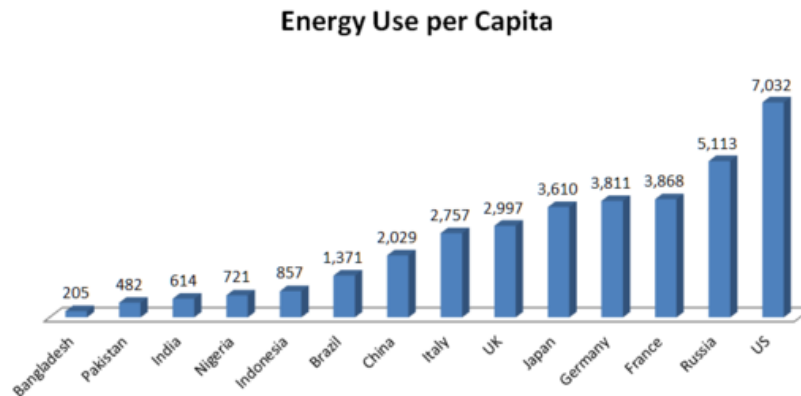


Figure 6.3: **Energy use per capita by country (World Bank data)**

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.

6.6 Renewables are now much cheaper than fossil fuels!

According to an article written by Megan Darby and published in *The Guardian* on 26 January, 2016, “Solar power costs are tumbling so fast the technology is likely to fast outstrip mainstream energy forecasts.

“That is the conclusion of Oxford University researchers, based on a new forecasting model published in *Research Policy*¹.

“Commercial prices have fallen by 58% since 2012 and by 16

“Since the 1980s, panels to generate electricity from sunshine have got 10% cheaper each year. That is likely to continue, the study said, putting solar on course to meet 20% of global energy needs by 2027.’ ”

Solar energy

Unlike the burning of fossil fuels, renewables like solar energy do not release pollutants into the atmosphere. In China, public opinion has shifted in favor of renewables because of air pollution in cities.

¹<http://www.sciencedirect.com/science/article/pii/S0048733315001699>

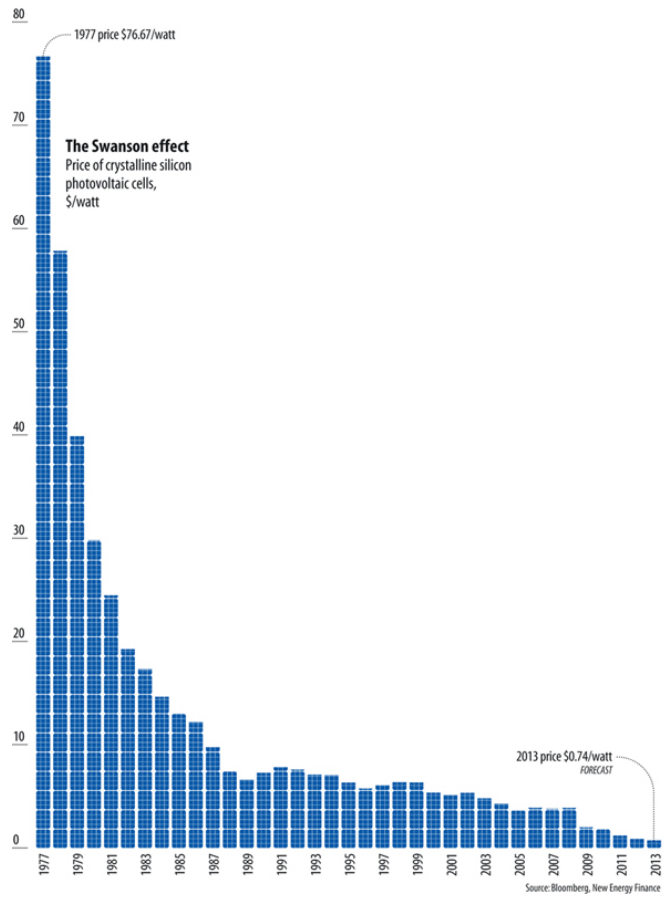


Figure 6.4: The cost of photovoltaic cell panels is falling rapidly

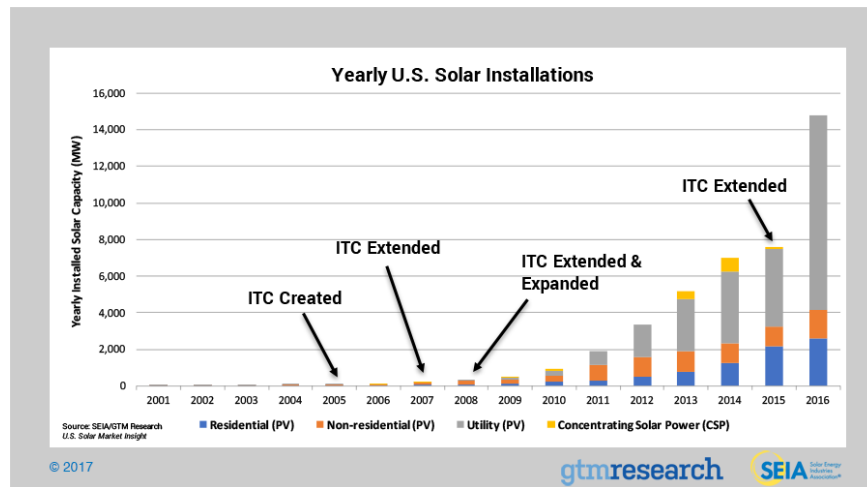


Figure 6.5: Driven by falling prices, new solar installations in the United States are increasing rapidly. The acronym ITC stands for Solar Investment Tax Credit. Commercial prices have fallen by 58% since 2012 and by 16% in the last year



Figure 6.6: Air pollution from the burning of coal has become a serious problem in China. This problem has helped to shift Chinese public opinion away from the burning of coal and towards renewables. China has now become a major manufacturer of photovoltaic cells.

Photovoltaic cells

The price of solar photovoltaic panels has declined 99 percent over the last four decades, from \$74 a watt in 1972 to less than 70 cents a watt in 2014.

Between 2009 and 2014, solar panel prices dropped by three fourths, helping global PV installations grow 50 percent per year.

Deutsche Bank notes that as of early 2014, solar PV was already competitive with average residential, commercial or industrial electricity rates in 14 countries, and in California - even without subsidies. By late 2014 there were nearly 600,000 individual PV systems in the United States, almost twice as many as in 2012. This number may well pass 1 million in 2016.

In 2013, just 12 percent of U.S. homebuilders offered solar panels as an option for new single-family homes. More than half of them anticipate doing so by 2016. Four of the top five U.S. home construction firms - DR Horton, Lennar Corp, PulteGroup and KB Home - now automatically include solar panels on every new house in certain markets.

In 2007 there were only 8,000 rooftop solar installations in coal-heavy Australia; now there are over a million.

Saudi Arabia has 41,000 megawatts of solar PV operating, under construction and planned - enough to generate up to two thirds of the country's electricity.

For the roughly 1.3 billion people without access to electricity, it is now often cheaper and more efficient simply to install solar panels rooftop-by-rooftop than to build a central power plant and transmission infrastructure.

Wind energy

Over the past decade, world wind power capacity grew more than 20 percent a year, its increase driven by its many attractive features, by public policies supporting its expansion, and by falling costs.

By the end of 2014, global wind generating capacity totaled 369,000 megawatts, enough to power more than 90 million U.S. homes. Wind currently has a big lead on solar PV, which has enough worldwide capacity to power roughly 30 million U.S. homes.

China is now generating more electricity from wind farms than from nuclear plants, and should have little trouble meeting its official 2020 wind power goal of 200,000 megawatts. For perspective, that would be enough to satisfy the annual electricity needs of Brazil.

In nine U.S. states, wind provides at least 12 percent of electricity. Iowa and South Dakota are each generating more than one quarter of their electricity from wind.

In the Midwestern United States, contracts for wind power are being signed at a price of 2.5 cents per kilowatt-hour (kWh), which compares with the nationwide average grid price of 10-12 cents per kWh.

Although a wind farm can cover many square miles, turbines occupy little land. Coupled with access roads and other permanent features, a wind farm's footprint typically comes to just over 1 percent of the total land area covered by the project.

Wind energy yield per acre is off the charts. For example, a farmer in northern Iowa could plant an acre in corn that would yield enough grain to produce roughly \$1,000 worth of fuel-grade ethanol per year, or the farmer could put on that same acre a turbine that generates \$300,000 worth of electricity per year. Farmers typically receive \$3,000 to \$10,000 per turbine each year in royalties. As wind farms spread across the U.S. Great Plains, wind royalties for many ranchers will exceed their earnings from cattle sales.

The problem of intermittency

Many forms of renewable energy encounter the problem of intermittency. For example, on windy days, Denmark's windmills generate more than enough electricity to meet the needs of the country, but on days when the wind is less strong, the electrical energy generated is insufficient. Denmark solves this problem by selling surplus electrical power to Germany on windy days, and buying power from hydroelectric-rich Norway on less windy days.

The problem of intermittency can alternatively be solved by pumping water to uphill reservoirs when the wind is strong, and letting the stored water drive turbines when the wind is weak. The problem of intermittency can also be solved with lithium ion storage batteries, by splitting water into hydrogen and oxygen, or by using other types of fuel cells.

Developing countries: No need for grids

When cell phones came into general use, developing countries with no telephone networks were able to use the new technology through satellites, thus jumping over the need for country-wide telephone lines. Similarly, village solar or wind installations in the developing countries can supply power locally, bypassing the need for a grid.

6.7 An economic tipping point

Renewables are now cheaper than fossil fuels

Solar energy and wind energy have recently become cheaper than fossil fuels. Thus a tipping point has been passed. From now on, despite frantic efforts of giant fossil fuel corporations to prevent it from happening, the transition to 100% renewable energy will be driven by economic forces alone.

Subsidies to the fossil fuel industry

<http://www.imf.org/en/News/Articles/2015/09/28/04/53/sonew070215a>

<http://priceofoil.org/fossil-fuel-subsidies/>

6.8 An unprecedented investment opportunity

Investment in electric vehicles

On July 5, 2017, the Volvo Car Group made the following announcement: ²

“Volvo Cars, the premium car maker, has announced that every Volvo it launches from 2019 will have an electric motor, marking the historic end of cars that only have an internal combustion engine (ICE) and placing electrification at the core of its future business.

“The announcement represents one of the most significant moves by any car maker to embrace electrification and highlights how over a century after the invention of the internal combustion engine electrification is paving the way for a new chapter in automotive history.

“‘This is about the customer,’ said Håkan Samuelsson, president and chief executive. ‘People increasingly demand electrified cars and we want to respond to our customers’ current and future needs. You can now pick and choose whichever electrified Volvo you wish.’

“Volvo Cars will introduce a portfolio of electrified cars across its model range, embracing fully electric cars, plug in hybrid cars and mild hybrid cars.

“It will launch five fully electric cars between 2019 and 2021, three of which will be Volvo models and two of which will be high performance electrified cars from Polestar, Volvo Cars’ performance car arm. Full details of these models will be announced at a later date.”

The electric vehicle investment opportunity was also illustrated by the 2017 vote of Germany’s Bundesrat to ban the manufacture of internal combustion engines after 2030 ³.

The article announcing the vote adds that “It’s a strong statement in a nation where the auto industry is one of the largest sectors of the economy; Germany produces more automobiles than any other country in Europe and is the third largest in the world. The resolution passed by the Bundesrat calls on the European Commission (the executive arm of the European Union) to ‘evaluate the recent tax and contribution practices of Member States on their effectiveness in promoting zero-emission mobility,’ which many are taking to mean an end to the lower levels of tax currently levied on diesel fuel across Europe.”

France plans to end the sale of vehicles powered by gasoline and diesel by 2040, environment minister Nicolas Hulot announced recently.

Hulot made the announcement on Thursday, June 13, 2017, in Paris as he launched the country’s new Climate Plan to accelerate the transition to clean energy and to meet its targets under the Paris climate agreement.

To ease the transition, Hulot said the French government will offer tax incentives to replace fossil-fuel burning cars with clean alternatives.

Furthermore, the government of India has recently announced its intention to only

²<https://www.media.volvocars.com/global/en-gb/media/pressreleases/210058/volvo-cars-to-go-all-electric>

³<https://arstechnica.com/cars/2016/10/germanys-bundesrat-votes-to-ban-the-internal-combustion-engine-by-2030/>

nave electric vehicles by 2030⁴. This hugely ambitious plan was announced during the 2017 Confederation of Indian Industry Annual Session. Besides the avoidance of climate change, which might make many regions of India uninhabitable, the motive for replacing 28 million combustion engine vehicles by electric ones was the severe air pollution from which India suffers. Severe air pollution also motivates efforts by the government of China to promote the transition to electric vehicles.

The governments of Norway and the Netherlands have taken steps towards banning the internal combustion engine⁵. Both the upper and lower houses of the Netherlands' government voted to ban cars driven by internal combustion engines by 2025, the same year in which Norway plans to sell nothing but zero-emission vehicles.

In a report commissioned by the investment bankers Cowan & Co, managing director and senior research analyst Jeffrey Osborne, predicted that electric vehicles will cost less than gasoline-powered cars by the early- to mid-2020s due to falling battery prices as well as the costs that traditional carmakers will incur as they comply to new fuel-efficiency standards. Osbourne pointed out that a number of major car brands are hopping onto the electric bandwagon to compete in a space carved out by industry disrupter, Tesla.

“We see the competitive tides shifting in 2019 and beyond as European [car makers] roiled by the diesel scandal and loss of share to Tesla in the high margin luxury segment step on the gas and accelerate the pace of EV introductions”, he wrote.

Bloomberg New Energy Finance reported similar predictions: “Falling battery costs will mean electric vehicles will also be cheaper to buy in the U.S. and Europe as soon as 2025,” the report said. “Batteries currently account for about half the cost of EVs, and their prices will fall by about 77 percent between 2016 and 2030.”

In October, 2017, General Motors unveiled plans to roll out 20 new entirely electric car models by 2023, with two of the new EVs coming out in the next 18 months. Meanwhile, Ford announced the creation of “Team Edison,” intended to accelerate the company’s EV development and partnership work. The name, is “seemingly in direct response to Elon Musk’s Tesla, which recently surpassed Ford’s market capitalization.”

Tesla’s Chairman, highly successful inventor and entrepreneur Elon Musk, has made massive investments in factories manufacturing electric vehicles, improved lithium ion storage cells, and photovoltaic panels, as will be discussed in Chapter 2.

Investment in wind turbine energy

In Denmark, the wind turbine industry contributes substantially to the country’s positive balance of payments. According to Wikipedia, “The Danish wind turbine industry is the world’s largest. Around 90% of the national output is exported, and Danish companies accounted for 38% of the world turbine market in 2003, when the industry employed some 20,000 people and had a turnover of around 3 billion euro.”

⁴<https://www.greentechmedia.com/articles/read/what-country-will-become-the-first-to-ban-internal-combustion-cars>

⁵<http://www.prnewswire.com/news-releases/the-dutch-revolution-in-smart-charging-of-electric-vehicles-597268791.html>

Denmark's two largest wind turbine manufacturers are Vestas and Simiens Wind Power. Vestas employs more than 21,000 people globally. In February 2016, Vestas got its largest order of 1,000 MW (278 x 3.6 MW) for the Fosen project near Trondheim in Norway. It costs DKK 11 billion, and should deliver 3.4 TWh per year.

In 2015 Siemens Wind had a combined market share of 63% of European offshore wind turbines (nearly 75% in 2009 by capacity and number). In 2011, Siemens Wind Power had 6.3% share of the world wind turbine market, and was the second largest in 2014.

In many countries, including Australia, Canada, Denmark, Germany, India, The Netherlands, United Kingdom, and United States, wind turbine cooperatives have sprung up. In these cooperatives, communities share the costs and profits of wind turbine projects. For example, the Hepburn Wind Project in Victoria, Australia, owns two 2MW wind turbines which produce enough power for 2,300 households.

Investment in solar energy

Global revenues from solar photovoltaic installations are expected to reach \$1.2 trillion between the present and 2024 according to a recent article⁶

Another article⁷ states that “The global electric power industry is evolving into a model that offers more diversity, both in terms of generation and in the ownership of generation assets, and solar PV is one technology at the head of this change. Following years of unsustainable pricing and oversupply, demand for solar PV systems has finally caught up, with 2015 expected to be the year when the global solar PV market shifts and starts to compete with other technologies. According to a recent report from Navigant Research, global revenue from solar PV installations is expected to total more than \$1.2 trillion from 2015 to 2024.”

6.9 For creating jobs, renewables beat fossil fuels

Here are some excerpts from a 2016 report issued by the Solar Foundation:

- One out of every 50 new jobs added in the United States in 2016 was created by the solar industry, representing 2 percent of all new jobs.
- Solar jobs in the United States have increased at least 20 percent per year for the past four years, and jobs have nearly tripled since the first Solar Jobs Census was released in 2010.
- Over the next 12 months, employers surveyed expect one out of every 50 new jobs added in the United States in 2016 was created by the solar industry, representing 2 percent of all new jobs.

⁶<https://cleantechnica.com/2016/01/25/global-revenue-solar-pv-installations-expected-reach-1-2-trillion/>

⁷<http://www.navigantresearch.com/newsroom/global-revenue-from-solar-pv-installations-is-expected-to-total-more-than-1-2-trillion-from-2015-to-2024>

- In 2016, the five states with the most solar jobs were California, Massachusetts, Texas, Nevada, and Florida.
- The solar industry added \$84 billion to the US GDP in 2016 to see total solar industry employment increase by 10 percent to 286,335 solar workers.
- The solar industry added \$84 billion to the US GDP in 2016.

6.10 The Stern Review

Background of the Stern Review

The Stern Review on the Economics of Climate Change is a 700 page document commissioned by the government of the United Kingdom and released on 30 October, 2006. The research behind this report was conducted by a team led by Nicolas Stern (Baron Stern of Brentford), chair of the Grantham Research Institute on Climate Change and the Environment.

The Stern Review discusses the catastrophic climate change which will result if prompt action is not taken, and it proposes that 1% of global GDP be used annually to prevent such disasters. In 2014, the global GDP was estimated to be 77.9 trillion dollars, so that the 1% investment in renewable energy recommended by Lord Stern and his research team would have amounted to nearly a trillion dollars.

The Middle East

According to current estimates, 81.5% of the world's proven crude oil reserves are located in OPEC Member Countries, with the bulk of OPEC oil reserves in the Middle East, amounting to 65.5% of the OPEC total.

China

China's large reserves of coal lie near to the surface, and are thus very easily accessible. Mining of coal has driven the country's rapid industrial growth, but it has also produced a severe public health problem because of air pollution.

In April, 2017, China's rate of economic growth was 6.9%⁸. This rate of growth, if continued, would mean that China's economy would double every ten years. and increase by a factor of 1024 every century. Obviously this is impossible. Never-ending economic growth on a finite planet is a logical absurdity. China's high economic growth rate, is driven by its use of coal, and this must quickly stop if ecological disaster is to be avoided.



Figure 6.7: Protesters at the 2017 G20 meeting in Hamburg Germany.

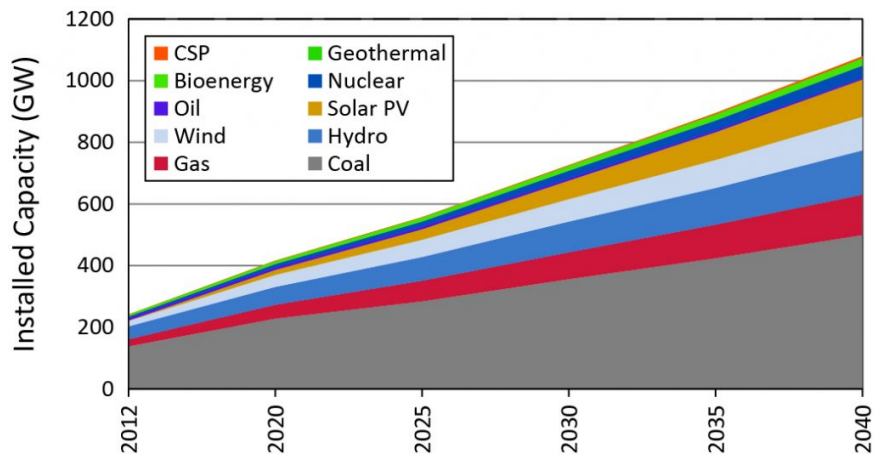


Figure 6.8: India's installed and future energy mix, as visualized by the World Coal Association

India

The MIT Technology Review recently published an important article entitled *India's Energy Crisis*⁹.

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

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

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

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

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

Meanwhile, the consequences of global warming are being felt by the people of India. For example, last May, a heat wave killed over 1,400 people and melted asphalt streets.¹⁰

Have India's economic planners really thought about the long-term future? Have they considered the fact that drastic climate change could make India completely uninhabitable?

⁸<https://tradingeconomics.com/china/gdp-growth-annual>

⁹<http://www.technologyreview.com/featuredstory/542091/indias-energy-crisis/>

¹⁰<https://www.rt.com/news/262641-india-heat-wave-killed/>



Figure 6.9: Oil production on the shelf in the Russian Arctic.

Russia

According to Wikipedia, “The petroleum industry in Russia is one of the largest in the world. Russia has the largest reserves, and is the largest exporter, of natural gas. It has the second largest coal reserves, the eighth largest oil reserves, and is one of the largest producer of oil. It is the third largest energy user.”

One of the difficulties of reducing Russia’s fossil fuel production is that the Russian economy depends so heavily on its oil and gas industries. Many European countries also depend on natural gas from Russia for winter heating of homes and workplaces.

North America

Canadian oil sands

Canada’s oil-sands deposits contain an amount of carbon comparable to the world’s total reserves of conventional oil. Oil is currently being extracted by methods that release four times as much carbon into the atmosphere as is contained in the refined oil from the deposits. Nevertheless, the government of Canada wholeheartedly supports extraction of oil from the tar sands.

The position of the Canadian government has been strongly criticized by leading climate scientist Professor James Hansen. A recent article in *The Guardian*¹¹, reported him as saying; “To leave our children with a manageable situation, we need to leave the unconventional fuel in the ground. Canada’s ministers are acting as salesmen for those people

¹¹<https://www.theguardian.com/environment/2013/may/19/tar-sands-exploitation-climate-scientist>



Figure 6.10: **Get rich quick at the oil sands.**

who will gain from the profits of that industry. But I don't think they are looking after the rights and wellbeing of the population as a whole.

“The thing we are facing overall is that the fossil fuel industry has so much money that they are buying off governments. Our democracies are seriously handicapped by the money that is driving decisions in Washington and other capitals.”

Fracking in the United States

According to the US Department of Energy (DOE), in 2013 at least two million oil and gas wells in the US have been hydraulically fractured, and that of new wells being drilled, up to 95% are hydraulically fractured. The output from these wells makes up 43% of the oil production and 67% of the natural gas production in the United States.

Because of earthquakes and poisoning of water supplies caused by fracking, this practice has been banned by several states in the US, and nine countries or regions in Europe: France, Bulgaria, Roumania, Germany, The Czech Republic, Luxembourg, Northern Ireland, Spain and Switzerland,

Latin America

Venezuela's Belt of Tar

The Orinoco River Basin in Venezuela contains the world's largest deposit of extra-heavy oil and tar. The amount of carbon contained in this deposit is comparable to the carbon content of all the world's known reserves of conventional oil, and also larger than the carbon contained in Canada's oil sands.

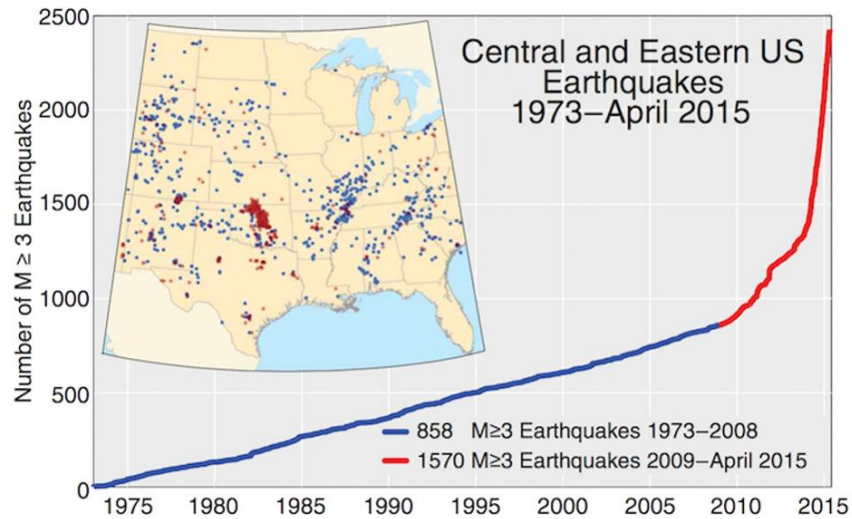


Figure 6.11: The sharply increased number of earthquakes in the United States has been linked to fracking. The use of fracking has also caused poisoning of water supplies.



Figure 6.12: Venezuela's Belt of Tar under the Orinoco River Basin is the world's largest deposit of extra-heavy oil and tar. Desire for control of Venezuela's huge oil reserves lies behind US interference in the internal politics of the country.

The Belt of Tar follows the line of the Orinoco river. It is approximately 600 kilometers (370 mi) from east to west, and 70 kilometers (43 mi) from north to south, with an area about 55,314 square kilometers (21,357 sq mi). The Orinoco deposit is estimated to contain 1.2 trillion barrels of extra-heavy oil.

The government of Venezuela has no plans for halting extraction from the Belt of Tar. On the contrary, detailed plans have been made for expanded exploitation of the deposit¹².

Extraction of oil in Brazil

According to a recent article in *The Guardian*¹³ “The discovery of tens of billions of barrels of oil in fields far off the coast of Rio de Janeiro was billed as one of the biggest finds of this century when it was announced in 2006.

“Many hoped it would deliver a bonanza for education and health and make Brazil one of world’s major economies.

“But with the country’s biggest energy company, Petrobras, mired in debt and scandal, the low price of oil and the dangers of a second Deepwater Horizon, the viability of this massive undertaking has never been under more scrutiny.”

The Brazilian offshore deposits are called “presalt oil”, since they lie under a thick layer of salt deposits.

According to the article in *The Guardian*, “Suggestions by climate campaigners that this reservoir of fossil fuel is a ‘carbon bomb’ that should be left in the ground, are dismissed as hypocrisy.”

The article quotes the geologist who discovered the off-shore fields as saying “The big countries of the world today developed without any concern for the environment. The base of US development was the oil in the Gulf of Mexico. The base of the UK’s industrial revolution was coal. How can they now say we can’t use our own pre-salt?”

The European Union

Coal in Germany and Poland

In 2016, Germany produced 176,100,000 tonnes of coal while Poland produced 131,100,000 tonnes. In the past, Poland experienced severe ecological effects from acid rain due to the burning of coal. Polish forests were destroyed by the effects of acid rain, and the facades of statues and buildings in Krakow and elsewhere were dissolved by the acid. Today the situation is improving, but the two countries are still heavily dependant on coal.

¹²<https://en.wikipedia.org/wiki/PDVSA>

¹³<https://www.theguardian.com/environment/ng-interactive/2015/jun/25/brazils-gamble-on-deep-water-oil-guanabara-bay>

North Sea oil

According to Wikipedia, “The British and Norwegian sections hold most of the remainder of the large oil reserves. It is estimated that the Norwegian section alone contains 54% of the sea’s oil reserves and 45% of its gas reserves- More than half of the North Sea oil reserves have been extracted, according to official sources in both Norway and the UK. For Norway, the Norwegian Petroleum Directorate [28] gives a figure of 4,601 million cubic meters of oil (corresponding to 29 billion barrels) for the Norwegian North Sea alone (excluding smaller reserves in Norwegian Sea and Barents Sea) of which 2,778 million cubic meters (60%) has already been produced prior to January 2007. UK sources give a range of estimates of reserves, but even using the most optimistic ‘maximum’ estimate of ultimate recovery, 76% had been recovered at end 2010.[citation needed] Note the UK figure includes fields which are not in the North Sea (onshore, West of Shetland).

6.11 Major producers of fossil fuels

The top 20 oil-producing nations in 2016

Wikipedia’s article entitles *List of countries by oil production* gives information shown in the table below. In the table. which is based on data from the International Energy Agency, production is measured in barrels of oil per day

1	Russia	10,551,497
2	Saudi Arabia	10,460,710
3	United States	8,875,817
4	Iraq	4,451,516
5	Iran	3,990,956
6	China	3,980,650
7	Canada	3,662,694
8	United Arab Emirates	3,106,077
9	Kuwait	2,923,825
10	Brazil	2,515,459
11	Venezuela	2,276,967
12	Mexico	2,186,877
13	Nigeria	1,999,885
14	Angola	1,769,615
15	Norway	1,647,975
16	Kazakhstan	1,595,199
17	Qatar	1,522,902
18	Algeria	1,348,361
19	Oman	1,006,841
20	United Kingdom	939,760

The top 10 coal producing nations in 2016

Wikipedia gives a similar list of coal producing nations. Only the top 10 are shown here, since these countries completely dominate global coal production. In the table, production is measured in millions of tonnes per year.

1	China	3411.0
2	India	692.4
3	United States	660.6
4	Australia	492.8
5	Indonesia	434.0
6	Russia	385.4
7	South Africa	251.3
8	Germany	176.1
9	Poland	131.1
10	Kazakhstan	102.4
	World	7,460.4

The world production of coal is falling. In 2014 it was 8,164.9 tonnes, in 2015, 7,861.1 tonnes, and in 2016 7,460.4 tonnes. Nevertheless, global production of coal remains worryingly high. If catastrophic climate change is to be avoided, it must stop altogether within one or two decades. At the moment the world is still producing roughly 1 tonne of coal per capita each year.

List of countries by natural gas production

Here is a similar table for natural gas. Production is measured in m³ per year. The final column indicates the date of the data.

1	United States	728,200,000,000	2014
2	Russia	578,700,000,000	2014
3	Iran	438,000,000,000	2017
4	Canada	143,100,000,000	2012
5	Qatar	133,200,000,000	2011
6	Norway	114,700,000,000	2012
7	China	107,200,000,000	2012
8	Saudi Arabia	103,200,000,000	2012
9	Algeria	82,760,000,000	2011
10	Netherlands	80,780,000,000	2012
	World	4,359,000,000,000	2010

6.12 Blood for oil

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.”

The resource curse

The way in which the industrialized countries maintain their control over less developed nations can be illustrated by the “resource curse”, i.e. the fact that resource-rich developing countries are no better off economically than those that lack resources, but are cursed with corrupt and undemocratic governments. This is because foreign corporations extracting local resources under unfair agreements exist in a symbiotic relationship with corrupt local officials.

One might think that taxation of foreign resource-extracting firms would provide developing countries with large incomes. However, there is at present no international law governing multinational tax arrangements. These are usually agreed to on a bilateral basis, and the industrialized countries have stronger bargaining powers in arranging the bilateral agreements.

6.13 Fossil fuel extraction must stop!

“Leave the oil in the soil! Leave the coal in the hole! Leave the gas under the grass!” That was message of protesters at the 2017 G20 meeting. But from the facts shown in this chapter, we can see that on the whole, fossil fuels are not being left in the ground, where they have to remain if an ecological disaster is to be avoided. On the contrary, the extraction of coal, oil and gas continues almost as though the climate emergency did

not exist. Most politicians, with their eyes focused on the present, seem blind to future dangers. They think primarily about the jobs and living standards of their constituents, and about the next election. Meanwhile, the future of human civilization is neglected and remains in peril.¹⁴

The fact that historically, the highly industrialized nations were primarily responsible for atmospheric CO₂ increases does not excuse the developing countries from their responsibility for saving the future. Today China's coal, India's coal, Venezuela's tar sands and Brazil's pre-salt oil are among the greatest threats, and in these countries as elsewhere, extraction must stop.

We have to wake up! Business as usual cannot continue!

6.14 Extinction events and feedback loops

Scientists warn that if the transition to renewable energy does not happen within very few decades, there is a danger that we will reach a tipping point beyond which feedback loops, such as the albedo effect and the methane hydrate feedback loop, will take over and produce an out-of-control and fatal increase in global temperature.

In 2012, the World Bank issued a report warning that without quick action to curb CO₂ emissions, global warming is likely to reach 4 °C during the 21st century. This is dangerously close to the temperature which initiated the Permian-Triassic extinction event: 6 °C above normal. During the Permian-Triassic extinction event, which occurred 252 million years ago, 96% of all marine species were wiped out, as well as 70% of all terrestrial vertebrates.¹⁵

¹⁴See <https://www.theguardian.com/commentisfree/2017/sep/18/enough-tiptoeing-around-lets-make-this-clear-coal-kills-people>

¹⁵<http://science.nationalgeographic.com/science/prehistoric-world/permian-extinction/>
<http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>

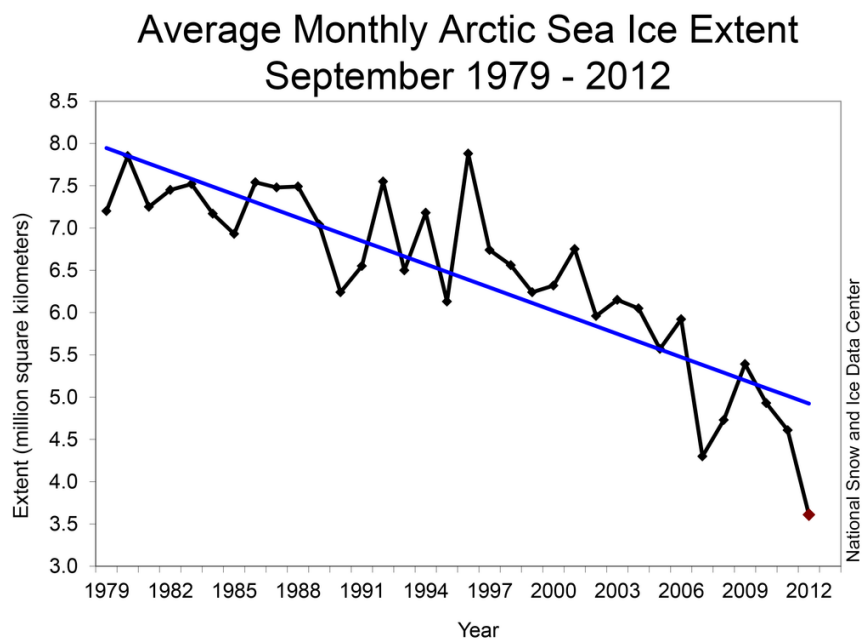


Figure 6.13: Monthly September ice extent for 1979 to 2012 shows a decline of **13.0%** per decade. One can also see that the straight line does not really fit the data, which more nearly resemble a downward curve will that reach zero in the period 2016-2019. Source: National Snow and Ice Data Center. Wikimedia Commons

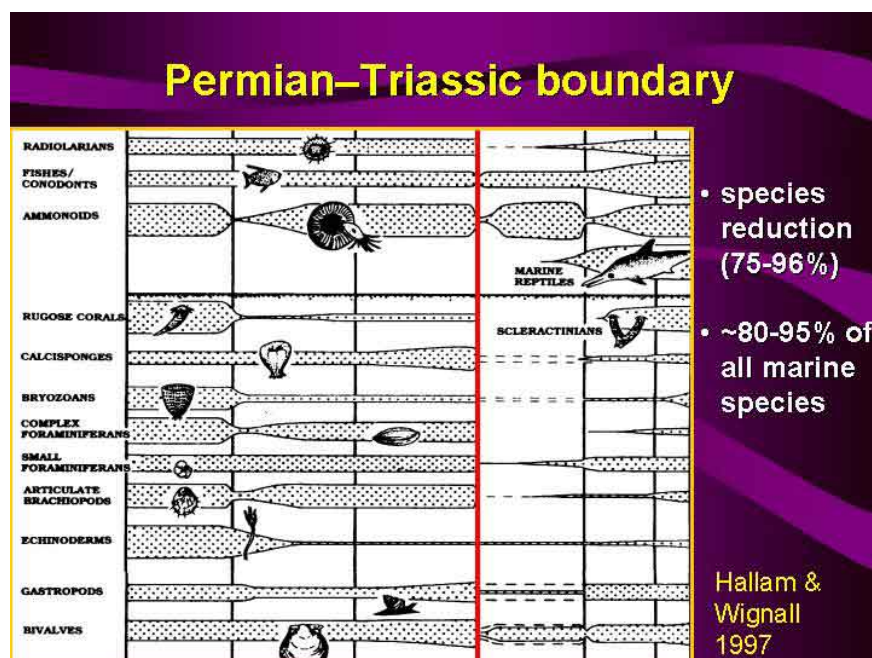


Figure 6.14: Loss of species caused by the Permian-Triassic extinction event. Unless quick steps are taken to lower our greenhouse gas emissions, we may cause a similar extinction event, which will threaten the survival of our own species. Source: Australian Frontiers of Science, www.sciencearchive.org.au

6.15 A warning from the World Bank

In 2012, the World Bank issued a report warning that without quick action to curb CO₂ emissions, global warming is likely to reach 4 °C during the 21st century. This is dangerously close to the temperature which initiated the Permian-Triassic extinction event: 6 °C above normal. During the Permian-Triassic extinction event, which occurred 252 million years ago, 96% of all marine species were wiped out, as well as 70% of all terrestrial vertebrates.¹⁶

The 4°C scenarios are devastating: the inundation of coastal cities; increasing risks for food production potentially leading to higher malnutrition rates; many dry regions becoming dryer, wet regions wetter; unprecedented heat waves in many regions, especially in the tropics; substantially exacerbated water scarcity in many regions; increased frequency of high-intensity tropical cyclones; and irreversible loss of biodiversity, including coral reef systems.

And most importantly, a 4°C world is so different from the current one that it comes with high uncertainty and new risks that threaten our ability to anticipate and plan for future adaptation needs. The lack of action on climate change not only risks putting prosperity out of reach of millions of people in the developing world, it threatens to roll back decades of sustainable development. It is clear that we already know a great deal about the threat before us. The science is unequivocal that humans are the cause of global warming, and major changes are already being observed: global mean warming is 0.8°C above pre industrial levels; oceans have warmed by 0.09°C since the 1950s and are acidifying; sea levels rose by about 20 cm since pre-industrial times and are now rising at 3.2 cm per decade; an exceptional number of extreme heat waves occurred in the last decade; major food crop growing areas are increasingly affected by drought.

Despite the global community's best intentions to keep global warming below a 2°C increase above pre-industrial climate, higher levels of warming are increasingly likely. Scientists agree that countries' current United Nations Framework Convention on Climate Change emission pledges and commitments would most likely result in 3.5 to 4°C warming. And the longer those pledges remain unmet, the more likely a 4°C world becomes.

Data and evidence drive the work of the World Bank Group. Science reports, including those produced by the Intergovernmental Panel on Climate Change, informed our decision to ramp up work on these issues, leading to, a World Development Report on climate change designed to improve our understanding of the implications of a warming planet; a Strategic Framework on Development and Climate Change, and a report on Inclusive Green Growth. The World Bank is a leading advocate for ambitious action on climate change, not only because it is a moral imperative, but because it makes good economic sense.

But what if we fail to ramp up efforts on mitigation? What are the implications of a 4°C world? We commissioned this report from the Potsdam Institute for Climate Impact

¹⁶<http://science.nationalgeographic.com/science/prehistoric-world/permian-extinction/>
<http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>

Research and Climate Analytics to help us understand the state of the science and the potential impact on development in such a world.

It would be so dramatically different from today's world that it is hard to describe accurately; much relies on complex projections and interpretations. We are well aware of the uncertainty that surrounds these scenarios and we know that different scholars and studies sometimes disagree on the degree of risk. But the fact that such scenarios cannot be discarded is sufficient to justify strengthening current climate change policies. Finding ways to avoid that scenario is vital for the health and welfare of communities around the world. While every region of the world will be affected, the poor and most vulnerable would be hit hardest. A 4°C world can, and must, be avoided.

The World Bank Group will continue to be a strong advocate for international and regional agreements and increasing climate financing. We will redouble our efforts to support fast growing national initiatives to mitigate carbon emissions and build adaptive capacity as well as support inclusive green growth and climate smart development. Our work on inclusive green growth has shown that, through more efficiency and smarter use of energy and natural resources, many opportunities exist to drastically reduce the climate impact of development, without slowing down poverty alleviation and economic growth.

This report is a stark reminder that climate change affects everything. The solutions don't lie only in climate finance or climate projects. The solutions lie in effective risk management and ensuring all our work, all our thinking, is designed with the threat of a 4°C degree world in mind. The World Bank Group will step up to the challenge.

6.16 Permian-Triassic extinction event

The geological record shows five major extinction events.

- Ordovician-Silurian Extinction. around 439 million years ago.
- Late Devonian Extinction. 375-360 million years ago.
- Permian-Triassic extinction. 352 million years ago.
- Triassic-Jurassic extinction, 201 million years ago.
- Cretaceous-Paleogene extinction, 66 million years ago.

The most devastating of these was the Permian-Triassic extinction, which occurred 252 million years ago.¹⁷ In the Permian-Triassic extinction, 96% of all marine species and 76% of all terrestrial vertebrates disappeared forever. The cause of this extremely severe

¹⁷ <https://www.thomhartmann.com/bigpicture/last-hours-climate-change>
The Last Hours of Humanity: Warming the World To Extinction (book), by Thom Hartmann
<https://www.amazon.com/Last-Hours-Humanity-Warming-Extinction/dp/1629213640>
<http://www.mediaite.com/online/leonardo-dicaprio-boosts-thom-hartmann-apocalyptic-global-warming-film-last-hours/>

event is disputed, but according to one of the most plausible theories it was triggered by a massive volcanic eruption in Siberia, which released enormous amounts of CO₂ into the earth's atmosphere.

The region where massive volcanic eruptions are known to have occurred 252 million years ago called the "Siberian Traps". (The "Traps" part of the name comes from the fact that many of the volcanic rock formations in the region resemble staircases. The Swedish word for staircase is "trapped".) The eruptions continued for about a million years.

Today the area covered is about 2 million square kilometers, roughly equal to western Europe in land area. Estimates of the original coverage are as high as 7 million square kilometers. The original volume of lava is estimated to range from 1 to 4 million cubic kilometers.

The CO₂ released by the Siberian Traps eruption is believed to have caused a global temperature increase of 6°C, and this was enough to trigger the methane-hydrate feedback loop, which will be discussed below, The earth's temperature is thought to have continued to rise for 85,000 years, finally reaching 15° above normal.

6.17 The Holocene (Anthropocene) extinction

We are now living in the midst of a sixth, human-caused, mass extinction. How severe it becomes is up to us.

Recently a group of scientists stated that the scope of human impact on planet Earth is so great that the *Anthropocene* warrants a formal place in the Geological Time Scale.

In a statement issued by University of Leicester Press Office on 2 October 2017, professor Jan Zalasiewicz from the University of Leicester's School of Geography, Geology, and the Environment said: "Our findings suggest that the Anthropocene should follow on from the Holocene Epoch that has seen 11.7 thousand years of relative environmental stability, since the retreat of the last Ice Age, as we enter a more unstable and rapidly evolving phase of our planet's history,"¹⁸

"We conclude that human impact has now grown to the point that it has changed the course of Earth history by at least many millennia, in terms of the anticipated long-term climate effects (e.g. postponement of the next glacial maximum: see Ganopolski et al., 2016; Clark et al., 2016), and in terms of the extensive and ongoing transformation of the biota, including a geologically unprecedented phase of human-mediated species invasions, and by species extinctions which are accelerating (Williams et al., 2015, 2016)."

The report stated that defining characteristics of the period include "marked acceleration of rates of erosion and sedimentation; large-scale chemical perturbations to the cycles of carbon, nitrogen, phosphorus and other elements; the inception of significant change in global climate and sea level; and biotic changes including unprecedented levels of species invasions across the Earth. Many of these changes are geologically long-lasting, and some are effectively irreversible."

¹⁸<http://www2.le.ac.uk/offices/press/press-releases/2017/october/significant-scale-of-human-impact-on-planet-has-changed-course-of-earth2019s-history-scientists-suggest>

Loss of biodiversity

Tropical rain forests are the most biologically diverse places in the world. This is because they have not been affected by the periods of glaciation that have periodically destroyed the forests of temperate and boreal regions. The destruction of species-rich tropical rain forests is one of the mechanisms driving the present high rate of species loss.

According to a recent article published in *The Guardian*¹⁹ “Conservation experts have already signalled that the world is in the grip of the ”sixth great extinction” of species, driven by the destruction of natural habitats, hunting, the spread of alien predators and disease, and climate change.

“The IUCN²⁰ created shock waves with its major assessment of the world’s biodiversity in 2004, which calculated that the rate of extinction had reached 100-1,000 times that suggested by the fossil records before humans.

“No formal calculations have been published since, but conservationists agree the rate of loss has increased since then, and Stuart said it was possible that the dramatic predictions of experts like the renowned Harvard biologist E O Wilson, that the rate of loss could reach 10,000 times the background rate in two decades, could be correct.”

A recent article by Profs. Gerardo Ceballos, Paul R. Ehrlich and Rodolfo Dirzo in the *Proceedings of the National Academy of Sciences* was entitled “Biological Annihilation via the Ongoing Sixth Mass Extinction Signaled by Vertebrate Population Losses and Declines”.

The Abstract of the paper reads as follows: “The population extinction pulse we describe here shows, from a quantitative viewpoint, that Earth’s sixth mass extinction is more severe than perceived when looking exclusively at species extinctions. Therefore, humanity needs to address anthropogenic population extirpation and decimation immediately. That conclusion is based on analyses of the numbers and degrees of range contraction (indicative of population shrinkage and/or population extinctions according to the International Union for Conservation of Nature) using a sample of 27,600 vertebrate species, and on a more detailed analysis documenting the population extinctions between 1900 and 2015 in 177 mammal species. We find that the rate of population loss in terrestrial vertebrates is extremely high, even in ‘species of low concern.’ In our sample, comprising nearly half of known vertebrate species, 32% (8,851/27,600) are decreasing; that is, they have decreased in population size and range. In the 177 mammals for which we have detailed data, all have lost 30% or more of their geographic ranges and more than 40% of the species have experienced severe population declines (>80% range shrinkage). Our data indicate that beyond global species extinctions Earth is experiencing a huge episode of population declines and extirpations, which will have negative cascading consequences on ecosystem functioning and services vital to sustaining civilization. We describe this as a ‘biological annihilation’ to highlight the current magnitude of Earth’s ongoing sixth major extinction event.”

¹⁹<https://www.theguardian.com/environment/2010/mar/07/extinction-species-evolve>

²⁰International Union for the Conservation of Nature

6.18 Global warming and atmospheric water vapor

A feedback loop is a self-re-enforcing trend. One of the main positive feedback loops in global warming is the tendency of warming to increase the atmospheric saturation pressure for water vapor, and hence amount of water vapor in the atmosphere, which in turn leads to further warming, since water vapor is a greenhouse gas.

Wikipedia's article on greenhouse gases states that, "Water vapor accounts for the largest percentage of the greenhouse effect, between 36% and 66% for clear sky conditions and between 66% and 85% when including clouds."

6.19 The albedo effect

Albedo is defined to be the fraction of solar energy (shortwave radiation) reflected from the Earth back into space. It is a measure of the reflectivity of the earth's surface. Ice, especially with snow on top of it, has a high albedo: most sunlight hitting the surface bounces back towards space.

Loss of sea ice

Especially in the Arctic and Antarctic regions, there exists a dangerous feedback loop involving the albedo of ice and snow. As is shown in Figure 4.1, Arctic sea ice is rapidly disappearing. It is predicted that during the summers, the ice covering arctic seas may disappear entirely during the summers. As a consequence, incoming sunlight will encounter dark light-absorbing water surfaces rather than light-reflecting ice and snow.

This effect is self-re-enforcing. In other words, it is a feedback loop. The rising temperatures caused by the absorption of more solar radiation cause the melting of more ice, and hence even more absorption of radiation rather than reflection, still higher temperatures, more melting, and so on.

The feedback loop is further strengthened by the fact that water vapor acts like a greenhouse gas. As polar oceans become exposed, more water vapor enters the atmosphere, where it contributes to the greenhouse effect and rising temperatures.

Darkened snow on Greenland's icecap

Greenland's icecap is melting, and as it melts, the surface becomes darker and less reflective because particles of soot previously trapped in the snow and ice become exposed. This darkened surface absorbs an increased amount of solar radiation, and the result is accelerated melting.

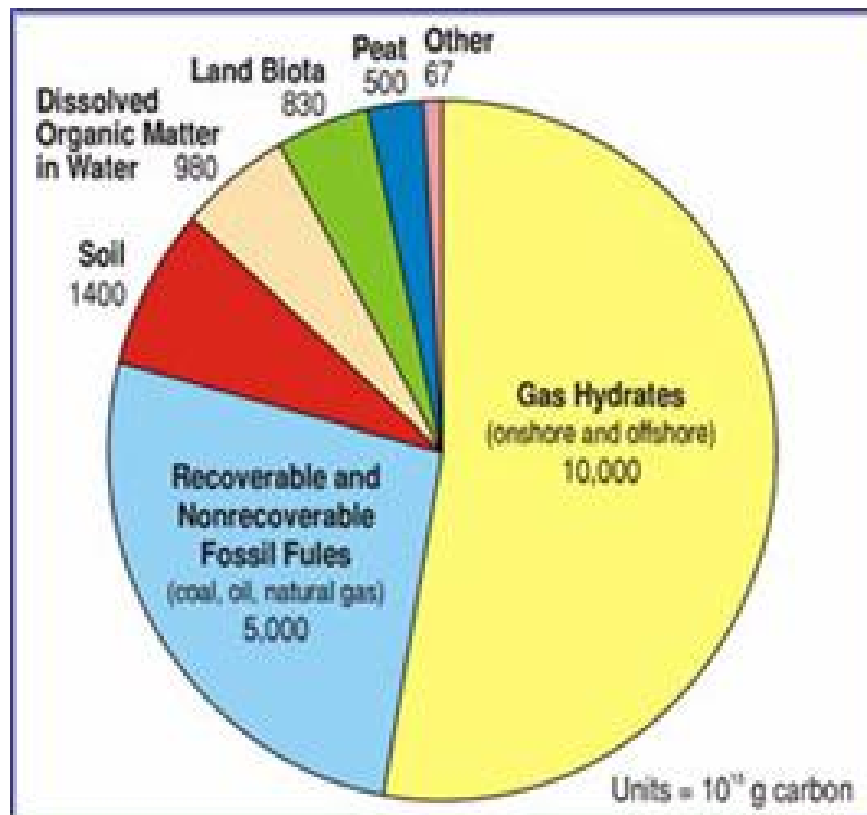


Figure 6.15: The worrying thing about the methane/hydrate feedback loop is the enormous amount of carbon in the form of hydrate crystals, 10,000 gigatons most of it on the continental shelves of oceans. This greater than the amount of carbon in all other forms that might potentially enter the earth's atmosphere.



Figure 6.16: When ocean temperatures rise, methane hydrate crystals become unstable, and methane gas bubbles up to ocean surfaces.

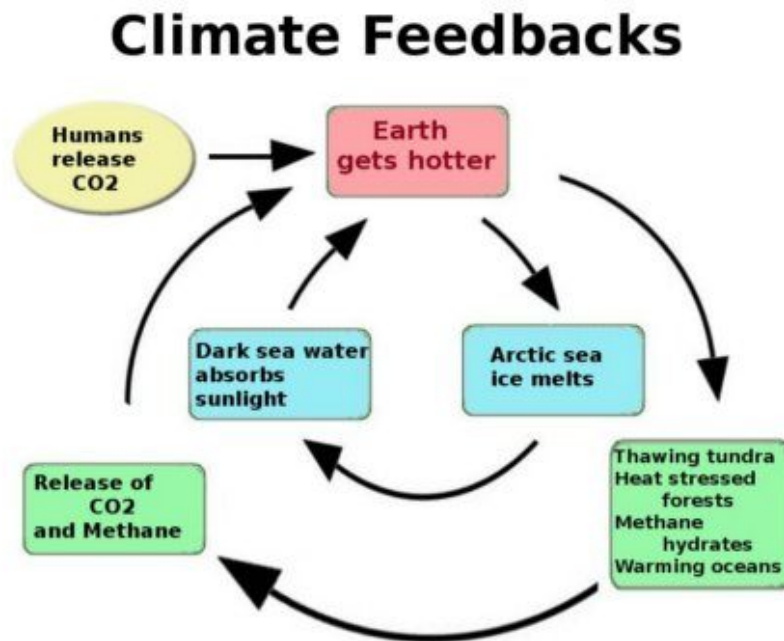


Figure 6.17: This diagram shows two important feedback loops, one involving the albedo effect, and the other involving methane hydrates.

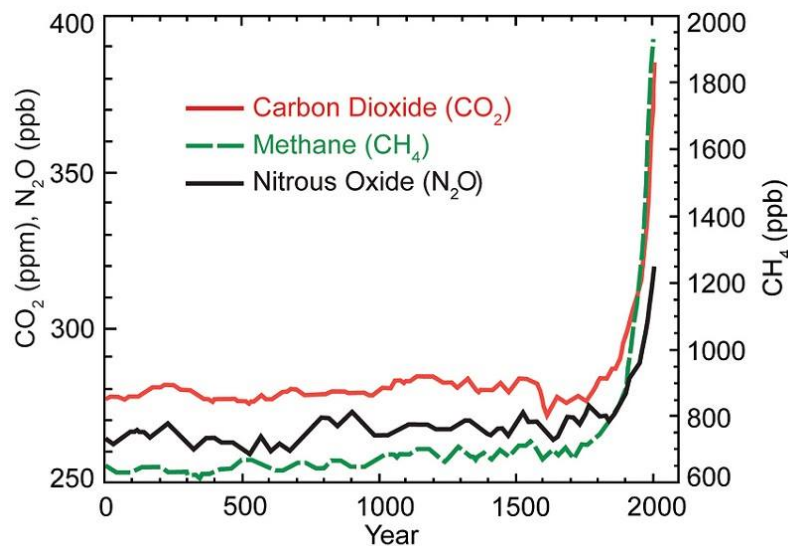


Figure 6.18: A “hockey stick” graph showing atmospheric concentrations of three important greenhouse gases during the last 2,000 years. The most dramatically increasing of these is methane.

6.20 The methane hydrate feedback loop

If we look at the distant future, by far the most dangerous feedback loop involves methane hydrates or methane clathrates. When organic matter is carried into the oceans by rivers, it decays to form methane. The methane then combines with water to form hydrate crystals, which are stable at the temperatures and pressures which currently exist on ocean floors. However, if the temperature rises, the crystals become unstable, and methane gas bubbles up to the surface. Methane is a greenhouse gas which is 70 times as potent as CO_2 .

The worrying thing about the methane hydrate deposits on ocean floors is the enormous amount of carbon involved: roughly 10,000 gigatons. To put this huge amount into perspective, we can remember that the total amount of carbon in world CO_2 emissions since 1751 has only been 337 gigatons.

A runaway, exponentially increasing, feedback loop involving methane hydrates could lead to one of the great geological extinction events that have periodically wiped out most of the animals and plants then living. This must be avoided at all costs.

6.21 A feedback loop from warming of soils

On October 6, 2017, the journal *Science* published an article entitled *Long-term pattern and magnitude of soil carbon feedback to the climate system in a warming world*²¹. The

²¹J.M. Melillo et al., *Long-term pattern and magnitude of soil carbon feedback to the climate system in a warming world*, *Science*, Vol. 358, pp. 101-105, (2017).

lead author, Jerry Melillo, is an ecologist working at the Marine Biological Laboratory, Woods Hole Massachusetts. In an interview with *Newsweek*, he said: “This self-reinforcing feedback is potentially a global phenomenon with soils, and once it starts it may be very difficult to turn off. It’s that part of the problem that I think is sobering... We think that one of the things that may be happening is both a reorganization of the microbial community structure and its functional capacity,”

The study reported on three decades of observations of heated sections of a forest owned by Harvard University. The heated sections were 5°C warmer than control sections.

6.22 Drying of forests and forest fires

According to a recent article in *Nature*²², “Across the American west, the area burned each year has increased significantly over the past several decades, a trend that scientists attribute both to warming and drying and to a century of wildfire suppression and other human activities. Allen suggests that the intertwined forces of fire and climate change will take ecosystems into new territory, not only in the American west but also elsewhere around the world. In the Jemez, for example, it could transform much of the ponderosa pine (*Pinus ponderosa*) forest into shrub land. ‘We’re losing forests as we’ve known them for a very long time,’ says Allen. ‘We’re on a different trajectory, and we’re not yet sure where we’re going.’

“All around the American west, scientists are seeing signs that fire and climate change are combining to create a ‘new normal’. Ten years after Colorado’s largest recorded fire burned 56,000 hectares southwest of Denver, the forest still has not rebounded in a 20,000-hectare patch in the middle, which was devastated by an intense crown fire. Only a few thousand hectares, which the US Forest Service replanted, look anything like the ponderosa-pine stands that previously dominated the landscape.”

6.23 Tipping points and feedback loops

A tipping point is usually defined as the threshold for an abrupt and irreversible change²³. To illustrate this idea, we can think of a book lying on a table. If we gradually push the book towards the edge of the table, we will finally reach a point after which more than half of the weight of the book will not be supported by the table. When this “tipping point” is passed the situation will suddenly become unstable, and the book will fall to the floor. Analogously, as the earth’s climate gradually changes, we may reach tipping points. If we pass these points, sudden instabilities and abrupt climatic changes will occur.

Greenland ice cores supply a record of temperatures in the past, and through geological evidence we have evidence of sea levels in past epochs. These historical records show that

²²<http://www.nature.com/news/forest-fires-burn-out-1.11424>

²³Other definitions of tipping points are possible. A few authors define these as points beyond which change is inevitable, emphasizing that while inevitable, the change may be slow.

abrupt climatic changes have occurred in the past.

Timothy Michael Lenton, FRS, Professor of Climate Change and Earth System Science at the University of Exeter, lists the following examples of climatic tipping points:

- Boreal forest dieback
- Amazon rainforest dieback
- Loss of Arctic and Antarctic sea ice (Polar ice packs) and melting of Greenland and Antarctic ice sheets
- Disruption to Indian and West African monsoon
- Formation of Atlantic deep water near the Arctic ocean, which is a component process of the thermohaline circulation.
- Loss of permafrost, leading to potential Arctic methane release and clathrate gun effect

It can be seen from this list that climate tipping points are associated with feedback loops. For example, the boreal forest dieback and the Amazon rainforest dieback tipping points are associated with the feedback loop involving the drying of forests and forest fires, while the tipping point involving loss of Arctic and Antarctic sea ice is associated with the Albedo effect feedback loop. The tipping point involving loss of permafrost is associated with the methane hydrate feedback loop.

Once a positive feedback loop starts to operate in earnest, change may be abrupt.

6.24 Greta Thunberg's TED talk

While political leaders and the older generation have been slow to react to the climate crisis, young people, whose future is at stake, are wide awake and are warning the world that action must be taken immediately if disaster is to be avoided. Massive global demonstrations have been initiated by the teenage activist, Greta Thunberg, who has succeeded where others have failed by speaking with extraordinary clarity, honesty and forcefulness.

Greta was born in Sweden in 2003. Her father, Svante Thunberg, is related to Svante Arrhenius, one of the important pioneers of climate science, and is named after him. Greta's mother was a successful opera singer. Greta Thunberg's strong belief in the urgency of action to prevent catastrophic climate change converted her parents, so that they made changes in their lives. For example, Greta's mother gave up her career as an opera singer because it involved air travel.

In November, 2018, Greta Thunberg gave an impressively clear TEDx talk in Stockholm, the video of which was recently released.²⁴ Here is a transcript of the talk.

²⁴<https://www.dailykos.com/stories/2018/12/16/1819508/-A-Call-to-Action-on-Climate-Change-by-15-year-Old-Greta-Thunberg>

When I was about 8 years old, I first heard about something called 'climate change' or 'global warming'. Apparently, that was something humans had created by our way of living. I was told to turn off the lights to save energy and to recycle paper to save resources. I remember thinking that it was very strange that humans, who are an animal species among others, could be capable of changing the Earth's climate. Because, if we were, and if it was really happening, we wouldn't be talking about anything else. As soon as you turn on the TV, everything would be about that. Headlines, radio, newspapers: You would never read or hear about anything else. As if there was a world war going on, but no one ever talked about it. If burning fossil fuels was so bad that it threatened our very existence, how could we just continue like before? Why were there no restrictions? Why wasn't it made illegal?

To me, that did not add up. It was too unreal.

So, when I was 11, I became ill, I fell into depression, I stopped talking, and I stopped eating. In two months, I lost about 10 kilos of weight. Later on, I was diagnosed with Asperger's syndrome, OCD and selective mutism. This basically means, I only speak, when I think it is necessary.

Now is one of those moments.

For those of us, who are on the spectrum, almost everything is black or white. We aren't very good at lying and we usually don't enjoy participating in the social games that the rest of you seem so fond of. I think, in many ways, that we autistic are the normal ones and the rest of the people are pretty strange. Especially when it comes to the sustainability crisis: Where everyone keeps saying that climate change is an existential threat and the most important issue of all. And yet, they just carry on like before.

I don't understand that. Because if the emissions have to stop, then we must stop the emissions. To me, that is black or white. There are no gray areas when it comes to survival. Either we go on as a civilization or we don't.

We have to change.

Rich countries like Sweden need to start reducing emissions by at least 15% every year. And that is so that we can stay below a 2 degrees warming target. Yet, as the IPCC has recently demonstrated, aiming instead for 1.5 degrees Celsius would significantly reduce the climate impacts. But we can only imagine what that means for reducing emissions.

You would think the media and every one of our leaders would be talking about nothing else. But they never even mention it.

Nor does anyone ever mentioned the greenhouse gases already locked in the system. Nor that air pollution is hiding some warming; so that, when we stop burning fossil fuels, we already have an extra level of warming - perhaps as high as 0.5 to 1.1 degrees Celsius.

Furthermore, does hardly anyone speak about the fact that we are in the midst of the sixth mass extinction: With up to 200 species going extinct every single day. That the extinction rate is today between 1000 and 10,000 times

higher than what is seen as normal.

Nor does hardly anyone ever speak about the aspect of equity or climate justice, clearly stated everywhere in the Paris agreement, which is absolutely necessary to make it work on a global scale. That means that rich countries need to get down to zero emissions within 6 to 12 years with today's emission speed. And that is so that people in poorer countries can have a chance to heighten their standard of living by building some of the infrastructures that we have already built, such as roads, schools, hospitals, clean drinking water, electricity, and so on. Because, how can we expect countries like India or Nigeria to care about the climate crisis if we, who already have everything, don't care even a second about it or our actual commitments to the Paris agreement?

So why are we not reducing our emissions? Why are they in fact still increasing? Are we knowingly causing a mass extinction? Are we evil?

No, of course, not. People keep doing what they do because the vast majority doesn't have a clue about the actual consequences for their everyday life. And they don't know that rapid change is required.

We all think we know and we all think everybody knows. But we don't.

Because, how could we? If there really was a crisis, and if this crisis was caused by our emissions, you would at least see some signs. Not just flooded cities. Tens of thousands of dead people and whole nations leveled to piles of torn down buildings. You would see some restrictions.

But no. And no one talks about it. There are no emergency meetings, no headlines, no breaking news. No one is acting as if we were in a crisis.

Even most climate scientists or green politicians keep on flying around the world, eating meat and dairy.

If I live to be 100, I will be alive in the year 2103. When you think about the future today, you don't think beyond the year 2050. By then I will, in the best case, not even have lived half of my life. What happens next? In the year 2078, I will celebrate my 75th birthday. If I have children or grandchildren, maybe they will spend that day with me. Maybe they will ask me about you, the people who were around back in 2018. Maybe they will ask why you didn't do anything while there still was time to act. What we do or don't do right now, will affect my entire life and the lives of my children and grandchildren. What we do or don't do right now, me and my generation can't undo in the future.

So, when school started in August of this year, I decided that this was enough. I set myself down on the ground outside the Swedish parliament. I school-striking for the climate.

Some people say that I should be in school instead. Some people say that I should study, to become a climate scientist so that I can solve the climate crisis.

But the climate crisis has already been solved. We already have all the facts

and solutions. All we have to do is to wake up and change.

And why should I be studying for a future that soon will be no more, when no one is doing anything whatsoever to save that future? And what is the point of learning facts in the school system, when the most important facts given by the finest science of that same school system clearly means nothing to our politicians and our society?

Some people say that Sweden is just a small country and that it doesn't matter what we do. But I think that if a few children can get headlines all over the world just by not coming to school for a few weeks, imagine what we could all do together if we wanted to?

Now we're almost at the end of my talk and this is where people usually people usually start talking about hope. Solar panels, wind power, circular economy, and so on. But I'm not going to do that. We've had 30 years of pep talking and selling positive ideas. And I'm sorry but it doesn't work because if it would have, the emissions would have gone down by now. They haven't.

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.

Today we use 100 million barrels of oil every single day. There are no politics to change that. There are no rules to keep that oil in the ground. So, we can't save the world by playing by the rules, because the rules have to be changed.

Everything needs to change and it has to start today.

Thank you.

6.25 Only immediate climate action can save the future

Immediate action to halt the extraction of fossil fuels and greatly reduce the emission of CO₂ 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.

Swedish student Greta Thunberg, is a 16-year-old who has launched a climate protest

movement in her country. She said, in a short but very clear speech after that of UN leader Antonio Guterres: “Some people say that I should be in school instead. Some people say that I should study to become a climate scientist so that I can ‘solve the climate crisis’. But the climate crisis has already been solved. We already have all the facts and solutions.”

She added: “Why should I be studying for a future that soon may be no more, when no one is doing anything to save that future? And what is the point of learning facts when the most important facts clearly mean nothing to our society?”

Thunberg continued: “Today we use 100 million barrels of oil every single day. There are no politics to change that. There are no rules to keep that oil in the ground. So we can’t save the world by playing by the rules. Because the rules have to be changed.”

She concluded by saying that “since our leaders are behaving like children, we will have to take the responsibility they should have taken long ago.”

Appearing among billionaires, corporate CEO’s and heads of state at the Davos Economic Forum in Switzerland, like a new Joan of Arc, 16-year-old Swedish climate activist Greta Thunberg called on decision-makers to fulfil their responsibilities towards future generations. Here are some excerpts from her speech:

Greta’s speech at Davos

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.





Figure 6.19: Greta Thunberg on the cover of Time Magazine, The Intergovernmental Panel on Climate Change, in their October 2018 report, used strong enough language to wake up at least part of the public: the children whose future is at stake. Here is an excerpt from a speech which 16-year-old Swedish climate activist Greta Thunberg made at the Davos Economic Forum in January, 2019: “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%...”

6.26 Worldwide school strike, 15 March, 2019

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. Nevertheless it went almost unmentioned in the media,

Here are some of the statements by the students explaining why they took part in the strikes:

In India, no one talks about climate change. You don't see it on the news or in the papers or hear about it from government. We want global leaders to declare a climate emergency. If we don't act today, then we will have no tomorrow. - Vidit Baya, 17, Udaipur, India.

We face heartbreaking loss due to increasingly extreme weather events. We urge the Taiwanese government to implement mitigation measures and face up to the vulnerability of indigenous people, halt construction projects in the indigenous traditional realm, and recognize the legal status of Plains Indigenous People, in order to implement environmental protection as a bottom-up approach - Kaisanan Ahuan, Puli City, Taiwan.

We have reached a point in history when we have the technical capacities to solve poverty, malnutrition, inequality and of course global warming. The deciding factors for whether we take advantage of our potential will be our activism, our international unity and our ability to develop the art of making the impossible possible. Whether we succeed or not depends on our political will - Eyal Weintraub, 18, and Bruno Rodriguez, 18, Argentina.

The damage done by multinationals is enormous: the lack of transparency, dubious contracts, the weakening of the soil, the destruction of flora and fauna, the lack of respect for mining codes, the contamination of groundwater. In Mali, the state exercises insufficient control over the practices of the multinationals, and it is us, the citizens, who suffer the consequences. The climate alarm has sounded, and the time has come for us all to realize that there is still time to act locally, in our homes, our villages, our cities - Mone Fousseny, 22, Mali.

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²⁵<https://www.theguardian.com/environment/2019/apr/03/parents-around-the-world-mobilise-behind-youth-climate-strikes>





Figure 6.20: Eve White and her children join climate protesters in Tasmania. According to an article in *The Guardian*, parents and grandparents around the world are mobilizing in support of the youth climate movement that has swept the globe.

Concerns of young protesters are justified

In an article in the journal *Science* dated 12 April, 2019,²⁶ 20 prominent climate scientists stated that the concerns of student protesters around the world are fully justified. Here are some quotations from the article:

The world's youth have begun to persistently demonstrate for the protection of the climate and other foundations of human well-being. As scientists and scholars who have recently initiated similar letters of support in our countries, we call for our colleagues across all disciplines and from the entire world to support these young climate protesters. We declare: Their concerns are justified and supported by the best available science. The current measures for protecting the climate and biosphere are deeply inadequate.

Nearly every country has signed and ratified the Paris Agreement of 2015, committing under international law to hold global warming well below 2°C above preindustrial levels and to pursue efforts to limit the temperature increase to 1.5°C. The scientific community has clearly concluded that a global warming of 2°C instead of 1.5°C would substantially increase climate-related impacts and the risk of some becoming irreversible. Moreover, given the uneven distribution of most impacts, 2°C of warming would further exacerbate existing global inequalities.

It is critical to immediately begin a rapid reduction in CO₂ and other greenhouse gas emissions. The degree of climate crisis that humanity will experience in the future will be determined by our cumulative emissions; rapid reduction now will limit the damage. For example, the Intergovernmental Panel on Climate Change (IPCC) has recently assessed that halving CO₂ emissions by 2030 (relative to 2010 levels) and globally achieving net-zero CO₂ emissions by 2050 (as well as strong reductions in other greenhouse gases) would allow a 50% chance of staying below 1.5°C of warming. Considering that industrialized countries produced more of and benefited more from previous emissions, they have an ethical responsibility to achieve this transition more quickly than the world as a whole.

Many social, technological, and nature-based solutions already exist. The young protesters rightfully demand that these solutions be used to achieve a sustainable society. Without bold and focused action, their future is in critical danger. There is no time to wait until they are in power...

The enormous grassroots mobilization of the youth climate movement - including Fridays for Future, School (or Youth) Strike 4 Climate, Youth for (or 4) Climate, and Youth Climate Strike - shows that young people understand the situation. We approve and support their demand for rapid and forceful action. We see it as our social, ethical, and scholarly responsibility to state in no uncertain terms: Only if humanity acts quickly and resolutely can we limit

²⁶<https://science.sciencemag.org/content/364/6436/139.2>



global warming, halt the ongoing mass extinction of animal and plant species, and preserve the natural basis for the food supply and well-being of present and future generations. This is what the young people want to achieve. They deserve our respect and full support.



Figure 6.21: Greta Thunberg addressing a meeting of the European Parliament in April, 2019. She complained that Brexit was treated as an emergency by the European Union, but climate change, which is a far greater emergency has been almost neglected. The 16-year-old, who is due to meet the Pope on Wednesday, said, “We face an end to civilization as we know it unless permanent changes take place in our society...European elections are coming soon and many like me who are affected most by this crisis, are not allowed to vote. That is why millions of children are taking to the street to draw attention to the climate crisis... It is not too late to act but it will take far-reaching vision and fierce determination... My plea is: Please wake up and do the seemingly impossible.”

6.27 The World Meteorological Organization's report

According to a recent United Nations report, extreme weather events displaced 2 million people during 2018. While no single event can be unambiguously attributed to anthropogenic climate change, scientists believe the the increasing frequency of extreme weather events is definitely linked to global warming. The same is true of their increasing severity.

The report states that during 2018, extreme weather events impacted roughly 62 million people, of whom 2 million were displaced from their homes. In the words of the WMO report, "The physical signs and socio-economic impacts of climate change are accelerating, as record greenhouse gas concentrations drive global temperatures towards increasingly dangerous levels."

UN Secretary General Antonio Guterres, speaking at the launching of the WMO report, used the occasion to remind global leaders of the urgency of the climate emergency. Guterres has convened a climate summit meeting scheduled for September 23, 2019, and referring to the meeting, he said: "Don't come with a speech, come with a plan. This is what science says is needed. It is what young people around the globe are rightfully demanding." Two weeks previously, on March 15, one and a half million students from more than 130 countries had skipped school to participate in the largest climate demonstration in history, demanding action to save the future from the threat of catastrophic climate change.

6.28 Only 12 years left to limit climate change catastrophe

The world's leading scientists met at the Forty-Eighth Session of the IPCC and First Joint Session of Working Groups I, II, and III, 1-5 October 2018 in Incheon, Republic of Korea and openly declared that civilization is on track for collapse because of reckless use of fossil fuels, unless immediate action is taken to drastically cut the extraction and use of fossil fuels.

The report finds that limiting global warming to 1.5°C would require "rapid and far-reaching" transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050.

"It's a line in the sand and what it says to our species is that this is the moment and we must act now," said Debra Roberts, a co-chair of the working group on impacts. "This is the largest clarion bell from the science community and I hope it mobilizes people and dents the mood of complacency."

"We have presented governments with pretty hard choices. We have pointed out the enormous benefits of keeping to 1.5C, and also the unprecedented shift in energy systems and transport that would be needed to achieve that," said Jim Skea, a co-chair of the working group on mitigation. "We show it can be done within laws of physics and chemistry.



Figure 6.22: A firefighter battles fire in California. The world is currently 1 degree Centigrade warmer than preindustrial levels.

Then the final tick box is political will. We cannot answer that. Only our audience can - and that is the governments that receive it.”

Bob Ward, of the Grantham Research Institute on Climate Change, said the final document was “incredibly conservative” because it did not mention the likely rise in climate-driven refugees or the danger of tipping points that could push the world on to an irreversible path of extreme warming.

Policymakers commissioned the report at the Paris climate talks in 2016, but since then the gap between science and politics has widened. Donald Trump has promised to withdraw the US - the world’s biggest source of historical emissions - from the accord. Brazil’s president, Jair Bolsonaro, threatens to do the same and also open the Amazon rainforest to agribusiness.

6.29 COP24, the climate summit in Poland

The UN Secretary General’s address to the opening session

Welcome to COP 24.

I thank President Duda, Minister Kowalczyk and COP President Designate Mijal Kurtyka for their warm welcome.

We are in trouble. We are in deep trouble with climate change.

Climate change is running faster than we are and we must catch up sooner rather than later before it is too late.

For many, people, regions even countries this is already a matter of life and death.

This meeting is the most important gathering on climate change since the Paris Agreement was signed.



Figure 6.23: UN Secretary-General Antonio Guterres: “It is hard to overstate the urgency of our situation. Even as we witness devastating climate impacts causing havoc across the world, we are still not doing enough, nor moving fast enough, to prevent irreversible and catastrophic climate disruption. Nor are we doing enough to capitalize on the enormous social, economic and environmental opportunities of climate action.”

It is hard to overstate the urgency of our situation.

Even as we witness devastating climate impacts causing havoc across the world, we are still not doing enough, nor moving fast enough, to prevent irreversible and catastrophic climate disruption.

Nor are we doing enough to capitalize on the enormous social, economic and environmental opportunities of climate action.

And so, I want to deliver four simple messages.

First: science demands a significantly more ambitious response.

Second: the Paris Agreement provides the framework for action, so we must operationalize it.

Third: we have a collective responsibility to invest in averting global climate chaos, to consolidate the financial commitments made in Paris and to assist the most vulnerable communities and nations.

Fourth: climate action offers a compelling path to transform our world for the better.

Let me turn first to science.

According to the World Meteorological Organization, the 20 warmest years on record have been in the past 22 years, with the top four in the past four years.

The concentration of carbon dioxide is the highest it has been in 3 million years.

Emissions are now growing again.

The recent special report from the Intergovernmental Panel on Climate Change finds that warming could reach 1.5 degrees as soon as 2030, with devastating impacts.

The latest UN Environment Programme Emissions Gap Report tells us that the current Nationally Determined Contributions under the Paris Agreement will lead to global warming of about 3 degrees by the end of the century.

Furthermore, the majority of countries most responsible for greenhouse gas emissions are behind in their efforts to meet their Paris pledges.

So, it is plain we are way off course.

We need more action and more ambition.

We absolutely have to close this emissions gap.

If we fail, the Arctic and Antarctic will continue to melt, corals will bleach and then die, the oceans will rise, more people will die from air pollution, water scarcity will plague a significant proportion of humanity, and the cost of disasters will skyrocket.

Last year I visited Barbuda and Dominica, which were devastated by hurricanes. The destruction and suffering I saw was heart-breaking. That story is repeated almost daily somewhere in the world.

These emergencies are preventable.

Emissions must decline by 45 per cent from 2010 levels by 2030 and be net zero by 2050.

Renewable energy will need to supply half to two-thirds of the world's primary energy by 2050 with a corresponding reduction in fossil fuels.

In short, we need a complete transformation of our global energy economy, as well as how we manage land and forest resources.

We need to embrace low-carbon, climate-resilient sustainable development.

I am hopeful that the Talanoa Dialogue will provide a very strong impulse for increased ambition in the commitments for climate action.

Excellencies,

This brings me to my second point.

The Paris Agreement provides a framework for the transformation we need.

It is our job here in Katowice is to finalize the Paris Agreement Work Programme – the rule book for implementation.

I remind all Parties that this is a deadline you set for yourselves and it is vital you meet it.

We need a unifying implementation vision that sets out clear rules, inspires action and promotes raised ambition, based on the principle of equity and common but differentiated responsibilities and respective capabilities, in light of different national circumstances.

We have no time for limitless negotiations.

A completed Work Programme will unleash the potential of the Paris Agreement.

It will build trust and make clear that countries are serious about addressing climate change.

Dear Friends,

This brings me to my third point: the central importance of finance.

We need concerted resource mobilization and investment to successfully combat climate change.

We need transformative climate action in five key economic areas - energy, cities, land use, water and industry.

Some 75 per cent of the infrastructure needed by 2050 still remains to be built.

How this is done will either lock us in to a high-emissions future or steer us towards truly sustainable low-emissions development.

Governments and investors need to bet on the green economy, not the grey.

That means embracing carbon pricing, eliminating harmful fossil fuel subsidies and investing in clean technologies.

It also means providing a fair transition for those workers in traditional sectors that face disruption, including through retraining and social safety nets.

We also have a collective responsibility to assist the most vulnerable communities and countries - such as small island nations and the least developed countries - by supporting adaptation and resilience.

Making clear progress to mobilize the pledged \$100 billion dollars a year will provide a much-needed positive political signal.

I have appointed the President of France and Prime Minister of Jamaica to lead the mobilization of the international community, both public and private, to reach that target in the context of preparation of the Climate Summit I have convened in September of next year.

I also urge Member States to swiftly implement the replenishment of the Green Climate Fund.

It is an investment in a safer, less costly future.

Dear Friends,

All too often, climate action is seen as a burden. My fourth point is this: decisive climate action today is our chance to right our ship and set a course for a better future for all.

We have the knowledge.

Many technological solutions are already viable and affordable.

Cities, regions, civil society and the business community around the world are moving ahead.

What we need is political more will and more far-sighted leadership.

This is the challenge on which this generation's leaders will be judged.

Climate action is not just the right thing to do - it makes social and economic sense.

Meeting the goals of the Paris Agreement would reduce air pollution - saving more than a million lives each year by 2030, according to the World Health

Organization.

According to the recent New Climate Economy report, ambitious climate action could yield 65 million jobs and a direct economic gain of \$26 trillion US dollars compared to business as usual over the next 12 years.

We are seeing early signs of this economic transformation, but we are nowhere near where we need to be.

The transition to a low-carbon economy needs political impetus from the highest levels.

And it requires inclusivity, because everyone is affected by climate change. That is the message of the Talanoa Dialogue.

We need a full-scale mobilization of young people.

And we need a global commitment to gender equality, because women's leadership is central to durable climate solutions.

A successful conference here in Katowice can provide the catalyst.

There is now significant global momentum for climate action.

It has galvanized private business and investors around the world, while cities and regional governments are also showing that ambitious climate action is possible and desirable.

Let us build on this momentum.

I am convening a Climate Summit in September next year to raise ambition and mobilize the necessary resources.

But that ambition needs to begin here, right now, in Katowice, driven by governments and leaders who understand that their legacies and the well-being of future generations are at stake.

We cannot afford to fail in Katowice.

Some might say that it will be a difficult negotiation. I know it is not easy. It requires a firm political will for compromise. But, for me, what is really difficult is to be a fisherman in Kiribati seeing his country in risk of disappearing or a farmer or herder in the Sahel losing livelihoods and losing peace. Or being a woman in Dominica or any other Caribbean nation enduring hurricane after hurricane destroying everything in its path.

Ladies and gentlemen,

Climate change is the single most important issue we face.

It affects all our plans for sustainable development and a safe, secure and prosperous world.

So, it is hard to comprehend why we are collectively still moving too slowly - and even in the wrong direction.

The IPCC's Special Report tells us that we still have time to limit temperature rise.

But that time is running out.

We achieved success in Paris because negotiators were working towards a common goal.



Figure 6.24: Greta: “Many people say that Sweden is just a small country, and it doesn’t matter what we do. But I’ve learned that you are never too small to make a difference. And if a few children can get headlines all over the world just by not going to school, then imagine what we could all do together if we really wanted to.”

I implore you to maintain the same spirit of urgent collaboration here in Katowice with a dynamic Polish leadership in the negotiations.

Katowice must ensure that the bonds of trust established in Paris will endure.

Incredible opportunity exists if we embrace a low-carbon future and unleash the power of the Paris Agreement.

But we must start today building the tomorrow we want.

Let us rise to the challenge and finish the work the world demands of us.

Thank you.

Greta Thunberg’s address to the opening session

Greta Thunberg (born 3 January 2003) is a Swedish climate activist. She is known for protesting outside the Swedish parliament building to raise climate change activism.

On 20 August 2018, Thunberg, then in 9th grade, decided to not attend school until the 2018 Sweden general election on 9 September after heat waves and wildfires in Sweden. Her demands were that the Sweden government reduce carbon emissions as per the Paris Agreement, and she protested via sitting outside the Riksdag every day during school hours with the sign “Skolstrejk för klimatet” (school strike for the climate). After the general elections, she continued to strike only on Fridays. The strike is now in its 17th week. The



Figure 6.25: Greta: “You only talk about moving forward with the same bad ideas that got us into this mess, even when the only sensible thing to do is pull the emergency brake. You are not mature enough to tell it like it is. Even that burden you leave to us children.”



Figure 6.26: Greta: “Until you start focusing on what needs to be done, rather than what is politically possible, there is no hope. We cannot solve a crisis without treating it as a crisis. We need to keep the fossil fuels in the ground, and we need to focus on equity. And if solutions within the system are so impossible to find, then maybe we should change the system itself.”

transcript of her address to the opening session of COP24²⁷²⁸ ²⁹ ³⁰ is given below,

My name is Greta Thunberg. I am 15 years old, and I'm from Sweden. I speak on behalf of Climate Justice Now!

Many people say that Sweden is just a small country, and it doesn't matter what we do. But I've learned that you are never too small to make a difference. And if a few children can get headlines all over the world just by not going to school, then imagine what we could all do together if we really wanted to.

But to do that, we have to speak clearly, no matter how uncomfortable that may be. You only speak of green eternal economic growth because you are too scared of being unpopular. You only talk about moving forward with the same bad ideas that got us into this mess, even when the only sensible thing to do is pull the emergency brake. You are not mature enough to tell it like it is. Even that burden you leave to us children.

But I don't care about being popular. I care about climate justice and the living planet. Our civilization is being sacrificed for the opportunity of a very small number of people to continue making enormous amounts of money. Our biosphere is being sacrificed so that rich people in countries like mine can live in luxury. It is the sufferings of the many which pay for the luxuries of the few.

The year 2078, I will celebrate my 75th birthday. If I have children, maybe they will spend that day with me. Maybe they will ask me about you. Maybe they will ask why you didn't do anything while there still was time to act. You say you love your children above all else, and yet you are stealing their future in front of their very eyes.

Until you start focusing on what needs to be done, rather than what is politically possible, there is no hope. We cannot solve a crisis without treating it as a crisis. We need to keep the fossil fuels in the ground, and we need to focus on equity. And if solutions within the system are so impossible to find, then maybe we should change the system itself.

We have not come here to beg world leaders to care. You have ignored us in the past, and you will ignore us again. We have run out of excuses, and we are running out of time. We have come here to let you know that change is coming, whether you like it or not. The real power belongs to the people. Thank you.

²⁷<https://www.youtube.com/watch?v=VFkQSGyeCWg>

²⁸<https://www.youtube.com/watch?v=0TYyBtb1PH4>

²⁹<https://www.youtube.com/watch?v=DdAOgNTxxt0>

³⁰<https://www.youtube.com/watch?v=pJ1HRGA8g10>



Figure 6.27: Greta Thunberg addresses the National Assembly In Paris on July 23, 2019 in Paris, France.



Figure 6.28: Greta Thunberg crossing the Atlantic on a small emission-free boat.

6.30 The UK declares a climate emergency

Introducing the motion in the House of Commons, Labour leader Jeremy Corbyn said: **“We have no time to waste. We are living in a climate crisis that will spiral dangerously out of control unless we take rapid and dramatic action now. This is no longer about a distant future. We’re talking about nothing less than the irreversible destruction of the environment within our lifetimes of members of this house.”**

Here are some excerpts from an article by Amy Goodman and Nermeen Shaikh of Democracy Now published in Truthout on May 2, 2019.³¹:

On Wednesday, the House of Commons became the first parliament in the world to declare a climate emergency. The resolution came on the heels of the recent Extinction Rebellion mass uprising that shut down Central London last month in a series of direct actions. Activists closed bridges, occupied public landmarks and even superglued themselves to buildings, sidewalks and trains to demand urgent action to combat climate change. Police arrested more than 1,000 protesters. Labour Party Leader Jeremy Corbyn told Parliament, **“We are witnessing an unprecedented upsurge of climate activism, with groups like Extinction Rebellion forcing the politicians in this building to listen. For all the dismissive and defensive column inches the processes have provoked, they are a massive and, I believe, very necessary wake-up call. Today we have the opportunity to say, ‘We hear you.’”** We speak with George Monbiot, British journalist, author and columnist with The Guardian. His recent piece for The Guardian is headlined **“Only rebellion will prevent an ecological apocalypse.”** Monbiot says capitalism **“is like a gun pointed at the heart of the planet. It will essentially, necessarily destroy our life-support systems. Among those characteristics is the drive for perpetual economic growth on a finite planet.”**

³¹<https://truthout.org/video/george-monbiot-on-the-uk-climate-emergency/>



6.31 Understatement of existential climate risk

Here are some excerpts from a 44-page report entitled *What Lies Beneath: The Understanding of Existential Climate Risk*, by David Spratt and Ian Dunlop³²:

Three decades ago, when serious debate on human-induced climate change began at the global level, a great deal of statesmanship was on display. There was a preparedness to recognize that this was an issue transcending nation states, ideologies and political parties which had to be addressed pro-actively in the long-term interests of humanity as a whole. This was the case even though the existential nature of the risk it posed was far less clear cut than it is today.

As global institutions, such as the United Nations Framework Convention on Climate Change (UNFCCC) which was established at the Rio Earth Summit in 1992, were developed to take up this challenge, and the extent of change this would demand of the fossil-fuel-dominated world order became clearer, the forces of resistance began to mobilize. Today, as a consequence, and despite the diplomatic triumph of the 2015 Paris Agreement, the debate around climate change policy has never been more dysfunctional, indeed Orwellian.

In his book 1984, George Orwell describes a double-think totalitarian state where most of the population accepts “the most flagrant violations of reality, because they never fully grasped the enormity of what was demanded of them, and were not sufficiently interested in public events to notice what was

³²<https://www.breakthroughonline.org.au/>

happening. By lack of understanding they remained sane.”

Orwell could have been writing about climate change and policymaking. International agreements talk of limiting global warming to 1.5-2 degrees Celsius ($^{\circ}\text{C}$), but in reality they set the world on a path of 3-5 $^{\circ}\text{C}$ of warming. Goals are reaffirmed, only to be abandoned. Coal is “clean”. Just 1 $^{\circ}\text{C}$ of warming is already dangerous, but this cannot be admitted. The planetary future is hostage to myopic national self-interest. Action is delayed on the assumption that as yet unproven technologies will save the day, decades hence. The risks are existential, but it is “alarmist” to say so.

A one-in-two or one-in-three chance of missing a goal is normalized as reasonable. Moral hazard permeates official thinking, in that there is an incentive to ignore the risks in the interests of political expediency.

Climate policymaking for years has been cognitively dissonant, “a flagrant violation of reality”. So it is unsurprising that there is a lack of understanding amongst the public and elites of the full measure of the climate challenge. Yet most Australians sense where we are heading: three-quarters of Australians see climate change as catastrophic risk, and half see our way of life ending within the next 100 years.

Politics and policymaking have norms: rules and practices, assumptions and boundaries, that constrain and shape them. In recent years, the previous norms of statesmanship and long-term thinking have disappeared, replaced by an obsession with short-term political and commercial advantage. Climate policymaking is no exception. Since 1992, short-term economic interest has trumped environmental and future human needs.

The world today emits 50% more carbon dioxide (CO_2) from the consumption of energy than it did 25 years ago, and the global economy has more than doubled in size. The UNFCCC strives “to enable economic development to proceed in a sustainable manner”, but every year humanity’s ecological footprint becomes larger and less sustainable. Humanity now requires the biophysical capacity of 1.7 Earths annually as it rapidly chews up natural capital.

A fast, emergency-scale transition to a post-fossil fuel world is absolutely necessary to address climate change. But this is excluded from consideration by policymakers because it is considered to be too disruptive. The orthodoxy is that there is time for an orderly economic transition within the current short-termist political paradigm. Discussion of what would be safe - less warming than we presently experience - is non-existent. And so we have a policy failure of epic proportions.

Policymakers, in their magical thinking, imagine a mitigation path of gradual change to be constructed over many decades in a growing, prosperous world. The world not imagined is the one that now exists: of looming financial instability; of a global crisis of political legitimacy and “fake news”; of a sustainability crisis that extends far beyond climate change to include all the fundamentals of human existence and most significant planetary boundaries

(soils, potable water, oceans, the atmosphere, biodiversity, and so on); and of severe global energy-sector dislocation.

In anticipation of the upheaval that climate change would impose upon the global order, the IPCC was established by the United Nations (UN) in 1988, charged with regularly assessing the global consensus on climate science as a basis for policymaking. The IPCC Assessment Reports (AR), produced every five-to-eight years, play a large part in the public framing of the climate narrative: new reports are a global media event.

AR5 was produced in 2013-14, with AR6 due in 2022. The IPCC has done critical, indispensable work of the highest standard in pulling together a periodic consensus of what must be the most exhaustive scientific investigation in world history.

It does not carry out its own research, but reviews and collates peer-reviewed material from across the spectrum of this incredibly complex area, identifying key issues and trends for policymaker consideration. However, the IPCC process suffers from all the dangers of consensus-building in such a wide-ranging and complex arena. For example, IPCC reports, of necessity, do not always contain the latest available information. Consensus-building can lead to “least drama”, lowest-common-denominator outcomes, which overlook critical issues. This is particularly the case with the “fat-tails” of probability distributions, that is, the high-impact but lower-probability events where scientific knowledge is more limited.

Vested-interest pressure is acute in all directions; climate denialists accuse the IPCC of alarmism, whereas many climate action proponents consider the IPCC to be far too conservative. To cap it all, the IPCC conclusions are subject to intense political oversight before being released, which historically has had the effect of substantially watering-down sound scientific findings.

These limitations are understandable, and arguably were not of overriding importance in the early period of the IPCC. However, as time has progressed, it is now clear that the risks posed by climate change are far greater than previously anticipated. We have moved out of the twilight period of much talk, but relatively limited climate impacts, into the harsh light of physically-evident existential threats. Climate change is now turning nasty, as we have witnessed recently in the North America, East and South Asia, the Middle East and Europe, with record-breaking heatwaves and wildfires, more intense flooding and more damaging hurricanes.

The distinction between climate science and risk is the critical issue, for the two are not the same. Scientific reticence - a reluctance to spell out the full risk implications of climate science in the absence of perfect information - has become a major problem. Whilst this is understandable, particularly when scientists are continually criticized by denialists and political apparatchiks for speaking out, it is extremely dangerous given the fat-tail risks of climate change. Waiting for perfect information, as we are continually urged to do

by political and economic elites, means it will be too late to act. Time is not on our side. Sensible risk management addresses risk in time to prevent it happening, and that time is now.

Irreversible, adverse climate change on the global scale now occurring is an existential risk to human civilization. Many of the world's top climate scientists - Kevin Anderson, James Hansen, Michael E. Mann, Michael Oppenheimer, Naomi Oreskes, Stefan Rahmstorf, Eric Rignot, Hans Joachim Schellnhuber, Kevin Trenberth and others - who are quoted in this report well understand these implications and are forthright about their findings, where we are heading, and the limitations of IPCC reports.

This report seeks to alert the wider community and business and political leaders to these limitations and urges changes to the IPCC approach, to the wider UNFCCC negotiations, and to national policymaking. It is clear that existing processes will not deliver the transformation to a carbon-negative world in the limited time now available. We urgently require a re-framing of scientific research within an existential risk-management framework. This requires special precautions that go well beyond conventional risk management. Like an iceberg, there is great danger in "what lies beneath".

Existential Risk to Human Civilization

In 2016, the World Economic Forum survey of the most impactful risks for the years ahead elevated the failure of climate change mitigation and adaptation to the top of the list, ahead of weapons of mass destruction, ranking second, and water crises, ranking third. By 2018, following a year characterized by high-impact hurricanes and extreme temperatures, extreme-weather events were seen as the single most prominent risk. As the survey noted: "We have been pushing our planet to the brink and the damage is becoming increasingly clear."

Climate change is an existential risk to human civilization: that is, an adverse outcome that would either annihilate intelligent life or permanently and drastically curtail its potential.

Temperature rises that are now in prospect, after the Paris Agreement, are in the range of 3-5 °C. At present, the Paris Agreement voluntary emission reduction commitments, if implemented, would result in planetary warming of 3.4 °C by 2100, without taking into account "long-term" carbon-cycle feedbacks. With a higher climate sensitivity figure of 4.5 °C, for example, which would account for such feedbacks, the Paris path would result in around 5 °C of warming, according to a MIT study.

A study by Schroeder Investment Management published in June 2017 found - after taking into account indicators across a wide range of the political, financial, energy and regulatory sectors - the average temperature increase implied for the Paris Agreement across all sectors was 4.1 °C.

Yet 3 °C of warming already constitutes an existential risk. A 2007 study

by two US national security think-tanks concluded that 3 °C of warming and a 0.5 meter sea-level rise would likely lead to “outright chaos” and “nuclear war is possible”, emphasizing how “massive non-linear events in the global environment give rise to massive nonlinear societal event”.

The Global Challenges Foundation (GCF) explains what could happen: “If climate change was to reach 3 °C, most of Bangladesh and Florida would drown, while major coastal cities - Shanghai, Lagos, Mumbai - would be swamped, likely creating large flows of climate refugees. Most regions in the world would see a significant drop in food production and increasing numbers of extreme weather events, whether heat waves, floods or storms. This likely scenario for a 3 °C rise does not take into account the considerable risk that self-reinforcing feedback loops set in when a certain threshold is reached, leading to an ever increasing rise in temperature. Potential thresholds include the melting of the Arctic permafrost releasing methane into the atmosphere, forest die-back releasing the carbon currently stored in the Amazon and boreal forests, or the melting of polar ice caps that would no longer reflect away light and heat from the sun.”

Warming of 4 °C or more could reduce the global human population by 80% or 90%, and the World Bank reports “there is no certainty that adaptation to a 4 °C world is possible.”

Prof. Kevin Anderson says a 4 °C future “is incompatible with an organized global community, is likely to be beyond ‘adaptation’, is devastating to the majority of ecosystems, and has a high probability of not being stable”.

This is a commonly-held sentiment amongst climate scientists. A recent study by the European Commission’s Joint Research Centre found that if the global temperature rose 4 °C, then extreme heatwaves with “apparent temperatures” peaking at over 55 °C will begin to regularly affect many densely populated parts of the world, forcing much activity in the modern industrial world to stop. (“Apparent temperatures” refers to the Heat Index, which quantifies the combined effect of heat and humidity to provide people with a means of avoiding dangerous conditions.)

In 2017, one of the first research papers to focus explicitly on existential climate risks proposed that “mitigation goals be set in terms of climate risk category instead of a temperature threshold”, and established a “dangerous” risk category of warming greater than 1.5 °C, and a “catastrophic” category for warming of 3 °C or more. The authors focussed on the impacts on the world’s poorest three billion people, on health and heat stress, and the impacts of climate extremes on such people with limited adaptation resources. They found that a 2 °C warming “would double the land area subject to deadly heat and expose 48% of the population (to deadly heat). A 4 °C warming by 2100 would subject 47% of the land area and almost 74% of the world population to deadly heat, which could pose existential risks to humans and mammals alike unless massive adaptation measures are implemented.”

A 2017 survey of global catastrophic risks by the Global Challenges Foundation found that: “In high-end [climate] scenarios, the scale of destruction is beyond our capacity to model, with a high likelihood of human civilization coming to an end.”

84% of 8000 people in eight countries surveyed for the Foundation considered climate change a “global catastrophic risk”.

Existential risk may arise from a fast rate of system change, since the capacity to adapt, in both the natural and human worlds, is inversely proportional to the pace of change, amongst other factors. In 2004, researchers reported on the rate of warming as a driver of extinction...

At 4 °C of warming “the limits for adaptation for natural systems would largely be exceeded throughout the world”.

Ecological breakdown of this scale would ensure an existential human crisis. By slow degrees, these existential risks are being recognized. In May 2018, an inquiry by the Australian Senate into national security and global warming recognized “climate change as a current and existential national security risk... defined as ‘one that threatens the premature extinction of Earth-originating intelligent life or the permanent and drastic destruction of its potential for desirable future development’”.

In April 2018, the Intelligence on European Pensions and Institutional Investment think-tank warned business leaders that “climate change is an existential risk whose elimination must become a corporate objective”.

However the most recent IPCC Assessment Report did not consider the issue. Whilst the term “risk management” appears in the 2014 IPCC Synthesis Report fourteen times, the terms “existential” and “catastrophic” do not appear...

6.32 The 2018 IPCC report

Excerpts from an article summarizing the report

Here are excerpts from an article entitled *UN Experts Warn of ‘Climate Catastrophe’ by 2040* by Jessica Corbett. The article was published in *Common Dreams* on Monday, October 8, 2018.³³:

“The climate crisis is here and already impacting the most vulnerable,” notes 350.org’s program director. “Staying under 1.5°C is now a matter of political will.”

Underscoring the need for “rapid, far-reaching, and unprecedented” changes to life as we know it to combat the global climate crisis, a new report from

³³<https://www.commondreams.org/news/2018/10/08/un-experts-warn-climate-catastrophe-2040-without-rapid-and-unprecedented-global>

the Intergovernmental Panel on Climate Change (IPCC) - the United Nations' leading body for climate science - details what the world could look like if the global temperature rises to 1.5°C versus 2°C (2.7°F versus 3.6°F) above pre-industrial levels, and outlines pathways to reducing greenhouse gas emissions in the context of sustainable development and efforts to eradicate poverty.

“Climate change represents an urgent and potentially irreversible threat to human societies and the planet,” the report reads. “Human-induced warming has already reached about 1°C (1.8°F) above pre-industrial levels at the time of writing of this Special Report... If the current warming rate continues, the world would reach human-induced global warming of 1.5°C around 2040.”

Approved by the IPCC in South Korea on Saturday ahead of COP24 in Poland in December, *Global Warming of 1.5°C* was produced by 91 authors and reviewers from 40 countries. Its release has elicited calls to action from climate campaigners and policymakers the world over.

“This is a climate emergency. The IPCC 1.5 report starkly illustrates the difference between temperature rises of 1.5°C and 2°C - for many around the world this is a matter of life and death,” declared Karin Nansen, chair of Friends of the Earth International (FOEI). “It is crucial to keep temperature rise well below 1.5 degrees ... but the evidence presented by the IPCC shows that there is a narrow and shrinking window in which to do so.”

The report was requested when the international community came together in December of 2015 for the Paris agreement, which aims to keep global warming within this century “well below” 2°C, with an ultimate target of 1.5°C. President Donald Trump's predecessor supported the accord, but Trump has vowed to withdraw the United States, even as every other nation on the planet has pledged their support for it. In many cases, however, sworn support hasn't led to effective policy.

“It's a fresh reminder, if one was needed, that current emissions reduction pledges are not enough to meet the long-term goals of the Paris agreement. Indeed, they are not enough for any appropriately ambitious temperature target, given what we know about dangerous climate impacts already unfolding even at lower temperature thresholds,” Rachel Cleetus, lead economist and climate policy manager for the Union of Concerned Scientists (UCS), wrote ahead of its release.

“The policy implications of the report are obvious: We need to implement a suite of policies to sharply limit carbon emissions and build climate resilience, and we must do all this in a way that prioritizes equitable outcomes particularly for the world's poor and marginalized communities,” Cleetus added.

“We want a just transition to a clean energy system that benefits people not corporations,” Nansen emphasized. “Only with a radical transformation of our energy, food and economic systems, embracing environmental, social, gender and economic justice, can we prevent climate catastrophe and temperature rises exceeding 1.5°C.”

Only immediate climate action can save the future

Immediate action to halt the extraction of fossil fuels and greatly reduce the emission of CO₂ 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.

Swedish student Greta Thunberg, is a 16-year-old who has launched a climate protest movement in her country. She said, in a short but very clear speech after that of UN leader Antonio Guterres: “Some people say that I should be in school instead. Some people say that I should study to become a climate scientist so that I can ‘solve the climate crisis’. But the climate crisis has already been solved. We already have all the facts and solutions.”

She added: “Why should I be studying for a future that soon may be no more, when no one is doing anything to save that future? And what is the point of learning facts when the most important facts clearly mean nothing to our society?”

Thunberg continued: “Today we use 100 million barrels of oil every single day. There are no politics to change that. There are no rules to keep that oil in the ground. So we can’t save the world by playing by the rules. Because the rules have to be changed.”

She concluded by saying that “since our leaders are behaving like children, we will have to take the responsibility they should have taken long ago.”

Institutional inertia

Our collective failure to respond adequately to the current crisis is very largely due to institutional inertia. Our financial system is deeply embedded and resistant to change. Our entire industrial infrastructure is based on fossil fuels; but if the future is to be saved, the use of fossil fuels must stop. International relations are still based based on the concept of absolutely sovereign nation states, even though this concept has become a dangerous anachronism in an era of instantaneous global communication and economic interdependence. Within nations, systems of law and education change very slowly, although present dangers demand rapid revolutions in outlook and lifestyle.

The failure of the recent climate conferences to produce strong final documents can be attributed to the fact that the nations attending the conferences felt themselves to be in competition with each other, when in fact they ought to have cooperated in response to a common danger. The heavy hand of the fossil fuel industry also made itself felt at the conferences.

Until the development of coal-driven steam engines in the 19th century humans lived more or less in harmony with their environment. Then, fossil fuels, representing many millions of years of stored sunlight, were extracted and burned in two centuries, driving a frenzy of growth of population and industry that has lasted until the present. But today, the party is over. Coal, oil and gas are nearly exhausted, and what remains of them must be left in the ground to avoid existential threats to humans and the biosphere. Big coal and oil corporations base the value of their stocks on ownership of the remaining resources that are still buried, and they can be counted on to use every trick, fair or unfair, to turn those resources into money.

In general corporations represent a strong force resisting change. By law, the directors of corporations are obliged to put the profits of stockholders above every other consideration. No room whatever is left for an ecological or social conscience. Increasingly, corporations have taken control of our mass media and our political system. They intervene in such a way as to make themselves richer, and thus to increase their control of the system.

Polite conversation and cultural inertia

Each day, the conventions of polite conversation contribute to our sense that everything is as it always was. Politeness requires that we do not talk about issues that might be contrary to another person's beliefs. Thus polite conversation is dominated by trivia, entertainment, sports, the weather, gossip, food, and so on. Worries about the distant future, the danger of nuclear war, the danger of uncontrollable climate change, or the danger of widespread famine seldom appear in conversations at the dinner table, over coffee or at the pub. In conversations between polite people, we obtain the false impression that all is well with the world. But in fact, all is not well. We have to act promptly and adequately to save the future.

The situation is exactly the same in the mass media. The programs and articles are dominated by trivia and entertainment. Serious discussions of the sudden crisis which civilization now faces are almost entirely absent, because the focus is on popularity and ratings. As Neil Postman remarked, we are entertaining ourselves to death.

Further growth implies future collapse

We have to face the fact that endless economic growth on a finite planet is a logical impossibility, and that we have reached or passed the sustainable limits to growth.

In today's world, we are pressing against the absolute limits of the earth's carrying capacity, and further growth carries with it the danger of future collapse. In the long run, neither the growth of industry nor that of population is sustainable; and we have now reached or exceeded the sustainable limits.

Our responsibility to future generations and to the biosphere

All of the technology needed for the replacement of fossil fuels by renewable energy is already in place. Although renewable sources currently supply only 19 percent of the world's energy requirements, they are growing rapidly. For example, wind energy is growing at the rate of 30 percent per year. Because of the remarkable properties of exponential growth, this will mean that wind will soon become a major supplier of the world's energy requirements, despite bitter opposition from the fossil fuel industry.

Both wind and solar energy 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.³⁴

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.³⁵

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.

“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.”
Greta Thunberg

³⁴<http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>

³⁵<http://steadystate.org/category/herman-daly/>

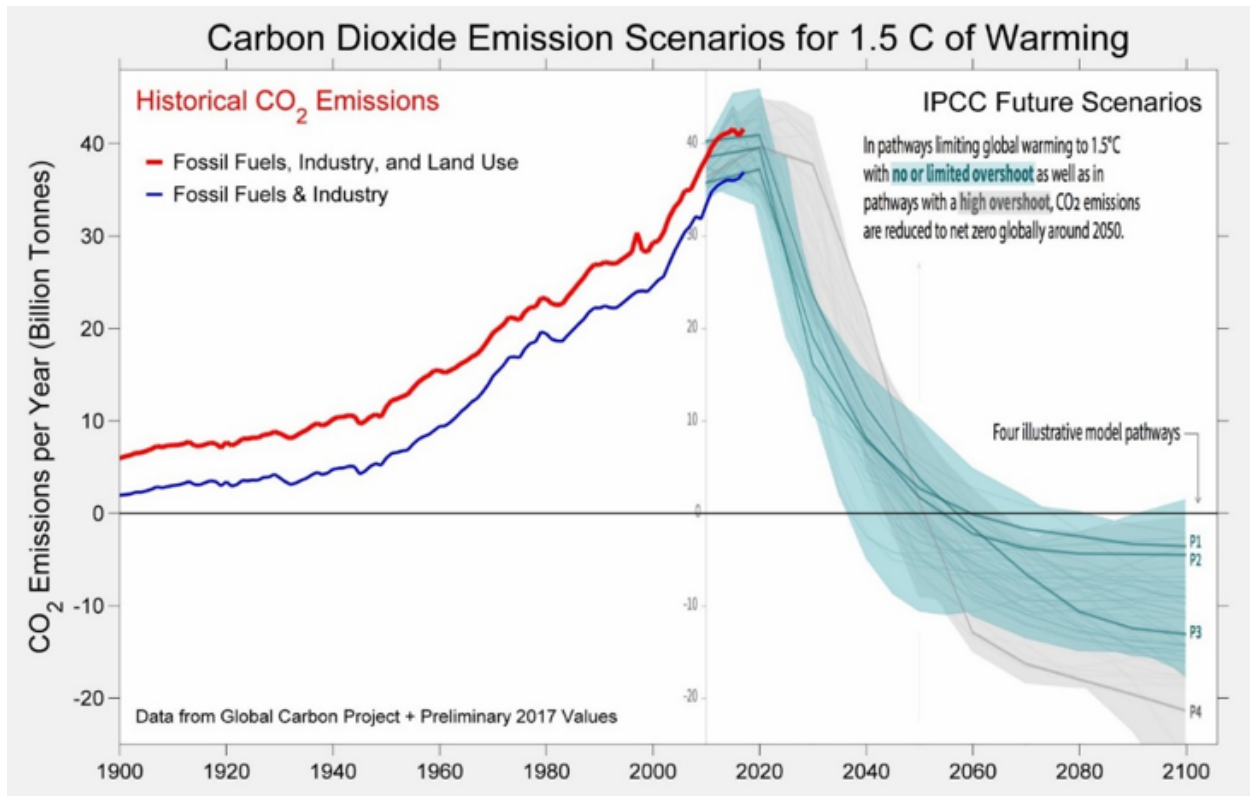


Figure 6.29: Our carbon budget. If global warming is to be limited to 1.5°C, CO₂ emissions must fall extremely rapidly. This means radical and fundamental changes for economies and lifestyles.

Suggestions for further reading

1. A. Gore, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It*, Rodale Books, New York, (2006).
2. A. Gore, *Earth in the Balance: Forging a New Common Purpose*, Earthscan, (1992).
3. A.H. Ehrlich and P.R. Ehrlich, *Earth*, Thames and Methuen, (1987).
4. P.R. Ehrlich and A.H. Ehrlich, *The Population Explosion*, Simon and Schuster, (1990).
5. P.R. Ehrlich and A.H. Ehrlich, *Healing the Planet: Strategies for Resolving the Environmental Crisis*, Addison-Wesley, (1991).
6. P.R. Ehrlich and A.H. Ehrlich, *Betrayal of Science and Reason: How Anti-Environmental Rhetoric Threatens our Future*, Island Press, (1998).
7. P.R. Ehrlich and A.H. Ehrlich, *One With Nineveh: Politics, Consumption and the Human Future*, Island Press, (2004).
8. D.H. Meadows, D.L. Meadows, J. Randers, and W.W. Behrens III, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*, Universe Books, New York, (1972).
9. D.H. Meadows et al., *Beyond the Limits. Confronting Global Collapse and Envisioning a Sustainable Future*, Chelsea Green Publishing, Post Mills, Vermont, (1992).
10. D.H. Meadows, J. Randers and D.L. Meadows, *Limits to Growth: the 30-Year Update*, Chelsea Green Publishing, White River Jct., VT 05001, (2004).
11. A. Peccei and D. Ikeda, *Before it is Too Late*, Kodansha International, Tokyo, (1984).
12. V.K. Smith, ed., *Scarcity and Growth Reconsidered*, Johns Hopkins University Press, Baltimore, (1979).
13. British Petroleum, *BP Statistical Review of World Energy*, (published yearly).
14. R. Costanza, ed., *Ecological Economics: The Science and Management of Sustainability*, Colombia University Press, New York, (1991).
15. J. Darmstadter, *A Global Energy Perspective*, Sustainable Development Issue Backgrounder, Resources for the Future, (2002).
16. D.C. Hall and J.V. Hall, *Concepts and Measures of Natural Resource Scarcity*, *Journal of Environmental Economics and Management*, **11**, 363-379, (1984).
17. M.K. Hubbert, *Energy Resources*, in *Resources and Man: A Study and Recommendations*, Committee on Resources and Man, National Academy of Sciences, National Research Council, W.H. Freeman, San Francisco, (1969).
18. Intergovernmental Panel on Climate Change, *Climate Change 2001: The Scientific Basis*, IPCC, (2001).
19. J.A. Krautkraemer, *Nonrenewable Resource Scarcity*, *Journal of Economic Literature*, **36**, 2065-2107, (1998).
20. N. Stern et al., *The Stern Review*, www.sternreview.org.uk, (2006).
21. T.M. Swanson, ed., *The Economics and Ecology of Biodiversity Decline: The Forces Driving Global Change*, Cambridge University Press, (1995).
22. P.M. Vitousek, H.A. Mooney, J. Lubchenco and J.M. Melillo, *Human Domination of Earth's Ecosystems*, *Science*, **277**, 494-499, (1997).

23. World Resources Institute, *World Resources 200-2001: People and Ecosystems: The Fraying Web of Life*, WRI, Washington D.C., (2000).
24. A. Sampson, *The Seven Sisters: The Great Oil Companies of the World and How They Were Made*, Hodder and Staughton, London, (1988).
25. D. Yergin, *The Prize*, Simon and Schuster, New York, (1991).
26. M.B. Stoff, *Oil, War and American Security: The Search for a National Policy on Oil, 1941-1947*, Yale University Press, New Haven, (1980).
27. J. Stork, *Middle East Oil and the Energy Crisis*, Monthly Review, New York, (1976).
28. F. Benn, *Oil Diplomacy in the Twentieth Century*, St. Martin's Press, New York, (1986).
29. K. Roosevelt, *Countercoup: The Struggle for the Control of Iran*, McGraw-Hill, New York, (1979).
30. E. Abrahamian, *Iran Between Two Revolutions*, Princeton University Press, Princeton, (1982).
31. J.M. Blair, *The Control of Oil*, Random House, New York, (1976).
32. M.T. Klare, *Resource Wars: The New Landscape of Global Conflict*, Owl Books reprint edition, New York, (2002).
33. H. Mejcher, *Imperial Quest for Oil: Iraq, 1910-1928*, Ithaca Books, London, (1976).
34. P. Sluglett, *Britain in Iraq, 1914-1932*, Ithaca Press, London, (1976).
35. D.E. Omissi, *British Air Power and Colonial Control in Iraq, 1920-1925*, Manchester University Press, Manchester, (1990).
36. V.G. Kiernan, *Colonial Empires and Armies, 1815-1960*, Sutton, Stroud, (1998).
37. R. Solh, *Britain's 2 Wars With Iraq*, Ithaca Press, Reading, (1996).
38. D. Morgan and D.B. Ottaway, *In Iraqi War Scenario, Oil is Key Issue as U.S. Drillers Eye Huge petroleum Pool*, Washington Post, September 15, (2002).
39. C.J. Cleveland, *Physical and Economic Aspects of Natural Resource Scarcity: The Cost of Oil Supply in the Lower 48 United States 1936-1987*, Resources and Energy **13**, 163-188, (1991).
40. C.J. Cleveland, *Yield Per Effort for Additions to Crude Oil Reserves in the Lower 48 States, 1946-1989*, American Association of Petroleum Geologists Bulletin, **76**, 948-958, (1992).
41. M.K. Hubbert, *Technique of Prediction as Applied to the Production of Oil and Gas*, in *NBS Special Publication 631*, US Department of Commerce, National Bureau of Standards, (1982).
42. L.F. Ivanhoe, *Oil Discovery Indices and Projected Discoveries*, Oil and Gas Journal, **11**, 19, (1984).
43. L.F. Ivanhoe, *Future Crude Oil Supplies and Prices*, Oil and Gas Journal, July 25, 111-112, (1988).
44. L.F. Ivanhoe, *Updated Hubbert Curves Analyze World Oil Supply*, World Oil, November, 91-94, (1996).
45. L.F. Ivanhoe, *Get Ready for Another Oil Shock!*, The Futurist, January-February, 20-23, (1997).

46. Energy Information Administration, *International Energy Outlook, 2001*, US Department of Energy, (2001).
47. Energy Information Administration, *Caspian Sea Region*, US Department of Energy, (2001).
48. National Energy Policy Development Group, *National Energy Policy*, The White House, (<http://www.whitehouse.gov/energy/>), (2004).
49. M. Klare, *Bush-Cheney Energy Strategy: Procuring the Rest of the World's Oil*, Foreign Policy in Focus, (Interhemispheric Resource Center/Institute for Policy Studies/SEEN), Washington DC and Silver City NM, January, (2004).
50. IEA, *CO2 from Fuel Combustion Fact-Sheet*, International Energy Agency, (2005).
51. H. Youguo, *China's Coal Demand Outlook for 2020 and Analysis of Coal Supply Capacity*, International Energy Agency, (2003).
52. R.H. Williams, *Advanced Energy Supply Technologies*, in **World Energy Assessment: Energy and the Challenge of Sustainability**, UNDP, (2000).
53. H. Lehmann, *Energy Rich Japan*, Institute for Sustainable Solutions and Innovations, Aachen, (2003).
54. D. King, *Climate Change Science: Adapt, Mitigate or Ignore*, Science, **303** (5655), pp. 176-177, (2004).
55. S. Connor, *Global Warming Past Point of No Return*, The Independent, (116 September, 2005).
56. D. Rind, *Drying Out the Tropics*, New Scientist (6 May, 1995).
57. J. Patz et al., *Impact of Regional Climate Change on Human Health*, Nature, (17 November, 2005).
58. M. McCarthy, *China Crisis: Threat to the Global Environment*, The Independent, (19 October, 2005).
59. L.R. Brown, *The Twenty-Ninth Day*, W.W. Norton, New York, (1978).
60. W.V. Chandler, *Materials Recycling: The Virtue of Necessity*, Worldwatch Paper 56, Worldwatch Institute, Washington D.C, (1983).
61. W.C. Clark and others, *Managing Planet Earth*, Special Issue, *Scientific American*, September, (1989).
62. B. Commoner, *The Closing Circle: Nature, Man and Technology*, Bantam Books, New York, (1972).
63. C. Flavin, *Slowing Global Warming: A Worldwide Strategy*, Worldwatch Paper 91, Worldwatch Institute, Washington D.C., (1989).
64. J.R. Frisch, *Energy 2000-2020: World Prospects and Regional Stresses*, World Energy Conference, Graham and Trotman, (1983).
65. J. Gever, R. Kaufmann, D. Skole and C. Vorosmarty, *Beyond Oil: The Threat to Food and Fuel in the Coming Decades*, Ballinger, Cambridge MA, (1986).
66. J. Holdren and P. Herrera, *Energy*, Sierra Club Books, New York, (1971).
67. N. Myers, *The Sinking Ark*, Pergamon, New York, (1972).
68. National Academy of Sciences, *Energy and Climate*, NAS, Washington D.C., (1977).
69. W. Ophuls, *Ecology and the Politics of Scarcity*, W.H. Freeman, San Francisco, (1977).

70. A. Peccei, *The Human Quality*, Pergamon Press, Oxford, (1977).
71. A. Peccei, *One Hundred Pages for the Future*, Pergamon Press, New York, (1977).
72. E. Pestel, *Beyond the Limits to Growth*, Universe Books, New York, (1989).
73. C. Pollock, *Mining Urban Wastes: The Potential for Recycling*, Worldwatch Paper 76, Worldwatch Institute, Washington D.C., (1987).
74. S.H. Schneider, *The Genesis Strategy: Climate and Global Survival*, Plenum Press, (1976).
75. P.B. Smith, J.D. Schilling and A.P. Haines, *Introduction and Summary*, in *Draft Report of the Pugwash Study Group: The World at the Crossroads*, Berlin, (1992).
76. World Resources Institute, *World Resources*, Oxford University Press, New York, (published annually).
77. J.E. Young, John E., *Mining the Earth*, Worldwatch Paper 109, Worldwatch Institute, Washington D.C., (1992).
78. J.R. Craig, D.J. Vaughan and B.J. Skinner, *Resources of the Earth: Origin, Use and Environmental Impact, Third Edition*, Prentice Hall, (2001).
79. W. Youngquist, *Geodesinies: The Inevitable Control of Earth Resources Over Nations and Individuals*, National Book Company, Portland Oregon, (1997).
80. M. Tanzer, *The Race for Resources. Continuing Struggles Over Minerals and Fuels*, Monthly Review Press, New York, (1980).
81. C.B. Reed, *Fuels, Minerals and Human Survival*, Ann Arbor Science Publishers Inc., Ann Arbor Michigan, (1975).
82. A.A. Bartlett, *Forgotten Fundamentals of the Energy Crisis*, American Journal of Physics, **46**, 876-888, (1978).
83. N. Gall, *We are Living Off Our Capital*, Forbes, September, (1986).
84. M. Anklin et al., *Climate instability during the last interglacial period recorded in the GRIP ice core*. Nature **364**, 15 July: 203-207, (1993).
85. O. J. Blanchard and S. Fischer, *Lectures on Macroeconomics*. Cambridge, Mass.: MIT Press. (1989).
86. Ehrlich P-R (1995) *The scale of the human enterprise and biodiversity loss*, in *Extinction Rates*, eds Lawton JH, May RM (Oxford Univ Press, Oxford, UK), pp 214-226.
87. Dirzo R, et al. (2014) *Defaunation in the Anthropocene*. Science **345**:401-406.
88. Young HS, McCauley DJ, Galletti M, Dirzo R (2016) *Patterns, causes, and consequences of Anthropocene defaunation*. Annu Rev Ecol Evol Syst **47**:433-458.
89. World Wide Fund for Nature (2016) *Living Planet Report 2016. Risk and resilience in a new era*. (WWF International, Gland, Switzerland), 2017.
90. Maxwell SL, Fuller RA, Brooks TM, Watson JEM (2016) *Biodiversity: The ravages of guns, nets and bulldozers*. Nature **536**:143-145.
91. Laliberte AS, Ripple WJ (2004) *Range contractions of North American carnivores and ungulates*. BioScience **54**:123-138.
92. Worm B, Tittensor DP (2011) *Range contraction in large pelagic predators*. Proc Natl Acad Sci USA **108**:11942-11947.
93. Ripple WJ, et al. (2014) *Status and ecological effects of the world's largest carnivores*. Science **343**:1241-1244.

94. Barnosky AD, et al. (2011) *Has the Earth's sixth mass extinction already arrived?* Nature **471**:51-57.
95. Ceballos G, Garcia A, Ehrlich PR (2010) *The sixth extinction crisis: Loss of animal populations and species.* J. Cosmology **8**:1821-1831.
96. Ceballos G, et al. (2015) *Accelerated modern human-induced species losses: Entering the sixth mass extinction.* Sci Adv **1**:e1400253.
97. Wake DB, Vredenburg VT (2008) *Colloquium paper: Are we in the midst of the sixth mass extinction? A view from the world of amphibians.* Proc Natl Acad Sci USA **105**:11466-11473.
98. McCallum ML (2015) *Vertebrate biodiversity losses point to a sixth mass extinction.* Biol Conserv **24**:2497-2519.
99. Pimm SL, et al. (2014) *The biodiversity of species and their rates of extinction, distribution, and protection.* Science **344**:1246752.
100. McCauley DJ, et al. (2015) *Marine defaunation: Animal loss in the global ocean.* Science **347**:1255641.
101. Collen B, Böhm M, Kemp R, Baillie J (2012) *Spineless: Status and Trends of the World's Invertebrates* (Zoological Society of London, London). Red List
102. Daily G (1997) *Nature's Services: Societal Dependence on Natural Ecosystems.* (Island Press, Covello, CA).
103. Naeem S, Duffy JE, Zavaleta E (2012) *The functions of biological diversity in an age of extinction.* Science **336**:1401-1406.
104. Estes JA, et al. (2011) *Trophic downgrading of planet Earth.* Science **333**:301-306.
105. Brosi BJ, Briggs HM (2013) *Single pollinator species losses reduce floral fidelity and plant reproductive function.* Proc Natl Acad Sci USA **110**:13044-13048.
106. Briggs JC (2014) *Global biodiversity gain is concurrent with decreasing population sizes.* Biodiver J **5**:447-452.
107. Hooper DU, et al. (2012) *A global synthesis reveals biRed Listodiversity loss as a major driver of ecosystem change.* Nature **486**:105-108. Red List
108. Ehrlich PR (2014) *The case against de-extinction: It's a fascinating but dumb idea.* Yale Environment 360 (Yale University, New Haven, CT). Available at bit.ly/1gAIuJF. Accessed JunStudiese 10, 2017.
109. Hobbs RJ, Mooney HA (1998) *Broadening the extinction debate: Population deletions and additions in California and Western Australia.* Conserv Biol **12**:271-283. Studies
110. Hughes JB, Daily GC, Ehrlich PR (1997) *Population diversity: Its extent and extinction.* Science **278**:689-692.
111. Ceballos G, Ehrlich PR (2002) *Mammal population losses and the extinction crisis.* Science **296**:904-907.
112. Gaston KJ, Fuller RA (2008) *Commonness, population depletion and conservation biology.* Trends Ecol Evol **23**:14-19.
113. International Union of Conservation of Nature (2015) *The IUCN Red List of Threatened Species, Version 2015.2* (IUCN, 2015). Available at www.iucnredlist.org. Accessed February 10, 2016. Revised January 10, 2017.

114. Durant SM, et al. (2017) *The global decline of cheetah *Acinonyx jubatus* and what it means for conservation*. Proc Natl Acad Sci USA **114**:528-533.
115. Henschel P, et al. (2014) *The lion in West Africa is critically endangered*. PLoS One **9**:e83500.
116. Challender D, et al. (2016) *On scaling up pangolin conservation*. Traffic Bulletin **28**: 19-21.
117. Fennessy J, et al. (2016) *Multi-locus analyses reveal four giraffe species instead of one*. Curr Biol **26**:2543-2549.
118. Butchart S, Dunn E (2003) *Using the IUCN Red List criteria to assess species with declining populations*. Conserv Biol **17**:1200-1202.
119. Gaston K, Blackburn T (2008) *Pattern and Process in Macroecology* (Blackwell Publishing, Hoboken, NJ). Red List
120. Thomas JA (2016) ECOLOGY. Butterfly communities under threat. Science **353**:216-218.
121. Régnier C, et al. (2015) *Mass extinction in poorly known taxa*. Proc Natl Acad Sci USA **112**:7761-7766.25.
122. Hughes JB, Daily GC, Ehrlich PR (1997) *Population diversity: Its extent and extinction*. Science **278**:689-692.
123. Ceballos G, Ehrlich PR (2002) *Mammal population losses and the extinction crisis*. Science **296**:904-907.
124. Cardinale BJ, et al. (2012) *Biodiversity loss and its impact on humanity*. Nature **486**: 59-67.
125. Hurlbert AH, Jetz W (2007) *Species richness, hotspots, and the scale dependence of range maps in ecology and conservation*. Proc Natl Acad Sci USA **104**:13384-13389.
126. Peterson AT, Navarro-Sigüenza AG, Gordillo A (2016) *Assumption- versus data-based approaches to summarizing species' ranges*. Conserv Biol, 10.1111/cobi.12801.
127. Martínez-Ramos M, Ortíz-Rodríguez I, Pinero D, Dirzo R, Sarukhán J (2016) *Humans disrupt ecological processes within tropical rainforest reserves*. Proc Natl Acad Sci USA **113**:5323-5328.
128. Camargo-Sanabria AA, Mendoza E, Guevara R, Martínez-Ramos M, Dirzo R (2015) *Experimental defaunation of terrestrial mammalian herbivores alters tropical rainforest understorey diversity*. Proc Biol Sci **282**:20142580.
129. Petipas RH, Brody AK (2014) *Termites and ungulates affect arbuscular mycorrhizal richness and infectivity in a semiarid savanna*. Botany **92**:233-240.
130. Wardle DA, et al. (2004) *Ecological linkages between aboveground and belowground biota*. Science **304**:1629-1633.
131. Ceballos G, Ehrlich AH, Ehrlich PR (2015) **The Annihilation of Nature: Human Extinction of Birds and Mammals**, (Johns Hopkins Univ Press, Baltimore).
132. Knoll AH (2015) *Life on a Young Planet: The First Three Billion Years of Evolution on Earth*, (Princeton Univ Press, Princeton, NJ).
133. Barnosky AD, et al. (2014) *Introducing the scientific consensus on maintaining humanity's life support systems in the 21st century: Information for policy makers*. The Anthropocene Review **1**:78-109.

134. Ceballos G, Ehrlich PR, Soberón J, Salazar I, Fay JP (2005) *Global mammal conservation: What must we manage?* Science **309**:603-607.
135. Brown IL, Ehrlich PR (1980) *Population biology of the checkerspot butterfly, Euphydryas chalcedona structure of the Jasper Ridge colony.* Oecologia **47**:239-251.
136. Environmental Systems Research Institute (2011) *Release 10. Documentation Manual*, (Environmental Systems Research Institute, Redlands, CA).
137. Balling, R. C. 1988. *The climate impact of Sonoran vegetation discontinuity.* Climate Change **13**: 99-109.
138. Balling, R. C. 1991. *Impact of desertification on regional and global warming.* Bulletin of the American Meteorological Society **72**: 232-234.
139. Barigozzi, C. (ed.). 1986. *The Origin and Domestication of Cultivated Plants.* Amsterdam: Elsevier.
140. Botkin, D. B. 1989. *Science and the global environment.* In: D. B. Botkin et al., *Global Change.* New York: Academic Press, pp. 1-14.
141. Bryson, R. 1972. *Climate modification by air pollution.* In: N. Polunin (ed.), *The Environmental Future.* London: Macmillan, pp. 133-174.
142. Dregne, H. E., M. Kassas, and B. Rozanov. 1991. *A new assessment of the world status of desertification.* Desertification Control Bulletin, **no. 20**: 6-18.
143. FAO (Food and Agriculture Organization). 1991. *Protection of land resources: Deforestation* UNCED Prepcomm., 2nd session, Doc. A/CONF. 15/PC/27.
144. Hare, F. K. and L. A. J. Ogallo. 1993. *Climate Variation, Drought and Desertification.* WMO-No. 653. Geneva: WMO.
145. Houghton, J. T., B. A. Callander, and S. K. Varney (eds.). 1992. *Climate Change 1992. The Supplementary Report to the IPCC Scientific Assessment.* (Cambridge: Cambridge University Press.
146. Hulme, M. and M. Kelly. 1993. *Exploring the links between desertification and climate change.* Environment **35(6)**: 5-11, 39-45.
147. Jackson, R. D. and S. B. Idso. 1975. *Surface albedo and desertification.* Science **189**: 1012-1013.
148. Matthews, E. 1983. *Global vegetation and land use: New high-resolution databases for climatic studies.* Journal of Climate and Meteorology **22**: 474-487.
149. Schlesinger, W. H., et al. 1990. *Biological feedback in global desertification.* Science **247**: 1043-1048.
150. Turner, B. L., et al. 1990. "Two types of global environmental changes: Definitional and special-scale issues in their human dimensions." Global Environmental Change 1: 14-22.
151. UNESCO. 1960. *Medicinal plants of arid zones.* Arid Zone Research 13.
152. Vavilov, N. I. 1949. *The Origin, Variation, Immunity and Breeding of Cultivated Plants.* Waltham, Mass.: Chronica Botanica

Chapter 7

SEX AND OVER-CONSUMPTION

In order to have a chance of avoiding catastrophic climate change, we must reduce our carbon footprints. Understanding the part of human nature that drives us to excessive consumption can help us to achieve this goal.

7.1 Charles Darwin's theory of sexual selection

Darwin's sequel to *The Origin of Species*

In 1871, Charles Darwin published a book entitled *The Descent of Man and Selection in Relation to Sex*. It was a sequel to his 1859 book *On the Origin of Species*, from which he had intentionally omitted any discussion of human ancestry. In 1871, however, honesty compelled him to discuss this highly controversial topic. In his 1871 book, Darwin also discusses a question that had long bothered him. Why do the males of some bird species have extravagantly ornamental plumages, which are so elaborate that they may even hinder the birds' escape from predators? Darwin had often remarked that the sight of a peacock's beautiful feathers made him ill because it seemed to contradict his theory of natural selection. By 1871, however, he had found the answer: sexual selection.

Male-male competition and female choice

In discussing sexual selection, Darwin divided the subject into two headings - male-male competition and female choice.

Regarding male-male competition, Darwin wrote that survival "...depends, not on a struggle for existence, but on a struggle between the males for possession of the females; the result is not death to the unsuccessful competitor, but few or no offspring."

In discussing female selection, he wrote "...when the males and females of any animal have the same general habits ... but differ in structure, colour, or ornament, such differences have been mainly caused by sexual selection."

The statistician and evolutionary biologist Sir Ronald Aylmer Fisher (1890-1962) later wrote that "...plumage development in the male, and sexual preference for such develop-



Figure 7.1: **A male peacock.**

ments in the female, must thus advance together, and so long as the process is unchecked by severe counterselection, will advance with ever-increasing speed. In the total absence of such checks, it is easy to see that the speed of development will be proportional to the development already attained, which will therefore increase with time exponentially, or in geometric progression... In most existing species the runaway process must have been already checked, and we should expect that the more extraordinary developments of sexual plumage are not due like most characters to a long and even course of evolutionary progress, but to sudden spurts of change.”



Figure 7.2: Display by a male bird of paradise.



Figure 7.3: Red bird of paradise male in display.



Figure 7.4: The King-of-Saxony bird of paradise.



Figure 7.5: Mating display of a seabird on the Galapagos Islands. The females find this very attractive.



Figure 7.6: Female bowerbirds judge males according to their building skills and aesthetic taste.

7.2 We must stop using material goods as a means of social competition

Shooting Santa Claus

No one wants to shoot Santa Claus. That goes without saying! Who would want to harm that jolly old man, with his reindeer and sleigh, and his workshop at the North Pole? Who would want to prevent him from bringing happiness to everyone? Who would want to stop him from making the children's eyes light up like stars? Surely no one!

But the sad truth today is that we have to get rid of Santa somehow, before he kills us, and before he kills most of the plants and animals with which we share our world. Perhaps shooting is too harsh. Perhaps we should just forget Santa and all that he stands for, with his red suit, invented by the advertising department of Coca Cola.

This is what Santa stands for: The customer is always right. Your wish is our command. You have a right to whatever you desire. If you feel like taking a vacation on the other side of the world, don't hesitate, just do it. If you feel like buying a SUV, just do it. Self-fulfillment is your birthright. Spending makes the economy grow, and growth is good. Isn't that right?

But sadly that isn't right. We have to face the fact that endless economic growth on a finite planet is a logical impossibility, and that we have reached or passed the sustainable limits to growth.

In today's world, we are pressing against the absolute limits of the earth's carrying



Figure 7.7: An expensive automobile can be thought of as a mating display used by human males to impress females.

capacity, and further growth carries with it the danger of future collapse. In the long run, neither the growth of industry nor that of population is sustainable; and we have now reached or exceeded the sustainable limits.

The size of the human economy is, of course, the product of two factors: the total number of humans, and the consumption per capita. Let us first consider the problem of reducing the per-capita consumption in the industrialized countries. The whole structure of western society seems designed to push its citizens in the opposite direction, towards ever-increasing levels of consumption. The mass media hold before us continually the ideal of a personal utopia, filled with material goods.

Every young man in a modern industrial society feels that he is a failure unless he fights his way to the “top”; and in recent years, women too have been drawn into the competition. Of course, not everyone can reach the top; there would not be room for everyone; but society urges us all to try, and we feel a sense of failure if we do not reach the goal. Thus, modern life has become a competition of all against all for power and possessions.

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

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Figure 7.8: A very large house can also be thought of as a human mating display.



Figure 7.9: Size matters!



Figure 7.10: Males fighting for dominance and mating rights.

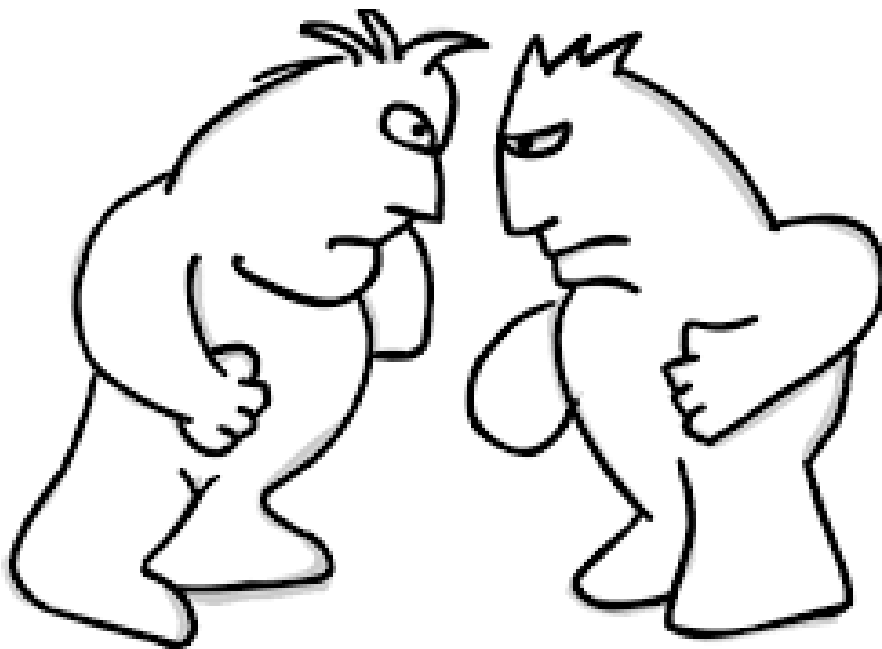


Figure 7.11: Males fighting for dominance and mating rights.

7.3 Thoreau: a pioneer of simple living

In the distant future (and perhaps even in the not-so-distant future) industrial civilization will need to abandon its relentless pursuit of unnecessary material goods and economic growth. Modern society will need to re-establish a balanced and harmonious relationship with nature. In pre-industrial societies harmony with nature is usually a part of the cultural tradition. In our own time, the same principle has become central to the ecological counter-culture while the main-stream culture thunders blindly ahead, addicted to wealth, power and growth.

In the 19th century the American writer, Henry David Thoreau (1817-1862), pioneered the concept of a simple life, in harmony with nature. Today, his classic book, *Walden*, has become a symbol for the principles of ecology, simplicity, and respect for nature.

Thoreau was born in Concord Massachusetts, and he attended Harvard from 1833 to 1837. After graduation, he returned home, worked in his family's pencil factory, did odd jobs, and for three years taught in a progressive school founded by himself and his older brother, John. When John died of lockjaw in 1842, Henry David was so saddened that he felt unable to continue the school alone.

Thoreau refused to pay his poll tax because of his opposition to the Mexican War and to the institution of slavery. Because of his refusal to pay the tax (which was in fact a very small amount) he spent a night in prison. To Thoreau's irritation, his family paid the poll tax for him and he was released. He then wrote down his ideas on the subject in an essay entitled *The Duty of Civil Disobedience*, where he maintains that each person has a duty to follow his own individual conscience even when it conflicts with the orders of his government. "Under a government that which imprisons any unjustly", Thoreau wrote, "the true place for a just man is in prison." *Civil Disobedience* influenced Tolstoy, Gandhi and Martin Luther King, and it anticipated the Nuremberg Principles.

Thoreau became the friend and companion of the transcendentalist writer Ralph Waldo Emerson (1803-1882), who introduced him to a circle of writers and thinkers that included Ellery Channing, Margaret Fuller and Nathaniel Hawthorne.

Nathaniel Hawthorne described Thoreau in the following words: "Mr. Thorow [sic] is a keen and delicate observer of nature - a genuine observer, which, I suspect, is almost as rare a character as even an original poet; and Nature, in return for his love, seems to adopt him as her especial child, and shows him secrets which few others are allowed to witness. He is familiar with beast, fish, fowl, and reptile, and has strange stories to tell of adventures, and friendly passages with these lower brethren of mortality. Herb and flower, likewise, wherever they grow, whether in garden, or wild wood, are his familiar friends. He is also on intimate terms with the clouds and can tell the portents of storms. It is a characteristic trait, that he has a great regard for the memory of the Indian tribes, whose wild life would have suited him so well; and strange to say, he seldom walks over a plowed field without picking up an arrow-point, a spear-head, or other relic of the red men - as if their spirits willed him to be the inheritor of their simple wealth."

At Emerson's suggestion, Thoreau opened a journal, in which he recorded his observations concerning nature and his other thoughts. Ultimately the journal contained more

than 2 million words. Thoreau drew on his journal when writing his books and essays, and in recent years, many previously unpublished parts of his journal have been printed.

From 1845 until 1847, Thoreau lived in a tiny cabin that he built with his own hands. The cabin was in a second-growth forest beside Walden Pond in Concord, on land that belonged to Emerson. Thoreau regarded his life there as an experiment in simple living. He described his life in the forest and his reasons for being there in his book *Walden*, which was published in 1854. The book is arranged according to seasons, so that the two-year sojourn appears compressed into a single year.

“Most of the luxuries”, Thoreau wrote, “and many of the so-called comforts of life, are not only not indispensable, but positive hindrances to the elevation of mankind. With respect to luxuries, the wisest have ever lived a more simple and meager life than the poor. The ancient philosophers, Chinese, Hindoo, Persian, and Greek, were a class than which none has been poorer in outward riches, none so rich in inward.”

Elsewhere in *Walden*, Thoreau remarks, “It is never too late to give up your prejudices”, and he also says, “Why should we be in such desperate haste to succeed, and in such desperate enterprises? If a man does not keep pace with his companions, perhaps it is because he hears a different drummer.” Other favorite quotations from Thoreau include “Rather than love, than money, than fame, give me truth”, “Beware of all enterprises that require new clothes”, “Most men lead lives of quiet desperation” and “Men have become tools of their tools.”

Towards the end of his life, when he was very ill, someone asked Thoreau whether he had made his peace with God. “We never quarreled”, he answered.

Thoreau’s closeness to nature can be seen from the following passage, written by his friend Frederick Willis, who visited him at Walden Pond in 1847, together with the Alcott family: “He was talking to Mr. Alcott of the wild flowers in Walden woods when, suddenly stopping, he said: ‘Keep very still and I will show you my family.’ Stepping quickly outside the cabin door, he gave a low and curious whistle; immediately a woodchuck came running towards him from a nearby burrow. With varying note, yet still low and strange, a pair of gray squirrels were summoned and approached him fearlessly. With still another note several birds, including two crows flew towards him, one of the crows nestling upon his shoulder. I remember that it was the crow resting close to his head that made the most vivid impression on me, knowing how fearful of man this bird is. He fed them all from his hand, taking food from his pocket, and petted them gently before our delighted gaze; and then dismissed them by different whistling, always strange and low and short, each wild thing departing instantly at hearing his special signal.”

In an essay published by the *Atlantic Monthly* in 1853, Thoreau described a pine tree in Maine with the words: “It is as immortal as I am, and perchance will go to as high a heaven, there to tower above me still.” However, the editor (James Russell Lowell) considered the sentence to be blasphemous, and removed it from Thoreau’s essay before publication.

In one of his essays, Thoreau wrote: “If a man walk in the woods for love of them half of each day, he is in danger of being regarded as a loafer; but if he spends his whole day as a speculator, shearing off those woods and making the earth bald before her time, he is esteemed an industrious and enterprising citizen.”



Figure 7.12: Henry David Thoreau, 1817-1862.

7.4 Veblen; economics as anthropology; conspicuous consumption

The phrase “conspicuous consumption” was invented by the Norwegian-American economist Thorstein Veblen (1857-1929) in order to describe the way in which our society uses economic waste as a symbol of social status. In *The Theory of the Leisure Class*, first published in 1899, Veblen pointed out that it is wrong to believe that human economic behavior is rational, or that it can be understood in terms of classical economic theory. To understand it, Veblen maintained, one might preferably make use of insights gained from anthropology, psychology, sociology, and history.

Thorstein Veblen was born into a large Norwegian immigrant family living on a farm in Wisconsin. His first language was Norwegian, and in fact he did not learn English well until he was in his teens. He was a strange boy, precociously addicted to reading, but negligent about doing his chores on the farm. His family recognized that he was unusually intelligent and decided to send him to Carlton College, where he obtained a B.A. in 1880. Later he did graduate work at Johns Hopkins University and finally obtained a Ph.D. from Yale in 1884.

Despite the Ph.D., he failed to obtain an academic position. His iconoclastic views and non-conformist attitudes undoubtedly contributed to this joblessness. Returning to the family farm, Thorstein Veblen continued his voracious reading and his neglect of farm duties for six years. As one of his brothers wrote, “He was lucky enough to come out of a race and family who made family loyalty a religion... He was the only loafer in a highly respectable community... He read and loafed, and the next day he loafed and read.”

An interesting fact about this strange man is that, for some reason, women found him very attractive. In 1888, Thorstein Veblen married Ellen Rolfe, the niece of the president of Carlton College. His wife was to leave him many times, partly because of his many infidelities, and partly because of his aloofness and detachment. He was like a visitor from another planet.

In part, the marriage to Ellen was motivated by Veblen’s search for a job. He hoped to obtain work as an economist for the Atchison, Topeka and Santa Fe Railway, of which her uncle was president. However, the railway was in financial difficulties, and it was taken over by bankers, after which the position disappeared.

Finally a family council was held on the Veblen farm, and it was decided that Thorstein should once again attempt to enter the academic world. In 1891, wearing corduroy trousers and a coonskin hat, he walked into the office of the conservative economist J.L. Laughlan and introduced himself. Although taken aback by Veblen’s appearance, Laughlan began to talk with him, and he soon recognized Veblen’s genius. A year later, when he moved to the University of Chicago, Laughlan brought Veblen with him at a salary of \$520 per year.

At the University of Chicago, Veblen soon established a reputation both for eccentricity and for enormous erudition. His socks were held up by safety pins, but he was reputed to be fluent in twenty-six languages. He gained attention also by publishing a series of brilliant essays.



Figure 7.13: Thorstein Veblen (1857-1929).

In 1899, Veblen “fluttered the doves of the East” by publishing a book entitled *The Theory of the Leisure Class*. It was part economics, part anthropology, and part social satire. Nothing of the kind had ever been seen in the field of economics. Until that moment it had been universally assumed that human economic behavior is rational. Veblen’s detached and surgically sharp intelligence exposed it as being very largely irrational.

According to Thorstein Veblen, ancient tribal instincts and attitudes motivate us today, just as they motivated our primitive ancestors. Veblen speaks of a predatory phase of primitive society where the strongest fighters were able to subjugate others. This primitive class structure was based on violence, and, according to Veblen, the attitudes associated with it persist today.

For example, Veblen noted that male members of the leisure class liked to go about with walking sticks. Why? Because, answers Veblen, it is “an advertisement that the bearer’s hands are employed otherwise than in useful effort.” Also, a walking stick is a weapon: “The handling of so tangible and primitive a means of offense is very comforting to anyone who is gifted with even a moderate share of ferocity”.

Even in modern society, Veblen says, we have an admiration for those who succeed in obtaining power and money through predatory means, and this admiration makes honest and useful work seem degraded. “During the predatory culture”, Veblen wrote, “labour comes to be associated in men’s habits of thought with weakness and subjugation to a master. It is therefore a mark of inferiority, and therefore comes to be accounted to be unworthy of man in his best estate. By virtue of this tradition, labour is felt to be debasing, and this tradition has never died out. On the contrary, with the advance of social differentiation it has acquired the axiomatic force of ancient and unquestioned prescription.”

“In order to gain and hold the esteem of men it is not sufficient merely to possess wealth or power. The wealth or power must be put in evidence, for esteem is awarded only on evidence. It is felt by all persons of refined taste that a spiritual contamination is inseparable from certain offices that are conventionally required of servants. Vulgar surroundings, mean (that is to say, inexpensive) habitations, and vulgarly productive occupations are unhesitatingly condemned and avoided. They are incompatible with life on a satisfactory spiritual plane - with ‘high thinking’.”

“...The performance of labour has been accepted as a conventional evidence of inferior force, therefore it comes by itself, by a mental shortcut, to be regarded as intrinsically base.”

“The normal and characteristic occupations of the [leisure] class are... government, war, sports, and devout observances... At this as at any other cultural stage, government and war are, at least in part, carried out for the pecuniary gain of those who engage in them, but it is gain obtained by the honourable method of seizure and conversion.”

Veblen also remarks that “It is true of dress even in a higher degree than of most items of consumption, that people will undergo a very considerable degree of privation in the comforts or the necessities of life in order to afford what is considered a decent amount of wasteful consumption; so that it is by no means an uncommon occurrence, in an inclement climate, for people to go ill clad in order to appear well dressed.”

The sensation caused by the publication of Veblen’s book, and the fact

that his phrase, “conspicuous consumption”, has become part of our language, indicate that his theory did not completely miss its mark. In fact, modern advertisers seem to be following Veblen’s advice: Realizing that much of the output of our economy will be used for the purpose of establishing the social status of consumers, advertising agencies hire psychologists to appeal to the consumer’s longing for a higher social position.

7.5 Gandhi as an economist; merit and goods are not connected

If humans are to achieve a stable society in the distant future, it will be necessary for them to become modest in their economic behavior and peaceful in their politics. For both modesty and peace, Gandhi is useful as a source of ideas.

Mohandas Karamchand Gandhi was born in 1869 in Porbandar, India. His family belonged to the Hindu caste of shopkeepers. (In Gujarati “Gandhi” means “grocer”.) However, the family had risen in status, and Gandhi’s father, grandfather, and uncle had all served as prime ministers of small principalities in western India.

In 1888, Gandhi sailed for England, where he spent three years studying law at the Inner Temple in London. Before he left India, his mother had made him take a solemn oath not to touch women, wine, or meat. He thus came into contact with the English vegetarians, who included Sir Edward Arnold (translator of the Bhagavad Gita), the Theosophists Madame Blavatsky and Annie Besant, and the Fabians. Contact with this idealistic group of social critics and experimenters helped to cure Gandhi of his painful shyness, and it also developed his taste for social reform and experimentation.

Gandhi’s exceptionally sweet and honest character won him many friends in England, and he encountered no racial prejudice at all. However, when he traveled to Pretoria in South Africa a few years later, he experienced racism in its worst form. Although he was meticulously well dressed in an English frock coat, and in possession of a first-class ticket, Gandhi was given the choice between traveling third class or being thrown off the train. (He chose the second alternative.) Later in the journey he was beaten by a coach driver because he insisted on his right to sit as a passenger rather than taking a humiliating position on the footboard of the coach.

The legal case which had brought Gandhi to South Africa was a dispute between a wealthy Indian merchant, Dada Abdullah Seth, and his relative, Seth Tyeb (who had refused to pay a debt of 40,000 pounds, in those days a huge sum). Gandhi succeeded in reconciling these two relatives, and he persuaded them to settle their differences out of court. Later he wrote about this experience:

“Both were happy with this result, and both rose in public estimation. My joy was boundless. I had learnt the true practice of law. I had learnt to find out the better side of human nature and to enter men’s hearts. I realized that the true function of a lawyer was to unite parties riven asunder. The lesson was so indelibly burnt into me that a large part

of my time during my twenty years of practice as a lawyer was occupied in bringing about compromises of hundreds of cases. I lost nothing thereby - not even money, certainly not my soul.”

Gandhi was about to return to India after the settlement of the case, but at a farewell party given by Abdullah Seth, he learned of a bill before the legislature which would deprive Indians in South Africa of their right to vote. He decided to stay and fight against the bill.

Gandhi spent the next twenty years in South Africa, becoming the leader of a struggle for the civil rights of the Indian community. In this struggle he tried “...to find the better side of human nature and to enter men’s hearts.” Gandhi’s stay in England had given him a glimpse of English liberalism and English faith in just laws. He felt confident that if the general public in England could be made aware of gross injustices in any part of the British Empire, reform would follow. He therefore organized non-violent protests in which the protesters sacrificed themselves so as to show as vividly as possible the injustice of an existing law. For example, when the government ruled that Hindu, Muslim and Parsi marriages had no legal standing, Gandhi and his followers voluntarily went to prison for ignoring the ruling.

Gandhi used two words to describe this form of protest: “satyagraha” (the force of truth) and “ahimsa” (non-violence). Of these he later wrote: “I have nothing new to teach the world. Truth and non-violence are as old as the hills. All that I have done is to try experiments in both on as vast a scale as I could. In so doing, I sometimes erred and learnt by my errors. Life and its problems have thus become to me so many experiments in the practice of truth and non-violence.”

In his autobiography, Gandhi says: “Three moderns have left a deep impression on my life and captivated me: Raychandbhai (the Indian philosopher and poet) by his living contact; Tolstoy by his book ‘The Kingdom of God is Within You’; and Ruskin by his book ‘Unto This Last’.”

Ruskin’s book, “Unto This Last”, which Gandhi read in 1904, is a criticism of modern industrial society. Ruskin believed that friendships and warm interpersonal relationships are a form of wealth that economists have failed to consider. He felt that warm human contacts are most easily achieved in small agricultural communities, and that therefore the modern tendency towards centralization and industrialization may be a step backward in terms of human happiness. While still in South Africa, Gandhi founded two religious Utopian communities based on the ideas of Tolstoy and Ruskin. Phoenix Farm (1904) and Tolstoy Farm (1910). At this time he also took an oath of chastity (“bramacharya”), partly because his wife was unwell and he wished to protect her from further pregnancies, and partly in order to devote himself more completely to the struggle for civil rights.

Because of his growing fame as the leader of the Indian civil rights movement in South Africa, Gandhi was persuaded to return to India in 1914 and to take up the cause of Indian home rule. In order to re-acquaint himself with conditions in India, he traveled tirelessly, now always going third class as a matter of principle.

During the next few years, Gandhi worked to reshape the Congress Party into an organization which represented not only India’s Anglicized upper middle class but also the millions of uneducated villagers who were suffering under an almost intolerable burden of

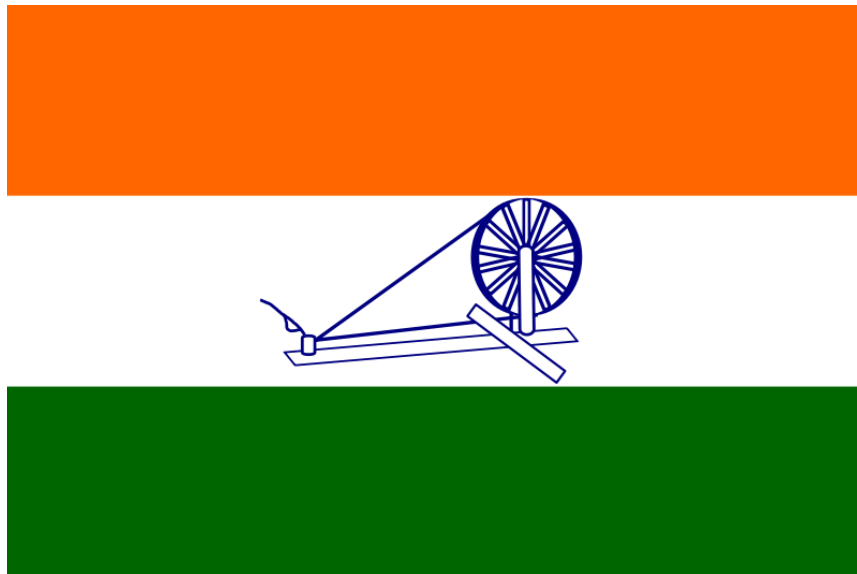


Figure 7.14: **Gandhi’s spinning wheel was incorporated into the flag of the Congress Party and later into the national flag of an independent India.**

poverty and disease. In order to identify himself with the poorest of India’s people, Gandhi began to wear only a white loincloth made of rough homespun cotton. He traveled to the remotest villages, recruiting new members for the Congress Party, preaching non-violence and “firmness in the truth”, and becoming known for his voluntary poverty and humility. The villagers who flocked to see him began to call him “Mahatma” (Great Soul).

Disturbed by the spectacle of unemployment and poverty in the villages, Gandhi urged the people of India to stop buying imported goods, especially cloth, and to make their own. He advocated the re-introduction of the spinning wheel into village life, and he often spent some hours spinning himself. The spinning wheel became a symbol of the Indian independence movement, and was later incorporated into the Indian flag.

The movement for boycotting British goods was called the “Swadeshi movement”. The word Swadeshi derives from two Sanskrit roots: *Swa*, meaning self, and *Desh*, meaning country. Gandhi described Swadeshi as “a call to the consumer to be aware of the violence he is causing by supporting those industries that result in poverty, harm to the workers and to humans or other creatures.”

Gandhi tried to reconstruct the crafts and self-reliance of village life that he felt had been destroyed by the colonial system. “I would say that if the village perishes India will perish too”, he wrote, “India will be no more India. Her own mission in the world will get lost. The revival of the village is only possible when it is no more exploited. Industrialization on a mass scale will necessarily lead to passive or active exploitation of the villagers as problems of competition and marketing come in. Therefore we have to concentrate on the village being self-contained, manufacturing mainly for use. Provided this character of the village industry is maintained, there would be no objection to villagers

using even the modern machines that they can make and can afford to use. Only they should not be used as a means of exploitation by others.”

“You cannot build nonviolence on a factory civilization, but it can be built on self-contained villages... Rural economy as I have conceived it, eschews exploitation altogether, and exploitation is the essence of violence... We have to make a choice between India of the villages that are as ancient as herself and India of the cities which are a creation of foreign domination...”

“Machinery has its place; it has come to stay. But it must not be allowed to displace necessary human labour. An improved plow is a good thing. But if by some chances, one man could plow up, by some mechanical invention of his, the whole of the land of India, and control all the agricultural produce, and if the millions had no other occupation, they would starve, and being idle, they would become dunces, as many have already become. There is hourly danger of many being reduced to that unenviable state.”

In these passages we see Gandhi not merely as a pioneer of nonviolence; we see him also as an economist. Faced with misery and unemployment produced by machines, Gandhi tells us that social goals must take precedence over blind market mechanisms. If machines are causing unemployment, we can, if we wish, and use labor-intensive methods instead. With Gandhi, the free market is not sacred - we can do as we wish, and maximize human happiness, rather than maximizing production and profits.

Gandhi also organized many demonstrations whose purpose was to show the British public that although the British raj gave India many benefits, the toll exacted was too high, not only in terms of money, but also in terms of India's self-respect and self-sufficiency. All of Gandhi's demonstrations were designed to underline this fact. For example, in 1930 Gandhi organized a civil-disobedience campaign against the salt laws. The salt laws gave the Imperial government a monopoly and prevented Indians from making their own salt by evaporating sea water. The majority of Indians were poor farmers who worked long hours in extreme heat, and salt was as much a necessity to them as bread. The tax on salt was essentially a tax on the sweat of the farmers.

Before launching his campaign, Gandhi sent a polite letter to the Viceroy, Lord Irwin, explaining his reasons for believing that the salt laws were unjust, and announcing his intention of disregarding them unless they were repealed. Then, on March 12 1930, Gandhi and many of his followers, accompanied by several press correspondents, started on a march to the sea to carry out their intention of turning themselves into criminals by making salt. Every day, Gandhi led the procession about 12 miles, stopping at villages in the evenings to hold prayer meetings. Many of the villagers joined the march, while others cast flower petals in Gandhi's path or sprinkled water on his path to settle the dust.

On April 5 the marchers arrived at the sea, where they spent the night in prayer on the beach. In the morning they began to make salt by wading into the sea, filling pans with water, and letting it evaporate in the sun. Not much salt was made in this way, but Gandhi's action had a strong symbolic power. A wave of non-violent civil disobedience demonstrations swept over India, so extensive and widespread that the Imperial government, in danger of losing control of the country, decided to arrest as many of the demonstrators as possible. By midsummer, Gandhi and a hundred thousand of his followers were in prison,

but nevertheless the civil disobedience demonstrations continued.

In January, 1931, Gandhi was released from prison and invited to the Viceroy's palace to talk with Lord Irwin. They reached a compromise agreement: Gandhi was to call off the demonstrations and would attend a Round Table Conference in London to discuss Indian home rule, while Lord Irwin agreed to release the prisoners and would change the salt laws so that Indians living near to the coast could make their own salt.

The salt march was typical of Gandhi's non-violent methods. Throughout the demonstrations he tried to maintain a friendly attitude towards his opponents, avoiding escalation of the conflict. Thus at the end of the demonstrations, the atmosphere was one in which a fair compromise solution could be reached. Whenever he was in prison, Gandhi regarded his jailers as his hosts. Once, when he was imprisoned in South Africa, he used the time to make a pair of sandals, which he sent to General Smuts, the leader of the South African government. Thus Gandhi put into practice the Christian principle, "Love your enemies; do good to them that hate you."

Gandhi's importance lies in the fact that he was a major political leader who sincerely tried to put into practice the ethical principles of religion. In his autobiography Gandhi says: "I can say without the slightest hesitation, and yet with all humility, that those who say that religion has nothing to do with politics do not know what religion means."

Gandhi believed that human nature is essentially good, and that it is our task to find and encourage whatever is good in the character of others. During the period when he practiced as a lawyer, Gandhi's aim was "to unite parties riven asunder," and this was also his aim as a politician. In order for reconciliation to be possible in politics, it is necessary to avoid escalation of conflicts. Therefore Gandhi used non-violent methods, relying only on the force of truth. "It is my firm conviction," he wrote, "that nothing can be built on violence."

To the insidious argument that "the end justifies the means," Gandhi answered firmly: "They say 'means are after all means'. I would say 'means are after all everything'. As the means, so the end. Indeed the Creator has given us control (and that very limited) over means, none over end. ... The means may be likened to a seed, and the end to a tree; and there is the same inviolable connection between the means and the end as there is between the seed and the tree. Means and end are convertible terms in my philosophy of life." In other words, a dirty method produces a dirty result; killing produces more killing; hate leads to more hate. But there are positive feedback loops as well as negative ones. A kind act produces a kind response; a generous gesture is returned; hospitality results in reflected hospitality. Hindus and Buddhists call this principle "the law of karma".

Gandhi believed that the use of violent means must inevitably contaminate the end achieved. Because Gandhi's methods were based on love, understanding, forgiveness and reconciliation, the non-violent revolution which he led left very little enmity in its wake. When India finally achieved its independence from England, the two countries parted company without excessive bitterness. India retained many of the good ideas which the English had brought - for example the tradition of parliamentary democracy - and the two countries continued to have close cultural and economic ties.

Mahatma Gandhi was assassinated by a Hindu extremist on January 30,

1948. After his death, someone collected and photographed all his worldly goods. These consisted of a pair of glasses, a pair of sandals and a white homespun loincloth. Here, as in the Swadeshi movement, we see Gandhi as a pioneer of economics. He deliberately reduced his possessions to an absolute minimum in order to demonstrate that there is no connection between personal merit and material goods. Like Veblen, Mahatma Gandhi told us that we must stop using material goods as a means of social competition. We must start to judge people not by what they have, but by what they are.

7.6 The counter-culture; stepping off the treadmill

Say's Law ("Supply creates its own demand"), was proposed by the French economist Jean-Baptiste Say (1767-1832). Say's basis for this proposition was the assumption that a consumer's desire for goods is infinite. He combined this assumption with the observation that the wages paid for the production of goods will provide money enough to buy back the goods, even if the amount involved increases without limit. Comforted by Say's "law", and by the observation that people in industrial societies do indeed consume far more than they actually need, economists continue to pursue economic growth as though it were the Holy Grail. We do indeed devote much of our efforts to "making the earth bald before her time".

As things are today, the advertising industry, which is part of the mainstream culture, whips demand towards ever higher levels by exploiting our tendency to use material goods for the purpose of social competition. Meanwhile, a small but significant counter-culture has realized that unlimited economic growth will lead to ecological disaster unless we stop in time.

In the 1960's, a counter-culture developed in the United States, partly as a reaction against the Vietnam War and partly as a reaction against consumerism. It seemed to young people that they were being offered a possession-centered way of life that they did not want, and that they were being asked to participate in a war that they thought was immoral.

In 1964, a free speech movement began on the campus of the University of California in Berkeley. Students demanded that the university administration should lift a ban that it had imposed on on-campus political activities. Student movements elsewhere in the United States and in Europe echoed the Berkeley protests throughout the late 1960's and early 1970's.

Mario Savo, one of the leaders of the Berkeley free speech movement, compared the Establishment to an enormous anti-human machine: "There is a time when the operation of the machine becomes so odious, makes you so sick at heart, that you can't take part; you can't even passively take part, and you've got to put your bodies upon the gears and upon the wheels, upon the levers, upon all the apparatus, and you've got to make it stop. And you've got to indicate to the people who run it, to the people who own it, that unless you're free, the machine will be prevented from working at all."

The Greening of America, by Charles Reich, describes the youth-centered counter-culture: “Industrialism produced a new man...”, Reich wrote, “one adapted to the demands of the machine. In contrast, today’s emerging consciousness seeks a new knowledge of what it means to be human, in order that the machine, having been built, may now be turned to human ends; in order that man once more can become a creative force, renewing and creating his own life and thus giving life back to society.”

Suggestions for further reading

1. R. Tilman, *The Intellectual Legacy of Thorstein Veblen: Unresolved Issues*, Greenwood Press, (1996).
2. R. Tilman, *Thorstein Veblen and His Critics, 1891-1963*, Princeton University Press, (1992).
3. K. McCormick, *Veblen in Plain English*, Cambria Press, (2006).
4. J. Dorfman, *Thorstein Veblen and His America*, Harvard University Press, (1934).
5. J. Homer, ed., *The Gandhi Reader: A Sourcebook of his Life and Writings*, Grove Press, New York, (1956).
6. G. Sharp, *Gandhi as a Political Strategist, with Essays on Ethics and Politics*, Extending Horizon Books, Boston, (1979).
7. J.V. Bondurant, *Conquest of Violence: The Gandhian Philosophy of Conflict*, Princeton University Press, (1988).
8. L. Fischer, *The Essential Gandhi: An Anthology of his Writings on His Life, Work and Ideas*, Vintage, New York, (2002).
9. M.K. Gandhi, *Hind Swaraj and Other Writings*, edited by A.J. Parel, Cambridge Texts in Modern Politics, (2006).
10. C. Bode, *Best of Thoreau’s Journals*, Southern Illinois University Press, (1967).
11. J. Meyerson et al., *The Cambridge Companion to Henry David Thoreau*, Cambridge University Press, (1995).
12. W. Howarth, *The Book of Concord: Thoreau’s Life as a Writer*, Viking Press, (1982).
13. W. Harding, *Days of Henry Thoreau*, Princeton University Press, (1982).
14. T. Roszak, *The Making of a Counter Culture*, (1970).
15. E. Nelson, *The British Counterculture 1966-1973*, Macmillan, London, (1989).
16. G. McKay, *Senseless Acts of Beauty: Cultures of Resistance since the Sixties*, Verso, London, (1996).
17. K. Goffman, *Counterculture Through the Ages*, Villard Books, (2004).
18. Brundtland Commission, *Our Common Future*, Oxford University Press, (1987).
19. G.O. Barney, , *The Unfinished Agenda: The Citizen’s Policy Guide to Environmental Issues*, Thomas Y. Crowell, New York, (1977).
20. R.E. Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, Harvard University Press, Cambridge, (1991).
21. T. Berry, *The Dream of the Earth*, Sierra Club Books, San Francisco, (1988).
22. L.R. Brown, *The Twenty-Ninth Day*, W.W. Norton, New York, (1978).

23. M.E. Clark, *Ariadne's Thread: The Search for New Modes of Thinking*, St. Martin's Press, New York, (1989).
24. W.C. Clark and others, *Managing Planet Earth*, Special Issue, *Scientific American*, September, (1989).
25. B. Commoner, *The Closing Circle: Nature, Man and Technology*, Bantam Books, New York, (1972).
26. Council on Environmental Quality and U.S. Department of State, *Global 2000 Report to the President: Entering the Twenty-First Century*, Technical Report, Volume 2, U.S. Government Printing Office, Washington D.C., (1980).
27. J.C.I. Dooge et al. (editors), *Agenda of Science for Environment and Development into the 21st Century*, Cambridge University Press, (1993).
28. E. Eckholm, *The Picture of Health: Environmental Sources of Disease*, New York, (1976).
29. Economic Commission for Europe, *Air Pollution Across Boundaries*, United Nations, New York, (1985).
30. P.R. Ehrlich, A.H. Ehrlich and J. Holdren, *Ecoscience: Population, Resources, Environment*, W.H. Freeman, San Francisco, (1977)
31. P.R. Ehrlich and A.H. Ehrlich, *Extinction*, Victor Gollancz, London, (1982).
32. P.R. Ehrlich and A.H. Ehrlich, *Healing the Planet*, Addison Wesley, Reading MA, (1991).
33. C. Flavin, *Slowing Global Warming: A Worldwide Strategy*, Worldwatch Paper 91, Worldwatch Institute, Washington D.C., (1989).
34. H.F. French, *Clearing the Air: A Global Agenda*, Worldwatch Paper 94, Worldwatch Institute, Washington D.C., (1990).
35. H.F. French, *After the Earth Summit: The Future of Environmental Governance*, Worldwatch Paper 107, Worldwatch Institute, Washington D.C., (1992).
36. G. Hagman and others, *Prevention is Better Than Cure*, Report on Human Environmental Disasters in the Third World, Swedish Red Cross, Stockholm, Stockholm, (1986).
37. G. Hardin, "The Tragedy of the Commons", *Science*, December 13, (1968).
38. P.W. Hemily and M.N. Ozdas (eds.) *Science and Future Choice*, Clarendon, Oxford, (1979).
39. IUCN, UNEP, WWF, *Caring for the Earth*, Earthscan Publications, London, (1991).
40. L. Rosen and R. Glasser (eds.), *Climate Change and Energy Policy*, Los Alamos National Laboratory, AIP, New York, (1992).
41. J.J. MacKenzie and M.T. El-Ashry, *Ill Winds: Airborne Pollution's Toll on Trees and Crops*, World Resources Institute, Washington D.C., (1988).
42. J.T. Mathews (editor), *Preserving the Global Environment: The Challenge of Shared Leadership*, W.W. Norton, New York, (1991).
43. J. McCormick, *Acid Earth*, International Institute for Environment and Development, London, (1985).
44. N. Myers, *The Sinking Ark*, Pergamon, New York, (1972).

45. N. Myers, *Conservation of Tropical Moist Forests*, National Academy of Sciences, Washington D.C., (1980).
46. D.W. Orr, *Ecological Literacy*, State University of New York Press, Albany, (1992).
47. D.C. Pirages and P.R. Ehrlich, *Ark II: Social Responses to Environmental Imperatives*, W.H. Freeman, San Francisco, (1974).
48. J. Rotblat (ed.), *Shaping Our Common Future: Dangers and Opportunities (Proceedings of the Forty-Second Pugwash Conference on Science and World Affairs)*, World Scientific, London, (1994).
49. J.C. Ryan, *Life Support: Conserving Biological Diversity*, Worldwatch Paper 108, Worldwatch Institute, Washington D.C., (1992).
50. S.F. Singer, *Global Effects of Environmental Pollution*, Springer Verlag, New York, (1971).
51. B. Stokes, *Local Responses to Global Problems: A Key to Meeting Basic Human Needs*, Worldwatch Paper 17, Worldwatch Institute, Washington D.C., (1978).
52. L. Timberlake, *Only One Earth: Living for the Future*, BBC/ Earthscan, London, (1987).
53. UNEP, *Environmental Data Report*, Blackwell, Oxford, (published annually).
54. UNESCO, *International Coordinating Council of Man and the Biosphere*, MAB Report Series No. 58, Paris, (1985).
55. P.M. Vitousek, P.R. Ehrlich, A.H. Ehrlich and P.A. Matson, *Human Appropriation of the Products of Photosynthesis*, *Bioscience*, 34, 368-373, (1986).
56. B. Ward and R. Dubos, *Only One Earth*, Penguin Books Ltd., (1973).
57. P. Weber, *Abandoned Seas: Reversing the Decline of the Oceans*, Worldwatch Paper 116, Worldwatch Institute, Washington D.C., (1993).
58. E.O. Wilson (ed.), *Biodiversity*, National Academy Press, Washington D.C., (1988).
59. E.O. Wilson, *The Diversity of Life*, Allen Lane, The Penguin Press, London, (1992).
60. G. Woodwell (ed.), *The Earth in Transition: Patterns and Processes of Biotic Impoverishment*, Cambridge University Press, (1990).
61. World Commission on Environment and Development, *Our Common Future*, Oxford University Press, (1987).
62. World Resources Institute (WRI), *Global Biodiversity Strategy*, The World Conservation Union (IUCN), United Nations Environment Programme (UNEP), (1992).

Chapter 8

OUR ROOTS IN SHARING SOCIETIES

8.1 The San people of the Kalahari Desert

Wikipedia says of them:

“Traditionally, the San were an egalitarian society. Although they had hereditary chiefs, their authority was limited. The San made decisions among themselves by consensus, with women treated as relative equals. San economy was a gift economy, based on giving each other gifts regularly rather than on trading or purchasing goods and services.

8.2 Sharing in Inuit societies

An article entitled *Inuit: Family, Sharing, and Community Life*, published by Teachers Centre¹, states that in Inuit society,

“A primary contribution that binds people together socially, and which has always played a part in our survival, is the sharing of food and the willingness to cooperate when the need arises. At times sharing and cooperation are based on very formal rules, while at other times, it is simply expected to be done. When animals are killed on the hunt, they are shared, when people are in need, they are looked after; it is the Inuit way and it represents a value that we continue to honour.”

¹<http://www.virtualmuseum.ca/edu/Login.do?method=load>

8.3 Sharing in early Christian communities

Acts of the Apostles 4:32-5:11

“Now the whole group of those who believed were of one heart and soul, and no one claimed private ownership of any possessions, but everything they owned was held in common. With great power the apostles gave their testimony to the resurrection of the Lord Jesus, and great grace was upon them all. There was not a needy person among them, for as many as owned lands or houses sold them and brought the proceeds of what was sold. They laid it at the apostles’ feet, and it was distributed to each as any had need.”

8.4 Trading in primitive societies

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

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

Early religions tended to be centered on particular tribes, and the ethics associated with them were usually tribal in nature. However, the more cosmopolitan societies that began to form after the Neolithic agricultural revolution required a more universal code of ethics. It is interesting to notice that many of the great ethical teachers of human history, for example Moses, Socrates, Plato, Aristotle, Lao-Tzu, Confucius, Buddha, and Jesus, lived at the time when the change to larger social units was taking place. Tribalism was no longer appropriate. A wider ethic was needed.

Today the size of the social unit is again being enlarged, this time enlarged to include the entire world. Narrow loyalties have become inappropriate and there is an urgent need

for a new ethic - a global ethic. Loyalty to one's nation needs to be supplemented by a higher loyalty to humanity as a whole.

8.5 Interdependence in modern human society

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

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

The achievements of modern society are achievements of cooperation. We can fly, but no one builds an airplane alone. We can cure diseases, but only through the cooperative efforts of researchers, doctors and medicinal firms. We can photograph and understand distant galaxies, but the ability to do so is built on the efforts of many cooperating individuals. The comfort and well-being that we experience depends on far-away friendly hands and minds, since trade is global, and the exchange of ideas is also global.

8.6 Benefits of equality

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 countries, 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:²

“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.”

²<https://inequality.org/facts/global-inequality/>

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.

Excessive economic inequality is at the root of the decay of democracy and the drift towards neofacism 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, mysogeny, 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.

8.7 Two sides of human nature

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

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

Chapter 9

A NEW SOCIAL CONTRACT

9.1 Caring for the future of our children

Our present situation is this:

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

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

Inaction is not an option. We have to act with courage and dedication, even if the odds are against success, because the stakes are so high. The mass media could mobilize us to action, but they have failed in their duty. Our educational system could also wake us up and make us act, but it too has failed us. The battle to save the earth from human greed and folly has to be fought in the alternative media. Hence this book, and hence urgent the tone of this final chapter.

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.

9.2 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



Figure 9.1: Nicholas Georgescu-Roegen: He showed that our present economic system is not cyclic but unidirectional, since it involves the irreversible degradation of non-renewable resources.

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.

Our present economic system as 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.

Georgescu-Roegen's list of desiderata remains valid today: We need drastic cuts in weapons production, thereby releasing productive forces for more constructive purposes. We need immediate aid to underdeveloped countries and gradual decrease in population to a level that can be maintained by organic agriculture. We also need avoidance, and strict regulation if necessary, of wasteful energy use. Finally, we need to abandon our attachment to extravagant gadgetry and fashion, and we must cure ourselves of workaholic habits by re-balancing the time spent on work and leisure.

Today, the distinguished economist Herman Daly (a student of Georgescu-Roegen) 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,



Figure 9.2: Herman E. Daly: A student of Georgescu-Roegen the distinguished economist, Prof. H.E. Daly calls for a transition to a steady-state economic system, in which processes would be cyclic and sustainable.

with Joshua Farley.¹

¹<http://steadystate.org/category/herman-daly/>
https://en.wikipedia.org/wiki/Herman_Daly
<http://grist.org/article/bank/>
<http://www.donellameadows.org/wp-content/userfiles/Limits-to-Growth-digital-scan-version.pdf>
<http://www.clubofrome.org/?p=326>

9.3 We must restore democracy

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.

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.

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

In a democracy, the power of judging and controlling governmental policy is supposed to be in the hands of the people. It is completely clear that if the people do not know what their government is doing, then they cannot judge or control governmental policy, and democracy has been abolished. There has always been a glaring contradiction between democracy and secret branches of the government, such as the CIA, which conducts its assassinations and its dirty wars in South America 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.

We must restore democracy 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.



Figure 9.3: Edward Snowden.

9.4 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.”

“This epochal change has been set in motion by the enormous qualitative, quantitative, rapid and cumulative advances occurring in the sciences and in technology, and by their instant application in different areas of nature and of life. We are in an age of knowledge and information, which has led to new and often anonymous kinds of power.”



Figure 9.4: We must decrease economic inequality.

“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.”

In a recent speech, Senator Bernie Sanders quoted Pope Francis extensively and added: “We have a situation today, Mr. President, incredible as it may sound, where the wealthiest 85 people in the world own more wealth than the bottom half of the world’s population.”²

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.³ 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.

9.5 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

²https://www.youtube.com/watch?v=9_LJpN893Vg
<https://www.oxfam.org/en/tags/inequality>
https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/cr-even-it-up-extreme-inequality-291014-en.pdf

³<https://www.youtube.com/watch?v=cZ7LzE3u7Bw>
https://en.wikipedia.org/wiki/Richard_G._Wilkinson



Figure 9.5: We must break the power of corporate greed.



Figure 9.6: Greed is driving us towards disaster.

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 Institute Professor Noam Chomsky of MIT 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.

Occasionally, for the sake of their public image, corporations seem to do something for other motives than their own bottom line, but it is usually window dressing. For example, Shell claims to be supporting research on renewable energy. Perhaps there is indeed a small renewable energy laboratory somewhere in that vast corporation; but the real interest of the organization is somewhere else. Shell is sending equipment on a large scale to drill for more and more environment-destroying oil in the Arctic.⁴

9.6 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.

New hope that such a catastrophe for human civilization and the biosphere can be avoided comes from two recently-released documents: The Encyclical “Laudato Si’ ” by Pope Francis, and the statistics on the rate of growth of renewable energy newly released by the Earth Policy Institute.

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

⁴<http://www.countercurrents.org/avery170715.htm>
<http://human-wrongs-watch.net/2015/06/25/militarisms-hostages/>
<https://www.youtube.com/watch?v=FJUA4cm0Rck>



Figure 9.7: **We must leave fossil fuels in the ground.**

been only 337 gigatons.

Despite the worrying nature of the threats that we are facing, there are reasons for hope. One of the greatest of these is the beautiful, profound and powerful encyclical that has just been released by Pope Francis.⁵

Pope Francis tells us that the dictates of today's economists are not sacred: In the future, if we are to survive, economics must be given both a social conscience and an ecological conscience. Nor are private property and profits sacred. They must be subordinated to the common good, and the preservation of our global commons. Less focus on material goods need not make us less happy. The quality of our lives can be increased, not decreased, if we give up our restless chase after power and wealth, and derive more of our pleasures from art, music and literature, and from conversations with our families and friends.

Another 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,⁶ 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.

All of us must still work with dedication to provide the political will needed to avoid catastrophic climate change. However, the strong and friendly voice of Pope Francis, and the remarkable rate of growth of renewable energy can guide our work, and can give us hope and courage.

⁵http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html

⁶<http://www.earth-policy.org/books/tgt>

The award-winning author and activist Naomi Klein has emphasized that the climate crisis changes everything. Environmentalists and antiwar activists must unite! We need a new economic system! The people of the world don't want climate change; they want system change!⁷

9.7 We must stabilize, and ultimately reduce, 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,

⁷<https://www.transcend.org/tms/2015/03/naomi-klein-the-economic-system-we-have-created-global-warming/>

<http://thischangeseverything.org/naomi-klein/>

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

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

<https://www.youtube.com/watch?v=sRGVTK-AAvw>

<https://www.youtube.com/watch?v=MVwmi7HCmSI>

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

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

<https://www.youtube.com/watch?v=MVwmi7HCmSI>

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

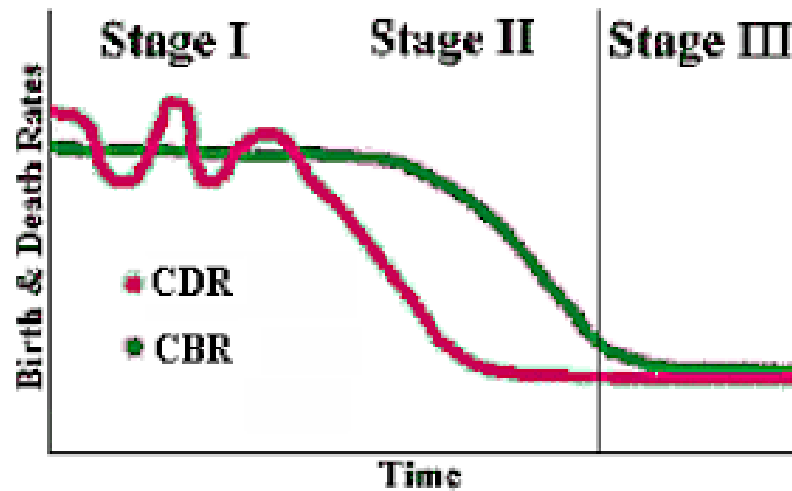


Figure 9.8: **We must stabilize, and ultimately reduce, global population. If we are to avoid a large-scale famine, all countries must pass through the demographic transition.**

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.

A recent study conducted by Robert F. Lapham of Demographic Health Surveys and W. Parker Maudlin of the Rockefeller Foundation has shown that the use of birth control is correlated both with socio-economic setting and with the existence of strong family-planning programs. The implication of this study is that even in the absence of increased living standards, family planning programs can be successful, provided they have strong government support.

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.

9.8 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

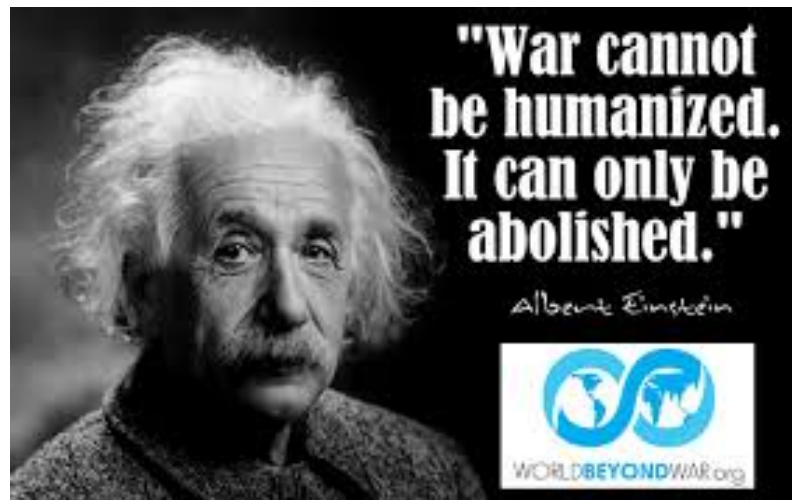


Figure 9.9: **We must abolish the institution of war.**

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.

9.9 Educational reforms

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.

In the teaching of science too, reforms are needed. Graduates in science and technology should be conscious of their responsibilities. They must resolve never to use their education in the service of war, or in any way which might be harmful to society or to the environment.

In modern societies, mass media play an extremely important role in determining behavior and attitudes. This role can be a negative one when the media show violence and enemy images, but if used constructively, the mass media can offer a powerful means for creating international understanding. If it is indeed true that tribalism is part of human nature, it is extremely important that the mass media be used to the utmost to overcome the barriers between nations and cultures. Through increased communication, the world's peoples can learn to accept each other as members of a single family.

Finally, let us turn to religion, with its enormous influence on human thought and behavior. Christianity, for example, offers a strongly stated ethic, which, if practiced, would make war impossible. In Mathew, the following passage occurs: "Ye have heard it said: Thou shalt love thy neighbor and hate thy enemy. But I say unto you: Love your enemies, bless them that curse you, do good to them that hate you, and pray for them that spitefully use you and persecute you."

This seemingly impractical advice, that we should love our enemies, is in fact of the greatest practicality, since acts of unilateral kindness and generosity can stop escalatory cycles of revenge and counter-revenge such as those which characterize the present conflict in the Middle East and the recent troubles of Northern Ireland. However, Christian nations, while claiming to adhere to the ethic of love and forgiveness, have adopted a policy of "massive retaliation", involving systems of thermonuclear missiles whose purpose is to destroy as much as possible of the country at which the retaliation is aimed. It is planned that entire populations shall be killed in a "massive retaliation", innocent children along with the guilty politicians. The startling contradiction between what the Christian nations profess and what they do was obvious even before the advent of nuclear weapons, at the time when Leo Tolstoy, during his last years, was exchanging letters with a young Indian lawyer in South Africa. In one of his letters to Gandhi, Tolstoy wrote:

"...The whole life of the Christian peoples is a continuous contradiction between that which they profess and the principles on which they order their lives, a contradiction between love accepted as the law of life, and violence, which is recognized and praised, acknowledged even as a necessity..."

"This year, in the spring, at a Scripture examination at a girls' high school in Moscow, the teacher and the bishop present asked the girls questions on the Commandments, and especially on the sixth. After a correct answer, the bishop generally put another question, whether murder was always in all cases forbidden by God's law; and the unhappy young

ladies were forced by previous instruction to answer 'Not always' - that murder was permitted in war and in the execution of criminals. Still, when one of these unfortunate young ladies (what I am telling is not an invention but a fact told to me by an eye witness) after her first answer, was asked the usual question, if killing was always sinful, she, agitated and blushing, decisively answered 'Always', and to the usual sophisms of the bishop, she answered with decided conviction that killing was always forbidden in the Old Testament and forbidden by Christ, not only killing but every wrong against a brother. Notwithstanding all his grandeur and arts of speech, the bishop became silent and the girl remained victorious."

As everyone knows, Gandhi successfully applied the principle of non-violence to the civil rights struggle in South Africa, and later to the political movement, which gave India its freedom and independence. The principle of non-violence was also successfully applied by Martin Luther King, and by Nelson Mandela. It is perhaps worthwhile to consider Gandhi's comment on the question of whether the end justifies the means: "The means may be likened to a seed", Gandhi wrote, "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." In other words, a dirty method produces a dirty result; killing produces more killing; hate leads to more hate. Everyone who reads the newspapers knows that this is true. But there are positive feedback loops as well as negative ones. A kind act produces a kind response; a generous gesture is returned; hospitality results in reflected hospitality. Buddhists call this principle of reciprocity "the law of karma".

The religious leaders of the world have the opportunity to contribute importantly to the solution of the problem of war. They have the opportunity to powerfully support the concept of universal human brotherhood, to build bridges between religious groups, to make intermarriage across ethnic boundaries easier, and to soften the distinctions between communities. If they fail to do this, they will have failed humankind at a time of crisis.

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 for this kind of pessimism, we can think of slavery, which, like war, has existed throughout most of recorded history. The cultures of ancient Egypt, Greece and Rome were all based on slavery, and, in more recent times, 13 million Africans were captured and forced into a life of slavery in the New World. Slavery was as much an accepted and established institution as war is today. Many people made large profits from slavery, just as arms manufacturers today make enormous profits. Nevertheless, in spite of the weight of vested interests, slavery has now been abolished throughout most of the world.

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 the twentieth century, will be equally amazed that such cruelty 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.

9.10 Culture, education and human solidarity

Cultural and educational activities have a small ecological footprint, and therefore are more sustainable than pollution-producing, fossil-fuel-using jobs in industry. Furthermore, since culture and knowledge are shared among all nations, work in culture and education leads societies naturally towards internationalism and peace.

Economies based on a high level of consumption of material goods are unsustainable and will have to be abandoned by a future world that renounces the use of fossil fuels in order to avoid catastrophic climate change, a world where non-renewable resources such as metals will become increasingly rare and expensive. How then can full employment be maintained?

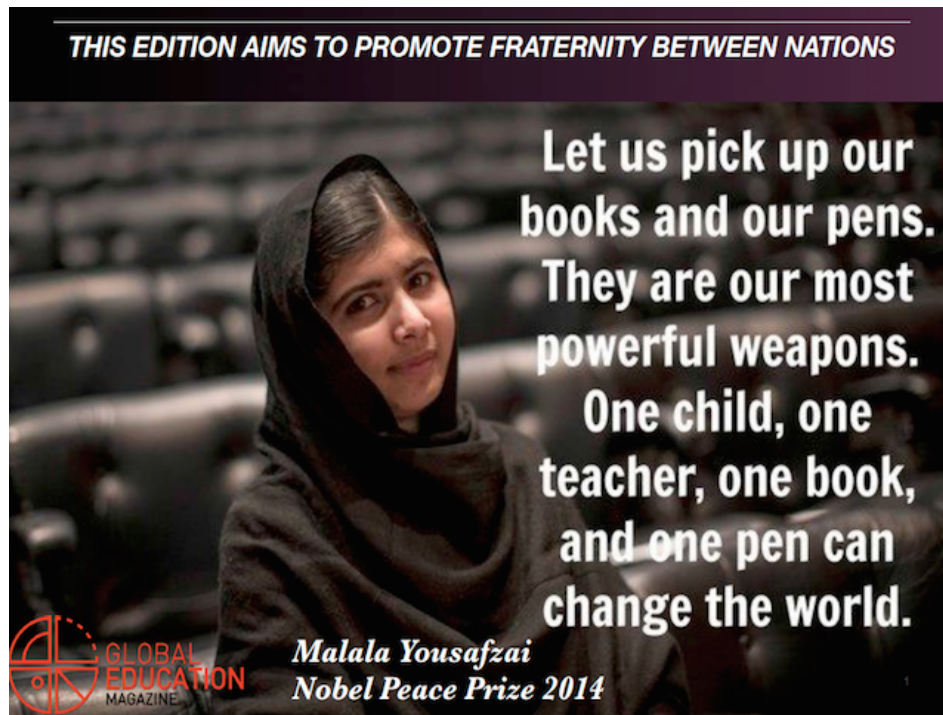
The creation of renewable energy infrastructure will provide work for a large number of people; but in addition, sustainable economies of the future will need to shift many workers from jobs in industry to jobs in the service sector. Within the service sector, jobs in culture and education are particularly valuable because they will help to avoid the disastrous wars that are currently producing enormous human suffering and millions of refugees, wars that threaten to escalate into an all-destroying global thermonuclear war.⁸

Human nature has two sides: It has a dark side, to which nationalism and militarism appeal; but our species also has a genius for cooperation, which we can see in the growth of culture. Our modern civilization has been built up by means of a worldwide exchange of ideas and inventions. It is built on the achievements of many ancient cultures. China, Japan, India, Mesopotamia, Egypt, Greece, the Islamic world, Christian Europe, and the Jewish intellectual traditions all have contributed. Potatoes, corn, squash, vanilla, chocolate, chilli peppers, and quinine are gifts from the American Indians.⁹

We need to reform our educational systems, particularly the teaching of history. As it is taught today, history is a chronicle of power struggles and war, told from a biased national standpoint. We are taught that our own country is always heroic and in the right. We urgently need to replace this indoctrination in chauvinism by a reformed view of history, where the slow development of human culture is described, giving credit to all who have contributed. When we teach history, it should not be about power struggles. It should be about how human culture was gradually built up over thousands of years by the patient work of millions of hands and minds. Our common global culture, the music, science, literature and art that all of us share, should be presented as a precious heritage - far too precious to be risked in a thermonuclear war.

We have to extend our loyalty to the whole of the human race, and to work for a world not only free from nuclear weapons, but free from war. A war-free world is not utopian but

⁸<http://www.fredsakademiet.dk/library/need.pdf>
<http://eruditio.worldacademy.org/issue-5/article/urgent-need-renewable-energy>
⁹<http://eruditio.worldacademy.org/article/evolution-cooperation>



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.

9.11 Construction versus destruction

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

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

Disorder, chaos, and destruction remain statistically favored over order, construction, and complexity.

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

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



Figure 9.10: The second law of thermodynamics tells us that disorder is statistically favored over order, and that life is always balancing above a sea of chaos. It is easier to burn down a house than to build one, easier to burn down the Great Library at Alexandria than to accumulate the knowledge that once filled it, and easier to start a thermonuclear war than to rebuild civilization from the radioactive ashes.

9.12 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



Figure 9.11: **We must develop a new system of ethics to match our advanced technology.**

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.¹⁰

¹⁰<http://www.countercurrents.org/zuesse050815.htm>
<https://www.youtube.com/watch?t=16&v=hDsPWmioSHg>
<http://www.commondreams.org/views/2014/04/14/us-oligarchy-not-democracy-says-scientific-study>
<http://www.treehugger.com/renewable-energy/striking-chart-showing-solar-power-will-take-over-world.html>
<http://www.countercurrents.org/richard120815.htm>
http://priceofoil.org/content/uploads/2015/08/OCI-Untouchable_Arctic_FINAL.pdf
<http://priceofoil.org/2015/08/13/untouchable-the-climate-case-against-arctic-drilling/>
<http://www.commondreams.org/views/2015/08/14/untouchable-climate-case-against-arctic-drilling>
https://www.youtube.com/watch?t=124&v=9_LJpN893Vg
<http://americamagazine.org/content/all-things/which-candidate-quotes-pope-most>
<http://www.truth-out.org/news/item/32336-our-united-states-of-indebtedness>
<http://www.commondreams.org/news/2015/08/17/ahead-australia-visit-naomi-klein-brands-pm-abbott-climate-villain>
http://www.footprintnetwork.org/ecological_footprint_nations/
<http://ecowatch.com/2015/08/16/earth-overshoot-day/2/>
<http://www.commondreams.org/news/2015/08/18/islamic-declaration-blasts-short-sighted-capitalism->

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. The Nobel laureate biochemist Albert Szent-Györgyi once wrote:

"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."

"This 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."

Suggestions for further reading

1. Herman Daly, *Steady-State Economics: Second Edition with New Essays*, Island Press, (1991).
2. Herman Daly, *Economics in a Full World*, Scientific American, Vol. 293, Issue 3, September, (2005).
3. Herman Daly and John Cobb, *For the Common Good*, Beacon Press, Boston, (1989).
4. E.O. Wilson, *The Diversity of Life*, Allen Lane, The Penguin Press, (1992).
5. Lester R. Brown et. al., *Saving the Planet. How to Shape an Environmentally Sustainable Global Economy*, W.W. Norton, New York, (1991).
6. Muhammad Yunus, *Banker to the Poor; Microcredit and the Battle Against World Poverty*, (2003).
7. UN Global Compact, <http://www.unglobalcompact.org> (2007).
8. UN Millennium Development Goals <http://www.un.org/millenniumgoals/> (2007).
9. Amartya Sen, *Poverty and Famine; An Essay on Entitlement and Deprivation*, Oxford University Press, (1981).
10. Amartya Sen, *Development as Freedom*, Oxford University Press, (1999).
11. Amartya Sen, *Inequality Reexamined*, Harvard University Press, (1992).

demands-action-climate

<http://islamicclimatedeclaration.org/islamic-declaration-on-global-climate-change/>

<http://ecowatch.com/2015/06/29/dalai-lama-pope-encyclical/>

<http://www.theguardian.com/music/2015/jun/28/dalai-lama-glastonbury-verdict-isis-unthinkable>

<http://ecowatch.com/2015/07/02/naomi-klein-people-planet-first/>

12. Paul F. Knitter and Chandra Muzaffar, editors, *Subverting Greed; Religious Perspectives on the Global Economy*, Orbis Books, Maryknoll, New York, (2002).
13. Edy Korthals Altes, *The Contribution of Religions to a Just and Sustainable Economic Development*, in F. David Peat, editor, *The Pari Dialogues, Volume 1*, Pari Publishing, (2007).
14. Hendrik Opdebeeck, *Globalization Between Market and Democracy*, in F. David Peat, editor, *The Pari Dialogues, Volume 1*, Pari Publishing, (2007).
15. Paul Hawken *The Ecology of Commerce; A Declaration of Sustainability*, Collins Business, (2005).
16. Luther Standing Bear, *Land of the Spotted Eagle*, Houghton Mifflin, (1933).
17. T. Gyatso, HH the Dalai Lama, *Ancient Wisdom, Modern World: Ethics for the New Millennium*, Abacus, London, (1999).
18. T. Gyatso, HH the Dalai Lama, *How to Expand Love: Widening the Circle of Loving Relationships*, Atria Books, (2005).
19. J. Rotblat and D. Ikeda, *A Quest for Global Peace*, I.B. Tauris, London, (2007).
20. M. Gorbachev and D. Ikeda, *Moral Lessons of the Twentieth Century*, I.B. Tauris, London, (2005).
21. D. Krieger and D. Ikeda, *Choose Hope*, Middleway Press, Santa Monica CA 90401, (2002).
22. P.F. Knitter and C. Muzaffar, eds., *Subverting Greed: Religious Perspectives on the Global Economy*, Orbis Books, Maryknoll, New York, (2002).
23. S. du Boulay, *Tutu: Voice of the Voiceless*, Eerdmans, (1988).
24. Earth Charter Initiative, www.earthcharter.org, *The Earth Charter*
25. P.B. Corcoran, ed., *The Earth Charter in Action*, KIT Publishers, Amsterdam, (2005).
26. R. Costanza, ed., *Ecological Economics: The Science and Management of Sustainability*, Colombia University Press, New York, (1991).
27. A. Peccei, *The Human Quality*, Pergamon Press, Oxford, (1977).
28. A. Peccei, *One Hundred Pages for the Future*, Pergamon Press, New York, (1977).
29. E. Pestel, *Beyond the Limits to Growth*, Universe Books, New York, (1989).
30. B. Broms, *United Nations*, Suomalainen Tiedeakatemia, Helsinki, (1990).
31. S. Rosenne, *The Law and Practice at the International Court*, Dordrecht, (1985).
32. S. Rosenne, *The World Court - What It Is and How It Works*, Dordrecht, (1995).
33. J. D'Arcy and D. Harris, *The Procedural Aspects of International Law (Book Series), Volume 25*, Transnational Publishers, Ardsley, New York, (2001).
34. H. Cullen, *The Collective Complaints Mechanism Under the European Social Charter*, European Law Review, Human Rights Survey, p. 18-30, (2000).
35. S.D. Bailey, *The Procedure of the Security Council*, Oxford, (1988).
36. R.A. Akindale, *The Organization and Promotion of World Peace: A Study of Universal-Regional Relationships*, Univ. Toronto Press, Toronto, Ont., (1976).
37. J.S. Applegate, *The UN Peace Imperative*, Vantage Press, New York, (1992).
38. S.E. Atkins, *Arms Control, Disarmament, International Security and Peace: An Annotated Guide to Sources, 1980-1987*, Clio Press, Santa Barbara, CA, (1988).

39. N. Ball and T. Halevy, *Making Peace Work: The Role of the International Development Community*, Overseas Development Council, Washington DC, (1996).
40. F. Barnaby, Ed., *The Gaia Peace Atlas: Survival into the Third Millennium*, Doubleday, New York, (1988)
41. J.H. Barton, *The Politics of Peace: An Evaluation of Arms Control*, Stanford Univ. Press, Stanford, CA, (1981).
42. W. Bello, *Visions of a Warless World*, Friends Committee on National Education Fund, Washington DC, (1986).
43. A. Boserup and A. Mack, *Abolishing War: Cultures and Institutions; Dialogue with Peace Scholars Elise Boulding and Randall Forsberg*, Boston Research Center for the Twenty-first Century, Cambridge, MA, (1998).
44. E. Boulding et al., *Bibliography on World Conflict and Peace*, Westview Press, Boulder, CO, (1979).
45. E. Boulding et al., Eds., *Peace, Culture and Society: Transnational Research Dialogue*, Westview Press, Boulder, CO, (1991).
46. A.T. Bryan et al., Eds., *Peace, Development and Security in the Caribbean*, St. Martins Press, New York, (1988).
47. A.L. Burns and N. Heathcote, *Peace-Keeping by UN Forces from Suez to Congo*, Praeger, New York, (1963).
48. F. Capra and C. Spretnak, *Green Politics: The Global Promise*, E.P. Dutton, New York, (1986).
49. N. Carstarphen, *Annotated Bibliography of Conflict Analysis and Resolution*, Inst. for Conflict Analysis and Resolution, George Mason Univ., Fairfax, VA, (1997).
50. N. Chomsky, *Peace in the Middle East? Reflections on Justice and Nationhood*, Vintage Books, New York, (1974).
51. G. Clark and L. Sohn, *World Peace Through World Law*, World Without War Pubs., Chicago, IL, (1984).
52. K. Coates, *Think Globally, Act Locally: The United Nations and the Peace Movements*, Spokesman Books, Philadelphia, PA, (1988).
53. G. De Marco and M. Bartolo, *A Second Generation United Nations: For Peace and Freedom in the 20th Century*, Colombia Univ. Press, New York, (1997).
54. F.M. Deng and I.W. Zartman, Eds., *Conflict Resolution in Africa*, Brookings Institution, Washington, DC, (1991).
55. W. Desan, *Let the Future Come: Perspectives for a Planetary Peace*, Georgetown Univ. Press, Washington, DC, (1987).
56. D. Deudney, *Whole Earth Security. A Geopolitics of Peace*, Worldwatch paper 55. Worldwatch Institute, Washington, DC, (1983).
57. A.J. Donovan, *World Peace? A Work Based on Interviews with Foreign Diplomats*, A.J. Donovan, New York, (1986).
58. R. Duffey, *International Law of Peace*, Oceania Pubs., Dobbs Ferry, NY, (1990).
59. L.J. Dumas, *The Socio-Economics of Conversion From War to Peace*, M.E. Sharpe, Armonk, NY, (1995).

60. W. Durland, *The Illegality of War*, National Center on Law and Pacifism, Colorado Springs, CO, (1982).
61. F. Esack, *Qur'an, Liberation and Pluralism: An Islamic Perspective on Interreligious Solidarity Against Oppression*, Oxford Univ. Press, London, (1997).
62. I. Hauchler and P.M. Kennedy, Eds., *Global Trends: The World Almanac of Development and Peace*, Continuum Pubs., New York, (1995).
63. H.B. Hollins et al., *The Conquest of War: Alternative Strategies for Global Security*, Westview Press, Boulder, CO, (1989).
64. H.J. Morgenthau, *Peace, Security and the United Nations*, Ayer Pubs., Salem, NH, (1973).
65. C.C. Moskos, *Peace Soldiers: The Sociology of a United Nations Military Force*, Univ. of Chicago Press, Chicago, IL, (1976).
66. L. Pauling, *Science and World Peace*, India Council for Cultural Relations, New Delhi, India, (1967).
67. C. Peck, *The United Nations as a Dispute Resolution System: Improving Mechanisms for the Prevention and Resolution of Conflict*, Kluwer, Law and Tax, Cambridge, MA, (1996).
68. D. Pepper and A. Jenkins, *The Geography of Peace and War*, Basil Blackwell, New York, (1985).
69. J. Perez de Cuellar, *Pilgrimage for Peace: A Secretary General's Memoir*, St. Martin's Press, New York, (1997).
70. R. Pickus and R. Woito, *To End War: An Introduction to the Ideas, Books, Organizations and Work That Can Help*, World Without War Council, Berkeley, CA, (1970).
71. S.R. Ratner, *The New UN Peacekeeping: Building Peace in Lands of Conflict after the Cold War*, St. Martins Press, New York, (1995).
72. I.J. Rikhye and K. Skjelsbaek, Eds., *The United Nations and Peacekeeping: Results, Limitations and Prospects: The Lessons of 40 Years of Experience*, St. Martins Press, New York, (1991).
73. J. Rotblat, Ed., *Scientists in Quest for Peace: A History of the Pugwash Conferences*, MIT Press, Cambridge, MA, (1972).
74. J. Rotblat, Ed., *Scientists, The Arms Race, and Disarmament*, Taylor and Francis, Bristol, PA, (1982).
75. J. Rotblat, Ed., *Striving for Peace, Security and Development in the World*, World Scientific, River Edge, NJ, (1991).
76. J. Rotblat, Ed., *Towards a War-Free World*, World Scientific, River Edge, NJ, (1995).
77. J. Rotblat, Ed., *Nuclear Weapons: The Road to Zero*, Westview, Boulder, CO, (1998).
78. J. Rotblat and L. Valki, Eds., *Coexistence, Cooperation and Common Security*, St. Martins Press, New York, (1988).
79. United Nations, *Peaceful Settlement of Disputes between States: A Select Bibliography*, United Nations, New York, (1991).

80. United States Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements: Texts and Histories of Negotiations*, USACDA, Washington, DC, (updated annually)
81. D. Fahrni, *An Outline History of Switzerland - From the Origins to the Present Day*, Pro Helvetia Arts Council of Switzerland, Zurich, (1994).

Chapter 10

ETHICS FOR THE FUTURE

Science investigates, religion interprets. Science gives man knowledge, which is power; religion gives man wisdom, which is control. Science deals mainly with facts; religion deals mainly with values. The two are not rivals. Martin Luther King Jr.

10.1 Some goals for the future

History has given all of us living today an enormous responsibility, and several daunting tasks: If civilization is to survive, we must not only stabilize the global population and avoid catastrophic climate, 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 will be supplemented by a higher loyalty to humanity as a whole.

In the words of the great Hungarian-American biochemist Albert Szent-Györgyi, "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."

The Russell-Einstein Manifesto of 1955, which led to the founding of Pugwash Conferences on Science and World Affairs, contains the following words: “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.”

Strengthening the United Nations

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

When we ask how very large and heterogeneous states achieve internal peace and security, we find that they do so by means of laws that act directly on individual citizens. Thus, the International Criminal Court is an extremely important first step towards the globalization of the methods of governance used by large states. The power to make and enforce laws which act directly on individuals is one of the key powers of successful federations.

An extremely important first step towards strengthening the United Nations would be to give the U.N. a greatly enlarged and reliable source of income. The amount of money available to the U.N., and its member organizations such as UNESCO, WHO and FAO, should be increased by a factor of at least 50. The beneficial services rendered by expanded agencies such as WHO would give the U.N. *de facto* power and prestige that could be used in situations where conflict resolution is needed.

Various sources of increased income have been proposed:

- Dues paid to the U.N. by member states. These should be compulsory in the sense that member states would lose their voting rights if they did not pay their dues.
- Revenues from resources belonging to the international community, for example seabed resources.
- A tax on multinational corporations for the service of regulating international agreements.
- The Tobin tax, i.e. a tax of between 0.1% and 1% on international currency transactions.

12 European countries favor the Tobin tax. These include France and Germany, although not the U.K.

Tobin taxes are in place in some of the world’s fastest-growing financial centers - Hong Kong, Mumbai, Seoul, Johannesburg and Taipei - where they are said to collectively raise 12 billion U.K. pounds a year.

The volume of international currency transactions is so enormous that a universally imposed Tobin tax of only 0.5% would raise between \$100 billion and \$300 billion per year. In 2015 the total UN budget was only \$5.6 billion, an absurdly small sum, considering the enormous importance of global governance, or the fact that the world spends \$1.7 trillion each year on armaments..

10.2 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.

The power of truth

Gandhi was trained as a lawyer, and when he began to practice in South Africa, in his first case, he was able to solve a conflict by proposing a compromise that satisfied both parties. Of this result he said, "My joy was boundless. I had learnt the true practice of law. I had learnt to find out the better side of human nature and to enter men's hearts. I realized that the true function of a lawyer was to unite parties riven asunder." When Gandhi became involved with the struggle for civil rights of the Indian minority in South Africa, his background as a lawyer once more helped him. This time his jury was public



Figure 10.1: Mahatma Gandhi firmly rejected the insidious doctrine that “the end justifies the means”.

opinion in England. When Gandhi led the struggle for reform, he insisted that the means of protest used by his followers should be non-violent, even though violence was frequently used against them. In this way they won their case in the court of public opinion. Gandhi called this method of protest “satyagraha”, a Sanskrit word meaning “the power of truth”. In today’s struggles for justice and peace, the moral force of truth and nonviolence can win victories in the court of world public opinion.

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.

Gandhian economics

In his autobiography, Mahatma Gandhi says: "Three moderns have left a deep impression on my life and captivated me: Raychandbhai (the Indian philosopher and poet) by his living contact; Tolstoy by his book 'The Kingdom of God is Within You'; and Ruskin by his book 'Unto This Last'." Ruskin's book, "Unto This Last", which Gandhi read in 1904, is a criticism of modern industrial society. Ruskin believed that friendships and warm interpersonal relationships are a form of wealth that economists have failed to consider. He felt that warm human contacts are most easily achieved in small agricultural communities, and that therefore the modern tendency towards centralization and industrialization may be a step backward in terms of human happiness. While still in South Africa, Gandhi founded two religious Utopian communities based on the ideas of Tolstoy and Ruskin, Phoenix Farm (1904) and Tolstoy Farm (1910).

Because of his growing fame as the leader of the Indian civil rights movement in South Africa, Gandhi was persuaded to return to India in 1914 and to take up the cause of Indian home rule. In order to re-acquaint himself with conditions in India, he travelled tirelessly, now always going third class as a matter of principle.

During the next few years, Gandhi worked to reshape the Congress Party into an organization which represented not only India's Anglicized upper middle class but also the millions of uneducated villagers who were suffering under an almost intolerable burden of

poverty and disease. In order to identify himself with the poorest of India's people, Gandhi began to wear only a white loincloth made of rough homespun cotton. He traveled to the remotest villages, recruiting new members for the Congress Party, preaching non-violence and "firmness in the truth", and becoming known for his voluntary poverty and humility. The villagers who flocked to see him began to call him "Mahatma" (Great Soul).

Disturbed by the spectacle of unemployment and poverty in the villages, Gandhi urged the people of India to stop buying imported goods, especially cloth, and to make their own. He advocated the re-introduction of the spinning wheel into village life, and he often spent some hours spinning himself. The spinning wheel became a symbol of the Indian independence movement, and was later incorporated into the Indian flag.

The movement for boycotting British goods was called the "Swadeshi movement". The word Swadeshi derives from two Sanskrit roots: Swa, meaning self, and Desh, meaning country. Gandhi described Swadeshi as "a call to the consumer to be aware of the violence he is causing by supporting those industries that result in poverty, harm to the workers and to humans or other creatures."

Gandhi tried to reconstruct the crafts and self-reliance of village life that he felt had been destroyed by the colonial system. "I would say that if the village perishes, India will perish too", he wrote, "India will be no more India. Her own mission in the world will get lost. The revival of the village is only possible when it is no more exploited. Industrialization on a mass scale will necessarily lead to passive or active exploitation of the villagers as problems of competition and marketing come in. Therefore we have to concentrate on the village being self-contained, manufacturing mainly for use. Provided this character of the village industry is maintained, there would be no objection to villagers using even the modern machines that they can make and can afford to use. Only they should not be used as a means of exploitation by others."

"You cannot build nonviolence on a factory civilization, but it can be built on self-contained villages... Rural economy as I have conceived it, eschews exploitation altogether, and exploitation is the essence of violence... We have to make a choice between India of the villages that are as ancient as herself and India of the cities which are a creation of foreign domination..."

"Machinery has its place; it has come to stay. But it must not be allowed to displace necessary human labour. An improved plow is a good thing. But if by some chances, one man could plow up, by some mechanical invention of his, the whole of the land of India, and control all the agricultural produce, and if the millions had no other occupation, they would starve, and being idle, they would become dunces, as many have already become. There is hourly danger of many being reduced to that unenviable state."

In these passages we see Gandhi not merely as a pioneer of nonviolence; we see him also as an economist. Faced with misery and unemployment produced by machines, Gandhi tells us that social goals must take precedence over blind market mechanisms. If machines are causing unemployment, we can, if we wish, and use labor-intensive methods instead. With Gandhi, the free market is not sacred; we can do as we wish, and maximize human happiness, rather than maximizing production and profits.

Mahatma Gandhi was assassinated by a Hindu extremist on January 30, 1948. After

his death, someone collected and photographed all his worldly goods. These consisted of a pair of glasses, a pair of sandals, a pocket watch and a white homespun loincloth. Here, as in the Swadeshi movement, we see Gandhi as a pioneer of economics. He deliberately reduced his possessions to an absolute minimum in order to demonstrate that there is no connection between personal merit and material goods. Like Veblen, Mahatma Gandhi told us that we must stop using material goods as a means of social competition. We must start to judge people not by what they have, but by what they are.

10.3 The ethics of Albert Einstein

Besides being one of the greatest physicists of all time, Albert Einstein was a lifelong pacifist, and his thoughts on peace can speak eloquently to us today. We need his wisdom today, when the search for peace has become vital to our survival as a species.

Einstein's letter to Freud: Why war?

Because of his fame, Einstein was asked to make several speeches at the Reichstag, and in all these speeches he condemned violence and nationalism, urging that these be replaced by and international cooperation and law under an effective international authority. He also wrote many letters and articles pleading for peace and for the renunciation of militarism and violence.

Einstein believed that the production of armaments is damaging, not only economically, but also spiritually. In 1930 he signed a manifesto for world disarmament sponsored by the Womens International League for Peace and Freedom. In December of the same year, he made his famous statement in New York that if two percent of those called for military service were to refuse to fight, governments would become powerless, since they could not imprison that many people. He also argued strongly against compulsory military service and urged that conscientious objectors should be protected by the international community. He argued that peace, freedom of individuals, and security of societies could only be achieved through disarmament, the alternative being "slavery of the individual and annihilation of civilization".

In letters, and articles, Einstein wrote that the welfare of humanity as a whole must take precedence over the goals of individual nations, and that we cannot wait until leaders give up their preparations for war. Civil society, and especially public figures, must take the lead. He asked how decent and self-respecting people can wage war, knowing how many innocent people will be killed.

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

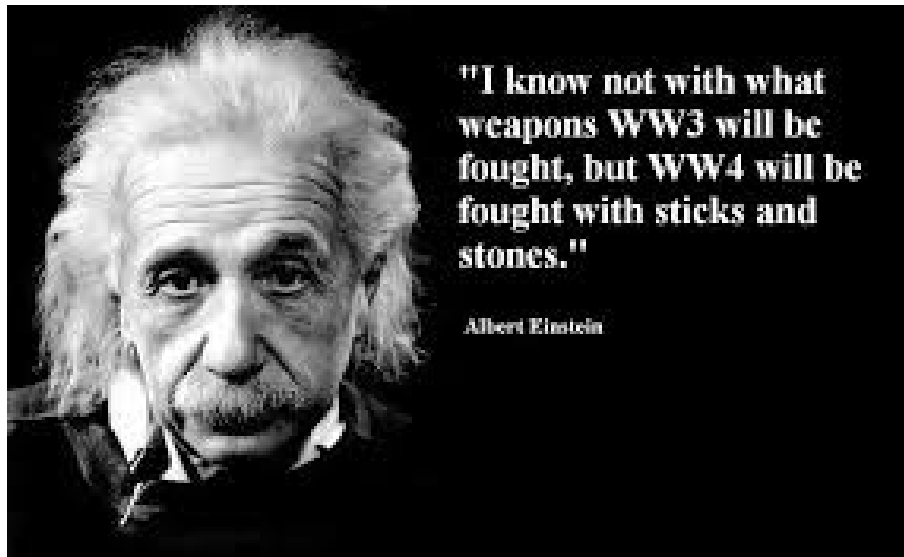


Figure 10.2:

how humanity could free itself from the curse of war. A translation from German of part of the long letter that he wrote to Freud is as follows:

“Dear Professor Freud, The proposal of the League of Nations and its International Institute of Intellectual Cooperation at Paris that I should invite a person to be chosen by myself to a frank exchange of views on any problem that I might select affords me a very welcome opportunity of conferring with you upon a question which, as things are now, seems the most important and insistent of all problems civilization has to face. This is the problem: 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 or death to 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 thoughts 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 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... 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... 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.

The fateful letter to Roosevelt

Albert Einstein's famous relativistic formula, relating energy to mass, soon yielded an understanding of the enormous amounts of energy released in radioactive decay. Marie and Pierre Curie had noticed that radium maintains itself at a temperature higher than its surroundings. Their measurements and calculations showed that a gram of radium produces roughly 100 gram-calories of heat per hour. This did not seem like much energy until Rutherford found that radium has a half-life of about 1,000 years. In other words, after a thousand years, a gram of radium will still be producing heat, its radioactivity only reduced to one-half its original value. During a thousand years, a gram of radium produces about a million kilocalories, an enormous amount of energy in relation to the tiny size of its source! Where did this huge amount of energy come from? Conservation of energy was one of the most basic principles of physics. Would it have to be abandoned?

The source of the almost-unbelievable amounts of energy released in radioactive decay could be understood through Einstein's formula equating the energy of a system to its mass multiplied by the square of the velocity of light, and through accurate measurements of atomic weights. Einstein's formula asserted that mass and energy are equivalent. It was realized that in radioactive decay, neither mass nor energy is conserved, but only a quantity more general than both, of which mass and energy are particular forms. Scientists in several parts of the world realized that Einstein's discovery of the relationship between mass and energy, together with the discovery of fission of the heavy element uranium meant that it might be possible to construct a uranium-fission bomb of immense power.

Meanwhile night was falling on Europe. In 1929, an economic depression had begun in the United States and had spread to Europe. Without the influx of American capital, the postwar reconstruction of the German economy collapsed. The German middle class, which had been dealt a severe blow by the great inflation of 1923, now received a second heavy blow. The desperate economic chaos drove German voters into the hands of political extremists.

On January 30, 1933, Adolf Hitler was appointed Chancellor and leader of a coalition cabinet by President Hindenburg. Although Hitler was appointed legally to this post, he quickly consolidated his power by unconstitutional means: On May 2, Hitler's police seized the headquarters of all trade unions, and arrested labor leaders. The Communist and Socialist parties were also banned, their assets seized and their leaders arrested. Other political parties were also smashed. Acts were passed eliminating Jews from public service; and innocent Jewish citizens were boycotted, beaten and arrested. On March 11, 1938, Nazi troops entered Austria.

On March 16, 1939, the Italian physicist Enrico Fermi (who by then was a refugee in America) went to Washington to inform the Office of Naval Operations that it might be possible to construct an atomic bomb; and on the same day, German troops poured into

Czechoslovakia.

A few days later, a meeting of six German atomic physicists was held in Berlin to discuss the applications of uranium fission. Otto Hahn, the discoverer of fission, was not present, since it was known that he was opposed to the Nazi regime. He was even said to have exclaimed: "I only hope that you physicists will never construct a uranium bomb! If Hitler ever gets a weapon like that, I'll commit suicide."

The meeting of German atomic physicists was supposed to be secret; but one of the participants reported what had been said to Dr. S. Flügge, who wrote an article about uranium fission and about the possibility of a chain reaction. Flügge's article appeared in the July issue of *Naturwissenschaften*, and a popular version in the *Deutsche Allgemeine Zeitung*. These articles greatly increased the alarm of American atomic scientists, who reasoned that if the Nazis permitted so much to be printed, they must be far advanced on the road to building an atomic bomb.

In the summer of 1939, while Hitler was preparing to invade Poland, alarming news reached the physicists in the United States: A second meeting of German atomic scientists had been held in Berlin, this time under the auspices of the Research Division of the German Army Weapons Department. Furthermore, Germany had stopped the sale of uranium from mines in Czechoslovakia.

The world's most abundant supply of uranium, however, was not in Czechoslovakia, but in Belgian Congo. Leo Szilard, a refugee Hungarian physicist who had worked with Fermi to measure the number of neutrons produced in uranium fission, was deeply worried that the Nazis were about to construct atomic bombs; and it occurred to him that uranium from Belgian Congo should not be allowed to fall into their hands.

Szilard knew that his former teacher, Albert Einstein, was a personal friend of Elizabeth, the Belgian Queen Mother. Einstein had met Queen Elizabeth and King Albert of Belgium at the Solvay Conferences, and mutual love of music had cemented a friendship between them. When Hitler came to power in 1933, Einstein had moved to the Institute of Advanced Studies at Princeton; and Szilard decided to visit him there. Szilard reasoned that because of Einstein's great prestige, and because of his long-standing friendship with the Belgian Royal Family, he would be the proper person to warn the Belgians not to let their uranium fall into the hands of the Nazis. Einstein agreed to write to the Belgian king and queen.

On August 2, 1939, Szilard again visited Einstein, accompanied by Edward Teller and Eugene Wigner, who (like Szilard) were refugee Hungarian physicists. By this time, Szilard's plans had grown more ambitious; and he carried with him the draft of another letter, this time to the American President, Franklin D. Roosevelt. Einstein made a few corrections, and then signed the fateful letter, which reads (in part) as follows:

"Some recent work of E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into an important source of energy in the immediate future. Certain aspects of the situation seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe, therefore, that it is my duty to bring to your attention the following.."

"It is conceivable that extremely powerful bombs of a new type may be constructed. A single bomb of this type, carried by boat and exploded a port, might very well destroy

the whole port, together with some of the surrounding territory..”

The letter also called Roosevelt’s attention to the fact that Germany had already stopped the export of uranium from the Czech mines under German control. After making a few corrections, Einstein signed it. On October 11, 1939, three weeks after the defeat of Poland, Roosevelt’s economic adviser, Alexander Sachs, personally delivered the letter to the President. After discussing it with Sachs, the President commented, “This calls for action.” Later, when atomic bombs were dropped on civilian populations in an already virtually-defeated Japan, Einstein bitterly regretted having signed Szilard’s letter to Roosevelt. He said repeatedly that signing the letter was the greatest mistake of his life, and his remorse was extreme.

Throughout the remainder of his life, in addition to his scientific work, Einstein worked tirelessly for peace, international understanding and nuclear disarmament. His last public act, only a few days before his death in 1955, was to sign the Russell-Einstein Manifesto, warning humankind of the catastrophic consequences that would follow from a war with nuclear weapons.

A few more things that Einstein said about peace:

We cannot solve our problems with the same thinking that we used when we created them.

It has become appallingly obvious that our technology has exceeded our humanity.

Peace cannot be kept by force; it can only be achieved by understanding.

The world is a dangerous place to live; not because of the people who are evil, but because of the people who don’t do anything about it.

Insanity: doing the same thing over and over again and expecting to get different results.

Nothing will end war unless the people themselves refuse to go to war.

Past thinking and methods did not prevent world wars. Future thinking must prevent war.

You cannot simultaneously prevent and prepare for war.

Never do anything against conscience, even if the state demands it.

Taken as a whole, I would believe that Gandhi’s views were the most enlightened of all political men of our time.

Without ethical culture, there is no salvation for humanity.

War seems to me to be a mean, contemptible thing: I would rather be hacked in pieces than take part in such an abominable business. And yet so high, in spite of everything, is my opinion of the human race that I believe this bogey would have disappeared long ago, had the sound sense of the nations not been systematically corrupted by commercial and political interests acting through the schools and the Press.

10.4 The ethics of Saint Francis

The life of Saint Francis

Saint Francis of Assisi was born in 1181 in the Italian hilltop town of Assisi. His father, Pietro di Bernardone, was a prosperous silk merchant, and his mother Pica de Bourlemont, was a noblewoman from Provence. Saint Francis was originally called Giovanni, but his father later renamed him Francesco because of his successful business dealings in France and his admiration for all things French.

After leading the ordinary (somewhat dissolute) life of a wealthy young man of that period, Saint Francis underwent a religious conversion, following which he renounced his inheritance and embraced a life of poverty. Although not ordained as a priest, he began teaching what he believed to be the true Christian message. He soon acquired a small group of followers, and he traveled with them to Rome to ask Pope Innocent III for permission to found a new religious order. During his life, Saint Francis founded three religious orders.

Saint Francis continued to preach, and is even said to have preached to birds and animals, whom he regarded as his sisters and brothers. His attitude towards nature can be seen in his “Canticle of the Sun”:

Canticle of the Sun

*Most High, all powerful, good Lord,
Yours are the praises, the glory, the honor,
and all blessing.*

*To You alone, Most High, do they belong,
and no man is worthy to mention Your name.*

*Be praised, my Lord, through all your creatures,
especially through my lord Brother Sun,
who brings the day; and you give light through him.*



Figure 10.3: Saint Francis

*And he is beautiful and radiant in all his splendor!
Of you, Most High, he bears the likeness.*

*Praise be You, my Lord, through Sister Moon
and the stars, in heaven you formed them
clear and precious and beautiful.*

*Praised be You, my Lord, through Brother Wind,
and through the air, cloudy and serene,
and every kind of weather through which
You give sustenance to Your creatures.*

*Praised be You, my Lord, through Sister Water,
which is very useful and humble and precious and chaste.*

*Praised be You, my Lord, through Brother Fire,
through whom you light the night and he is beautiful
and playful and robust and strong.*

*Praised be You, my Lord, through Sister Mother Earth,
who sustains us and governs us and who produces
varied fruits with colored flowers and herbs.*

*Praised be You, my Lord,
through those who give pardon for Your love,
and bear infirmity and tribulation.*

*Blessed are those who endure in peace
for by You, Most High, they shall be crowned.*

*Praised be You, my Lord,
through our Sister Bodily Death,
from whom no living man can escape.*

*Woe to those who die in mortal sin.
Blessed are those whom death will
find in Your most holy will,
for the second death shall do them no harm.*

*Praise and bless my Lord,
and give Him thanks
and serve Him with great humility.*

Canonization

Pope Gregory IX canonized Francis on 16 July 1228. Along with Saint Catherine of Sienna, he was designated Patron Saint of Italy. He later became associated with patronage of animals and the natural environment, and it became customary for Catholic and Anglican churches to hold ceremonies blessing animals on his feast day of 4 October.

A prayer of Saint Francis

*Blessed is he who loves and does not therefore desire to be loved;
Blessed is he who fears and does not therefore desire to be feared;
Blessed is he who serves and does not therefore desire to be served;
Blessed is he who behaves well toward others and does not desire that others behave well toward him;*

10.5 The ethics of Pope Francis

Despite the worrying nature of the threats that we are facing, there are reasons for hope. One of the greatest of these is the beautiful, profound and powerful encyclical that has just been released by Pope Francis.

When he accepted the responsibility for leading the world's 1.2-billion-strong Catholic Church, Cardinal Bergoglio of Argentina adopted the name Francis, after the universally loved Saint Francis of Assisi, whose life of simplicity, love for the poor, and love of nature he chose as the model for his Papacy. The Pope's inspiring encyclical letter "Laudato Si'" takes its name from a canticle of Saint Francis, that begins with the words "Praise be to you, my Lord, through our sister, mother Earth, who sustains and governs us..."

We can remember that Saint Francis regarded birds and animals as his brothers and sisters. He even thought of the sun, moon, clouds, rain and water as brothers and sisters. Like his chosen namesake, Pope Francis stresses the unity of all of nature, and our kinship with all of creation. Francis appeals to love. We can be saved through love.

His encyclical is addressed not only to Catholics, but also to all men and women of good will, and almost all of its 102 pages appeal to moral sensibilities and rational arguments that can be shared by all of us. Pope Francis stresses that the natural world that sustains us is in grave danger from our ruthless exploitation and greed-driven destruction of all the beauty and life that it contains: animals, forests, soil, and air.

Pope Francis tells us that the dictates of today's economists are not sacred: In the future, if we are to survive, economics must be given both a social conscience and an ecological conscience. Nor are private property and profits sacred. They must be subordinated to the common good, and the preservation of our global commons.

Less focus on material goods need not make us less happy. The quality of our lives can be increased, not decreased, if we give up our restless chase after power and wealth, and derive more of our pleasures from art, music and literature, and from conversations with



Figure 10.4: Pope Francis reminds us that Christian ethics require both respect and care for the earth and elimination of the institution of war.

our families and friends, Please read this great encyclical in its entirety. It can give us hope and courage as we strive to make the changes that are needed to avert an ecological mega-catastrophe.

Don Joao Mamede Filho is the Bishop of the Diocese of Umuarama, commented: “‘Laudato Si’, considered by environmentalists all around the world as the Green Encyclical, has become a work read by Christians and non-Christians alike in all corners of the world. In it, Pope Francis calls on us all to take care of our ‘Common Home’ and all that exists in it.

“In his call, the Pope reaffirms that the planet is a common good that must be preserved and guarded. Therefore, it is our duty to refrain from any human activity that may degrade, pollute or pose any kind of threat or risk to our planet and those who inhabit it.

“‘Laudato Si’ also presents a strong and persisting plea for a shift towards a new energy and development model, leaving fossil fuels behind. Since these energy sources are responsible for the highest emissions of greenhouse gases, they pollute, render climate changes more intense, bring on diseases, and kill.

“It is important to remember that, at the beginning of Creation, an organic relationship between all living beings was established. All that exists is connected and coexists in a sustainable and wholesome manner. However, by choosing dirty energy sources such as fossil fuels, which leave trails of destruction behind them, we disconnect ourselves from our surroundings and ignore the harm they may cause us and to our fellow creatures.”



Figure 10.5: **The message of Beethoven's Choral 9th: All humans are brothers and sisters! Not just some - All!**

10.6 All humans are brothers and sisters!

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.

10.7 The ethics of Henry David Thoreau

In the distant future (and perhaps even in the not-so-distant future) industrial civilization will need to abandon its relentless pursuit of unnecessary material goods and economic growth. Modern society will need to re-establish a balanced and harmonious relationship with nature. In preindustrial societies harmony with nature is usually a part of the cultural tradition. In our own time, the same principle has become central to the ecological counter-culture while the main-stream culture thunders blindly ahead, addicted to wealth, power

and growth.

In the 19th century the American writer, Henry David Thoreau (1817-1862), pioneered the concept of a simple life, in harmony with nature. Today, his classic book, *Walden*, has become a symbol for the principles of ecology, simplicity, and respect for nature.

Thoreau was born in Concord Massachusetts, and he attended Harvard from 1833 to 1837. After graduation, he returned home, worked in his family's pencil factory, did odd jobs, and for three years taught in a progressive school founded by himself and his older brother, John. When John died of lockjaw in 1842, Henry David was so saddened that he felt unable to continue the school alone.

Nonviolent civil disobedience

Thoreau refused to pay his poll tax because of his opposition to the Mexican War and to the institution of slavery. Because of his refusal to pay the tax (which was in fact a very small amount) he spent a night in prison. To Thoreau's irritation, his family paid the poll tax for him and he was released. He then wrote down his ideas on the subject in an essay entitled *The Duty of Civil Disobedience*, where he maintains that each person has a duty to follow his own individual conscience even when it conflicts with the orders of his government.

In his essay, Thoreau said: "A common and natural result of an undue respect for law is that you may see a file of soldiers, colonel, captain, corporal, privates, powder-monkeys, and all marching in admirable order over hill and dale to the wars, against their wills, ay, against their common sense and consciences, which makes it very steep marching indeed, and produces a palpitation of the heart. They have no doubt that it is a damnable business in which they are concerned; they are all peaceably inclined. Now, what are they? Men at all? or small movable forts and magazines, at the service of some unscrupulous man in power?"

"Under a government that which imprisons any unjustly", Thoreau wrote, "the true place for a just man is in prison." Civil Disobedience influenced Tolstoy, Gandhi and Martin Luther King, and it anticipated the Nuremberg Principles.

Harmony with nature

Thoreau became the friend and companion of the transcendentalist writer Ralph Waldo Emerson (1803 1882), who introduced him to a circle of New England writers and thinkers that included Ellery Channing, Margaret Fuller and Nathaniel Hawthorne.

Nathaniel Hawthorne described Thoreau in the following words: "Mr. Thorow [sic] is a keen and delicate observer of nature, a genuine observer, which, I suspect, is almost as rare a character as even an original poet; and Nature, in return for his love, seems to adopt him as her especial child, and shows him secrets which few others are allowed to witness. He is familiar with beast, fish, fowl, and reptile, and has strange stories to tell of adventures, and friendly passages with these lower brethren of mortality. Herb and flower, likewise, wherever they grow, whether in garden, or wild wood, are his familiar friends. He is also



Figure 10.6: Thoreau, with his cabin at Walden Pond in the background.

on intimate terms with the clouds and can tell the portents of storms. It is a characteristic trait, that he has a great regard for the memory of the Indian tribes, whose wild life would have suited him so well; and strange to say, he seldom walks over a plowed field without picking up an arrow-point, a spear-head, or other relic of the red men, as if their spirits willed him to be the inheritor of their simple wealth.”

Walden, an experiment in simple living

At Emerson’s suggestion, Thoreau opened a journal, in which he recorded his observations concerning nature and his other thoughts. Ultimately the journal contained more than 2 million words. Thoreau drew on his journal when writing his books and essays, and in recent years, many previously unpublished parts of his journal have been printed.

From 1845 until 1847, Thoreau lived in a tiny cabin that he built with his own hands. The cabin was in a second-growth forest beside Walden Pond in Concord, on land that belonged to Emerson. Thoreau regarded his life there as an experiment in simple living. He described his life in the forest and his reasons for being there in his book *Walden*,

“Most of the luxuries”, Thoreau wrote, “and many of the so-called comforts of life, are not only not indispensable, but positive hindrances to the elevation of mankind. With respect to luxuries, the wisest have ever lived a more simple and meager life than the poor. The ancient philosophers, Chinese, Hindoo, Persian, and Greek, were a class than which none has been poorer in outward riches, none so rich in inward.”

Elsewhere in “Walden”, Thoreau remarks, “It is never too late to give up your prejudices”, and he also says, “Why should we be in such desperate haste to succeed, and in such desperate enterprises? If a man does not keep pace with his companions, perhaps it is because he hears a different drummer.” Other favorite quotations from Thoreau include “Rather than love, than money, than fame, give me truth”, “Beware of all enterprises that require new clothes”, “Most men lead lives of quiet desperation” and “Men have become tools of their tools.”

Thoreau’s closeness to nature can be seen from the following passage, written by his friend Frederick Willis, who visited him at Walden Pond in 1847, together with the Alcott family: “He was talking to Mr. Alcott of the wild flowers in Walden woods when, suddenly stopping, he said: ‘Keep very still and I will show you my family.’ Stepping quickly outside

the cabin door, he gave a low and curious whistle; immediately a woodchuck came running towards him from a nearby burrow. With varying note, yet still low and strange, a pair of gray squirrels were summoned and approached him fearlessly. With still another note several birds, including two crows flew towards him, one of the crows nestling upon his shoulder. I remember that it was the crow resting close to his head that made the most vivid impression on me, knowing how fearful of man this bird is. He fed them all from his hand, taking food from his pocket, and petted them gently before our delighted gaze; and then dismissed them by different whistling, always strange and low and short, each wild thing departing instantly at hearing his special signal.”

Thoreau’s views on religion

Towards the end of his life, when he was very ill, someone asked Thoreau whether he had made his peace with God. “We never quarreled”, he answered.

In an essay published by the Atlantic Monthly in 1853, Thoreau described a pine tree in Maine with the words: “It is as immortal as I am, and perchance will go to as high a heaven, there to tower above me still.” However, the editor (James Russell Lowell) considered the sentence to be blasphemous, and removed it from Thoreau’s essay.

In one of his essays, Thoreau wrote: “If a man walk in the woods for love of them half of each day, he is in danger of being regarded as a loafer; but if he spends his whole day as a speculator, shearing off those woods and making the earth bald before her time, he is esteemed an industrious and enterprising citizen.”

A few more things that Thoreau said

It is the beauty within us that makes it possible for us to recognize the beauty around us. The question is not what you look at, but what you see.

Simplify your life. Don’t waste the years struggling for things that are unimportant. Don’t burden yourself with possessions. Keep your needs and wants simple and enjoy what you have. Don’t destroy your peace of mind by looking back, worrying about the past. Live in the present. Simplify!

Go confidently in the direction of your dreams. Live the life you’ve imagined.

Happiness is like a butterfly; the more you chase it, the more it will elude you, but if you turn your attention to other things, it will come and sit softly on your shoulder.

Rather than love, than money, than fame, give me truth.

The mass of men lead lives of quiet desperation.

You must live in the present, launch yourself on every wave, find your eternity in each moment. Fools stand on their island of opportunities and look toward another land. There is no other land; there is no other life but this

Be not simply good, be good for something,

Books are the treasured wealth of the world and the fit inheritance of generations and nations.

If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them.

If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music he hears, however measured or far away.

The greatest compliment that was ever paid me was when one asked me what I thought, and attended to my answer.

We need the tonic of wildness...At the same time that we are earnest to explore and learn all things, we require that all things be mysterious and unexplorable, that land and sea be indefinitely wild, unsurveyed and unfathomed by us because unfathomable. We can never have enough of nature.

10.8 The message of Bertha von Suttner

Early life and marriage

Baroness Bertha von Suttner (1843-1914) was born in Prague as Countess Kinsky. She was the posthumous daughter of a Field Marshall, and during the first part of her life, she accepted the military traditions of her family. Later she vigorously opposed militarism, and she became a leader of the peace movement. It was her arguments that persuaded Alfred Nobel to establish the Nobel Peace Prize, and in 1905 she became the first woman to receive the prize.

After serving as Alfred Nobel's secretary (and close friend) in Paris (1876), Bertha married Baron Arthur von Suttner. However, the von Suttner family was strongly opposed to the marriage, and the young couple left for the Caucasus where for nine years they earned a living by giving lessons in languages and music. During this period, Bertha von Suttner became a highly successful writer.



Figure 10.7: **Bertha von Suttner**

In 1885 the von Suttner family relented, and welcomed the couple back to Austria. Here Bertha von Suttner wrote most of her books, including her many novels. The couple's life was oriented almost solely toward the literary until, through a friend, they learned about the International Arbitration and Peace Association¹ in London and about similar groups on the Continent, organizations that had as an actual working objective what they had now both accepted as an ideal: arbitration and peace in place of armed force.

Bertha von Suttner immediately added material on this to her second serious book, *Das Maschinenzeitalter* (*The Machine Age*) which, when published early in 1889. Her book was much discussed and reviewed. It criticizing many aspects of the times, and it was among the first to foretell the results of exaggerated nationalism and armaments. Her novel *Lay Down Your Arms*, published in the same year, had a huge impact.

The 1905 Nobel Peace Prize

Here are some excerpts from Bertha von Suttner's acceptance speech:

One of the eternal truths is that happiness is created and developed in peace, and one of the eternal rights is the individual's right to live. The strongest of all instincts, that of self-preservation, is an assertion of this right, affirmed and sanctified by the ancient commandment "Thou shalt not kill."

It is unnecessary for me to point out how little this right and this commandment are respected in the present state of civilization. Up to the present time, the military organization of our society has been founded upon a denial of the possibility of peace, a contempt for the value of human life, and an acceptance of the urge to kill...

It is erroneous to believe that the future will of necessity continue the trends of the past and the present. The past and present move away from us in the stream of time like the passing landscape of the riverbanks, as the vessel carrying mankind is borne inexorably by the current toward new shores...

"If you keep me in touch with developments, and if I hear that the Peace Movement is moving along the road of practical activity, then I will help it on with money." These words were spoken by that eminent Scandinavian to whom I owe this opportunity of appearing before you today, Ladies and Gentlemen. Alfred Nobel said them when my husband and I visited with him in 1892 in Bern, where a peace congress was in progress...

..although the supporters of the existing structure of society, which accepts war, come to a peace conference prepared to modify the nature of war, they are basically trying to keep the present system intact. The advocates of pacifism, inside and outside the Conference, will, however, defend their objectives and press forward... to "bring nearer the time when the sword shall not be the arbiter among nations".

A few more things the Bertha von Suttner said about peace

Strange how blind people are! They are horrified by the torture chambers of the Middle Ages, but their arsenals fill them with pride!

After the verb 'to Love', 'to Help' is the most beautiful verb in the world.

10.9 Helen Keller's message

Childhood

Helen was a normal child until the age of 19 months, when she contracted an illness which may have been scarlet fever or meningitis. It left her both deaf and blind. When Helen was 6 years old, her parents followed the advice of Alexander Graham Bell and contacted the Perkins Institute for the Blind. The Perkins Institute recommended their recent graduate Annie Sullivan, who became Helen's teacher.

Annie Sullivan, who was 20 years old at that time and also blind, began to work with Helen, spelling out words on the palm of Helen's hand. This method was unsuccessful at



Figure 10.8: **Helen Keller: Although blind, she could see injustice. Although deaf, she could hear the cries of the oppressed, and the voices of victims of war.**

first, but one day, when Annie Sullivan was spelling out “water” on one of Helen’s hands while water was running over the other, Helen suddenly realized that the letters were a symbol for water. For the next many days, the child almost wore her teacher out by demanding the spelling of hundreds of other things within her experience. Annie Sullivan later became Helen’s lifelong friend and companion.

Victory over a triple handicap

Starting in 1888, Helen Keller began her formal education, at first at the Perkins Institute, then at a succession of other schools. Finally, at the age of 24, with financial help from a wealthy friend of Mark Twain. Helen graduated from Radcliffe College. She was the first blind and deaf person to obtain a BA degree. On the way to this triumph, Helen had taught herself to speak normally, and she could understand what other people were saying by placing her hand on their lips.

Helen Keller quickly developed into a popular lecturer and author. She spoke and wrote to advocate many social reforms, including woman’s suffrage, labour rights, socialism and antimilitarism.

The story of Helen Keller and Annie Sullivan, as told in Helen’s *Autobiography*, became known to a very wide public through the drama *The Miracle Worker*, which was first produced as a radio broadcast, then as a television drama, then as a Broadway play and finally as a succession of films.

Here is a newspaper account of one of Helen Keller’s lectures:

“The wonderful girl who has so brilliantly triumphed over the triple afflictions of blind-

ness, dumbness and deafness, gave a talk with her own lips on 'Happiness,' and it will be remembered always as a piece of inspired teaching by those who heard it.

"According to those who attended, Helen Keller spoke of the joy that life gave her. She was thankful for the faculties and abilities that she did possess and stated that the most productive pleasures she had were curiosity and imagination. Keller also spoke of the joy of service and the happiness that came from doing things for others ... Keller imparted that 'helping your fellow men is one's only excuse for being in this world and in the doing of things to help one's fellows lay the secret of lasting happiness.' She also told of the joys of loving work and accomplishment and the happiness of achievement. Although the entire lecture lasted only a little over an hour, the lecture had a profound impact on the audience."

A few things that Helen Keller said

Strike against war, for without you no battles can be fought! Strike against manufacturing shrapnel and gas bombs and all other tools of murder! Strike against preparedness that means death and misery to millions of human beings! Be not dumb, obedient slaves in an army of destruction! Be heroes in an army of construction.

The best and most beautiful things in the world cannot be seen or even touched - they must be felt with the heart.

Believe. No pessimist ever discovered the secrets of the stars or sailed to an uncharted land or opened a new heaven to the human spirit

Alone we can do so little. Together we can do so much!

It is for us to pray not for tasks equal to our powers, but for powers equal to our tasks, to go forward with a great desire forever beating at the door of our hearts as we travel toward our distant goal

When one door of happiness closes, another opens; but often we look so long at the closed door that we do not see the one which has been opened for us.

To keep our faces toward change, and behave like free spirits in the presence of fate, is strength undefeatable.

Self-pity is our worst enemy and if we yield to it, we can never do anything wise in the world.

Security is mostly a superstition. It does not exist in nature, nor do the children of men as a whole experience it. Avoiding danger is no safer in the long

run than outright exposure. Life is either a daring adventure or nothing

I do not want the peace that passeth understanding. I want the understanding which bringeth peace.

10.10 The Universal Declaration of Human Rights

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

Articles 1 and 2 of the Declaration state that “all human beings are born free and equal in dignity and in rights”, and that everyone is entitled to the rights and freedoms mentioned in the Declaration without distinctions of any kind. Neither race color, sex, language, religion, political or other opinion, national or social origin, property or social origin must make a difference.

The Declaration states that everyone has a right to life, liberty and security of person and property. Slavery and the slave trade are prohibited, as well as torture and cruel, inhuman or degrading punishments. All people must be equal before the law, and no person must be subject to arbitrary arrest, detention or exile. In criminal proceedings an accused person must be presumed innocent until proven guilty by an impartial public hearing where all necessary provisions have been made for the defense of the accused.

No one shall be subjected to interference with his privacy, family, home or correspondence. Attacks on an individual’s honor are also forbidden. Everyone has the right of freedom of movement and residence within the borders of a state, the right to leave any country, including his own, as well as the right to return to his own country. Every person has the right to a nationality and cannot be arbitrarily deprived of his or her nationality.

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

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

Everyone has the right to the economic, social and cultural conditions needed for dignity and free development of personality. The right to work is affirmed. The job shall be of

a person's own choosing, with favorable conditions of work, and remuneration consistent with human dignity, supplemented if necessary with social support. All workers have the right to form and to join trade unions.

Article 25 of the Declaration states that everyone has the right to an adequate standard of living, including food, clothing, housing and medical care, together with social services. All people have the right to security in the event of unemployment, sickness, disability, widowhood or old age. Expectant mothers are promised special care and assistance, and children, whether born in or out of wedlock, shall enjoy the same social protection. Everyone has the right to education, which shall be free in the elementary stages. Higher education shall be accessible to all on the basis of merit. Education must be directed towards the full development of the human personality and to strengthening respect for human rights and fundamental freedoms. Education must promote understanding, tolerance, and friendship among all nations, racial and religious groups, and it must further the activities of the United Nations for the maintenance of peace.

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

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

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

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

Furthermore, recent research shows that a war fought with nuclear weapons would be an ecological disaster. Smoke from burning cities would rise to the stratosphere, where it would spread globally and remain for a period of 10 years, blocking sunlight, destroying the the ozone layer, and blocking the hydrological cycle. An all-out war with thermonuclear

weapons would essentially destroy all agriculture for such a long period that most humans would die from starvation. The damage to the biosphere would also be enormous. We may ask: by what right do the nuclear nations threaten the world with a disaster of these proportions? Would not a war fought with nuclear weapons be the greatest imaginable violation of human rights? We should remember that both war in general and the use of nuclear weapons in particular violate democratic principles: The vast majority of ordinary citizens prefer peace to war, and the vast majority also long for a world without nuclear weapons.

It is plain that if the almost unbelievable sums now wasted on armaments were used constructively, most of the pressing problems facing the world today could be solved; but today the world spends more than 20 times as much on armaments as it does on development.

Today's world is one in which roughly 10 million children die every 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 rate of illiteracy in the 25 least developed countries is 80 percent, and the total number of illiterates in the world is estimated to be 800 million. Meanwhile every 60 seconds the world spends roughly 3 million dollars on armaments. The millions who are starving have a right to food. The millions of illiterates have a right to education. By preferring armaments to development, we deny them these rights.

It is time for civil society to make its voice heard. Politicians are easily influenced by lobbies and by money, but in the last analysis they have to listen to the voice of the people. We have seen this recently in Tunisia, Egypt, Libya, Bahrain and Yemen. We should try to learn from the courage of the people of these countries who have defied guns and tanks to demand their human rights. No single person can achieve the changes that we need, but together we can do it: together we can build the world that we choose.

No one living today asked to be born in a time of crisis, but the global crisis of the 21st century has given each of us an enormous responsibility: We cannot merely leave things up to the politicians, as we have been doing. The future is in our own hands: the hands of the people, the hands of civil society. This is not a time for building private utopias or cultivating our own gardens. Today everyone has two jobs: Of course we have to earn a living, but in addition, all of us have the duty to work actively, to the best of our abilities, to save humanity's future and the biosphere.



Figure 10.9: Eleanor Roosevelt and the Universal Declaration of Human Rights, which she helped to draft.

10.11 The voice of Martin Luther King, Jr.

The son of a southern Baptist minister, Martin Luther King, Jr received his Ph.D. in theology from Boston University in 1955. During his studies, he had admired Thoreau's essay "On the Duty of Civil Disobedience," and he had also been greatly moved by the life and teachings of Mahatma Gandhi.

Martin Luther King Jr. had been pastor of the Dexter Avenue Baptist Church in Montgomery Alabama for only a year when he was chosen to lead a boycott protesting segregation in the Montgomery buses. Suddenly thrust into this situation of intense conflict, he remembered both the Christian principle of loving one's enemies and Gandhi's methods of non-violent protest. In his first speech as President of the Montgomery Improvement Association (a speech which the rapid pace of events had forced him to prepare in only twenty minutes, five of which he spent in prayer), he said:

"Our method will be that of persuasion, not coercion. We will only say to people, 'Let your conscience be your guide'. Our actions must be guided by the deepest principles of our Christian faith. Love must be our regulating ideal. Once again we must hear the words of Jesus echoing across the centuries: 'Love your enemies, bless them that curse you, and pray for them that despitefully use you.' If we fail to do this, our protest will end up as a meaningless drama on the stage of history, and its memory will be shrouded by the ugly garments of shame. In spite of the mistreatment that we have confronted, we must not become bitter and end up by hating our white brothers. As Booker T. Washington said, 'Let no man pull you down so low as to make you hate him.'"

"If you will protest courageously, and yet with dignity and Christian love, when the history books are written in future generations, the historians will have to pause and say, 'There lived a great people, a black people, who injected new meaning and dignity into the veins of civilization.' This is our challenge and our overwhelming responsibility."

Victory in the court of public opinion

This speech, which Dr. King made in December 1955, set the tone of the black civil rights movement. Although the protesters against racism were often faced with brutality and violence; although many of them, including Dr. King were unjustly jailed; although the homes of the leaders were bombed; although they constantly received telephone calls threatening their lives; although many civil rights workers were severely beaten, and several of them killed, they never resorted to violence in their protests against racial discrimination. Because of this adherence to Christian ethics, public opinion shifted to the side of the civil rights movement, and the United States Supreme Court ruled bus segregation to be unconstitutional.

Welcomed to India by Nehru

In 1959, while recovering from an almost-fatal stabbing, Martin Luther King Jr. visited India at the invitation of Prime Minister Jawaharlal Nehru. Dr. King and his wife Coretta

were warmly welcomed by Nehru, who changed his schedule in order to meet them. They had an opportunity to visit a religious community or “ashram” that Gandhi had founded, and they discussed non-violence with many of Gandhi’s disciples.

King is awarded the Nobel Peace Prize

In 1964, the change in public opinion produced by the non-violent black civil rights movement resulted in the passage of the civil rights act. In the same year, Dr. King was awarded the Nobel Peace Prize. He accepted it, not as an individual, but on behalf of all civil rights workers; and he immediately gave all the prize money to the movement.

Opposition to the Viet Nam War

In 1967, a year before his assassination, Dr. King forcefully condemned the Viet Nam war in an address at a massive peace rally in New York City. He felt that opposition to war followed naturally from his advocacy of non-violence. Speaking against the Viet Nam War, Dr. King said: “We have corrupted their women and children and killed their men. They move sadly and apathetically as we herd them off the land of their fathers into concentration camps where minimal social needs are rarely met. They know they must move on or be destroyed by our bombs ... primarily women and children and the aged watch as we poison their water, as we kill a million acres of their crops. They must weep as the bulldozers roar through their areas preparing to destroy the precious trees. They wander into the hospitals. So far we may have killed a million of them, [in Vietnam by 1967] mostly children. They wander into the towns and see thousands of the children, homeless, without clothes, running in packs on the streets like animals. They see the children degraded by our soldiers as they beg for food. They see the children selling their sisters to our soldiers, soliciting for their mothers.”

Opposition to nuclear weapons

In his book, “Strength to Love”, Dr. King wrote, “Wisdom born of experience should tell us that war is obsolete. There may have been a time when war served a negative good by preventing the spread of an evil force, but the power of modern weapons eliminates even the possibility that war may serve as a negative good. If we assume that life is worth living, and that man has a right to survival, then we must find an alternative to war ... I am convinced that the Church cannot be silent while mankind faces the threat of nuclear annihilation. If the church is true to her mission, she must call for an end to the nuclear arms race.”

Assassination

On April 4, 1968, Dr. King was shot and killed. A number of people, including members of his own family, believe that he was killed because of his opposition to the Viet Nam



Figure 10.10: Dr. Martin Luther King Jr. speaks in Washington: “I have a dream!”

War. This conclusion is supported by the result of a 1999 trial initiated by members of the King family. Summing up the arguments to the jury, the family’s lawyer said “We are dealing in conspiracy with agents of the City of Memphis and the governments of the State of Tennessee and the United States of America. We ask that you find that a conspiracy existed.” After two and a half hour’s deliberation, the jury found that Lloyd Jowers and “others, including governmental agencies, were parties to this conspiracy”. The verdict of the jury remains judicially valid today, and it has never been overturned in a court of law, although massive efforts have been made to discredit it.

Redemptive love

Concerning the Christian principle of loving one’s enemies, Dr. King wrote: “Why should we love our enemies? Returning hate for hate multiplies hate, adding deeper darkness to a night already devoid of stars. Darkness cannot drive out darkness; only light can do that. Hate cannot drive out hate. Only love can do that ... Love is the only force capable of transforming an enemy into a friend. We never get rid of an enemy by meeting hate with hate; we get rid of an enemy by getting rid of enmity... It is this attitude that made it possible for Lincoln to speak a kind word about the South during the Civil War, when feeling was most bitter. Asked by a shocked bystander how he could do this, Lincoln said, ‘Madam, do I not destroy my enemies when I make them my friends?’ This is the power of redemptive love.”

To a large extent, the black civil rights movement of the ’50’s and ’60’s succeeded in ending legalized racial discrimination in America. If the methods used had been violent, the movement could easily have degenerated into a nightmare of interracial hatred; but by remembering the Christian message, “Love your enemy; do good to them that spitefully

use you”, Martin Luther King Jr. raised the ethical level of the civil rights movement; and the final result was harmony and understanding between the black and white communities. Later the nonviolent methods of Gandhi and King were successfully applied to the South African struggle against Apartheid by Nelson Mandela and his followers.

Here are a few more things that Martin Luther King said

I have decided to stick to love...Hate is too great a burden to bear

Faith is taking the first step even when you can't see the whole staircase.

Our lives begin to end the day we become silent about things that matter.

In the end, we will remember not the words of our enemies, but the silence of our friends.

If you can't fly then run, if you can't run then walk, if you can't walk then crawl, but whatever you do you have to keep moving forward.

Only in the darkness can you see the stars.

There comes a time when a person must take a position that is neither safe, nor politic, nor popular, but he must take it because conscience tells him it is right.

Everybody can be great...because anybody can serve. You don't have to have a college degree to serve. You don't have to make your subject and verb agree to serve. You only need a heart full of grace. A soul generated by love.

Forgiveness is not an occasional act, it is a constant attitude.

We must accept finite disappointment, but never lose infinite hope.

There is some good in the worst of us and some evil in the best of us. When we discover this, we are less prone to hate our enemies.

We must live together as brothers or perish together as fools.

Intelligence plus character - that is the goal of true education

True peace is not merely the absence of tension; it is the presence of justice.

Science investigates; religion interprets. Science gives man knowledge, which is power; religion gives man wisdom, which is control. Science deals mainly with facts; religion deals mainly with values. The two are not rivals.

The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy.

We know through painful experience that freedom is never voluntarily given by the oppressor, it must be demanded by the oppressed.

Injustice anywhere is a threat to justice everywhere. We are caught in an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly, affects all indirectly.

We have also come to this hallowed spot to remind America of the fierce urgency of Now. This is no time to engage in the luxury of cooling off or to take the tranquilizing drug of gradualism. Now is the time to make real the promises of democracy.

The time is always right to do what is right.

For when people get caught up with that which is right and they are willing to sacrifice for it, there is no stopping point short of victory.

All we say to America is, 'Be true to what you said on paper.' If I lived in... any totalitarian country, maybe I could understand the denial of certain basic First Amendment privileges, because they hadn't committed themselves to that over there. But somewhere I read of the freedom of assembly. Somewhere I read of the freedom of speech. Somewhere I read of the freedom of the press. Somewhere I read that the greatness of America is the right to protest for right.

We've got some difficult days ahead. But it really doesn't matter with me now because I've been to the mountaintop . . . I've looked over and I've seen the promised land. I may not get there with you. But I want you to know tonight that we as a people will get to the promised land.

10.12 ICAN wins the 2017 Nobel Peace Prize

What is ICAN?

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

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

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

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



Figure 10.11: From left to right: Berit Reiss-Andersen, Chairman of the Norwegian Nobel Committee, Setsuko Thurlow, an 85-year-old survivor of the 1945 atomic bombing of Hiroshima, and ICAN Executive Director Beatrice Fihn.

10.13 Compassion versus greed

Humans are capable of great compassion and unselfishness. Mothers and fathers make many sacrifices for the sake of their families. Kind teachers help us through childhood, and show us the right path. Doctors and nurses devote themselves to the welfare of their patients.

Sadly there is another, side to human nature, a darker side. Human history is stained with the blood of wars and genocides. Today, this dark, aggressive side of human nature threatens to plunge our civilization into an all-destroying thermonuclear war.

Humans often exhibit kindness to those who are closest to themselves, to their families and friends, to their own social group or nation. By contrast, the terrible aggression seen in wars and genocides is directed towards outsiders. Human nature seems to exhibit what might be called “tribalism”: altruism towards one’s own group; aggression towards outsiders. Today this tendency towards tribalism threatens both human civilization and the biosphere.

Greed, in particular the greed of corporations and billionaire oligarchs, is driving human civilization and the biosphere towards disaster.

The greed of giant fossil fuel corporations is driving us towards a tipping point after which human efforts to control climate change will be futile because feedback loops will have taken over. The greed of the military industrial complex is driving us towards a Third

World War that might develop into a catastrophic thermonuclear war. The greed of our financial institutions is also driving us towards economic collapse, as we see in the case of Greece.

Until the start of the Industrial Revolution in the 18th and 19th centuries, human society maintained a more or less sustainable relationship with nature. However, with the beginning of the industrial era, traditional ways of life, containing elements of both social and environmental ethics, were replaced by the money-centered, growth-oriented life of today, from which these vital elements are missing.

According to the followers of Adam Smith (1723-1790), self-interest (even greed) is a sufficient guide to human economic actions. The passage of time has shown that Smith was right in many respects. The free market, which he advocated, has turned out to be the optimum prescription for economic growth. However, history has also shown that there is something horribly wrong or incomplete about the idea that self-interest alone, uninfluenced by ethical and ecological considerations, and totally free from governmental intervention, can be the main motivating force of a happy and just society. There has also proved to be something terribly wrong with the concept of unlimited economic growth.

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.

The Stern Review Discussion Paper of 2006 stated that “Melting of permafrost in the Arctic could lead to the release of huge quantities of methane. Dieback of the Amazon forest could mean that the region starts to emit rather than to absorb greenhouse gases. These feedbacks could lead to warming that is at least twice as fast as current high-emission projections, leading to temperatures higher than seen in the last 50 million years.”

The greed of giant fossil fuel corporations has recently led them to conduct large-scale advertising campaigns to convince the public that anthropogenic climate change is not real. These corporations own vast oil, coal and gas reserves that must be kept in the ground if we are to avoid catastrophic global warming. It does not seem to bother the fossil fuel giants that if the earth is made uninhabitable, future generations of both humans and animals will perish.

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.

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. Nothing must count except the bottom line. 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.

Occasionally, for the sake of their public image, corporations seem to do something for other motives than their own bottom line, but it is usually window dressing. For example, Shell claims to be supporting research on renewable energy. Perhaps there is indeed a small renewable energy laboratory somewhere in that vast corporation; but the real interest of the organization is somewhere else. Shell is sending equipment on a large scale to drill for more and more environment-destroying oil in the Arctic.

What does Christianity say about greed? Wikipedia states that “The seven deadly sins, also known as capital vices or cardinal sins, is a classification of vices (part of Christian ethics) that has been used since early Christian times to educate and instruct Christians concerning fallen humanity’s tendency to sin. In the currently recognized version, the sins are usually given as wrath, greed, sloth, pride, lust, envy and gluttony. Each is a form of Idolatry-of-Self wherein the subjective reigns over the objective.”

Saint Thomas Aquinas wrote: “Greed is a sin against God, just as all mortal sins, in as much as man condemns things eternal for the sake of temporal things”.

In the New Testament, we can find many passages condemning greed, for example:

“For the love of money is the root of all evil: which while some coveted after, they have erred from the faith, and pierced themselves through with many sorrows.” Timothy 6:10

“Lay not up for yourselves treasures upon earth, where moth and rust doth corrupt, and where thieves break through and steal.” Mathew 6:19

In his encyclical *Laudato Si’*, and on his recent visit to South America, Pope Francis has spoken strongly against economic activity that lacks both social and environmental ethics.

Much depends on whether we are able to break the power that corporations and extremely rich oligarchs now hold over our governments and our mass media. Pope Francis has shown by example what a world leader of courage and honesty can do. Most of us are not in such a position, but each person can do his or her best to restore democracy where it has been lost to corporate money and greed. If the mass media have sold themselves to the highest bidder, we can make our own media. If most politicians are corrupt, we can make our own political movements. As Shelly said, “We are many, they are few”.

We need your voice today

Saint Francis said:

“Blessed is he who loves and does not therefore desire to be loved;
Blessed is he who fears and does not therefore desire to be feared;
Blessed is he who serves and does not therefore desire to be served;
Blessed is he who behaves well toward others and does not desire that others
behave well toward him.”

William Blake said:

“Every Night & every Morn
Some to Misery are Born
Every Morn and every Night
Some are Born to sweet delight
Some are Born to sweet delight
Some are Born to Endless Night.”

Thomas Paine said:

“It is a perversion of terms to say that a charter gives rights. It operates by a contrary effect: that of taking rights away. Rights are inherently in all the inhabitants; but charters, by annulling those rights, in the majority, leave the right, by exclusion, in the hands of a few... They... consequently are instruments of injustice ... The fact, therefore, must be that the individuals, themselves, each, in his own personal and sovereign right, entered into a contract with each other to produce a government: and this is the only mode in which governments have a right to arise, and the only principle on which they have a right to exist.”

Thomas Jefferson said:

“I know of no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them but to inform their discretion.”

Mary Wollstonecraft said:

“I entreat (men) to assist to emancipate their companion, to make her a help meet for them! Would men but generously snap our chains, and be content with rational fellowship instead of slavish obedience, they would find us more

observant daughters, more affectionate sisters, more faithful wives, more reasonable mothers: in a word, better citizens.”

William Godwin said:

“To whom does any article, suppose a loaf of bread, justly belong? I have an hundred loaves in my possession, and in the next street there is a poor man expiring with hunger, to whom one of these loaves would be a means of preserving his life. If I withhold this loaf from him, am I not unjust? If I impart it, am I not complying with what justice demands?”

The Marquis de Condorcet said:

“Any person who has contributed to the progress of mankind to the best of his ability becomes immune to personal disaster and suffering. He knows that human progress is inevitable and can take comfort and courage from his inner picture of the epic march of mankind, through history, towards a better future.”

Thomas Robert Malthus said:

“That population cannot increase without the means of subsistence is a proposition so evident that it needs no illustration. That population does invariably increase, where there are means of subsistence, the history of every people who have ever existed will abundantly prove. And that the superior power cannot be checked without producing misery and vice, the ample portion of these two bitter ingredients in the cup of human life, and the continuance of the physical causes that seem to have produced them, bear too convincing a testimony. (He later modified this opinion and made it less pessimistic by allowing for the effect of preventive checks such as late marriage. Malthus considered birth control to be a form of vice, but today it is accepted as the most humane method of avoiding the grim Malthusian forces, famine, disease and war.”)

Percy Bysshe Shelley said:

“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!”

Robert Owen said:

“I know that society may be formed so as to exist without crime, without

poverty, with health greatly improved, with little, if any, misery. and with intelligence and happiness increased a hundredfold; and no obstacle whatsoever intervenes at this moment except ignorance to prevent such a state of society from becoming universal.”

John Stuart Mill said:

“The only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others.”

Henry David Thoreau said:

“Simplify your life. Don’t waste the years struggling for things that are unimportant. Don’t burden yourself with possessions. Keep your needs and wants simple and enjoy what you have. Don’t destroy your peace of mind by looking back, worrying about the past. Live in the present. Simplify!”

Count Leo Tolstoy said:

“The sharpest of all contradictions can be seen between the government’s professed faith in the Christian law of the brotherhood of all humankind, and the military laws of the state, which force each young man to prepare himself for enmity and murder.”

Mahatma Gandhi said:

“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.”

Martin Luther King said:

“Wisdom born of experience should tell us that war is obsolete. There may have been a time when war served a negative good by preventing the spread of an evil force, but the power of modern weapons eliminates even the possibility that war may serve as a negative good. If we assume that life is worth living, and that man has a right to survival, then we must find an alternative to war ... I am convinced that the Church cannot be silent while mankind faces the threat of nuclear annihilation. If the church is true to her mission, she must call for an end to the nuclear arms race.”

Wilfred Owen said:

“If in some smothering dream, you too could pace
Behind the wagon that we flung him in,
And watch the white eyes writhing in his face,
His hanging face, like a devil’s sick of sin,
If you could hear, at every jolt, the blood
Come gargling from the froth-corrupted lungs
Obscene as cancer, bitter as the cud
Of vile, incurable sores on innocent tongues,
My friend, you would not tell with such high zest
To children ardent for some desperate glory,
The old Lie: Dulce et decorum est
Pro patria mori”.

Albert Einstein said:

“The unleashed power of the atom has changed everything except our ways of thinking, and thus we drift towards unparalleled catastrophes.”

Edna St. Vincent Millay said:

“Man, doughty Man, what power has brought you low,
That heaven itself in arms could not persuade
To lay aside the lever and the spade
And be as dust among the dusts that blow?
Whence, whence the broadside? Whose the heavy blade?...
Strive not to speak, poor scattered mouth; I know.”

Bertha von Suttner said:

“Strange how blind people are! They are horrified by the torture chambers of the Middle Ages, but their arsenals fill them with pride!”

George Orwell said:

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

Helen Keller said:

“Strike against war, for without you no battles can be fought! Strike against manufacturing shrapnel and gas bombs and all other tools of murder! Strike

against preparedness that means death and misery to millions of human beings! Be not dumb, obedient slaves in an army of destruction! Be heroes in an army of construction.”

Today, human civilization and the biosphere are facing a crisis. Here are the tasks which history has given to our generation:

- We must abolish the institution of war before modern weapons destroy us.
- We must replace institutionalized violence by a just, democratic and enforcible system of global governance and international law.
- We must stabilize and ultimately reduce global population to a level that can be supported by sustainable agriculture.
- We must leave fossil fuels in the ground.
- We must avoid the large-scale global famine which threatens us because of the combined effects of climate change, population growth and the end of the fossil fuel era.
- We must achieve a steady-state economic system. Limitless growth on a finite planet is a logical absurdity.
- We must decrease economic inequality, both between nations and within nations,
- We must strive for governments that are true democracies rather than oligarchies.
- And finally, we must develop a mature ethical system to match our new technology.

These are difficult tasks, but together we can overcome the difficulties. As Helen Keller said, *Alone we can do so little! Together we can do so much!*

At a time of crisis, with the future at stake, please don't be silent. We urgently need your voice today!

10.14 The fragility of our complex civilization

The rapid growth of knowledge

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

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

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

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

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

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

The fragility of modern society

As our civilization has become more and more complex, it has become increasingly vulnerable to disasters. We see this whenever there are power cuts or transportation failures due to severe storms. If electricity should fail for a very long period of time, our complex society would cease to function. The population of the world is now so large that it is completely dependent on the high efficiency of modern agriculture. We are also very dependent on the stability of our economic system.

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



Figure 10.12: **The earth at night, seen from space: The thin layer of atmosphere covering the earth is vulnerable to the greenhouse gases that can cause catastrophic climate change. At night we can see the massive energy use that produces these greenhouse gases.**

ahead of us.

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

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

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

10.15 Looking towards the future

Tensions created by the rapidity of technological change

In human cultural evolution, information transfer and storage through the language of molecular complementarity is supplemented by new forms of biological information flow and conservation - spoken language, writing, printing, and more recently electronic communication. The result has been a shift into a much higher evolutionary gear.

Because of new, self-reinforcing mechanisms of information flow and accumulation, the rate of evolutionary change has increased enormously: It took 3 billion years for the first autocatalytic systems to develop into multicellular organisms. Five hundred million years were required for multicellular organisms to rise from the level of sponges and slime molds to the degree of complexity and organization that characterizes primates and other mammals; but when a branch of the primate family developed a tool-using culture, spoken language, and an enlarged brain, only 40,000 years were required for our ancestors to change from animal-like hunter-gatherers into engineers, poets and astronomers.

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 genetic adaptation. The prolonged childhood which 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 minds are not perfectly adapted to our new way of life. They reflect more accurately the way of life of our hunter-gatherer ancestors.

In addition to the contrast between the slow pace of genetic evolution when compared with the rapid and constantly-accelerating rate of cultural evolution, we can also notice a contrast between rapidly- and slowly-moving aspects of cultural change: Social institutions and structures seem to change slowly when compared with the lightning-like pace of scientific and technological innovation. Thus, tensions and instability characterize information-driven society, not only because science and technology change so much more rapidly than institutions, laws, and attitudes, but also because human nature is not completely appropriate to our present way of life. In particular, human nature seems to contain an element of what might be called "tribalism", because our emotions evolved during an era when our ancestors lived in small, mutually hostile tribes, competing with one another for territory on the grasslands of Africa.

Looking towards the future, what can we predict? Detailed predictions are very diffi-

cult, but it seems likely that information technology and biotechnology will for some time continue to be the most rapidly-developing branches of science, and that these two fields will merge. We can guess with reasonable certainty that much progress will be made in understanding the mechanism of the brain, and in duplicating its functions artificially. Scientists of the future will undoubtedly achieve greatly increased control over the process of evolution. Thus it seems probable that the rapidity of scientific and technological change will produce ethical dilemmas and social tensions even more acute than those which we experience today. It is likely that the fate of our species (and the fate of the biosphere) will be made precarious by the astonishing speed of scientific and technological change unless this progress is matched by the achievement of far greater ethical and political maturity than we have yet attained.

Science has proved to be double-edged - capable of great good, but also of great harm. Information-driven human cultural evolution is a spectacular success - but can it become stable? Terrestrial life can look back on almost four billion years of unbroken evolutionary progress. Can we say with confidence that an equal period stretches ahead of us?

Can information-driven society achieve stability?

“We are living in a very special time”, Murray Gell-Mann¹ remarked in a recent interview, “Historians hate to hear this, because they have heard it so many times before, but we *are* living in a very special time. One symptom of this is the fact that human population has for a long time been increasing according to a hyperbolic curve - a constant divided by 2020 minus the year.”

The hyperbola has the form $P = C/(2020 - y)$, P being the population, y , the year, and C a constant. This form is at first surprising. One might have expected it to be an exponential, if the rate of increase were proportional to the population already present. The fact that the curve is instead a hyperbola can be understood in terms of the accumulation of cultural information. New techniques (for example the initial invention of agriculture, the importation of potatoes to Europe, or the introduction of high-yield wheat and rice varieties) make population growth possible. In the absence of new techniques, population is usually held in check by the painful Malthusian forces - famine, disease, and war.

Gell Mann’s curve shows an explosive growth of human population, driven by an equally explosive growth of stored cultural information - especially agricultural and medical information, and the information needed for opening new land to agriculture. As Gell-Mann remarks, population cannot continue to increase in this way, because we are rapidly approaching the limits of the earth’s carrying capacity. Will human numbers overshoot these limits and afterwards crash disastrously? There is certainly a danger that this will happen.

Besides the challenge of stabilizing global population, the information-driven human society of the future will face another daunting task: Because of the enormously destructive weapons that have already been produced through the misuse of science, and because of

¹ Gell-Mann is an American physicist who was awarded a Nobel Prize in 1969 for his contributions to the theory of elementary particles.

the even worse weapons that may be invented in the future, the long-term survival of civilization can only be insured if society is able to eliminate the institution of war. This task will be made more difficult by the fact that human nature seems to contain an element of tribalism.

Humans tend to show great kindness towards close relatives and members of their own group, and are even willing to sacrifice their lives in battle in defense of their own family, tribe or nation. This tribal altruism is often accompanied by inter-tribal aggression - great cruelty towards the "enemy", i.e. towards members of a foreign group which is perceived to be threatening ones own. The fact that human nature seems to contain a genetically-programmed tendency towards tribalism is the reason why we find football matches entertaining, and the reason why Arthur Koestler once remarked: "We can control the movements of a space-craft orbiting about a distant planet, but we cannot control the situation in Northern Ireland."

How could evolutionary forces have acted to make the pattern of tribal altruism and inter-tribal aggression a part of human nature? To put the same question differently, how could our ancestors have increased the chances for survival of their own genes by dying in battle? The statistician R.A. Fisher and the evolutionary biologist J.B.S. Haldane considered this question in the 1920's.² Their solution was the concept of population genetics, in which the genetically homogeneous group as a whole - now sometimes called the "deme" - is taken to be the unit upon which evolutionary forces act.

Haldane and Fisher postulated that the small tribes in which our ancestors lived were genetically homogeneous, since marriage within the tribe was more probable than marriage outside it. This being the case, a patriotic individual who died for the tribe, killing many members of a competing tribe in the process, increased the chance of survival for his or her own genes, which were carried into the future by the surviving members of the hero's group. The tribe as a whole either lived or died; and those with the best "team spirit" survived most frequently.

Because of the extraordinarily bitter and cruel conflicts between ethnic groups which can be found in both ancient and modern history, it is necessary to take the ideas of Haldane and Fischer seriously. This does not mean that the elimination of the institution of war is impossible, but it means that the task will require the full resources and full cooperation of the world's educational systems, religions, and mass media. It will be necessary to educate children throughout the world in such a way that they will think of humanity as a single group - a large family to which all humans belong, and to which they owe their ultimate loyalty.

In addition to educational reform, and reform of the images presented by the mass media, the elimination of war will require the construction of a democratic, just, and humane system of international governance, whose laws will act on individuals rather than on states. The problems involved are very difficult, but they must be solved if the information-driven society of the future is to achieve stability.

² More recently the evolution of tribal altruism and inter-tribal aggression has also been discussed by W.D. Hamilton and Richard Dawkins.

Respect for natural evolution

The avalanche of new techniques in biotechnology and information technology will soon give scientists so much power over evolution that evolutionary ethical problems will become much more acute than they are today. It is already possible to produce chimeras, i.e. transgenic animals and plants incorporating genetic information from two or more species. Will we soon produce hybrids which are partly machines and partly living organisms? What about artificial life? Will humans make themselves obsolete by allowing far more intelligent beings to evolve in cyberspace, as Thomas Ray proposes? What about modification and improvement of our own species? Is there a limit beyond which we ought not to go in constructing new organisms to suit human purposes?

Perhaps one answer to these questions can be found by thinking of the way in which evolution has operated to produce the biosphere. Driven by the flood of Gibbs free energy which the earth receives from the sun, living organisms are generated and tested by life. New generations are randomly modified by the genetic lottery, sometimes for the worse, and sometimes for the better; and the instances of improvement are kept. It would be hard to overestimate the value of this mechanism of design by random modification and empirical testing, with the preservation of what works. The organisms which are living today are all champions! They are distillations of vast quantities of experience, end products of four billion years of solar energy income.

The beautiful and complex living organisms of our planet are exquisitely adapted to survive, to live with each other, and to form harmonious ecological systems. Whatever we do in biotechnology ought to be guided by caution and by profound respect for what evolution has already achieved. We need a sense of evolutionary responsibility, and a non-anthropocentric component in our system of ethics.

Construction versus destruction

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

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

It is easier to burn down a house than to build one, easier to kill a human than to raise

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

What kind of future world do we want?

Our political and educational systems must reflect the kind of world that we want for the future - and what kind of world do we want? We want a world where war is abolished as an institution, and where the enormous resources now wasted on war are used constructively. We want a world where a stable population of moderate size lives in comfort and security, free from fear of hunger or unemployment. We want a world where peoples of all countries have equal access to resources, and an equal quality of life. We want a world with a new economic system, not designed to produce unlimited growth, but aiming instead at meeting the real needs of the human community in equilibrium with the global environment. We want a world of changed values, where extravagance and waste are regarded as morally wrong; where kindness, wisdom and beauty are admired; and where the survival of other species than our own is regarded as an end in itself, not just a means to our own ends.

In our reverence for the intricate beauty and majesty of nature, and our respect for the dignity and rights of other humans, we can feel united with the great religious and philosophical traditions of mankind, and with the traditional wisdom of our ancestors.

Pictures sent back by the astronauts show the earth as it really is - a small, fragile, beautiful planet, drifting on through the dark immensity of space - our home, where we must learn to live in harmony with nature and with each other.

10.16 Chaplin's speech: Hope

At the end of his 1940 film, **The Great Dictator**, Charlie Chaplin suddenly abandons satire and speaks to us directly with his own voice, his own idealism. In the film, the speech is given by a small Jewish barber, who looks very much like the dictator, Adenoid Henkel (Adolf Hitler). Mistaken for Henkel, the barber must address a huge expectant crowd. Here is the speech:

Hyinkel: I'm sorry, but I don't want to be an Emperor - that's not my business. I don't want to rule or conquer anyone. I should like to help everyone, if possible - Jew, gentile, black man, white. We all want to help one another; human beings are like that. We want to live by each other's happiness, not by each other's misery. We don't want to hate and

despise one another. In this world there's room for everyone and the good earth is rich and can provide for everyone.

The way of life can be free and beautiful.

But we have lost the way.

Greed has poisoned men's souls, has barricaded the world with hate, has goose-stepped us into misery and bloodshed. We have developed speed but we have shut ourselves in. Machinery that gives abundance has left us in want. Our knowledge has made us cynical, our cleverness hard and unkind. We think too much and feel too little. More than machinery, we need humanity. More than cleverness, we need kindness and gentleness. Without these qualities, life will be violent and all will be lost.

The aeroplane and the radio have brought us closer together. The very nature of these inventions cries out for the goodness in men, cries out for universal brotherhood for the unity of us all. Even now my voice is reaching millions throughout the world, millions of despairing men, women, and little children, victims of a system that makes men torture and imprison innocent people.

To those who can hear me I say, "Do not despair." The misery that is now upon us is but the passing of greed, the bitterness of men who fear the way of human progress. The hate of men will pass and dictators die; and the power they took from the people will return to the people and so long as men die, liberty will never perish.

Soldiers: Don't give yourselves to brutes, men who despise you, enslave you, who regiment your lives, tell you what to do, what to think and what to feel; who drill you, diet you, treat you like cattle, use you as cannon fodder. Don't give yourselves to these unnatural men, machine men, with machine minds and machine hearts! You are not machines! You are not cattle! You are men! You have the love of humanity in your hearts. You don't hate; only the unloved hate, the unloved and the unnatural.

Soldiers: Don't fight for slavery! Fight for liberty! In the seventeenth chapter of Saint Luke it is written, "the kingdom of God is within man" - not one man, nor a group of men, but in all men, in you, you the people have the power, the power to create machines, the power to create happiness. You the people have the power to make this life free and beautiful, to make this life a wonderful adventure.

Then, in the name of democracy, let us use that power! Let us all unite!! Let us fight for a new world, a decent world that will give men a chance to work, that will give you the future and old age a security. By the promise of these things, brutes have risen to power, but they lie! They do not fulfill their promise; they never will. Dictators free themselves, but they enslave the people!! Now, let us fight to fulfill that promise!! Let us fight to free the world, to do away with national barriers, to do away with greed, with hate and intolerance. Let us fight for a world of reason, a world where science and progress will lead to all men's happiness.

Soldiers: In the name of democracy, let us all unite!!!

In Chaplin's film, Hannah is the sweetheart of the Jewish barber, and she is listening (as he hopes) to a radio broadcast of the speech. He continues his speech, talking to her:



Figure 10.13: **Look up, Hannah!**



Figure 10.14: **Alone we can do so little; together, we can do so much!**

Hannah, can you hear me? Wherever you are, look up, Hannah. The clouds are lifting. The sun is breaking through. We are coming out of the darkness into the light. We are coming into a new world, a kindlier world, where men will rise above their hate, their greed and brutality.

Look up, Hannah. The soul of man has been given wings, and at last he is beginning to fly. He is flying into the rainbow – into the light of hope, into the future, the glorious future that belongs to you, to me, and to all of us.

Look up, Hannah. Look up!

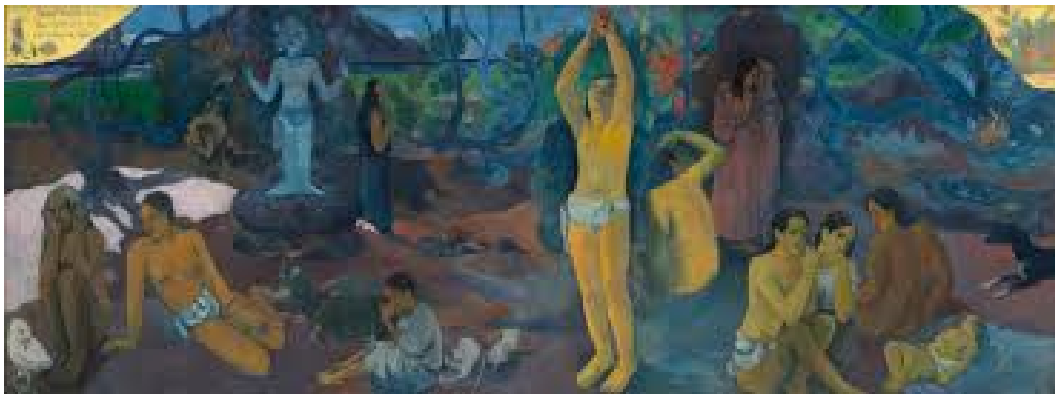


Figure 10.15: **Where do we come from? What are we? Where are we going?**

Suggestions for further reading

1. Jacob Bronowski *Science and Human Values*, Harper and Row (1958).
2. Jacob Bronowski *The Identity of Man* Natural History Press, (1965).
3. Paul R. Ehrlich, Anne H. Ehrlich and John Holdren, *Human Ecology*, W.H. Freeman, (1977).
4. World Commission on Environment and Development, *Our Common Future*, Oxford University Press, (1987).
5. R. Goodland, H. Daly, S. El Serafy and B. von Droste, editors, *Environmentally Sustainable Development: Building on Brundtland*, UNESCO, Paris, (1991).
6. D.H. Meadows, D.L. Meadows and J. Randers, *Beyond the Limits*, Chelsea Green Publishing Co., Vermont, (1992).
7. P.M. Vitousek, P.R. Ehrlich, A.H. Ehrlich and P.A. Matson, *Human Appropriation of the Products of Photosynthesis*, *Bioscience*, 34, 368-373, (1986).
8. E.O. Wilson, editor, *Biodiversity*, National Academy Press, Washington D.C., (1988).
9. World Resources Institute (WRI), *Global Biodiversity Strategy*, The World Conservation Union (IUCN), and United Nations Environment Programme (UNEP), (1992).
10. Lester R. Brown, *Building a Sustainable Society*, W.W. Norton, (1981).
11. Lester R. Brown and J.L. Jacobson, *Our Demographically Divided World*, Worldwatch Paper 74, Worldwatch Institute, Washington D.C., (1986).
12. Worldwatch Institute, Washington, D.C, *The State of the World*, (published annually).
13. John Avery, *Progress, Poverty and Population; Rereading Condorcet, Godwin and Malthus*, Frank Cass, London, (1997).
14. Herman E. Daly, *Steady-State Economics*, Island Press, Washington D.C., (1991).
15. Paul R. Ehrlich and Anne H. Ehrlich, *Healing the Planet*, Addison Wesley, Reading Mass., (1991).
16. E. Chivian et al., editors, (International Physicians for the Prevention of Nuclear War), *Last Aid: The Medical Dimensions of Nuclear War*, W.H. Freeman, (1982).

17. Robert Jay Lifton and Eric Markusen, *Genocidal Mentality: Nazi Holocaust and Nuclear Threat*, Basic Books, New York, (1990).
18. Joseph Rotblat and Sven Hellman, editors, *A World at the Crossroads: New Conflicts, New Solutions*, World Scientific, (1994).
19. Jack Steinberger, Bhalchandra Udgaonkar and Joseph Rotblat, editors, *A Nuclear-Weapon-Free-World*, Westview Press, Boulder, Colorado, (1994).
20. Joseph Rotblat, editor, *Nuclear Weapons: The Road to Zero*, Westview Press, Boulder, Colorado, (1998).
21. Kofi Annan, *In Larger Freedom: Towards Development, Security and Human Rights for All*, United Nations, New York, (2005).
22. Herman Daly, *Steady-State Economics: Second Edition with New Essays*, Island Press, (1991).
23. Herman Daly, *Economics in a Full World*, Scientific American, Vol. 293, Issue 3, September, (2005).
24. Herman Daly and John Cobb, *For the Common Good*, Beacon Press, Boston, (1989).
25. E.O. Wilson, *The Diversity of Life*, Allen Lane, The Penguin Press, (1992).
26. Lester R. Brown et. al., *Saving the Planet. How to Shape an Environmentally Sustainable Global Economy*, W.W. Norton, New York, (1991).
27. Muhammad Yunus, *Banker to the Poor; Microcredit and the Battle Against World Poverty*, (2003).
28. Amartya Sen, *Development as Freedom*, Oxford University Press, (1999).
29. Amartya Sen, *Inequality Reexamined*, Harvard University Press, (1992).
30. Paul F. Knitter and Chandra Muzaffar, editors, *Subverting Greed; Religious Perspectives on the Global Economy*, Orbis Books, Maryknoll, New York, (2002).
31. Edy Korthals Altes, *The Contribution of Religions to a Just and Sustainable Economic Development*, in F. David Peat, editor, *The Pari Dialogues, Volume 1*, Pari Publishing, (2007).
32. Hendrik Opdebeeck, *Globalization Between Market and Democracy*, in F. David Peat, editor, *The Pari Dialogues, Volume 1*, Pari Publishing, (2007).
33. Paul Hawken *The Ecology of Commerce; A Declaration of Sustainability*, Collins Business, (2005).
34. Luther Standing Bear, *Land of the Spotted Eagle*, Houghton Mifflin, (1933).
35. T. Gyatso, HH the Dalai Lama, *Ancient Wisdom, Modern World: Ethics for the New Millennium*, Abacus, London, (1999).
36. T. Gyatso, HH the Dalai Lama, *How to Expand Love: Widening the Circle of Loving Relationships*, Atria Books, (2005).
37. J. Rotblat and D. Ikeda, *A Quest for Global Peace*, I.B. Tauris, London, (2007).
38. M. Gorbachev and D. Ikeda, *Moral Lessons of the Twentieth Century*, I.B. Tauris, London, (2005).
39. D. Krieger and D. Ikeda, *Choose Hope*, Middleway Press, Santa Monica CA 90401, (2002).
40. P.F. Knitter and C. Muzaffar, eds., *Subverting Greed: Religious Perspectives on the Global Economy*, Orbis Books, Maryknoll, New York, (2002).

41. S. du Boulay, *Tutu: Voice of the Voiceless*, Eerdmans, (1988).
42. Earth Charter Initiative *The Earth Charter*, www.earthcharter.org
43. P.B. Corcoran, ed., *The Earth Charter in Action*, KIT Publishers, Amsterdam, (2005).
44. R. Costanza, ed., *Ecological Economics: The Science and Management of Sustainability*, Columbia University Press, New York, (1991).
45. A. Peccei, *The Human Quality*, Pergamon Press, Oxford, (1977).
46. A. Peccei, *One Hundred Pages for the Future*, Pergamon Press, New York, (1977).
47. E. Pestel, *Beyond the Limits to Growth*, Universe Books, New York, (1989).
48. Pope Francis I, *Laudato si'*, <https://laudatosi.com/watch>
49. John Scales Avery, *The Need for a New Economic System*, Irene Publishing, Sparsnäs Sweden, (2016).
50. John Scales Avery, *Collected Essays*, Volumes 1-3, Irene Publishing, Sparsnäs Sweden, (2016).
51. John Scales Avery, *Space-Age Science and Stone-Age Politics*, Irene Publishing, Sparsnäs Sweden, (2016).
52. John Scales Avery, *Science and Society*, World Scientific, (2016).
53. John Scales Avery, *Civilization's Crisis: A Set of Linked Challenges*, World Scientific, (2017).
54. Stockholm International Peace Research Institute, *SIPRI Military Expenditure Database*, (2017).
55. United States Census Bureau, *International Database, World Population*, (2016).
56. Stockholm International Peace Research Institute, *SIPRI Arms Transfers Database*, (2017).
57. R.E. Black, et al., *Maternal and child undernutrition and overweight in low-income and middle-income countries.*, *The Lancet*, 382 (9890), pp. 427-451, doi:10.1016/S0140-6736(13)60937-X, (2013).
58. L. Lui, et al., *Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000*, *The Lancet*, 379 (9832), pp. 2151-2161 doi:10.1016/S0140-6736(12)60560-1, (2012).
59. A. Fenwick, *The global burden of neglected tropical diseases*, *Public Health*, 126 (3), pp. 233-236, 10.1016/j.puhe.2011.11.015, (2012).
60. UN-OHRLLS Representatives for the Least Developed Countries, *UN LDC fact sheet*, <http://unohrlls.org/custom-content/uploads/2013/09/LDC-Factsheet-2013.pdf>.
61. Unesco Institute of Statistics, Literacy: <http://uis.unesco.org/en/topic/literacy>
62. Critchley and Bruinjeel, Unesco, *Environmental Impacts of Converting Moist Tropical Forest to Agriculture and Plantations*, IHP Humid Tropics Programme Series no. 10, (1996).
63. J. Buxton, *Drug Crop Production, Poverty, and Development*, Open Society Foundations (2016).
64. United Nations Office on Drugs and Crime, *World Drug Report*, (2014).
65. R.A. Akindale, *The Organization and Promotion of World Peace: A Study of Universal-Regional Relationships*, Univ. Toronto Press, Toronto, Ont., (1976).

66. N. Ball and T. Halevy, *Making Peace Work: The Role of the International Development Community*, Overseas Development Council, Washington DC, (1996).
67. Alexander Hamilton, James Madison and John Jay, *The Federalist Papers*, (1787-1788), Project Gutenberg.
68. Edith Wynner, *World Federal Government in Maximum Terms: Proposals for United Nations Charter Revision*, New York: Fedonat Press, (1954).
69. Grenville Clark and Louis B. Sohn (1958). *World Peace Through World Law*, Cambridge: Harvard University Press.
70. Bertrand Russell, *Has Man A Future?*, Hammondsworth: Penguin, (1961).
71. United Nations General Assembly, *Principles of International Law Recognized in the Charter of the Nuremberg Tribunal and in the Judgment of the Tribunal*, (1950).
72. Sydney Bailey, *The Procedure of the Security Council*, Oxford: Clarendon Press, (1998).
73. R.A. Akindale, *The Organization and Promotion of World Peace: A Study of Universal-Regional Relationships*, Toronto: University of Toronto Press, (1976).
74. J.S. Applegate, (1992). *The UN Peace Imperative*, New York: Vantage Press, (1988).
75. S.E. Atkins, *Arms Control, Disarmament, International Security and Peace: An Annotated Guide to Sources*, Santa Barbara: Clio Press, (1980-1987).
76. N. Ball, and T. Halevy, *Making Peace Work: The Role of the International Development Community*, Washington D.C.: Overseas Development Council, (1996).
77. J.H. Barton, *The Politics of Peace: An Evaluation of Arms Control*, Stanford: Stanford University Press, (1981).
78. A. Boserup and A. Mack, *Abolishing War: Cultures and Institutions; Dialogue with Peace Scholars Elise Boulding and Randall Forsberg*, Cambridge: Boston Research Center for the Twenty first Century, (1998).
79. Elise Boulding et al. Eds., *Peace, Culture and Society: Transnational Research Dialogue*, Boulder: Westview Press, (1991).
80. J. D'Arcy and D. Harris, *The Procedural Aspects of International Law (Book Series), Volume 25*, Transnational Publishers, Ardsley, New York, (2001).
81. Shabtai Rosenne, *The Law and Practice at the International Court*, Leiden: Dordrecht, (1985).
82. Shabtai Rosenne, *The World Court - What It Is and How It Works*, Leiden: Dordrecht, (1995).
83. J. D'Arcy and D. Harris, *The Procedural Aspects of International Law Volume 25 (Book Series)*, New York: Transnational Publishers, (2001).
84. H. Cullen, *The Collective Complaints Mechanism Under the European Social Charter*, European Law Review, Human Rights Survey no. 25: 18-30, (2000).
85. United Nations, *Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons*, (Treaty adopted on 7 July, 2017).
86. J. Tobin, *A Proposal for International Monetary Reform*. Eastern Economic Journal. Eastern Economic Association: pp. 153-159, (1978).
87. OXFAM, *Working for the Few: Political capture and economic inequality*, <http://www.oxfam.org/en/few>

88. UN Millennium Development Goals <http://www.un.org/millenniumgoals/> (2007).
89. Amartya Sen, *Poverty and Famine; An Essay on Entitlement and Deprivation*, Oxford University Press, (1981).
90. Amartya Sen, *Development as Freedom*, Oxford University Press, (1999).
91. Amartya Sen, *Inequality Reexamined*, Harvard University Press, (1992).
92. Paul F. Knitter and Chandra Muzaffar, editors, *Subverting Greed; Religious Perspectives on the Global Economy*, Orbis Books, Maryknoll, New York, (2002).
93. International Commission on Peace and Food. *Uncommon Opportunities: An Agenda for Peace and Equitable Development 2nd Edition*, New Jersey: Zed Books, (2004).
94. Michael Klare, *Resource Wars: The New Landscape of Global Conflict*, New York: Owl Books, (2002).
95. Michael Klare, *Rising Powers, Shrinking Planet: The New Geopolitics of Energy*, New York: Henry Holt and Company, (2008).
96. Michael Klare, *The Race for What's Left: The Global Scramble for the World's Last Resources*, New York: Metropolitan Books, (2012).
97. D. Feldman, et al., *Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections*, U.S. Department of Energy, NREL/PR-6A20-64898, (2015).
98. A. Baranus and D. Grionyte, *Measuring Fossil Fuel Subsidies*, ECFIN Economic Brief, Issue 40, doi:10.2765/85991, European Commission (2015).
99. British Petroleum Company, *B.P. Statistical Review of World Energy*, London: British Petroleum Company, (1991).
100. David Wasdell, *Arctic Dynamics*, Envisionation <http://www.envisionation.co.uk/index.php/videos/arctic-dynamics>
101. A. Gore, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It*, Rodale Books, New York, (2006).
102. A. Gore, *Earth in the Balance: Forging a New Common Purpose*, Earthscan, (1992).
103. M.K. Hubbert, *Energy Resources*, in *Resources and Man: A Study and Recommendations*, Committee on Resources and Man, National Academy of Sciences, National Research Council, W.H. Freeman, San Francisco, (1969).
104. G. Boyle (editor), *Renewable Energy: Power for a Sustainable Future, Second Edition*, Oxford University Press, (2004).
105. G. Boyle, B. Everett and J. Ramage (editors), *Energy Systems and Sustainability*, Oxford University Press, (2003).
106. United Nations Development Programme, *World Energy Assessment*, United Nations, New York, (2002).
107. P. Smith et al., *Meeting Europe's Climate Change Commitments: Quantitative Estimates of the Potential for Carbon Mitigation by Agriculture*, *Global Change Biology*, 6, 525-39, (2000).
108. IPCC, Intergovernmental Panel on Climate Change, *Climate Change 2001: The Scientific Basis*, (2001).
109. D. King, *Climate Change Science: Adapt, Mitigate or Ignore*, *Science*, 303 (5655), pp. 176-177, (2004).

110. S. Connor, *Global Warming Past Point of No Return*, The Independent, (116 September, 2005).
111. D. Rind, *Drying Out the Tropics*, New Scientist 6 May, (1995).
112. J. Patz et al., *Impact of Regional Climate Change on Human Health*, Nature, 17 November, (2005).
113. L.R. Brown, *The Twenty-Ninth Day*, W.W. Norton, New York, (1978).
114. L.R. Brown et al., *The Great Transition*, Earth Policy Institute, (2016).
115. World Bank, *Climate Change Report Warns of Dramatically Warmer World This Century*, <http://www.worldbank.org/en/news/feature/2012/11/18/Climate-change-report-warns-dramatically-warmer-world-this-century>
116. Food and Agriculture Organization of the United Nations (FAO), *The State of Food Insecurity in the World*, (2015).
117. T.R. Malthus, *An Essay on the Principle of Population, or, A View of its Past and Present Effects on Human Happiness, with an Inquiry into our Prospects Respecting its Future Removal or Mitigation of the Evils which it Occasions* 2nd edn. (London: Johnsons, (1803). (Obtainable from Everyman's University Library, J.M. Dent, London).
118. M. Giampietro and D. Pimental, *The Tightening Conflict: Population, Energy Use and the Ecology of Agriculture*, in *Negative Population Forum* L. Grant ed., Negative Population Growth, Inc. New Jersey: Teaneck, (1993).
119. L.R. Brown, *Full Planet, Empty Plates*, New York: W.W. Norton, (2012).
120. Michael Rowbotham, *The Grip of Death: A Study of Modern Money, Debt Slavery and Destructive Economics*, Oxfordshire: Jon Carpenter Publishing, (1998).
121. Herman Daly and Joshua Farley, *Ecological Economics: Principles and Applications*, Washington, D.C: Island Press, (2004).
122. Herman Daly, *Beyond Growth: The Economics of Sustainable Development*, Boston: Beacon Press, (1997).
123. Herman Daly, *Valuing the Earth: Economics, Ecology, Ethics* Cambridge: The MIT Press, (1993).
124. Herman Daly and John Cobb, Jr., *For The Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future*, Boston: Beacon Press, (1994).
125. Robert Goodland, Herman Daly and Salah El Serafy, *Population, Technology, and Lifestyle: The Transition To Sustainability*, Washington, D.C: Island Press, (1992).
126. Richard Heinberg, *The End of Growth*, Gabriola Island BC: New Society Publishers, (2011).
127. Richard Florida, *The Rise of the Creative Class*, New York: Basic Books, (2002).
128. Robert Goodland et al., eds., *Environmentally Sustainable Economic Development: Building on Brundtland*, Paris: UNESCO, (1991).
129. Donella Meadows, Dennis Meadows and Jorgen Randers, *Beyond the Limits*, Vermont: Chelsea Green Publishing Co., (1992).
130. Peter Vitousek et al., *Human Appropriation of the Products of Photosynthesis*, *Bio-science* 34, no.6 (1986): 368-373.

131. World Resources Institute (WRI), *Global Biodiversity Strategy, The World Conservation Union (IUCN), United Nations Environment Programme (UNEP)*, Washington D.C.: WRI, (1992).
132. Joseph Rotblat, *Nobel Peace Prize Lecture 1996*, Norwegian Nobel Institute, (1995).
133. Pope Francis I, *Laudato si'*, <https://laudatosi.com/watch>
134. László Szombatfalvy, *The Greatest Challenges of Our Time*, Stockholm, Ekerlids Forlag, (2010).
135. Lester R. Brown et. al., *Saving the Planet. How to Shape an Environmentally Sustainable Global Economy*, W.W. Norton, New York, (1991).
136. Luther Standing Bear, *Land of the Spotted Eagle*, Houghton Mifflin, (1933).
137. T. Gyatso, HH the Dalai Lama, *Ancient Wisdom, Modern World: Ethics for the New Millennium*, Abacus, London, (1999).
138. T. Gyatso, HH the Dalai Lama, *How to Expand Love: Widening the Circle of Loving Relationships*, Atria Books, (2005).
139. J. Rotblat and D. Ikeda, *A Quest for Global Peace*, I.B. Tauris, London, (2007).
140. M. Gorbachev and D. Ikeda, *Moral Lessons of the Twentieth Century*, I.B. Tauris, London, (2005).
141. D. Krieger and D. Ikeda, *Choose Hope*, Middleway Press, Santa Monica CA 90401, (2002).
142. S. du Boulay, *Tutu: Voice of the Voiceless*, Eerdmans, (1988).
143. Earth Charter Initiative *The Earth Charter*, www.earthcharter.org
144. P.B. Corcoran, ed., *The Earth Charter in Action*, KIT Publishers, Amsterdam, (2005).
145. E.O. Wilson, *The Diversity of Life*, Allen Lane, The Penguin Press, (1992).
146. Paul Hawken *The Ecology of Commerce; A Declaration of Sustainability*, Collins Business, (2005).
147. R. Costanza, ed., *Ecological Economics: The Science and Management of Sustainability*, Columbia University Press, New York, (1991).
148. Edy Korthals Altes, *The Contribution of Religions to a Just and Sustainable Economic Development*, in F. David Peat, editor, *The Pari Dialogues, Volume 1*, Pari Publishing, (2007).
149. Edward Wilson, ed., *Biodiversity* Washington D.C., National Academy Press, (1988).

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