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Chapter 2

The State of the World: The Environment, Population, International Debt and Interest, and the Social Fabric

This book develops a distinctive perspective on the arrangements needed to run modern society. Recognition of the need to do this was prompted by awareness of two things: (1) The precariousness of the present human predicament; and (2) The inability of our current societal management arrangements - the financial system (and especially market processes) and the public management system (government and bureaucracy) - to tackle the problems which face us. The dangerous situation in which humankind finds itself will be well known to many readers. Nevertheless, the book would not be complete without a brief summary of the main evidence.

Although this chapter mainly summarises a few of the facts assembled by ecologists and others to underline the seriousness of the environmental crisis, it also includes a little information on the state of the financial system and the disintegration of the social fabric although these topics will be discussed at greater length later.

Much of the material summarised in this chapter has been discussed more fully in the sources on which it is based. These include Ward and Dubos' book *Only One Earth*^{2.1}, the Worldwatch *State of the World Reports*^{2.2}, the *Gaia Atlas of Planet Management*^{2.3}, an books published by Porritt^{2.4}, Milbrath^{2.5}, and Meadows et al.^{2.6}.

In essence, the problems we face stem from the pervasive and perverse persistence of the “American Dream”. Not only has this proved to be a mirage even in America itself, but, long before all the world's people - or even just the people of China - could achieve it, the planet would be laid to waste. Apart from anything else, living like Americans depends on endless resources sucked in from other parts of the globe. The West consumes more than three quarters of all the world's metals and energy and causes the bulk of the pollution of the soils, seas, and atmosphere. It accounts for two thirds of all the greenhouse gases and three quarters of the sulphur and nitrogen oxides that cause acid rain. It generates 90% of the chlorofluorocarbons (CFCs) that destroy the ozone layer. Since the Second World War, the population of the US alone has consumed as many minerals as everyone who lived on the entire planet in all previous generations.

Despite this fantastic consumption, there has been no increase in the proportion of Americans who report themselves “very happy”. The socio-economic processes which drive American society have had the effect of requiring Americans to engage in more and more frenetic activity to stay in almost exactly the same place as they were 50 years ago. To achieve the same standard of living today it is necessary for both partners in a marriage to work - and to work longer hours each day - despite the availability of labour-saving gadgets like washing machines, vacuum cleaners, and refrigerators. The US social fabric is collapsing: Statistics on crime, mental illness, family disintegration, and levels of stress are all increasing exponentially. The American Dream is therefore a mirage in more ways than one: It is unattainable and its pursuit is unbelievably destructive.

The average American consumes almost his or her own weight of basic materials each day: 18 kg of petroleum, 13 kg of other minerals, 12 kg of agricultural products, and 9 kg of forest products. The US, with 5% of the world’s population, uses 30% of its energy and generates 30% of its carbon dioxide emissions.

One fifth of American families own three or more cars. 90% of new cars in the US have air conditioning, doubling their contribution to global warming and adding to the emissions of ozone-depleting CFCs. The USA’s automobile-based way of life clearly cannot be generalised to the rest of the world: Only 8% of the world population currently have cars. No technological developments could possibly achieve the energy savings or the increase in production that would be required to extend the American way of life to the rest of the world - never mind to deal with the products of energy consumption and waste disposal. Nor would developments in car technology help the majority of humanity who will never own a car. They would not reduce traffic congestion, death (worldwide, more than 250,000 fatal accidents a year) and injury on the roads, urban sprawl, centralised production and distribution, the loss of vast tracts of land to highway construction, or the social costs of road building.

The US - and the rest of world with it - is lured to its destructive way of life in part by images presented in the media. It is not only advertisements that are to blame: Films and plays also portray the materialistic way of life as a legitimate - indeed as almost the only thinkable - way of life. They portray it as a means of achieving satisfaction. Yet, in any comparison between countries, there is no correlation between income and happiness. Within countries there is more support for the idea: The better off are slightly happier than the less well off - but they are no happier than those who are actually poorer but, in their own countries *relatively* better off. Contrary to what the media suggest, life satisfaction is related most closely to satisfaction with family life, work, leisure, and friendships.

In the remainder of this chapter, the seriousness of the problems which face us will be documented under a number of headings.

Population and Resources

Perhaps it is best to approach what is in reality a dense knot of environmental problems by looking first at the question of population. Since the beginning of the Industrial Revolution, world population has increased exponentially. At a growth rate of 2% per annum, population doubles every 35 years. Although the actual rate has dropped below this figure during the last

two decades, population growth remains exponential. In 1991, 92 million people were added to the world population, equivalent to the populations of Germany, Switzerland, and Austria taken together. However, since 90% of the increase has occurred in the Third World, a more appropriate comparison would perhaps be eight times the population of Calcutta.

Unfortunately, the space and resources of the Earth are finite, not only in terms of the supply of resources available but, perhaps more importantly, in terms of its capacity to absorb waste.

However, the population increase itself is not the main problem: India, with 20% of the world's population, uses only 2% of its energy. This is particularly important because many of the most important problems facing the planet stem from the pollutants and greenhouse gases which arise from our inordinate consumption of energy and the destruction which the use of energy-intensive machinery inflicts. Without wishing to minimise the problem of population, and noting what China has been able to accomplish by way of limiting population growth if not by way of restraining "development", it would be churlish not to overlook the possibility that focussing attention on population may be, at least in part, a mechanism whereby the poor of the Third World can be blamed for problems created by the West.

It is the *combination* of population explosion with a worldwide commitment to Western concepts of "development" - most notably in Pacific rim countries - which is so terrifying. When this is combined with access to the knowledge and technology required to deploy biological and nuclear weapons to lay claim to whatever remains available the situation becomes still more alarming.

Agriculture, Food Production, and Land Management

Each year 40 million people die from hunger and hunger-related diseases - equivalent to 300 Jumbo jets crashing without survivors every day. The within-country variance in access to food - outside China - is often enormous. The rich in Kenya, Brazil, Mexico, and the Philippines gorge themselves among the starving. Average statistics by country are therefore extremely misleading.

In 1989, enough food was produced in the world to provide 5.9 billion people, more than the world's population, with a subsistence diet, but only 2.9 billion with a diet at European levels. Nevertheless over a fifth of the population had less food than the body requires, and something between 10% and 20% were chronically hungry.

Despite the enormous success (at least in the short-term) of the agricultural policies pursued in the US and Europe, both of these countries import massive amounts of foodstuffs from the Third World. Thus Rees^{2.7} has shown that Holland imports all the fodder which can be produced by a land area five times its size to feed to its livestock. Overall, it requires all the agricultural produce of a land area 17 times its size for its population to live as does. The highly fertile Frazer valley of Western Canada requires for its survival at its current standard of living a hinterland of 18 times its size. Among the most important agricultural imports into Europe is grain to feed cattle. This often comes from countries in which many people are living at starvation levels. (At the height of the Ethiopian famine, Europe imported grain worth many times the value of the "aid" sent to that country at the time, and vastly exceeds the sums raised by the worldwide Band Aid concerts organised by Bob Geldof.) We should not focus only on the *quantity* of food imports: they are typically priced at well below their cost. This is partly a product of the absence of international standards to outlaw conditions of work which would not be tolerated in the West including low wages, child labour, absence of

welfare, poor housing, poor health care, absence of pensions, and scanty control of pollution. But this is not their main source. GATT and the policies of the IMF and World Bank, not to mention the activities of the TNCs, force Third World countries to sell food to the West at below cost and to divert still more of their farmers to growing cash crops for export instead of the food needed at home. We import coffee, cocoa, and sugar at prices which have been forced down by GATT and IMF policies which require the countries concerned to close down local manufacturing plants in order to concentrate on exporting unprocessed commodities in a highly competitive buyer's market. The TNCs also deny these countries access to the equipment required to process foods, like coffee, for themselves. As a result, only 8% of the sale price of coffee, and as little as 2.5% for bananas, ever reaches the grower.

Over most of human history agriculture was mildly energy positive ... which is just as well. Modern agriculture outside China uses enormous amounts of energy - not only to drive tractors and equipment, but also to manufacture and distribute fertilisers, to transport seeds, and to get the produce to market via vast processing, packaging, and centralised distribution plants. Manufacture of the packaging itself consumes huge amounts of energy and results in waste which is hard to dispose of. Centralised distribution plants result in the transportation of such things as vegetables over hundreds, if not thousands, of miles to the plants and then back to supermarkets whose customers themselves then drive miles to purchase them.

Each year land is lost in every part of the world. This is due in part to such things as erosion in North America, desertification and deforestation in Asia, Africa and Latin America, and acidification in Europe, although it has, of course, many other causes.

Desertification alone accounts for the loss of 12 million hectares a year. 11 million hectares are lost as a result of clearing tropical forest and 6 million through erosion. 25 billion tons of topsoil - equivalent to the total tillable soil coverage of India and France combined - disappear into the sea each year. Additional contributions to the degradation of the agricultural land bank include a declining supply of uncontaminated water and the absence of sinks for agricultural chemicals.

The potential of the seas to generate food in the form of fish is being destroyed by dumping and over-fishing. Although it is well known that land-based agriculture results in destruction of the soil and contaminates waterways with fertilizer, it is less well known that fish farming produces substantial contamination of the seas from excess food, fish droppings, and dissipation of the antibiotics required to counteract the diseases which proliferate when fish are reared in high concentrations. Fish farm escapes, which are common, also result in genetic changes in wild fish populations.

Deforestation

Since the introduction of agriculture, a third of the Earth's forests have been lost, and only a third of what remains is undisturbed primary forest. Half of the loss has occurred since 1950. 200 million hectares of trees have been felled since 1972 - an area one third that of the USA. The more species-rich tropical forests are culled at ever-increasing rates. Encouraged by domestic government policies, international aid agencies, and international pricing, cattle ranchers alone cut and burn 2.5 million hectares of forest in central America and Amazonia each year. The soils lose their fertility within six years, leading the ranchers to move to new land. Hardwoods are also cut for export and other species for paper manufacture. Loss of forest cover causes erosion which silts up lakes and reservoirs, thus leading to flooding and

loss of water supplies. As it washes into the oceans the silty effluent destroys natural fisheries. Forest clearance also affects climate, since trees absorb heat and CO₂. Thus forest clearance results in drier climates like those of North America and Europe.

It is important to note, however, that the disappearance of forests can also be caused indirectly - acid rain and air pollution have damaged three quarters of European forests.

Ecological Diversity

From the point of view of survival of the planet perhaps the most worrying change is that more species have been exterminated in the last 20 years than in the mass extermination that eliminated the dinosaurs 65 million years ago. At the same time our species - one among millions - now appropriates 40% of terrestrial net primary production (photosynthesis).

Water for Drinking and Agriculture

The majority of the world's population drink seriously contaminated water. It is the most common source of deadly diseases.

Water, like timber, is a renewable resource which, under conditions of local over-exploitation, becomes non-renewable. Pollution, and an exponential growth in demand which continually comes up against operational limits on storage capacity, are together laying the foundations for a global water shortage.

Falling water tables and competition for river water are now a major threat to continued agricultural production in many parts of the world, not just in India, China, the US, and the Middle East. The rate of fall of the water table in mid-China is a metre a year. The vast Ogallala aquifer, which supplies irrigation water to US farmers and ranchers from Nebraska to Texas, is being systematically depleted.

In the "developed" world much water is now contaminated by leaching from landfills, oil pollution, etc.

Energy

The pervasive use of oil is a very recent phenomenon. Even 40 years ago, annual oil consumption was one sixth of what it is today. It is set to increase by 75% in a decade - an amount that can only feasibly be extracted from the Persian Gulf. US oil production is already declining because of lack of new finds.

In 1989, the World Energy Conference predicted that the world's overall energy demand will increase by 75% by 2020. Most of this will need to be satisfied by the non-renewable fossil fuels - coal, oil, and natural gas. Due to the discovery of new deposits and the upward reappraisal of old stocks, estimates of the number of years resources will last if production remains at current rates have actually increased since 1970. In 1989, the estimate was 41 years for oil, 60 years for gas, and nearly 800 years for coal. The estimates will continue to rise as long as the rate of discovery outstrips production. However, each new discovery draws from the Earth's - ultimately finite - store of irreplaceable fuel. Further, at the end of the production process, fuel combustion pours pollutants and greenhouse gases into the various planetary sinks, which are already straining. In the case of coal, which is still relatively

abundant but whose combustion produces enormous quantities of carbon dioxide, use will almost certainly be limited by the (unknown) capacity of the atmosphere to absorb this most important of the greenhouse gases. The same limit applies to the flow of oil, but here depletion at source is much more of a problem. We can expect to see less and less return on exploratory efforts, and a gradual decline in global production as remaining stocks become concentrated in the Middle East. Natural gas is the cleanest of the fossil fuels, but it would be rapidly used up if adopted as a replacement for coal and oil.

It is important to realise that, while renewable energy sources can provide energy forever, they cannot support an ever-expanding population or the massive increase in energy consumption which would be required for the universalisation of the American way of life. Nevertheless they could provide the energy for a sustainable society without incurring the destructive effects of fossil fuel.

Waste Disposal; Pollution; Threats to the Global Ecosystem

So far, we have concentrated on problems associated with diminishing resources. At least as great a threat to future global security is posed by the abuse of our planetary sinks, which are beginning to overflow with waste. The most dangerous among these, such as radioactive waste and the greenhouse gases, seem to generate a feeling of paralysis arising from the manifest political and economic difficulties involved in their regulation.

In the case of nuclear waste, humanity has created a monster - something outside the natural order of things. The lethal products of the fission have not previously existed in the biosphere to any extent. No organism has evolved to render them harmless. They only degrade over a long period of time, in some cases thousands of years. Our solution to the problem they pose has thus far has been to store them out of sight in the hope that we will one day find a way of destroying them.

Surprisingly, many industrial chemicals are just as much an unknown quantity as nuclear wastes. Although more than 65,000 such compounds are now in regular use, toxicology data are available for less than 1%, and of the new chemicals entering the market each day, 80% have not been tested. It is, however, known that organochlorines (such as PCBs, dioxins, DDT, and Lindane), which are used in bleaching solvents, dyes, PVC, and pesticides, damage the immune and reproductive systems, causing birth defects and cancer. US industry discharges 250 million tonnes of toxic waste a year - one tonne per citizen. Very little of it is properly disposed of. Most of it finds its way into landfills, which often leak into water, which then makes its way the surface. Not infrequently such wastes are exported to Third World countries for a small fee. Those countries, lacking both a full understanding of what is involved and the bureaucracy required to enforce regulations, are even less likely to dispose of them in a satisfactory manner than the originating country.

The US generates 660 kilograms of garbage per person per year - twice the rate of Europe. Garbage incineration pollutes the atmosphere and the water used to cool the incineration plants and quench cinders. It also produces highly toxic ash which, when placed in landfills, leaches into water systems. Incinerators pump into the air nitrogen and sulphur oxides (which cause acid rain), carbon monoxide, dioxins, furans, and heavy metals. These heavy metals are widely scattered, extremely damaging, and non-degradable. Smokestack cleaners can extract some of these pollutants - but at the cost of further water pollution and the production of

more toxic ash. The capital costs are also extremely high: Building a plant runs at about \$150,000 per day ton of productive capacity.

Finally, mining itself produces enormous amounts of waste. For example, non-fuel mining in the US produces 1.3 billion tons of waste a year.

Whereas solid radioactive and industrial wastes are relatively localised in their effects, discharges into the air and seas have global effects. Certain gases, carbon dioxide chief among them, trap the sun's energy, letting it reach the earth's surface but not allowing it to leave the atmosphere on reflection. This "greenhouse effect" is a natural process, crucial for the maintenance of habitable conditions on our planet, but the concentration of the gases responsible for the effect must remain constant for a steady temperature to be maintained. At the beginning of the Industrial Revolution, the level of carbon dioxide in the atmosphere was 265ppm. In 1990 it reached 350ppm. The difference is the result of fossil fuel consumption and deforestation. Currently, 6 billion tons of carbon are pumped into the atmosphere each year. There are all manner of predictions for future levels, but a typical estimate suggests an exponential growth to a concentration of some 600ppm by 2050. Analysis over the last twenty years suggests that concentrations of other greenhouse gases, including methane, nitrogen oxides and chlorofluorocarbons, are also growing exponentially, having doubled since 1972. Given these changes, we should be able to observe an increase in average temperature corresponding to the increase in concentration of greenhouse gases and indeed, the eight hottest years in the last century have been recorded in the 1980s and 1990s. The ice-free season in the Canadian Lakes has lengthened, so that the mix of species in the Lakes has changed.

Climate predictions for the future vary widely. An increase of a few degrees centigrade in average temperature over the next 20 years could lead to a permanent drought in the North American grain belt and a six metre rise in global sea-levels. The former would lead to world-wide starvation and the latter flood much of the Netherlands, half of Florida, much of Bengal and the savannah of Argentina. However, great uncertainties surround the actual workings of the global ecosystem. There may, for example, be negative feedback mechanisms to counteract climatic change. Indeed, it already seems that the oceans are busily absorbing about half the excess carbon dioxide we emit. But specific predictions are really premature. The point is that vast amounts of information need to be sifted, evaluated and acted upon if we are to gain control of the global environment^{2,8}.

The ozone layer, associated with the maintenance of planetary temperatures and the exclusion of life-threatening radiation, is destroyed by chemicals contained in such apparently harmless things as aerosols or the Styrofoam of which egg cartons are made. The radiation which enters through the hole in the ozone layer produces skin cancer, cataracts, allergies, lowered resistance to diseases, and destroys forests, crop yields and animals. In the past decade ozone levels in both the Northern and Southern hemispheres have fallen by 8%.

Acid rain is another global pollutant which does not respect national frontiers. 90 million tonnes of sulphur dioxide (mainly from electricity generating plants and smelters) are pumped into the atmosphere each year. This, together with oxides of nitrogen, creates the acid rain which kills forests, makes lakes sterile, leaches plant nutrients out of the ground, destroys buildings, and activates heavy metals in the soil, rendering them toxic.

Air pollution alone is causing a fall in US agricultural production of 8% p.a.

But it is not only gases which are discharged into the atmosphere. Particles are ejected as well: There is half a gramme of lead in every litre of leaded petrol, with the result that cars eject 450,000 tonnes of lead per year as fine particles. While this has been reduced in North America and Europe, the oil companies still insist on selling large quantities of leaded petrol elsewhere in the world. But the use of unleaded petrol is no panacea because its anti-knock ingredients are based on enzymes which find their way into exhaust fumes. These may have much more detrimental effects on life than lead, although they have been much less thoroughly studied.

Turning to pollution of the seas, Britain discharges 5,046 tonnes of highly toxic heavy metals (zinc, lead, cadmium and mercury) into the sea each year. These heavy metals are used in a wide range of manufacturing processes including electroplating, the manufacture of paints, plastics, pulp and paper, pesticides, electrical goods, pharmaceuticals, mining and ammunition.

Widespread pollution is also caused by dumping untreated sewage directly into the seas, carrying waste out to sea and then dumping it, massive dumping of nuclear and other wastes, and washing residue out of oil tankers. The oceans are littered with plastic and tar balls resulting from oil spills, lost drift nets, and factory ships. All of these are fairly conspicuous, yet 70% of marine pollution consists of the often unnoticed sediments and contaminants that flow into the seas from landbased sources.

Political and Military Bloodshed

Since the Second World War sixteen million people (many of them civilians) have died as a result of military operations^{2,9} and there are over ten million refugees displaced by war. In fact, the world is, from the point of view of massive extermination of man by man using military (as distinct from economic) force, an increasingly dangerous place.

The number of wars fought each year is increasing steadily. In the 1950s an average of 9 wars broke out each year; in the 60s it rose to 11, and in the 70s to 14.

Current nuclear firepower amounts to 1.5 million Hiroshimas. A single Trident contains eight times the *total* firepower expended in the second World War. There are more nuclear reactors in the sea than on land. Yet a nuclear winter could easily be precipitated by terrorists placing conventional bombs in selected nuclear power stations.

“Peacetime” military operations contaminate vast tracts of land with bombing practice and other manoeuvres. Although the pollution caused by nuclear testing is well-known, military manoeuvres involving nuclear weapons also result in massive contamination. The actual production of nuclear and other weaponry is highly contaminating. Military activity in the US releases more toxins into the air than the next six largest polluters combined. Horrific contamination has been revealed in the former Soviet Union and Eastern Europe as military forces have moved off.

Military contamination is not confined to nuclear weapons. Conventional warheads are extremely toxic, and chemical and biological warfare has been widely practised - as in the Iraq-Iran War.

Current developments for use in biological warfare are even more terrifying. Genetic engineering has resulted not only in the production of deadly viruses, but also recombinant DNA - a product capable of permanently destroying the operation of cells at the most basic level.

The proliferation of chemical and biological weapons is also wide open to exploitation by unscrupulous terrorists.

Much of what has been said refers to the worsening environmental situation at a global level. But, despite surface appearances, the social fabric of most Western societies - and especially the United States of America - is also deteriorating at an alarming rate. Statistics on crime, poverty, social and ethnic conflict, homelessness, mental health, family disintegration, stress, insecurity, drug addiction, and lack of health care are all increasing dramatically.

In the US, the number of children born to single mothers increased from 4% of all births in 1950 to 18.4% in 1980. Since 1972 there has been a tenfold increase in the US prison population, which now amounts to 5% of the population. 42% of Black men aged 16-35 are serving some kind of sentence from the criminal justice system. The prison building programme has cost more than 70 billion dollars. More than 2 million crimes are reported to the police each year ... and reported crimes amount to only 25% of all crime.

The Financial System

This brief review of the environmental and social problems facing society is sufficient to indicate the need for urgent action. However, although the workings of the financial system will be examined in greater detail in later chapters, this chapter would be incomplete without a brief discussion of the precarious state of the world's financial system and the ways in which it is linked to the previously mentioned ecological problems.

Evidence suggesting that the financial system is on the verge of collapse has been assembled by Bellini^{2.10} and Robertson^{2.11}. But clearly the money-creation process (to be described in Chapter 4), which has resulted in money amounting to some 30 times the value of the total annual world production circulating the globe cannot be sustained indefinitely. Neither, too, can the process of sucking money and agricultural and mineral commodities priced at a fraction of their true cost out of the Third World continue much longer. Likewise, the process which has resulted in the banks and insurance companies in effect owning most of the land, buildings, and companies of the West cannot go on for ever. Nor can the creation of huge national debts or the subsidy of national government budgets from the sale of public assets. These observations suggest that the financial system as we know it *must* collapse. The only question is: "When?"

Most people are aware, at the edge of their consciousness, of the radical need for change in the way we organise society. Many young people holding well-paid jobs are so aware of the gathering storm and their powerlessness to do anything about it that they have chosen simply to live for today. Everyone can see that stopping the arms race should have led to an increase in quality of life ... but that on the contrary the "peace dividend" has become a peace tax. They have become aware that consumerism simply cannot generate enough work to yield "full employment". They dimly perceive that this has one of two, equally disturbing, implications. Either the production of useless goods - especially armaments - will have to be stepped up. Or we will have to either take much more radical steps to share work out or

change our current fixation on the idea that the only entitlement to share in the good things in life comes from a contribution to society through paid work. The horns of the dilemma are horribly clear: To generate enough conventional work, a Third World War is required. Peace, paradoxically, worsens the quality of life, worsens sidewalks, health care, social security, the quality of television programmes, and pensions. Yet the thought of sharing wealth and well-being with those who do not work is, for most people, unthinkable. As far as they can see it would lead to the disintegration of society.

In 1988 the World Bank for Economic Reconstruction and Development lent \$11 billion to the Third World but, in the same year, received \$15 billion back in interest payments. A similar story could be told about the “lending” of Western governments and private banks. This financial inflow to the West is but a fraction of the total: The “loans” are typically spent on Western armaments, consultants, and machinery. As a result, much of the capital never leaves the West. Furthermore, much of what does reach the Third World countries flows into the hands of public servants and politicians who promptly place it in their Western bank accounts.

In 1989 Third World “debt” amounted to \$1.2 trillion, 44% of its collective gross annual product (it was 400% of GNP in Mozambique). In 1985 the net flow in terms of interest payments alone from the Third World to the West amounted to over \$40 billion a year.

Much of the money - even the money lent by the World Bank - is spent on projects which are ecologically and socially damaging, such as the construction of dams, military installations, chemical plants, and highways. Even a cursory examination of the lending shows that its main effect is to keep the wheels of Western economies turning rather than to help the Third World.

According to Hancock^{2.12} “(World) Bank staff are rewarded for the quantity of loans they process, not their quality”. The Bank is “plagued by a culture of secrecy and arrogance that makes it resistant both to its own internal reformers and to pressures exerted from the outside”. Its *borrowers* are responsible for assessment of the value of the projects for which money will be “lent”, but they lack the staff and expertise needed to assess their environmental impact. Since it requires less Bank staff time to oversee large loans than a similar volume of smaller ones, there is a tendency to go for ambitious projects. It is very difficult for anyone to find out about the details of any proposals - and virtually impossible to debate them in public.

Trade

The international trade orchestrated by the IMF and the TNCs is highly exploitative of Third World countries. As George^{2.13} shows, these countries are routinely forced to: Sell their nationalised industries and other national assets; give loans to the TNCs who purchase them (in the hope of retaining jobs); subsidise TNCs’ exports; move out of manufacturing into the export of basic agricultural and mineral commodities; sell these commodities in a buyers market in competition with other countries who have been forced into the same position; cut wages and welfare; eliminate subsidies which benefit the poor; cut back on the public service needed to manage and oversee their economies, and cut back on the regulatory framework which plays such an important part in promoting the well-being of the West. As if this were not enough, they are not allowed the licences or the equipment which would be required to process their agricultural and mineral commodities, and are confronted by all manner of tariff

barriers, quotas, “voluntary” agreements, and non-tariff barriers involving irrelevant specifications which only Western products can meet when they seek to enter the West. To add insult to injury Western manufacturers (a) dump their manufactured products - and especially drugs and pesticides banned in the West^{2.14} - in these countries at below cost, thus further forestalling the growth of local industry, (b) ship components around the world so that profits are only made in tax havens, and (c) rely on these Third World countries to, for a small fee, dispose of millions of tons of highly poisonous nuclear and chemical waste from pharmaceuticals and other industry.

The West has exported its labour-intensive^{2.15}, dirty, and most polluting industries to the Third World. In addition, importing timber has the effect of transferring, or exporting, the debt we have accumulated through the deforestation of Western countries.

These processes *increase* the disparity between the average incomes of those living in rich and poor countries and between rich and poor within countries. In fact, the trajectory upon which international “development” has been propelled is now truly a cause for alarm: It can only lead to conflict, terrorism, and genocide. The Marxist class struggle has, in effect, been *internationalised*.

Provocation of the Wrath of Gaia - and Hints of How to Avoid It

We have now seen that the urgency of the situation cannot be over-estimated - indeed that we may already be beyond the point of no return for we may have damaged the soils, seas, and atmosphere beyond repair and set in train virtually unstoppable “development” processes.

Yet there is one more - perhaps the most important yet - reason to fear the future. If it is true, as Lovelock^{2.16} has suggested, that the planet is actually *alive*, then we must anticipate the kind of reaction an animal would initiate if one part of it became cancerous and threatened its existence.

Evidence that the planet is, indeed, alive - i.e. evidence for believing that it behaves like a single live organism (which has been named Gaia) - is to be found in the fact that the planet, like other living things, supports many incompatible processes.

One example is that the chemical composition of the atmosphere should not be as it is. Methane, nitrous oxide, and even nitrogen should not exist in our oxidising atmosphere. The gases which compose the atmosphere are unstable in each other’s presence. They should not co-exist, especially in the presence of sunlight. They must be being systematically replaced on a vast scale - methane at the order of 1,000 megatons a year. There is no reaction known to chemistry which can produce this output. Something must also be preventing their too rapid destruction. And whatever it is that is going on has been keeping the proportions of the various gases very much the same over millions of years despite the cataclysmic changes in temperature and vegetation that have taken place over this time.

If the planet were dead, 95% of the atmosphere would consist of carbon dioxide. Instead only 0.03% is carbon dioxide - and that is the level required to support life. Part of the explanation is that photosynthesis continuously operates to convert carbon dioxide into carbon and oxygen. But much of the carbon so created has been miraculously locked away - in contradiction to the second law of thermodynamics - in vast stores of fossil fuel. The laws of entropy would suggest that such energy differentials should long since have been run down.

That they continue to exist suggests that the planet has somehow arranged to take all this carbonised energy out of circulation in order that the whole network of life that constitutes Gaia can continue to exist. The atmosphere is not merely a biological product but a biological construction designed to maintain the environment required for the survival of Gaia. If we humans burn and release this energy and this carbon we will be undoing the very thing Gaia has taken so much trouble to do, and we should not be surprised if she vents her spleen upon us. She has to stop us doing it if she is to survive.

In saying that the planet is alive one is saying that she maintains processes which enable her to continue to live. She is therefore likely to do the same kind of things that animals do when attacked by viruses or bacteria. Thus she may get a fever - make herself too hot for us - or exude antibodies (the AIDS virus?) to exterminate us. Although there is danger that we, like a cancer, may kill Gaia, the probability is that she will survive by eliminating us.

Implications

Whether or not we accept the truth of the Gaia hypothesis, the problem facing us is to find ways of living in in harmony with nature instead of seeking to dominate it. The aim of this book is, therefore, to develop a perspective - going beyond those outlined by Goldsmith^{2.17}, Milbrath^{2.18} and other “green” philosophers - on how this is to be done.

Our basic argument is that the implication of the information summarised in this chapter is that it is going to be necessary to *manage* our society much more effectively and, after we have documented more fully why things cannot be left to market processes or to our current forms of bureaucracy and democracy, we will outline the developments which are needed to do so. But the discussion cannot be entirely postponed because the word “management” tends to conjure up an image of a process which is very different to that which is needed.

Jaques^{2.19} has convincingly demonstrated that the manager’s job is not to orchestrate or accept “democratic” decisions, still less to do what is most popular. It is to consult widely, collect information from below and above, and to make discretionary judgments and take high-quality decisions *which are in the best long-term interests of everyone in the organisation*. The problem is to hold managers accountable for doing these things. If one substitutes “public servant” for “manager” in the above statement it becomes clear what this book is centrally about: It is about finding ways of holding public servants accountable for collecting and sifting information about what is in the long-term public interest and acting on the judgments so formed. Neither the expectations we currently hold of our public servants nor our current concepts or forms of democracy are conducive to this end.

Although our central problem is to develop more effective forms of public management, let there be no doubt about it. What we have seen in this chapter is that the societal transformations which our new management arrangements need to bring into being as a matter of urgency are radical indeed. We need to dramatically reduce levels of transportation and get rid of most of our motor vehicles and the industries associated with them (which amount to about one quarter of modern economies). We need to redeploy those involved in the military-industrial “defence” system (another 25% of the economy). We need to dramatically re-organise the banking, insurance, and tax-collection and security-payment system (another 25%). We need to return to energy positive agriculture. We need to take firm steps to control population. We need to *reduce* consumption; to reuse rather than (in an energy-intensive way) re-cycle.

Despite the apparently threatening nature of this scenario, there is every reason to believe that, if it is done in an appropriate way, the adoption of a more sustainable way of life will bring with it a higher quality of life.

Let us be clear, however. It follows from what we have seen that radical transformation in our way of life is *inevitable*. We are currently set on a disaster course. The only option we have is whether we will act in time to get control of the situation or whether we will wait to be pushed around - and probably eliminated as a species - by forces beyond our control.

The Lure of Complacency and Committees of Enquiry

Much of the information in this chapter has been around for a quarter of a century. During that time the situation has only got worse - often at an exponential rate - and may now be beyond recovery. Why has so little been done? The answer is in part that the way forward requires dramatic, radical, change in the way our society is run. It is in part that the action to be taken requires systems analysis. It is not sufficient to recycle beer cans: The whole politico-economic system drives toward higher consumption of commodities, faster destruction of the rain forests, more merciless exploitation of the Third World, greater production of more dangerous wastes, and less processing of those wastes. Morgan^{2.20} has shown that the study and reversal of such systems processes requires careful study and carefully targeted intervention. Otherwise the effects of any change - however well-intentioned - are negated by the operation of other components of the system.

But the time has come to comment on the inadequacy of the normal way in which we try to move forward - i.e. through the production of official reports and conferences which claim to be seeking ways of addressing the problems.

It will be obvious from what has been said that neither most of those who wrote the Brundtland Report, nor most of those who attended the Earth Summit Conference in Rio de Janeiro in 1992, recognise the seriousness and urgency of the predicament in which we find ourselves, the inter-connectedness of the problems, or the radical nature of the changes that are required.

Trainer^{2.21} has provided the most trenchant commentary on the Brundtland Report. That report is given to mouthing platitudes without considering - let alone spelling out - the implications of what is being said. The assumption that growth will somehow yield a way out of our difficulties permeates its thinking. As a result, most of its recommendations will have exactly the opposite effect to those intended. It fails to identify and analyse the fundamental causes of our problems. To examine such causes and generate alternative ways forward requires a huge investment in research - research which cannot be initiated or conducted according to the conventional understandings of the scientific process. Despite appearances, the Report in fact constitutes an enthusiastic and unquestioning re-affirmation of the system, lifestyles, and values that are causing the problems under discussion. It purports to be critical and innovative but is in fact an entirely conventional statement: It argues for continuation, indeed acceleration, of the same basic values, systems, and strategies. This is most evident and most seriously mistaken with respect to its unquestioning acceptance of (a) the so-called free enterprise and market-oriented global economic system, (b) the "indiscriminate growth and trickle down" approach to Third World development, and (c) the affluent lifestyles and resource-expensive social systems characteristic of rich countries. While it contains the occasional phrase acknowledging the real problems, these take the form of window-dressing

embellishments to conceal what is behind. They are not built into, and do not inform, the main body of the text or its recommendations. Such behaviour is characteristic of commissions of enquiry made up of the great and the good. We are easily duped by their words ... indeed, the members themselves seem to have an enormous facility for self-deception and for failing to notice what their colleagues are really saying so long as they mouth what seem to be the right words.

One does not know how much of this is accidental and how much a product of Machiavellian manipulation on the part of the socially astute. But one thing we do know is that the oil lobby in the agenda-setting talks prior to the Rio Earth Summit got all discussion of the oil companies' central role in creating the crisis which confronts us off the agenda. They succeeded despite numerous attempts to re-insert it and despite the role which these companies actually play - directly and via the manufacture of plastics and fertilizers and the promotion of transportation and energy use - in poisoning the soils, seas, and atmosphere; despite their implication in the wars which have ravaged the globe in recent years; and despite their role in manipulating the international financial system.

The establishment of more such commissions is not, therefore, the way forward. An alternative is urgently needed. It is hoped that this book will provide it.

Notes

- 2.1 Ward and Dubos, 1972
- 2.2 Brown et al., 1984-1991
- 2.3 Myers, 1985
- 2.4 e.g. Porritt, 1984
- 2.5 Milbrath, 1989
- 2.6 Meadows et al., 1972, 1992
- 2.7 Rees (1992) shows that it would require five backup planet earths to support the current population of the world at the standard of living of the Fraser Valley, Canada.
- 2.8 See Holling, 1994.
- 2.9 Myers, 1985
- 2.10 Bellini, 1980
- 2.11 Robertson, 1985
- 2.12 Hancock, 1991
- 2.13 George, 1988
- 2.14 The US alone does trade of \$5 billion a year in pesticides that are banned at home to developing countries ... ironically, some of it finds its way back to the West in foodstuffs.
- 2.15 For example, Korten (1995) reports that a footwear manufacturer employs 8,000 people in management, design, sales, and promotion. However, its shoes are made by some 75,000 workers employed by independent contractors, most of whom are in Indonesia. Shoes sold in the West for £50 to £75 cost about £3.50 to produce ... by young women working for about 10p an hour. The workers are housed in company barracks and overtime is mandatory. See also Barnet and Cavanagh (1994).
- 2.16 Lovelock, 1979
- 2.17 Goldsmith, 1992
- 2.18 Milbrath, 1989
- 2.19 Jaques, 1976, 1989