

THE COLLAPSE OF CIVILISATION AND THE COMING DARK AGE

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ABSTRACT: *Through looking at the world as a single socio-political and economic system, within a living body, it becomes clear that to sustain the opportunities for complex life requires rapid change within our culture in a new direction. We have a choice, but the window of opportunity could close fast.*

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*Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart; the centre cannot hold;
Mere anarchy is loosed upon the world,
The blood-dimmed tide is loosed, and everywhere
The ceremony of innocence is drowned;
The best lack all conviction, while the worst
Are full of passionate intensity.
Surely some revelation is at hand;
Surely the Second Coming is at hand.
The Second Coming! Hardly are those words out
When a vast image out of "Spiritus Mundi"
Troubles my sight: somewhere in the sands of the desert
A shape with lion body and the head of a man
A gaze blank and pitiless as the sun,
Is moving its slow thighs, while all about it
Reel shadows of the indignant desert birds.
The darkness drops again; but now I know
That twenty centuries of stony sleep
Were vexed to nightmare by a rocking cradle,
And what rough beast, its hour come round at last,
Slouches towards Bethlehem to be born?*

The Second Coming

William Butler Yeats

"In 1900, a visitor from another sphere might reasonably have decided that man, as one met him in Europe or America, was a kindly, merciful and generous creature. In 1940 he might have decided, with an equal show of justice, that this creature was diabolically malignant. And yet it was the same creature, under different conditions of stress."

See H G Wells, in *The Shape of Things to Come*, 1933

THE WORLD DEVELOPMENT FIELD

The film by James Cameron of the “Titanic” resonates strongly with our current planetary predicament. The rudder of that ship was too small for its size and power, it needed a turning circle of 30 kilometres to turn the vessel around. To halt at full speed required 6 kilometres. The lookout had to shout to someone at the foot of the masthead, who ran to tell the Captain, who ordered the first mate to tell the bosun, who telegraphed the engine room if the engines needed to be put in reverse. If this chain was broken, the message could not be delivered, and to make matters worse, the lookout had left his binoculars in Europe! There were insufficient lifeboats even for first class passengers as the boat was pronounced “unsinkable”.

But is our world and its communities any better than the Titanic? If we are to be able to predict the future of humanity as a whole, we need to understand if and how our world works as a system¹; ecologically, socially, culturally, economically, and politically². How do we know where we are going; if we do not know where we are now, where we have come from, how did we get here, how fast we are travelling and the direction we are pointed in? Communities that cannot answer these questions, are in reality like the Titanic, merely some kind of accident looking for somewhere to happen. Changes we make in the absence of answering these questions run the risk of merely shuffling the deck chairs on the Titanic, destined to give the organisers a “warm fuzzy feeling” rather than being truly effective in their actions. Only by first answering these questions will we know what cultural, political, environmental and economic forces exist that enable us to make a change, and possibly mitigate any negative effects of our current cultural insanity discussed in the last chapter. Where is the brake, the steering wheel or the accelerator that allows us to guide our future successfully? So how does this world system of which we are a part really operate?

Globalisation is the current name of the game. It has become the contemporary “buzz word” for a worldwide process that is in fact far older. Today it is a corporate-led process of total world economic integration for which Maggie Thatcher used to say “There is No Alternative”. Globalisation is considered to effect everybody, it is supposedly inevitable, and it is claimed people cannot resist, except at their own peril. In the 1970s and 80s the same process was called “Development”, and some countries were considered less or more developed than others. In the 1950s and 60s it was called “Modernisation”. Modernisation then too was a process that was considered “inevitable” and “desirable”. In the 1940s and 50s the term was simply called “Progress” and people who “resist progress” were considered “backward” or even “primitive”³.

When we look behind this concept, however, we see that something similar has operated throughout the history of civilisation since the beginning as a process of something else at work. In every case, such terms have historically concealed an “imperial imperative”, a political and economic force where a majority who have less power, have been required to accept the formula and conceptions of the future determined by a minority elite of those who are more powerful⁴. These misused words ultimately are based upon physical coercion and do violence, by forcing someone

else into a future strait-jacket designed for them by others. It literally is really a process of imperial disempowerment and cultural colonisation.

It may have been originally Benjamin Franklin who first suggested that “time” has become a “monetary” commodity. Karl Marx showed that under Capitalism, unlike earlier forms of slavery, the factory owners don’t purchase either a labourer, or a worker. This used to occur in the ancient world or until the 1960s in the American South where humans were commodity slaves⁵. An earlier phase of the “world system” used such a market in human lives. Today, in the “modern” world we only purchase the “labour time” of the workers. Workers, Marx argued, are expected to look after themselves and maintain the personal asset that their employer purchases. If they do not maintain themselves satisfactorily they are ultimately dismissed, for failing in “their responsibilities”. Because this time is equal to money, those that use time most “effectively” are those that can work the fastest, producing the most. Time, like money, is to be “saved”. Time thus begins to collapse into a present as everything is compelled to go faster and faster in order to maximise the profits made ultimately from selling the product of that work⁶. This drive to maximise profit seeks to make everything instantaneous, to collapse all of time into a present moment, an omnipresent omnipotent “now”.

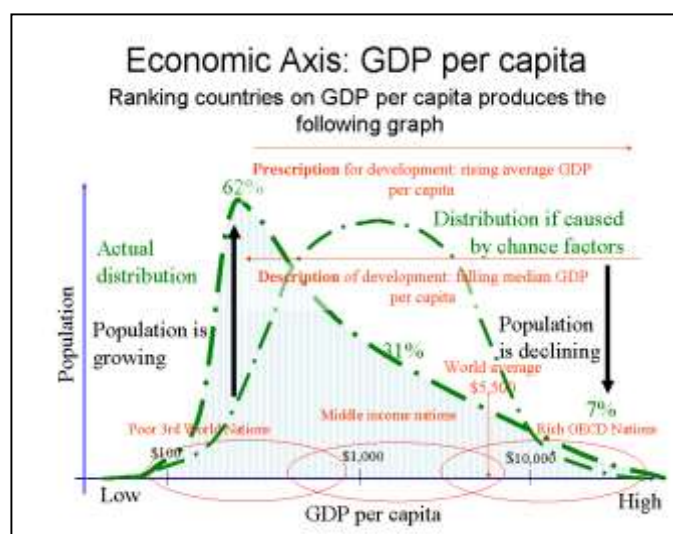
In this situation people it is easy to lose track of both their past and their. People increasingly cannot think beyond one generation, politicians cannot think beyond the next election, businessmen cannot think beyond the next planning period (usually reducing inventories to work “just in time”), and so the past becomes irrelevant. Equally in the fractional reserved banking system of the creation of money the future is “discounted” economically, by systems which automatically assume the falling value of money⁷. Rates of change accelerate and begin to exceed the capacity of ecosystems, human communities, and even of our bodies⁸ to adapt, mega-extinction of life starts reducing biodiversity as to go faster needs farming monocultures in which everything needs to be standardised. Even the New Age⁹ gurus preach the need to live in the “Now” of an eternal timeless present, in which we are told the past is dead and gone and our concepts of the future are imaginary, and only the present is real. In such a world the past becomes a meaningless jumble of disconnected events whilst the future for many if not most becomes increasingly bleak and apocalyptic. For instance, in numerous reports, it suggests that over 80% of young people believe that the “world will end” within their lifetime, and that there is nothing they can do about it¹⁰. Apocalypse here can also become a self-fulfilling prophecy of “Apocalypse Now”. Research into the origins of major wars shows how a belief that a major war is inevitable contributes strongly to the outbreak of eventual hostilities. How we have arrived at such a situation, however, is a result of a centuries-long operation of a civilisation based upon industrial growth and its processes of accelerating “economic development”; a process that produces inequalities of either too little, too much or of the wrong sort.

The term “Economic Development” was coined by Harry Truman in the late 1947, but historically it started by meaning “the process of liberation of the management of our households from that which limits them¹¹”. Since Adam Smith this process has been equated to “the wealth of nations”. But what is the “wealth of a nation”? Today it is no longer, as Bobby Kennedy remarked¹², “the

happiness and vitality of its communities, the resilient flourishing of its natural ecology, or the skill and contentment of its people”¹³. Today the wealth of nations is usually measured by the national income, also called the Gross Domestic Product, or the GDP. In the early 20th century, our modern economic concepts of production, investment, saving, and consumption gained renewed importance because of the desire in World War I and II to maximise war expenditure, and the statistical data collected in the same period constituted the database for national income estimation. Following the Great Depression of 1929, Lord John Maynard Keynes, (1883-1946) attempted to put into new direction to these macroeconomic studies, and the importance of national accounting system increased. The Nobel prize winning economist Simon Kuznets (1901-1985), working for the National Bureau of Economic Research in America, collected and organised the national income accounts of the United States for three periods; 1934, 1941, and 1946. This work, combined with that of Colin Clark in England led to the study of production, market and national income.

Comprehensive studies on national income spread during the 2nd World War, and in 1944¹⁴, United States of America, United Kingdom and Canada joined together to determine common definitions for “national accounts”. The attempt to spread international standardisation was initiated through the new United Nations Organisation in 1949 and in 1952 A international Standardisation System of National Accounts (SNA) was published. The United Nations rearranged the SNA in 1968 to focus upon domestic production (GDP), and exclude the international transfer payments measured in the Gross National Production (GNP) which had inflated the wealth of some richer nations and depressed that of other poorer ones. In 1992, the SNA was revised again, hopefully in order to make assessments of economic sustainability easier to calculate.

But these figures all only take into account what is bought and sold. It does not take into account domestic production consumed at home, nor does it subtract from the wealth the cost of damage done to the environment, the collapse of viable communities, the depletion of natural resources, or the fact that extremes of wealth and poverty excludes those at the bottom of the economic pecking order from participating economically on a level playingfield. As Hazel Henderson¹⁵ has remarked “Steering a national economy by GDP is like flying a jumbo jet using an oil-pressure guage” and “Every time there is a car accident the GDP improves”. But attempts to reform the GDP figure and



use a more ecologically based assessment have been strongly resisted by conventional neoclassical economists of the wealthy nations¹⁶. Correcting these weaknesses, using the Index for Sustainable Economic Welfare, also known as the Genuine Progress Indicator, has been suggested as one way of eliminating the “bad” effects of the economy (for instance spending on increased crime) from the “goods” that are produced.¹⁷

Economically, therefore, when considering the world based upon this single measure of Gross Domestic Product per capita, three groups of countries can be broadly detected¹⁸. High GDP per capita countries (apart from a few small oil-resource rich or banking havens), are generally members of the Organisation of Economic Cooperation and Development (OECD). With an average per capita GDP of \$29,310 in 2003, these countries have a population numbering 432 million or just over 7% of the world's population. With their GDP growing at a rate of \$2,070 a year per capita from 2002 to 2003, this represents an annual growth rate of over 7.5% per annum. Low income countries, with a GDP per capita of less than \$1,110 per annum (just over \$3 per day), have a population of over 3.8 billion, comprising 62% of the world's population. The average GDP of these countries grew by a paltry \$30 per person per year, demonstrating the widening gap between the minority of the world's super rich nations and the majority world of the poor, a ratio which today stands for the poorest at more than 90:1. Thus even though world average GDP per capita grew by 7.21%, because most of this growth went to the richer countries of the world, the lot of the poorest in the world actually worsened.

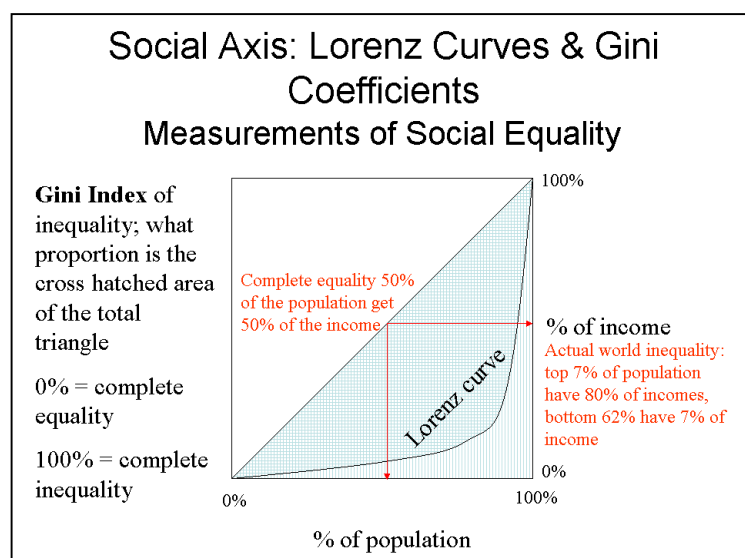
If this distribution of wealth was a result of random advantages possessed by the rich nations, or disadvantages possessed by the poor, the distribution of GDP per capita amongst populations would be by chance, taking the shape of the familiar normal distribution or "bell curve". When plotting GDP per capita against population, however, a highly skewed distribution results, with few people living in the most wealthy countries, like Luxembourg, Switzerland, the Cayman Islands, or Norway, and large numbers of people living in the poorest countries, with more than a billion people earning less than \$1 US per day, and another billion earning less than \$2US per day. Trends within this system also confirm the same pattern. Population growth in the wealthiest countries barely replaces the current population, whilst in the poorest countries population continues to rise rapidly. Clearly some kind of systemic or non-random factors are involved in generating such a distribution.

This focus on this narrowly defined economic "production" continues to distort our understanding.

Since the 1947 speech by Harry Truman, it has been assumed that "development" means that "they" must become like "us", and less developed countries need to adopt the characteristics of the "more developed" in order to prosper. This ignores the way in which income has been historically socially

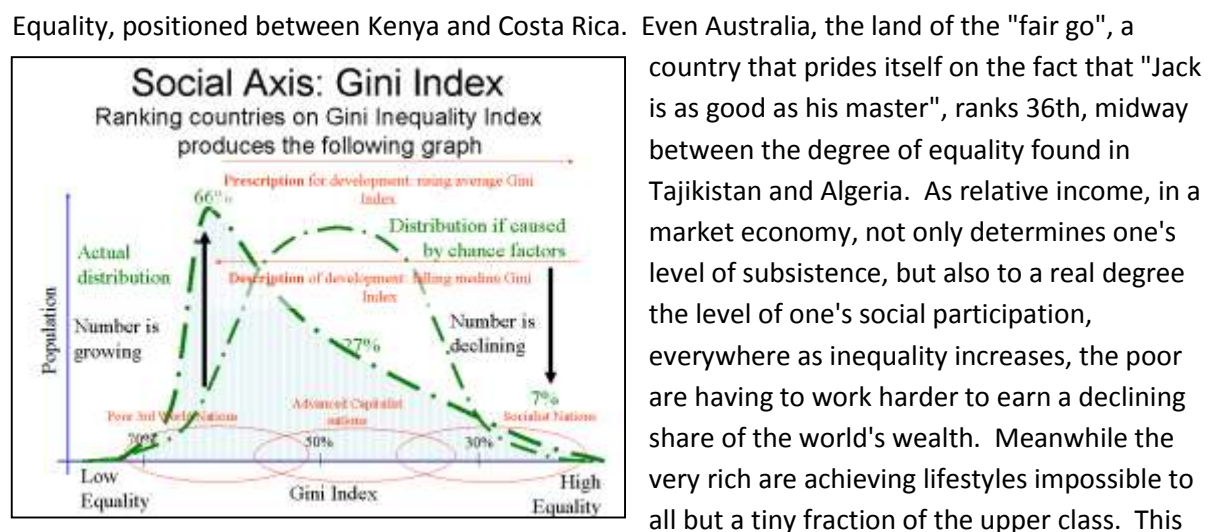
distributed within and between nations. One of system for assessing this system of

distribution of income within and between countries is by a Lorenz curve. By plotting cumulative percentages of the population by the cumulative percentage of income they receive we obtain the



following graph. This growing concentration of wealth into fewer and fewer hands is also confirmed in terms of rising international levels of social inequality. Within countries as well as between countries, with few exceptions the plight of the poorest is generally worsening whilst the incomes of the very rich continues to grow rapidly¹⁹.

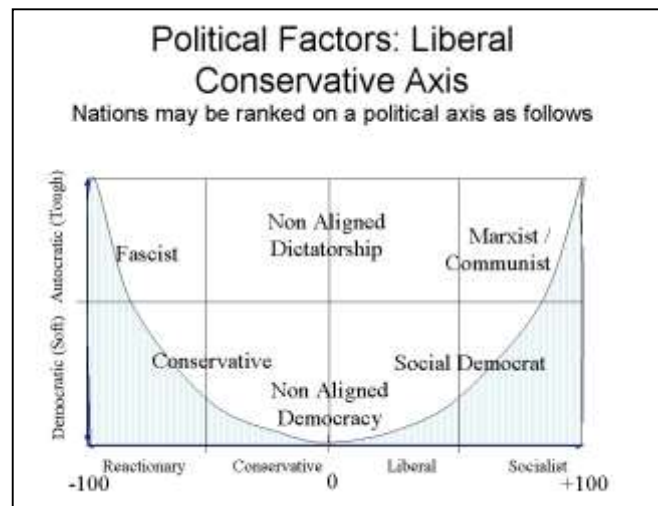
The Lorenz curve can be converted into a numerical Gini Index by considering to what degree is the area under the curved line a proportion of the total area of the hatched triangle. A figure of 0% represents complete equality, where 50% of the population receive 50% of the income. A hundred percent is complete inequality. Nations can now be ranked according to the degree of inequality. We can now even assess the inequality of the world as a whole. On this scale, the United States ranks 83rd out of 115 nations ranked by the Gini Index of



increasing polarisation between those that “have” and those that “have not”, perpetuates a world where 354 billionaires have collectively between themselves a wealth equal to 50% of the world’s population. This is a world where one in five go to bed hungry, one in ten have their health seriously damaged through malnutrition, and more 40,000 people per day die from chronic persistent hunger, 80% of them children. This is equivalent to 280 jumbo-jet crashes daily with no survivors, yet rarely makes the front pages of the mass media. And this occurs not for lack of food, but because of its inadequate distribution. At the same time we learn that in the rich nations obesity is a growing health problem.

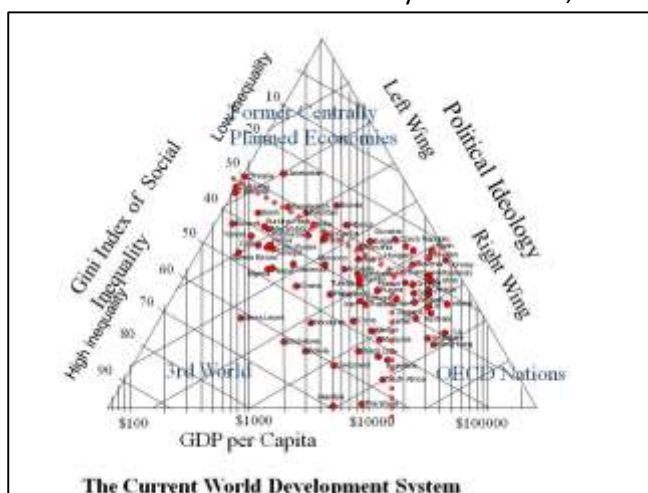
Politically it was the amplification of social outrage at the growing inequalities within countries as a result of such economic development that led to social democrat, socialist and Marxist ideologies concerned to lessen or overcome such inequalities. From the 1930s social programs were created²⁰ and in the “developed” nations post-war “Welfare States” were created to eliminate the “ugly face” of such inequalities by taking care of those who through temporary or permanent inability would have been unable to gain an adequate share in the national income. But with the collapse of the Soviet Union and the repudiation of Marxism, as a general rule nations everywhere seem to have taken a sharp political turn towards anti-egalitarian right-wing economic regimes²¹.

Politically there have been a number of attempts to measure adherence to “socialist” and “liberal” as against “conservative” and “reactionary” political values²². “Liberal” values have been defined as the structure of preferring new things, change or innovation and the content of desiring that change be in an egalitarian and libertarian direction. On the otherhand a conservative thinks our societies are egalitarian enough already and change might be dangerous; and a reactionary wants to change back to a former state and they desire a return to more elitist government. Other researchers have



attempted to classify national political ideologies on a “tough minded” or “authoritarian” type, to a “tender minded” pluralist position. Generally the period since 1980 has seen the victory of “conservatism”, or even “reactionary”, “tough-mindedness” as polities have been less concerned with the situation of services for the poor, and more concerned with reducing the tax burden upon the rich²³.

Welfare state structures have been dismantled to permit “markets” to distribute goods and services. If we were to plot population against political ideologies we would find that since the collapse of Soviet communism, the distribution is similar to those seen above for economic and social distributions – with a collapsing number of socialist regimes, and a growing number of right-wing conservative or even reactionary regimes. Voter participation in such nations seems to be declining, and evidence exists that the poor are being systematically disenfranchised. Privatisation of publicly owned assets also reduces the degree of democratic control citizens have over their own welfare. History tells us the answer. In nearly every case in which privatisation of community assets has occurred within a “free market” system has led, historically to exceeding the limits of the natural environment.

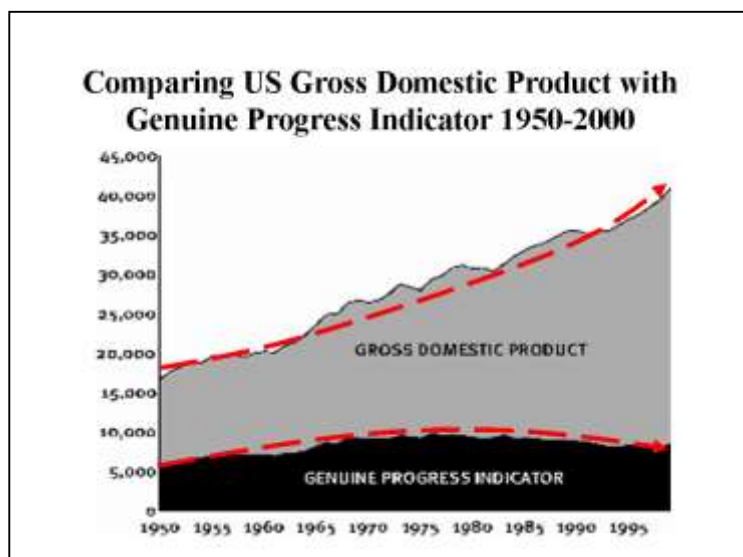


Considering the world is a single ecological system, we now have three separate but related axes – economic, social and political, which allow us to consider the world as a whole, and which allow us to plot the economic, social or political movements within all nations of the world. We also now have a single evolving system that allows us to look at World Development as a systemic whole, rather than focussing upon individual populous,

powerful or prosperous nations. Plotting the position of various countries leads to the discovery

that there is in fact a single triangular “regression plane” upon which most nations seem to “fit” fairly closely.

Thus for example, Third World Nations as a whole have tended to be low on the economic or X axis, to have a high degree of social inequality between rich and poor, and to try to be tough-minded but non-aligned politically, prepared until the recent past to try to take a neutral position in the cold war between the USA and the former USSR. Richer countries belonging to the G7 or the Organisation for Economic Cooperation and Development have tended to be right wing but tender minded politically, to have a high GDP per capita and to be mid-way as regards social equality. Countries intermediate on the GDP per capita scale, have in the recent past, been more inclined to be left-wing but tough minded politically, and to attempt to build a higher degree of social equality within their nation. When we extract the “regression plane” from the three dimensions discussed here, the world appears as a triangular “field”, which I refer to hereafter as the “World Development Field”. Countries may move around on these three axes as they respond to social, political and economic forces shaping their dynamics, but here I wish to look at the evolution not of any one nation but of the “world system” as a whole. Having uncovered the present structure of this system, we can now begin to look at where this system came from, and how fast it has developed. Such a diagnosis is necessary to permit a prognosis prophesying the future of the system as a whole.



Rather than be obsessed with the particular trajectory taken by any one individual nation, we can now look at the changing patterns of this international community of nations. Thus for example, while some nations have prospered economically, others, as a part of the same world system have suffered. Similarly, whilst certain regimes may have been for a period more democratic and balanced between left and right wing ideologies, they may at other periods move more strongly in one

or another direction as a result of local changes within the World Development Field as a whole. It is also possible to undertake a “time series” analysis of the World Development Field to look at its past history, and analyse the forces that have shaped it. When such an analysis is done we find that the principle motor of the World Development Field has been economic. Thus despite the fact that the Gross Domestic Product currently and inadequately measures this wealth, it is the sum of all marketed economic activity that occurs within the borders of a nation. In the fifty-year period from 1950 to 2000, the world economy grew more than sixfold from 6.4 to 43.2 trillion US dollars. This increase was many times faster than the increase in world population, which over the same period grew from 2.555 billion to 6.080 billion, with the result that the average product per person grew

from \$2,502 in 1950 to \$7,102 in 2000 and \$9,900 by 2006.²⁴ This is an amazing achievement, a factor not seen in any other 50 year period in the history of the planet. Effectively it means that if distributed equally, a family of four would have contributed \$39.600 to the economy of the world. But these figures, as Keynes, Kuznets and the early economists have the potential to distort reality. For instance the GDP figures show that in the period from January 2000 to January 2003, the US economy grew approximately 2.64%—about \$272 billion or \$180 per American. The Genuine Progress Indicator, however, shows that economic activity grew by less than one percent (0.12%) during the same period. From 2000 to 2003 there was actually a \$212 decline in GPI, with the biggest reductions coming from the degradation of natural resources and increased national debt. The change is largely due to the depletion of non-renewable resources, the decay of public infrastructure, the loss of community and rising levels of indebtedness. Not taking account of these factors overstates the value of the US economy by \$7 trillion.

Projecting the figure of the Genuine Progress Indicator backwards into the past gives the “time series” which allows us to see what happened historically to the world system as a whole. The data shows that as more and more nations have achieved political independence as “nation states” the development field has progressively grown larger in size. The last populated areas of the planet – Tibet, the Amazon and the Highlands of Papua New Guinea, was dragged into the “modern world development” system as a result of changes in the late 1950s early 1960s. The only area outside “the world system” at present is Antarctica, which has only a limited and scattered population of international scientists²⁵.

WORLDWIDE ECONOMIC CYCLES

Corporate-led globalisation explains where we are now, and gives some indication of the direction we are pointed in, but where have we come from and how did we get here? Based on the figures presented above, economists have detected fluctuating cycles of business activity. In the USA according to the National Bureau of Economic Research, between 1854 and 1991 there have been 31 such cycles, during which the economy contracts for an average of about 18 months and then expands for 35 months, giving 53 months between peaks in the economy²⁶. The Austrian economist Joseph A. Schumpeter, (1883-1950) in 1939 proposed that business cycles were caused by technological changes. Inventions and new markets, he suggested leads to a crop of new entrepreneurs, who attract capital investment to their projects. Market saturation and one or two prominent collapses leads to a withdrawal of credit, producing a recession, a process he called “creative destruction”²⁷. The current worldwide economic crisis threatens to precipitate us into another of these periods.

What has caused such patterns? Today, of the largest 100 economic units, more than 50% are multinational or transnational corporations. Incorporated and recognised as legal “persons” under the law, these corporations have no responsibilities except to securing profits and dividends for their shareholders. As so called “rational economic agents”, they aim to maximise their benefits and

minimise their costs, owing no loyalty to anyone or anything except for contractual obligations established in a marketplace. David Korten in his book “When Corporations Rule the World” has shown us that in this way “such publicly traded, limited liability corporations are a gigantic pool of money with an artificial legal personality required by law to behave like a sociopath.”²⁸

We think of trans-national corporations as something new, but they are not. They have been around for a long time. They were established in the 17th century when small groups of merchant investors in the East India Companies in Amsterdam and London discovered that by limiting their liabilities in cases where they had a monopolistic control of transnational trade, economic, social and ultimately political power could be extracted from separating the relationship that had existed prior to then between producers and consumers. To paraphrase Pierre-Joseph Proudhon, in such circumstances of monopolised non-reciprocal trading “profit is theft”. From the beginning these transnational institution have had enormous power; they were governed by absentee owners and unaccountable managers who worked in the business of converting the life energy of people and nature into money, for the short-term financial gain of already wealthy shareholders and managers without regard to human or natural consequences. Third World workers in such companies had few, if any, individual rights. They were paid to serve the institution at its pleasure. Today still, even powerful corporate Chief Executive Officers are required by law to serve in making decisions that make the corporation a profit, leaving any personal values that conflict with this at the door. If not they may find themselves subject to dismissal without recourse at a moment’s notice.

Amongst the first trans-national corporations in Western History were:

1. The Dutch East India Company, (VOC) which transferred wealth from the East Indies to Holland. When this trade started the Javanese and the Dutch were roughly equal in size. By the end of the period, when the Dutch government took over the rule of Indonesia, the size of the average Dutchman had grown, whilst through malnutrition the size of the average Javanese had fallen significantly.
2. The British East India Company similarly transferred wealth from India to Britain. When the British East India Company started, 60% of Indians were peasants, 35% were artisans and craftsmen and 5% were “upper class” landowners and nobility. After two centuries of British Rule, 90% were peasants, 7% were artisans, workers and craftsmen, and 3% were “upper class”. In the Industrial Revolution, the Lancashire cotton industry only developed once the East India Company had destroyed the rival Indian cotton industry, forcing Indian peasants to export their raw materials and import the finished products.
3. The Hudson Bay Company, which transferred the wealth from the North American Indians to Britain, eventually leading to the slaughter of their buffalo herds, and expropriation of the indigenous people’s lands as well. Before the coming of Europeans to North America there were between 90-100 million Indians. Today less than 1 million survive.

4. From about 1600, European governments granted monopolies to corporations to participate in the Atlantic Slave Trade. British trading corporations operating out of Bristol and Liverpool, established the incredibly profitable “triangular trade”, where cloth, guns and ammunition was shipped to Africa in exchange for slaves, and when sold in America for sugar, rum, molasses, tobacco, cotton and hemp, generated huge profits. These profits were invested from 1760 in textiles, coal and iron production, and canal development, leading to the Industrial Revolution.

From the start, such companies as these had the power to organise coups and topple local governments of what we now recognise as Third World nations. It is not surprising that the centres of European colonialism, from which these companies made their greatest profits, in Congo and West Africa, Kerala, Bangladesh, Haiti and the Moluccas, are now some of the poorest parts of the world. Transnational corporations since the beginning have in this way worked through the “privatisation” of what were once community owned assets, whilst the costs of these enterprises were “socialised”, being passed on as “externals” to future generations, the wider community or the more-than-human environment. Expropriation of “ownership rights” then becomes a means of rewarding the few at the expense of the many. Historically the first European privatisation was the enclosure of the community commons, that destroyed the self-reliant communities of the early modern period, and with the destruction of these communities drove the now landless workers into the industrial slums to work in the factors and mines of the early Industrial era. Today as we privatise the water we drink, the genes which are the common biological inheritance of the planet and, through establishing markets for “greenhouse gases”, even the air we breathe²⁹, we are facing the ultimate ownership and the right to buy and sell the essentials on which the whole of our life depends.

But today the current neo-conservative “globalisation ideology” of the “Washington consensus”³⁰ tells us that the most efficient way to organise and run an economy is by fostering such private ownership, which they tell us is by definition supposedly more “efficient” than any other form of ownership such as public ownership or community ownership. It is claimed that because of the “bottom line” of “profitability” is a discipline that other forms of ownership may not need to confront, they will not be as efficient in their use of scarce resources (eg. money) than are private firms. The claim has been made that “the tragedy of the commons”, in the absence of private ownership will result automatically in ecological destruction³¹.

But as the patterns of worsening income distribution shows, private ownership redistributes access to goods and services proportionally to a person, or a firm’s “purchasing power”. In this way, it is those corporations who have the money that are in a position of making still more money, while those that have less, get less access to the goods and services that are privatised. Everyone comes to work on a “user pays” principle of a “fee for service”, which is highly profitable for the new owner, or else they learn to do without. Paying for goods previously free (eg. museums, public

libraries, education, public health, or even water), reduces the income and thereby the standards of living for those that are poor even further.

Globalisers also tell us that because “competition” creates efficiency, a “competition policy” is required. Markets should be “free” of all government or community intervention. Government support for social welfare is considered to be a “market distortion”, and governments should not intervene in such cases because they produce results defined as inefficient. But government support for failing enterprises (eg. Enron, HIH, Lehman Brothers, etc) or for companies that fail is justified in terms of “maintaining business confidence”. These costs of competition are rarely considered³². Competition in any struggle always creates “winners” and “losers”, but in the corporate world, the odds are continuously stacked against the smaller competitor and in a free market, winners take all. Such systems are only sustainable for all players if the losers believe they have a chance to try again, which only occurs at a time of economic buoyancy and growth. If, on the other hand they are locked into a situation of perpetual losing, they have nothing to gain by continuing to “play the game”. They will seek to withdraw from the game altogether, or even sabotage it for the winners. Competition thus becomes self-limiting, with monopolies and a situation of perpetual loss being the automatic eventual result for the losers. Thus for example smaller corner stores and local delicatessens have been considered a thing of the past by comparison to larger supermarkets and mega-malls. These costs of competition are by definition these are considered to be “external to the market place”, while the benefits of competition get privatised, to be distributed to shareholders via dividends. What happens, for instance, to the losers from a process of competition is not considered within the Globalisers’ ideology, as they are by definition defined as “inefficient”, and they are considered necessary sacrifices to promote the growth of the system.

Finally Globalisers tell us that industry should be “de-regulated” and freed from “government red-tape” and restrictions. It is considered that the most efficient industries are those that are “self-regulated”. Government regulation of any kind, such as environmental protection standards, health and safety laws, or minimum wage standards ultimately come to be considered a “distorting factor” to the market place, which prevent efficiency and are a cost to the community. But such regulations ensure that the needs of those “less powerful” than the corporation are also considered negotiable. Transnational competition between regulated nations with states that have abolished these regulations will put pressure on others in a “race for the bottom”, reducing the rights of consumers, eliminating health or safety regulations, reducing the rights of workers, or eliminating the protection for the environment.

These concerns and the “Globalisers” agendas are not new. They have been applied, over and over again, under different names in different periods, with drastic and frequently destructive historical consequences. In every case they see a separation between those who have the power and make the decisions and those who pay the costs and suffer the consequences in the local communities affected. Marxist Globalizers in the Soviet Union, for example, led to an elite of Apparatchiks who organised and ran the Centralised 5 year Gosplan, separate from those forced to work to meet the targets set in state owned factories and farms. Not only did this produce the worst environmental

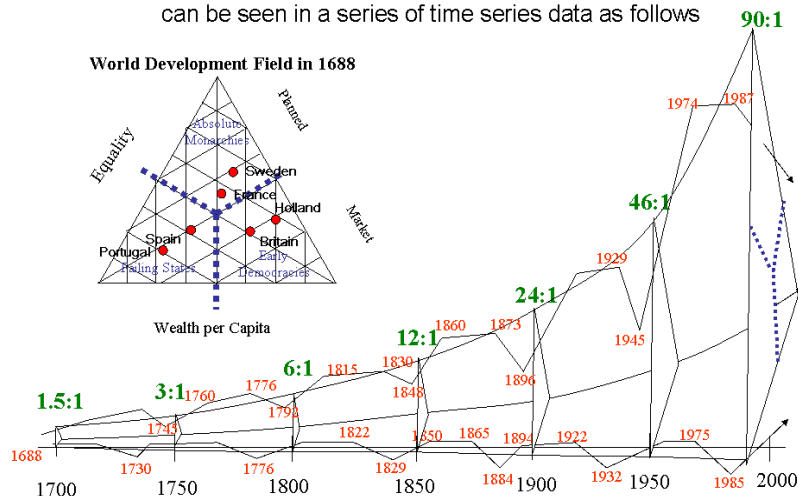
disasters, but when “privatised, corporatised, de-regulated and competitivised” resulted in a major and long-term collapse of living standards of all but for a tiny minority of mafia-like “kleptocrats”.

This illustrates the second principle characteristic of the World Development Field, which today seems so obvious it is frequently forgotten. It is a field of competitive “nation states”, in which each nation in theory is the ultimate sovereign authority. We can thus date the beginning of the world development field rather accurately as it was in the Treaty of Westphalia, in 1648, after nearly a century of religious war, that the principles of national sovereignty were enshrined at an international level. Nations were seen as the highest authority to which an individual could appeal, each nation was held to be independent in legal, religious, political and economic terms, and could issue its own currency. Further confirmed in the treaty of Utrecht, in 1715, nation states henceforth were considered the ultimate political expression of organised humankind. But at this period, many states were not in fact, nations in the modern sense of the word. The Austro-Hungarian Empire was a multi-ethnic, multi-national state, created largely through dynastic marriages. Italy and Germany were “nations” divided between many tiny statelets, each claiming sovereign independence. It took more than a century and a half of reorganisation after the French Revolution that the political map of Europe began to resemble the ethnic map that it was supposedly based upon. Even today, in Northern Ireland, the Basque country, Bosnia, Kosovo and Chechnia, huge problems remain.

When we examine the world development field as an integrated system, we find that its growth in size is not merely economic. It is also political. In 1688 only six “fully modern” nations in our modern sense of the word, existed; Britain, France, Holland, Spain and Portugal, and even these contained big dominated ethnic minorities³³. By the 1830s, 21 National states were incorporated into the World Development Field. Other large areas of the world were not recognised as nations and were in fact being incorporated into various trans-national Empires, dominated by European Imperial powers. The oldest of these was the Spanish Empire in Latin America, whose territories achieved political independence in the 1820s. Portuguese domination of Brazil ended with the transfer of part of the Portuguese ruling family to Brazil as an independent government, but elsewhere, in Angola, Mozambique, Goa, Timor and Macao, Portugal was to hang on to its possessions until the second half of the 20th century. This was in fact the pattern of all of the European states, France, Britain and the Netherlands. By the end of the First World War of the 20th century, 91 nations existed and could be fitted into the World Development Field. The growth of separate nation states, as legitimated at the 1922 Treaty of Versailles, was nothing compared to what happened in the decades following the Second World War. The World Development Field grew to 178 nation states by the 1970s and with the dismemberment of the USSR, effectively the old Tsarist Empire of “All the Russias”, today we have over 191 states. The last two multi-ethnic Empires to survive in the modern world, Indonesia and China, do not look like fragmenting into separate nations any time soon, but if they do, a new crop of nations will be added to the World Development Field at that time.

Trends of the whole World Development Field

Using modified GDP the changes in the World Development Field can be seen in a series of time series data as follows



As a result, since its beginning more than three centuries ago, the World Development Field it has been characterised by extreme market fluctuations, where the “greed” of a “bull” market gets replaced by the “fear” of the “bear” market, the only legitimate emotions permitted in a market economy. Some have suggested emotional or psychological causes for

these fluctuating cycles of business expectations in which investment decisions are driven by expectations of rising or falling consumer demand. Monetary theorists like Friedrich August von Hayek (1889-1992), argue that in the trough a credit expansion occurs because of an accumulation of loanable funds. Growth in investment in capital goods leads to increased production and rising levels of employment. These in turn lead to increased demands for consumer goods, which become more profitable, attracting investment away from capital productive goods. The increasing costs of money, and the falling production of capital goods, leads to falling productivity. Employment in that sector falls, reducing demand for consumer goods, and loanable money will begin to accumulate again. Thus monetarists argue, the cause of the business cycle is fluctuations in money supply which produces excessive demand for consumer goods. John Maynard Keynes gave a different explanation. He argued that the business cycle was due to a weakness in effective aggregate demand. Under-consumption led to oversupply of goods, which led in turn to falling profits, and ushered in a business recession. He advocated that the government should intervene in stimulating the money supply. This, Keynes argued, would dampen the degree of under-consumption and help eliminate the depression.

Each of these explanations has some justification, but are simplistic. For example in their “one size fits all” approach, they would seem to suggest that there is just one business cycle. In actual fact, it would appear that there are multiple cycles in operation, operating on different factors. Kuznets for instance suggests that in addition to the conventional short-term business cycle, there is a longer period 15-20 year cycle, which now bears his name. The Russian economist Nikolai D. Kondratiev, (1892-1931), one of the architects of the first Soviet Five Year Plan, first recognised in two works, “The Long Waves in Economic Life”, (1926), and “The Long Wave Cycle”, (1928), long 50 year periods of depression-recovery-boom-recession. Emanuel Wallerstein has recently proposed that “world systems cycles” with a period of about a century can be recognised. Although there have been

claims that such “Long Waves” do not exist – Simon Kuznets (1940) believed a number of Kondratieff waves could be distinguished.

Three Centuries of Boom-Slump Kondratieff Cycles

Date	1688-1745	1745-1792	1792-1848	1848-1896	1896-1945	1945-1987?	1987?-?
Name	Mercantilist	Agrarian Revolution	Industrial Revolution	Steel, Railways & Engineering	Mass Production, Electric	Electronic, Chemical & Consumerist	Bionic, Solar Age? Ecozoic
Core area	Netherlands, SE England	Britain	British Isles, NW Europe	West Germany, NE USA	Region from Moscow to Chicago	California, Japan, Korea, China Coast	? China, ? India
Hinterland	Scottish lowlands, NE Ireland, Western Europe	Poland to Coastal USA	Eastern Europe, Interior USA, SE Australia.	“New World” US & Canadian prairies, Australasia	Australia, Japan, Argentina, Chile	Australia, South Africa, South America, Mediterranean	South East Asia
Periphery	North & South America, SE Asia, Coastal India	Scottish Highlands, Ireland, Mediterranean, Americas	Coastal China, Australasia, South America, India	China, India, South America, SE Asia, Africa	Colonies of European powers, Arabia	Post-colonial Africa, Middle East	Africa, Melanesia.
External zone	China, Japan, Interior Africa, Middle	As before	Japan, High Asia, Ottoman World,	Arabia, Central Asia, Melanes	Tibet, Afghanistan, New Guinea Highland	None	None

	East, Interior India, Pacific		Interior Africa	ian Pacific	s, Amazoni a		
Technolo gy	“Eotechnic” Boom in wind and water power, R&D Coal and iron and cotton textiles	R & D in steam transport. Boom in cotton, coal and iron. Monopoly of wind and water	“Paleotechnic” Boom in steam transport, Monopoly of cotton coal & iron, replacement of water power	R & D of automobile & electricity, monopoly of steam, replacement of wind	“Neotechnic” Boom in automobile & electricity, replacement of steam power, R & D electronics	Monopoly of automobile & coal electricity, Electronic, R & D in genetics, bionics & solar	“Ecologic” Replacement of automobile and coal electricity, boom in “smart renewables”
Industrial Organisation	Monopolistic Corporations, small workshops	Beginnings of Manufacturing factories	Factories, “shop-keepers”	Industrial cartels, Regional companies	Zaibatsu, National Corporations	Transnational corporations	“Re-localisation”? Community Enterprise?
Revolutionary area	British Isles, 1688, 1715, 1745	USA 1776, France 1789	South America 1822 W. Europe, 1839, 1848	Germany & Italy 1866-70, Meiji Japan	Russia 1905, 1917, China 1911	Algeria 1950, Vietnam 1960, Iran 1977	Middle East?
Wars	Spanish Succession till 1713	7 Years War, Revolutionary War	Napoleonic War	Crimean War, Opium War	World War I & II	Vietnam, Gulf Wars, USSR in Afghanistan	War on Terror, Resource War

Labor structure	Slave Labour	Factory system begins	Child Labour, beginning of the end of slavery	Indentured, peonage, end of slavery	Indentured, Unionisation of Labour	De-unionisation, sweat shops, trade zones	Large numbers "unemployed"
Declining Core	Spain & Portugal	Netherlands			Lancashire – Midlands UK	NE USA, old industrial Europe	Japan? USA?

This now allows us to see where we have come from and the direction we are pointed in. But how can we explain the development of this system so that it is understandable to others? Joanna Macy, the Buddhist Scholar and Experiential Deep Ecologist, has a facilitated process she uses in sensitising people to the growth of the Industrial Growth "Trance" in which she passes participants seating in a ring slips of paper, with important sequential dates for the growth of the world system. The list is intended for this use, in a facilitated community based workshop.

WHERE TO FROM HERE?

Previously, earlier Konratieff cycles were ended through the incorporation of new states in the World Development Field. Since the collapse of the Soviet Union, the only places in which new states are going to come from are China, Indonesia and possibly India. The incorporation of these nations within the World Development Field is preceding apace, with the lift in levels of consumption by populations in these countries the biggest economic and political change of the last quarter century.

The graphs presented show that while the quality of life has been improving for the average person in populous countries like India and China, which some see as a newly emerging core, whilst the quality of life for the richest countries of the world, as measured by the Genuine Progress Indicator (GPI) or the Index of Sustainable Economic Welfare, has been falling. It seems we are undergoing from 1993 one of the cyclic crises of "creative destruction" spoken of so long ago by Schumpeter.

For example, by 2006 the potential bankruptcy of the USA was being spoken of for the first time. The cost of the War in Iraq has been over \$297 billion US to date, and Joseph Stiglitz estimates that by the time the US disengages, it will have cost the USA between \$1-2 trillion. US national debt before the current economic crisis currently stands at \$13.4 trillion, (\$4.6 trillion held by private debt, \$3.2 trillion as national government public debt, \$1.7 trillion of combined debt from state and

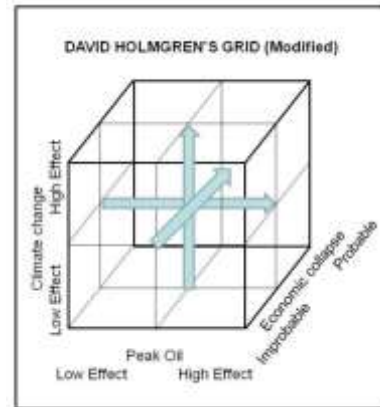
local governments and a \$3.7 trillion shortfall in Social Security trust funds), this was already 115% of the US GDP (\$11.6 trillion) and over 31% of the combined GDP of the planet. Mortgage debt rises from \$4.4 to \$4.8 billion, with wages falling to the lowest level and debt making up the balance of consumer spending, which from 1956-2005 has risen from 120% of wages to 160% of wages.³⁴ At the same time, US military spending (excluding combat costs of fighting wars) is up from \$288 billion to \$441 billion, currently 43% of the total defence spending of the planet. The second countries, Britain and China, spend a mere 7% of the world total, such is the cost of Empire. Early in 2006 the Congress seeks an additional \$300 billion for the war in Iraq and Afghanistan. The US spends 2/5ths of the total military spending of the world, more than it did at the height of the Cold War, when its military establishment was not as large. These figures are more than 29 times that of the combined so called “rogue states”.³⁵ The US has more than 411,000 soldiers located in 46 countries around the world (29 nations having between 100-999 US troops, and 17 nations with more than 1,000). This is back to the levels seen at the height of the Cold War. The so called “peace dividend” from the end of the Cold War seems to have been totally wasted.

It seems that we are perched on a historic cusp, and have been there for some time. It would seem that we are faced with a choice of different scenarios, in a way not seen before.

- (a) There are those that hope for “Business as Usual”. These people, deny the existence of climate change and peak oil, and believe the current free market system of the past “Washington Consensus” can solve all problems. Led by US think tanks and political lobbyists, they tend to be right wing economic fundamentalists and denialists.
- (b) There are those who believe in a technological fix. Amongst this movement are such people as the “Transhumanist” movement who believe with Ray Kurzweil and others that biotechnologies, nanotechnology and advances in computing means we are approaching a technological omega point where human culture goes asymptotic to the extent that human beings could be downloaded into computers.
- (c) There are those that seemingly believe that industrial culture has the right to seize the resources it needs wherever they are found, by military means. Such groups operate much of the policies of the US in the Middle East, and also through corporations fund the proxy wars in places like Sierra Leone and the Congo.
- (d) By 2025, if current trends continue, according to Ian Angell’s “New Barbarian Manifesto: How to Survive the Information Age” there will be 70 million millionaires world wide who, living in “smart regions”, will collectively control more than 90% of the world’s wealth. 700 million people will be employed producing the goods and services needed to generate this wealth, and 7 billion people could be living in poverty, left to fend for themselves, attempting to make a living as best they can. Given such a situation, the trend to “gated communities” where the wealthy live in armed and fortified ghettos of wealth, aimed at keeping the poor excluded and in their place, will become the norm.
- (e) There are those who believe in the real possibility of complete cultural collapse, and have been warning us of this possibility for some time. Joseph Tainter has shown that there is a

declining return on complexity, which has led to the collapse of past systems like the Roman Empire or the Mayan culture. His work has been extended by Thomas Homer Dixon and Jarred Diamond. It builds out of earlier work like Thomas Malthus, Oswald Spengler, and Arnold Toynbee, on the collapse of civilisations. To see what such a future may be like, Somalia offers us an example where escalations of violence and vicious reprisals, including use of “dirty” nuclear weapons may characterise a world system that is falling over the edge into collapse.

- (f) There are the Green Optimists, who think that replacement of fossil fuels with solar and windpowered or other ecologically benign technologies will enable us to reach a cultural steady state, with no or little reduction in current lifestyles needed. Since the Brundtland Report of 1989 the “sustainability industry” has become a huge and self-perpetuating mass of economic and technological consultants, working to make our current systems of the Industrial Growth Civilisation more sustainable.
- (g) The Transition Movement, spoken of above and below, sees that a real reduction in consumerism is required, and that it is possible to plan a way of moving to such a future with a real improvement in the quality of life.
- (h) Finally we have the “New Age Optimists” who champion various forms of millennialism, often associated with things like the Mayan Calendar, hoping for collapse but believing in a renewal as a result of hidden technologies like zero point energy and a planet-wide shift to Aquarian Age peace and love.



In such a world extremes these scenarios seem to cover the bulk of what people think will happen. Rather than being alternatives, I feel that in fact all 8 scenarios will occur simultaneously. As Permaculturist David Holmgren recently suggested they can be arranged along an axis of whether we believe that climate change and peak oil will have either little effect or a great deal of effect. To Holmgren’s two dimensions I have added a third, whether we believe that economic collapse will or will not occur. Positioning the various scenarios according to these three dimensions is productive.

Possibly even more useful is the use of the curves discussed later in analysing change, suggested by Sophie Banks, of the Transition Movement. Using the work of the terminal illness pioneer Elisabeth Kubler Ross she shows how the various scenarios above can be arranged according to beliefs about avoidance, denial, unrealistic hope, bargaining, anger, depression, acceptance, and psychic recovery.

But if I am right, and we live in a world where all scenarios are being simultaneously pursued and are likely to unfold together, this socio-economic situation highlights the five damaging forms of economic growth listed by the United Nations Human Development Programme

Jobless: growth which does not translate into rewarding employment

Voiceless: growth which reduces democratic decision making

Rootless: growth which destroys the sense of community

Futureless: growth which despoils the environment

Ruthless: growth where most of the benefits go to the rich

Social, economic and environmental policy changes seem needed in order to prevent these five “lesses” of growth. But is something more needed than tinkering at the margins? But is such attempts to perpetuate “business as usual” sufficient? Or is there a deeper malaise? Is there a biological driver from which we cannot escape, which is driving the deeper levels of these scenarios towards collapse? To this analysis I now turn.

PRESCRIPTIONS FOR THE FUTURE - THE POPULATION STORY

Thomas Malthus (1766-1834) in 1789, in his famous “Essay on the Principle of Population, as it Affects the Future Improvement of Society” said “that population, when unchecked, increased in a geometrical ratio, and subsistence for man in an arithmetical ratio.” By this he argued that population growth if left unchecked would very quickly exceed the amounts of food available. Malthus wrote

“The population of the Island [of Britain] is computed to be about seven millions, and we will suppose the present produce equal to the support of such a number. In the first twenty-five years the population would be fourteen millions, and the food being also doubled, the means of subsistence would be equal to this increase. In the next twenty-five years the population would be twenty-eight millions, and the means of subsistence only equal to the support of twenty-one millions. In the next period, the population would be fifty-six millions, and the means of subsistence just sufficient for half that number. And at the conclusion of the first century the population would be one hundred and twelve millions and the means of subsistence only equal to the support of thirty-five millions, which would leave a population of seventy-seven millions totally unprovided for.”³⁶

Population growth in Western Europe was not as fast as Malthus calculated. English populations, however, did grow rapidly. By 1850 the population of Britain was 17.9 million³⁷, more than twice the 7 million of Malthus’s day, and massive emigration was underway to the USA and the “new world”. By 1950, a century later it was 56 million. And yet the British with 56 million were not starving. What was it that enabled Britain to escape from Malthus’ trap?

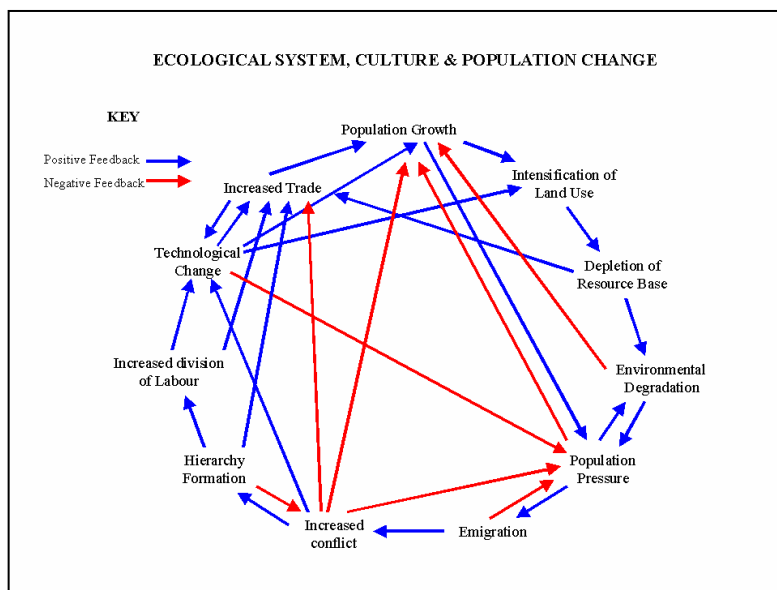
The common belief that population growth is reduced by industrialisation, but the evidence denies such an explanation. From 1790-1850 North Western Europe did experience an incipient population crisis, with inflation, unemployment, revolution, war, epidemics and famines especially during the “hungry forties”. But instead of crashing, the population exploded, and has been exploding world-wide ever since.

One of the main factors was emigration. Between 1851 and 1931 18 million people emigrated from Britain. They emigrated to countries that had climates similar to those of Europe, chiefly in North America, but also to the Southern Hemisphere countries of South Africa, South America and Australasia, where European crops and animals could thrive. From 1846 to 1890, it has been estimated that 377,000 people left Europe yearly, rising to 911,000 yearly in the period 1890-1920. Between 1846 and 1930, 50 million Europeans emigrated to these new lands³⁸. Displacing and exterminating the native inhabitants of these countries, these settler colonies enabled a huge expansion in food production, which transported by new technologies of the steam engine and the cargo vessel managed to ensure that the growing population of Britain was fairly adequately fed. These imports were paid for with the machines produced through a tremendous technological advance, the “Industrial Revolution” far greater than any change ever seen on earth before. Technological exploitation of a fossil fuel, coal, laid down over millions of years, enabled Britain and other countries in Western Europe to avoid the Malthusian trap. From 1800 to 1930, European Caucasians grew from 22 percent of the world’s population, to over 35 per cent.

But Malthus’ limits to population seemed not to be overcome by these means, but merely temporarily deferred. By the mid 20th century, despite huge increases in agricultural productivity, it was clear the largest population increases would be in those ex-colonial countries referred to as “less developed”, “Third World” or more increasingly today as “the majority world”. Whereas birth-rates had plummeted in industrially developed Europe, approaching replacement level with the still falling death rate, in Africa, Asia and Latin America they remained high. The gap caused populations in these parts of the world to grow rapidly. From 1920 to 1960, world population had grown from 1,810 million to nearly 3 billion. Food production in ex-colonial countries was not keeping pace with population increase, and many seemed to be being converted from countries which previously had a net export of food, to nations that were importing food. Dennis Gabor in the little book that invented the new study of “futurology” called “Inventing the Future” called overpopulation one of the three greatest problems, along with growth in global militarism and technological change, that we had yet to face. In an even more highly influential book “The Population Bomb: the end of affluence and how to be a survivor” Paul Ehrlich in 1967 drew our attention to our foreclosing of the Malthusian options, and predicted rising levels of world famine. The Biafra and the Ethiopian famine of the early 1970s seemed like the early warnings of what was to come.

In 1972, the then little known Club of Rome, assuming an oracular role, sponsored the publication of a book, the “Limits to Growth”, authored by Jørgen Randers, William W. Behrens III, Dennis and Donella Meadows. It used the new science of computer modelling, and was based upon an earlier “World System” used earlier by Jay Forrester. The model created a number of interconnected

separate “subsystems”, based upon population, investment, food production, resource extraction, industrial production and pollution, with feedback loops of appropriate magnitude between the various systems. When projecting into the future the economic growth that had characterised the period from 1900 to 1970 it showed we would face serious problems in the early 21st Century, major pollution problems would accumulate by 2030 to 2040 and culminate in a major collapse by 2070. The book had a huge impact, more than 30 million copies were sold in 30 differing translations. But, like Carson’s work already considered, and the Gaia theory spoken of below, it was immediately attacked. The March 13th Newseek article by Yale Economist Henry C. Wallich labelled it as “irresponsible nonsense”. He accused the scientists of inventing the figures to prove their theory. Similar arguments were made by Robert Solow, the economic guru at M.I.T., who criticised some of the figures used. More recently similar voices have been raised by those keen to deny the reality of “climate change”. But there was then some merit in this criticism. Donella Meadows herself admitted, while good data was available in some areas, in other fields data was just not available, and so estimations were made that were probably only reliable within very broad limits. Nonetheless, the robust reliability and validity of the model was tested using different data inputs, and they made almost no difference in the output. Clearly any system of infinite exponential growth within a finite system of a planet, was bound to eventually run into problems. Basic physics tells us that perpetual motion machines are impossible, but the laws of economics seem to take little account of the Second Law of Thermodynamics.



Nevertheless the critics seemed for a while to win the day. Julian Simon and Bjørn Lomborg³⁹, for example, both criticised the restrictions of the finite planet, stating that when one resource becomes scarce its price increases and it can be substituted by another. There is some truth to this in certain cases, as the example of international fisheries shows. When one fish stock is overfished and its population crashes, the industrial commercial fishing industry just

moves down the food chain, or to another area, progressively overfishing and destroying the habitat here too. But here we see the nature of the substitution problem. The depletion of high grade ores and their substitution by lower grades, requires greater amounts of energy to process. It does not take account of the fact that sources of high grade energy itself is also degrading. As energy increases in price, so does its availability to the less wealthy diminish.

The prophecies of the Limits to Growth seemed to be given immediate credibility by what was called the “Arab Embargo” on oil exports in 1973.

Once again, as before with the early Industrial Revolution, fossil fuels and technology came to the rescue. World coal production, principally for electricity generation, more than doubled from 1950 to 2000, from a base of 1074 to over 3332 million tonnes of oil equivalent. The Green Revolution led to the production of new fast growing varieties of rice and wheat, which with the application of artificial fertilisers and pesticides, produced increased vastly yields. Coupled with the expansion of irrigation, this led to huge increases in food production. From 1970 to 1980 world production in grains increased from 805 to 1430 million tonnes, growing at a faster rate than world population. As a result of these changes, world life expectancy which was about 26 years at birth in 1900 and 44 years at birth at 1950, by 2000 was about 67 years for the world as a whole, and over 76 years in the USA. The issue of the world population problem seemed to recede in the 1980s and 1990s.

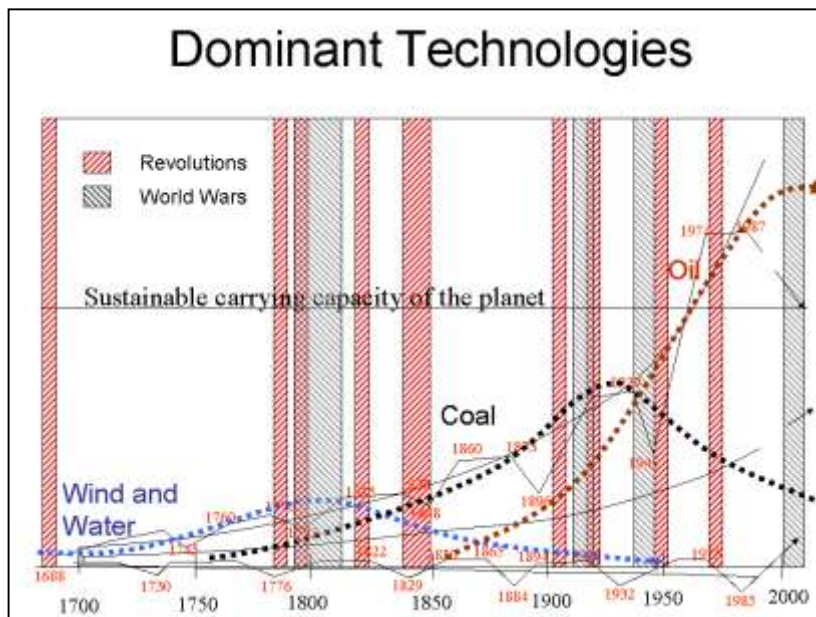
But in each historical case, the Malthusian population limits have been overcome by changes in technology, permitting a further rise in population. In the first place, it was the shift from wind and water power, the renewable sustainable energies of what Mumford calls the “Eotechnic”, to the non-renewable energy of coal, Mumford’s “Paleotechnic”. And then later, it was the shift from easily accessed coal to the even more quickly depleted deposits of oil, the “Neotechnic”, which enabled the world to escape the second Malthusian trap. Then plotted against the world development field, a very interesting pattern emerges. The development of each resource seems to go through four stages

Stage 1: Research and Development – in which major breakthroughs in design and production technologies make possible the growth of a new technology. At this stage the technology seems insignificant against the major technology, and economic risks are high (but so are potential gains).

Stage 2: In the next Kondratieff cycle, there is a growth in exploration about the limits of the resource base for the technology. Best sites for the location of water mills, the exploration of coal-fields or of the growth in discoveries of new oil reserves, all peak during the “exploration” phase.

Stage 3: During the following Kondratieff cycle, we have the exploitation phase. In this period the technology has a monopoly control over the economy, and demand for the use of this technology reaches an all-time high.

Stage 4: Depletion and Replacement by a new technological energy source then follows in the next Kondratieff cycle as, even though demand continues to grow for the original resource, the depletion of that resource is underway and there is an increased economic and also social and political instability as a result.



Plotting the occurrence of revolutions and world wars on our graph produces a very interesting result. It would appear that there is a decided clustering of wars and revolutions exactly in those periods when there is a peak and change in the dominant technologies. This is not unexpected, as one could expect the powerful nation of one age, through its technological lead and its utilisation of one form of technology would build its

major infrastructure upon that technology and thus have difficulty in making adjustments in the time of change. Also, international tensions would be heightened in the period of a change of technologies, either to capture control of the remaining best resources, or to have access to the new resource fields that are becoming available⁴⁰. Thus for example, Holland led the world in the development of wind and water power in the first period of the World Development Field. By the beginning of the 18th century, however, a series of exhausting wars in Europe led to the eclipse of Holland and the rise of France and Sweden, on the continent and of England in the oceans of the world. The Revolutionary and Napoleonic Wars saw the rise of the new British industrial superpower, built on steam, textiles and the coal and iron industries. The First and Second World Wars, saw the eclipse of steam and coal technology and the rise of oil and electricity. Twice Germany sought to capture the Russian oil fields, twice she almost succeeded and both times she failed. The end of these wars saw the new power shift decisively away from the oil coal and iron powers of Western and Central Europe to the new oil and electricity powers of the USSR and even more importantly to the USA.

But the world population problem has not disappeared. Claire and W M S Russell in "Population Crises and Population cycles"⁴¹ show that human population graphs show a 'sawtooth' effect, similar to that seen in the Kondratieff Cycle, because again and again humans have found escapes from over-population by methods to increase their food supplies through new inventions - weapons to hunt with, then agriculture, irrigation, plant breeding and fertilisers and now genetic engineering - as well as by wars, conquests, migrations and imports. But this does not permanently solve the risk of over-population, because what then happens is that each invention has permitted a further leap in population that then brings on another crisis, sometime in the future. In fact the changes in technology, because they have led to increases in world-wide consumption of goods and services, actually increase the environmental impact of the additional population. This has meant that the area of land needed to sustain each human being has grown proportionately. Once it was the area

required to produce a few simple foods, and to provide a person with fuel. Today in the richer countries we use products from around the planet and consume at rates never before seen. With industrial production systems the average person in the USA today consumes 1512 gallons of water and 56.9 barrels of oil each year. Recently it has been calculated that we consume in 12 months the oil that it takes 15 months to produce. For each new barrel of oil discovered, we are currently using between four and six. We have now arrived, it would seem, in the age of "Peak Oil"⁴².

It has been announced that if we continue at this rate by the middle of this 21st century we will require the resources of another two Earth-type planets. The facts of climate change and global warming show that we are collectively producing as much in carbon dioxide equivalent emissions as three Earth-type planets could absorb. Clearly we are living on borrowed capital, and the interest bill is currently falling due⁴³. As world oil production is currently expected to peak in the period between 2006 and 2010 and decline thereafter, it also appears that our consumer culture is also living on borrowed time. We were saved previously through the use of fossil fuel based technologies, and the limits of such technologies can now be seen to be fast approaching. The Malthusian check, that as Charles Darwin showed, provided the motor of selection by evolution that cannot be indefinitely deferred. But population is less than half of the matter. Consumption, as we have seen, as indicated by levels of affluence amongst the rich is a second part of the equation. And so we arrive today seemingly at a treble crisis. In past ages, the World Development Field overcame the Kondratieff crisis through geographic expansion. Not only is the World Development Field finding it difficult to expand geographically, and shows signs of beginning to consume itself cannibalistically. Characteristics of third world economies are beginning to appear in the heartlands of the first world, and major new industries are found in such Third World countries as India and China. We have also arrived at the depletion stage of a major technological resource with no obvious replacement technology waiting for us. The apparently irresistible force of the expansion of the World Development Field, for the first time since it started 3 centuries ago is facing its greatest crisis yet. From the examples of the past, such an age was characterised by world war and revolution. In a nuclear armed world, where nuclear weapons are proliferating, new world wars threaten us all. Clearly building a planetary system founded on perpetual limitless expansion is a mark of insanity.

People today are historically ignorant of the past and fearful of the future. But those who don't learn from the lessons of the past are doomed to repeat them, the first time as tragedy, the second time as farce⁴⁴. Seen from this point of view, much of what we currently see as "new" is in fact very old. How many examples do we need? There is not a single case of a culture or civilisation that has exceeded what the natural environment can sustain that has yet survived. In every case they have collapsed, ushering in "Dark Ages" of unspeakable cruelty, misery and suffering. This is the future that the Globaliser offer us in the name of its inevitability, arguing that there is no alternative. There are however alternatives. The Dark Ages that stares us in the face will only happen by our acquiescence, an acquiescence to the policies that the globalisers are trying, by every possible strategy, to force upon us.

In this circumstance it is interesting looking at our responses to the disaster in 2001 that occurred with our destruction of the World Trade Centre in New York. Witnessing the pain of the United States over the years brings many thoughts to mind. For instance I say “our destruction” deliberately because the terrorist lies within each one of us. As the events of Afghanistan and Iraq have shown, the demands for vengeance, “an eye for an eye and a tooth for a tooth” will ultimately just result in a never ending cycle of paybacks in which we all finish up as eyeless and toothless. As Einstein said, “To resolve a problem requires a separate consciousness than that which created it in the first place”. This is our hegemonic, imperialist consciousness talking. The demands to destroy the terrorist will finish up destroying all of us, because the terrorist resides in every human heart.

For anyone who doubts the truth of this I would invite you to read the childhood biography of Saddam Husein, orphaned as a child by the British in Iraq, brought up by a military uncle who hated the Westerners. Given the fact that the current death toll in Iraq from the Western war and imposed sanctions is over 1,150,000, I would ask “How many other Saddam Huseins, or Osama bin Ladens is the world breeding by these actions?”

When the wealth ratio exceeds 1:45 the only way this extreme measure can be maintained within and between nations, is by coercion and force. This figure was reached for the world as a whole in the late 1960s. It is now 90:1. We pride ourselves on our democracy, yet there is no economic democracy between our nations, or the world⁴⁵, where power in the world is increasingly removed from the communities most affected by the decisions that get taken.

Today our internationally and nationally unequal distributions of wealth cannot be maintained in any democratic set-up. Our situation is one which is alarmingly like Apartheid South Africa, where the rich (white) community had a liberal democracy and the poor (non-white) majority were confined to various forms of authoritarianism. Violence is the automatic result of such a situation. Locked as perpetual losers in a vicious economic struggle, people trapped in this situation quickly find themselves in a situation where they have no loyalty or allegiance to any system that depresses and oppresses them. Sabotage and suicide in such circumstances become thinkable options. We call such actions “terrorism”.

Cell biologist L.L. Larison Cudmore examines the morality of cancer, which opposes the natural pattern on the cellular level. She says:

"Cancer cells do not respect the territorial rights of other cells and refuse to obey the two rules obeyed by all other cells: they neither stop growing nor stop moving when they encounter another cell, and they do not stick to their own kind. Quite simply, they are cells that have decided on autonomy and independent growth, rather than cooperation. There would be little in this to criticize if they were discreet about it. But they are not. They run amok with as much violence and insensibility as any Malay caught in that terrifying frenzy. Cancer will not stop its hideous course of uncontrolled growth and invasion until it or its victim is dead. Cancer is illegal and dishonest. It secretes a substance that lures blood vessels to it. Once supplied with its own circulation network, it pirates nutrients from the body, in greedy and ever-

increasing insatiability. It turns invasive, growing into other tissues, dissolving the connections between cells with Samson-like strength. It can bore holes in muscle and bones. As it divides, its daughter cells lose more and more of what was once the fine sensibilities of the cell. They do not stay with their parental mass they leave, and totally undismayed by the fact that they may not belong in a kidney, a liver, or a lung, they colonize these organs with as little regard for any of the right of the inhabitants as the worst of human imperialists. They grow and grow. Over cells, and around cells, stealing their food and space."

And as the Corporate-led World Development Field shows, we currently live within a cancerous culture, built on the idea of ceaseless endless economic growth. The cancer cell, that psycho-biological resonance of such cultures, is also neurotic in the sense that it follows the same pattern. As shown below, it sucks energy out of the system that supports it without having reciprocal relationship with the whole. To continue the holistic, holographic analysis, the phenomenon of neuroticism that occurs in the Industrial Growth Civilisation, as a whole, is reflected in militarism, conquest and acquisition - as its fear leads it to suck energy into its collapsing centre. But before we can look at the task of overcoming these problems, we need to look more closely at its origins, and the degree to which we are complicit in these difficulties.

So far in this book we have examined at depth the nature of the three hundred year old irresistible force of the World Development Field which has created the global Industrial Growth Civilisation, of which we are all a part. We have seen how this civilisation has created, and in turn, partly been created by a way of seeing the world composed of separated objects, and simultaneously in which I am also a separate individual, disconnected from the Earth. The planet, in this view, is believed to be an inexhaustible inanimate matter resource for human use. We have seen that this global culture now faces its greatest challenge, a force far more ancient and far stronger than itself – the fundamental and immovable nature required for the life support systems of the planet, a living planet which when stressed, will remove the stress by changing its equilibrium. This chapter looks at the consequences of this confrontation between irresistible objects and immovable forces, and will show that both are going to be transformed in semi-predicable ways.

The environmental impact upon the Earth has been assessed according to the equation of Paul Ehrlich as follows.

$I = PAT$

Where "I" is the overall impact, "P" the population, "A" their level of affluence (an assessment of their consumption, and "T" the level of technology used to ensure that consumption. We have seen in previous chapters that the population of the planet has more than doubled, and the total level of affluence, as measured by consumption, has increased sixfold, made possible by the use of an energy technology based upon irreplaceable non-renewable fossil fuels; coal, oil, and natural gas. But even this is a little misleading. The population of the Earth is currently six billion, and will soon be seven. Our population levels themselves are the result of affluence and technology; and affluence too is largely determined by the technology. It is the social, economic and political

systems that create this technology and disseminate its products. At the moment, for instance, nearly four, and soon to be five billion people are kept alive directly by the industrial system based upon fossil fuels. In the absence of this “energy subsidy” these people could not exist. As the supply of oil now will increasingly fail to keep pace with the demand for oil⁴⁶, so its price will rise, placing it economically out of the reach of a greater and greater fraction of the world’s poor and falling income middle class people. At the same time, as the usable resource diminishes, the attempts by the powerful to gain monopoly control of these resources for their own exclusive use will increase. The complexity of this interlocking system and its increasing economic and environmental fragility is reducing its overall resilience. In this chapter we look at the nature of the general systems collapse that is coming, and show what we can do constructively when faced with such problems.

PREVIOUS COLLAPSES OF CIVILISATION

If one starts by the Canary Islands of the Atlantic Coast, on the Western Sahara, one can travel eastward as far as the Gobi Desert of Northern China, in a huge band of unpopulated desert from east to west. At the end of the Ice Age, this area was a huge and fertile open woodland garden of Eden (from Edin = wilderness in the Sumerian language) of many rivers, lakes and grasslands, rich in game, elephants, wild cattle, giraffe and gazelle. Climate change has played an important part in the destruction of these areas, but it is also not surprising that the epicentre of this desert zone is located in Southern Iraq, the centre from which forest clearing, soil-eroding, overgrazing civilisations have spread to the east and west around the temperate-sub-tropical region of the old world.

The irrigation areas of Sumer and Akkad were ruined by salt. In the 9th century AD a desperate but futile attempt was made in Khuzistan to remove the saline surface crust with impressed slave labor. There is abundant evidence from archeological surveys, numbers of settlements and tax records, of recurrent population crises with their accompaniments of inflation, famine, violence and epidemics. These crises repeated historically, beginning with Akkad in mid-second millennium BCE, near the end of the Egyptian Old Kingdom, and continued to early modern times in periods identified by the Arab historian and sociologist Ibn Khaldun of Tunis in AD 1377. Rainfall in these areas has not diminished markedly since at least Roman times - all these deserts have to a large extent been man-made, the result of deforestation, soil loss and overgrazing. The cost of the irresistible growth and expansion of civilisation beyond the limits imposed by the life support structures of Gaia, finishes up by killing all the life upon which the living Earth depends. Empty deserts are usually the result.

For instance, the population of Iraq, estimated as around 30 millions around AD 800, had shrunk to under 5 million by the early 20th century. The great Arab civilisation also went through the same cycle, and now, again, the Islamic Middle East that had begun to revive in the 19th century with a much reduced population, is threatened once again by over-population, with resulting violence and

increasing environmental degradation and economic refugees. In each case we have seen that expansion beyond what the environment can sustain is prompted by four factors that be identified in contributing to the rise of the elites which dominated the Sumerian cultures as it did the growth of civilisations which followed

Commerce and its domination of commerce through monopolies, fosters the growth of trade and greater specialisation between skilled professional full-time craftspeople, produced goods of higher quality and excellence, allowed some areas to prosper at the expense of others. In the growth of civilisation this corresponds to the rise of the secondary products revolution under the Halafian and Ubaid cultures. Reapportionment of gender roles led to a fall in the economic status of women. Male merchants tended to travel the long distances, leaving wives and families “at home”. Long distance trade also allowed a first separation between those who gained the benefits of production from those who paid the cost. Today this approach continues with the World Trade Organisation and the growth of corporate controlled globalisation of the Industrial Growth Civilisation.

Control of strategic water resources, allowed the growth of a bureaucratic elite who could manipulate the coordination of labour on public irrigation works. These people then made use of the same powers in fostering their own political authority. In southern Iraq this occurred with the growth of systems of irrigation to deal with the problems of local aridity. Today, the domination of oil industry interests in the US, fosters monopolistic control of a different strategic resource, upon which modern life largely depends. The increasing privatisation of public water supplies, placing them into the hands of private corporations is another example of the growth of such monopolistic control.

Conditioning of the social and religious beliefs. The dominance of local cults led to the growth of ceremonial centres, which established greater power for the temple authorities in the day-to-day economic lives of the people. The huge growth in urban temple complexes and their defining role in the religious, educational and economic lives of their communities encouraged the base of centralisation from which civilisation was to develop. In today’s industrialised world it is the role taken the institutions of the corporate mass media who determine, to a large extent, through their control of entertainment and information, what people think, and ultimately, how they behave. In societies where mass media are less developed, however, religious authorities, through their control of schooling, still play the same role.

Coercion led to the rise of the military caste, who, as a class, use terror to capture the benefits of society, whilst forcing others to pay the costs. In the early days of Mesopotamian civilisation this military control began once population pressure on the resources of the area threatened to exceed the carrying capacity of local environments, and so increasing the rewards accrued to those “Big-men” who could confiscate the resources of less powerful neighbours. In the neo-imperial Anglo-American world the US Defense Department and the Pentagon take the equivalent role. Through its support of a campaign of “shock and awe” of the citizens of Baghdad and Kabul, there is little difference with the “shock and awe” of the citizens of New York after September 11th, except for who was on the receiving end of the campaign of terror, and differences in the numbers of casualties involved.

As these four methods of extracting the surplus production that a civilisation requires we have come through a period in which the area of Industrial Growth Civilisation has expanded to cover the entire planet, its population just in the last century doubled, and doubled again, and the accumulation of its wealth has risen to levels never seen before on the planet. The modern population crisis of Industrial Growth Civilisation is unique because it is universal. It is not, as in the past, staggered between regions of the major civilised, with their different crises and relief periods. As it can not today geographically expand any further, so to grow further requires a more intensive use of available resources. This intensity requires new and even greater sources of energy, energy that is just now “peaking” and is not available. And so the wealth accumulated is increasingly based upon speculative gain and debt, rather than upon real sources of production or rising levels of popular income.

All civilisations it seems go through a cycle of genesis, growth, apex, a time of troubles and attempts to reform, and then collapse and disappearance. One can ask, where on this cycle is the Industrial Growth Civilisation? All the evidence points to the date from 1968 to 1973. For instance that was the end of the longest uninterrupted economic boom in the last three hundred years. World oil production per person peaked and has not increased since. Real value of wages also peaked, and have not significantly improved since, as despite growths in GDP per capita, inflation in the 1970s and 1980s ate into increases, and the increasing gaps between rich and poor have done the same in the 1990s and early 21st century. The “time of troubles” began when the largest military powers of the world, the USA and USSR, were defeated militarily by some of the poorest – the peasants of North Vietnam and Afghanistan. But there is other evidence of the time of troubles staring us in the face.

Gaia, the living planet, captures the energy of sunlight and produces living tissue.

As the following table shows:

ECOSYSTEM TYPE	Area	Mean Nett Primary Production	World Primary Production	Mean biomass	World biomass)	Minimum re- placement rate
	(million km2)	(gram dryC/sq metre/year)	(billion tonnes/ year)	(kg dryC/sq metre)	(billion tonnes)	(years)
Tropical rain forest	17.0	2,200	37.40	45.00	765.00	20.45
Tropical monsoon forest	7.5	1,600	12.00	35.00	262.50	21.88
Temperate evergreen forest	5.0	1,320	6.60	35.00	175.00	26.52
Temperate deciduous forest	7.0	1,200	8.40	30.00	210.00	25.00
Boreal forest	12.0	800	9.60	20.00	240.00	25.00
Mediterranean open forest	2.8	750	2.10	18.00	50.40	24.00
Woodland & shrubland	5.7	700	3.99	6.00	34.20	8.57
Savannah	15.0	900	13.50	4.00	60.00	4.44
Temperate grassland	9.0	600	5.40	1.60	14.40	2.67
Tundra and alpine	8.0	140	1.12	0.60	4.80	4.29
Desert & semidesert scrub	18.0	90	1.62	0.70	12.60	7.78
Extreme desert, rock, sand or ice	24.0	3	0.07	0.02	0.48	6.67
Cultivated land	14.0	650	9.10	1.00	14.00	1.54
Swamp & marsh	2.0	2,000	4.00	15.00	30.00	7.50
Lake and stream	2.0	250	0.50	0.02	0.04	0.08

Total continental	149.00	774.51	115.40	12.57	1,873.42	16.23
Open Ocean	332.00	125.00	41.50	0.003	1.00	0.02
Upwelling zones	0.40	500.00	0.20	0.020	0.01	0.04
Continental shelf	26.60	360.00	9.58	0.010	0.27	0.03
Algal beds and reefs	0.60	2,500.00	1.50	2.000	1.20	0.80
Estuaries & mangroves	1.40	1,500.00	2.10	1.000	1.40	0.67
Total marine	361.00	152.01	54.88	0.01	3.87	0.07
Grant total	510.00	926.52	170.28	12.58	1,877.29	11.02

From a Gaian perspective the most important ecosystems are the tropical forests, swamps and marshlands, algal beds and reefs. But since the late 1960s evidence has accumulated that shows we are damaging these environments at a faster rate than natural repair can occur.

For example recent estimates of the World Resources Institute suggest that tropical forests are home to 50 to 90 percent of the world's species. Annual forest loss of 250,000 ha of tropical forests will push 13 percent of the world's species to extinction by the year 2015 – somewhere between 8,000 to 28,000 species per year. Forest degradation and fragmentation further diminish biological diversity. Adverse affects on the lifecycle of some species will occur through the removal of “keystone” species on which they depend. For example collapse of bee species removes needed pollinators for many plants. Many populations don’t survive in fragmented habitats. For instance a study of the Brazilian Amazon found that while only about 6 percent of closed canopy forest had been cleared as of 1988, approximately 15 percent appeared changed by habitat destruction, habitat isolation, and the edge effect of deforestation. Recently the Brazilian parliament has been discussing a bill to log half of the rainforests by 2030.

We are currently losing 2.5 gigatons of above-ground biomass, producing over 4.6 gigatons of atmospheric carbon dioxide. This measures 20% of global emissions from fossil fuel use, and contributes greatly to upsetting the global heat balance.⁴⁷

Regarding soils analysis shows that more than 14.5% (243 million ha) of Russian land is affected by soil degradation caused by improper management and technology. The rate of soil degradation and loss of soil productivity in Russia has been fairly rapid⁴⁸. US figures are comparable. In some areas,

for each ton of wheat produced, farmlands are losing 4 tonnes of topsoil, and in tropical, third world areas, the losses are even higher. Accordingly 35 per cent of the earth's land surface an area approximately the size of North and South America combined are under threat from desertification. This will negatively affect the livelihoods of the 850 million people who inhabit that land, and untold numbers of species with whom they share it. At present some 21 million ha each year are reduced to a state of near or complete uselessness.

The situation regarding wetlands, mangroves and reefs is equally bad. It is reported that human activities have already destroyed one-half of the globe's original coastal mangrove forests. While aquaculture may account for only about 10% of mangrove loss worldwide, in some areas it produces almost all the loss. It can threaten coral reefs through the discharge of polluted and nutrient-rich waste water from the ponds. Acidification of oceans and rising ocean temperatures is bleaching over 80% of the world's corals. In parts of Southeast Asia, such practices have destroyed as much as 70% of mangrove areas, leading to a complete devastation of nearby coral reefs. Such "ecological sins" are clearly the result of a continuing blind ignorance and denial of the reality of what we do, and of its consequences upon the living world of Gaia.

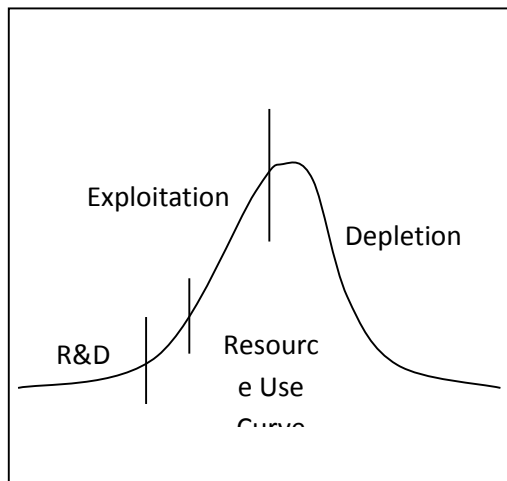
A UN report in 1994 warned that 'one third of the world land surface is threatened with desertification', following deforestation, overgrazing, over cropping and over-irrigation, with resulting erosion, silting, salinisation, laterisation and bare earth. In 1990 a report of the World Health Organisation estimated that 25 million agricultural workers are acutely poisoned by pesticides every year. Unusual climate changes and increases in climatic disasters are now being attributed to the extensive forest loss and atmospheric pollution with greenhouse gases and holes in the ozone layer. The environmental damage caused by the population explosion that is chiefly in developing countries, is more than matched by the consumption explosion in developed countries - and now more peoples seek to emulate that development.

In 1986 Piter Visoutek estimated the percentage of the world Nett Primary Production, that 39% either directly or indirectly was being co-opted for human use. Looking at direct human consumption, the effect of human forest fires, the conversion of forest for croplands and pasture, land removed from productivity altogether with urban development, and desertification they only about 60% was available for all others of the 30 million species with which we share the planet.

Population crises today show the typical economic and social effects - high unemployment, gross inequality, desperate poverty, increasing violations of human rights, and resurgences of incessant local, national and civil wars that now kill more civilians than since the 17th century crisis in Northern Europe. The violent imaginations that mark the cultures of the affluent West also reflects that growing stress, as well as risking to be a self fulfilling prophecy.

As if this were not bad enough, there is also evidence that suggests that in the near future we are going to have significantly less options and "room to manoeuvre" than we have had in the recent past. In the exploitation of any resource, for humans, like animals, or bacteria, there is generally a cycle form research and development, resource exploration, resource exploitation, production and depletion, that has the shape of a "bell curve". In the research and development stage, the resource

is generally used for a single purpose, for example in the early use of water-power for the purpose of grinding and milling grain. At this stage, the resource is generally used fairly inefficiently, using techniques adapted from other processes. In the resource exploration stage, suitable sites for accessing the resource are identified, and if economic, are then brought into usage in the resource exploitation stage. Full production of the resource follows with the resource being applied to a range of other needed technologies (for instance with water-power being used to drive early textile machinery, or the hammers and bellows of blacksmiths). Resource depletion occurs when demand for the resource exceeds its supply. At this stage there is a search for more efficient and effective ways of using the resource, or an active search for finding a replacement – substituting the resource in some way with alternatives. In the case of water-power – hydro-electricity generation was eventually found to be a more effective way of utilising the resource than the direct mechanical use of the energy of falling water. At the same time, research and development of a new technology – coal driven steam engines – met the growing demands for energy in the early stages of the Industrial Revolution.



Coal power followed a similar curve. After research and development, easily exploitable surface seams of coal were depleted first – leading to the development of deeper pits and seams, searching for deeper rich veins of coal. Deeper mines required the development of coal driven water pumps, and eventually to open-cut coal exploitation, using a complex technology of petroleum driven earth-moving machinery. At the same time, the exploitation of coal driven steam turbines also saw a parallel development – with the current electric generators used in power stations vastly more efficient than the first primitive steam

engine pumps developed in Britain in the late 18th century. In the late 19th century – the depletion of sources of whale oil for lighting led to the development of coal gas, and then kerosene and natural gas as a fuel. Research and development of a more flexible and adaptive engine for transport to the heavy steam machine, led to the development of the internal combustion engine, which saw petroleum, which until then, was considered an explosive waste product, made available. Growing demand saw the markets for petroleum to grow and the search for new oil fields around the world beginning in earnest.

Petroleum exploration peaked in the 1960s and resource exploitation followed soon after, with the availability of this fossil fuel per person peaking in the 1970s. Its widespread application to the production of plastics, fertiliser, pesticides and insecticides, and to mass transport systems, permitted the massive increase in food production at a rate faster than the increase in world population. Application of chemical pharmaceuticals to illness, and the increased availability of food, saw average world life expectancy grow from 44 years per person in the 1950s to 67 years

today. Thanks to cheap fossil fuels, with falling death rates world population soared to over six billion. Urban areas grew until they today house more than 50% of the world's population. Depletion of easily accessible oil fields located in richer developed nations has forced industrialised countries to depend to a greater and greater extent upon imports from Third World nations, principally in the Middle East.

Petroleum geologists today tell us that this resource too will reach maximum production and start depleting within the next few years, with supply being vastly exceeded by still growing demand, resulting in increasing energy prices. New renewable energy technologies are urgently required, but the long-term monopoly control of economically subsidised fossil fuel industries over the two centuries has limited the research and development of these technologies, with the result that the future is looking increasingly grim for large sections of the world's population⁴⁹.

How are we to proceed? The work we do needs to be threefold. Firstly is the work of our Hands. We must limit the destruction: This requires continuous action aimed at preventing certain actions. eg. Government and industry promoted destruction of forests, ditto in the nuclear industries, opposition to ridiculous privatisations of the planetary genetic heritage, resisting the damage done by the World Trade Organisation, the Structural Adjustment Policies (SAPs) from IMF and world bank (IBRD), the ongoing wars and ethnic "cleansing" in various parts of the world (Tibet, Kosovo, Kurds, East Timor, Ruanda, Iraq and Afghanistan etc.) These holding actions are demanding, exhausting, but they slow down the rate of the cancerous Industrial growth society's destruction, and saves (human and non-human) lives. It involves boycotts, letter writing, lobbying, legal and court injunctions, participation in shareholder meetings, attendance in submission writing, civil disobedience and non-violent direct action. All are required. But such actions can rapidly produce burnout and cannot for most people be sustained indefinitely for long periods. By itself it is necessary, but is not in itself sufficient. By itself this is not enough for the Great Turning to our Life Sustaining Culture (LSC) of the future. It needs to be complimented at a second level with a new direction.

It needs to be complemented by the work of our Heads. We urgently need to build new social, political, economic and technological structures for the Life Sustaining Culture we need to replace the Industrial Growth Civilisation (IGC). Here we need rapid reduction in overall levels of consumption, transferring savings achieved in the so-called First World to Third World Nations, so lessening the 90:1 gap in incomes (a gap which was 45:1 in the 1950s and 24:1 at the turn of the 20th century). A community campaign of "simplicity circles" is urgently needed where groups of people support each other to trade income and levels of consumption, practicing radical simplicity, for improved quality of life, and directing savings achieved to Third World development NGOs. Such "Transition Towns" creating "Energy Descent Action Plans" need to be coupled with improved living conditions in the "majority world". Flexible part-time work hours could easily reduce everyone's paid employment time to 70% of the current figure, reducing stress and improving the quality of our lives at the same time. But this trade off needs Guaranteed Minimum Income Legislation to be balanced by legislated maximum permissible wage differentials for both income, share equity and assets (linking CEO salaries to minimal salaries paid within enterprises). Given the obscene levels of

bonuses paid to managers of companies, that has helped to fuel the recent economic collapse of the Global Financial Crisis, this urgently needs addressing. Changes in youth education, employment transitions and the abolition of “retirement”, with full accounting of domestic duties and community work as employment (rewarded accordingly) are also required.

Arms spending, for example, needs to be taxed internationally, and the funds need to be directed towards UN peacekeeping arrangements. These changes will limit the outflow in debt from 3rd world to first world. If Third World Nations were able to keep the results of their economic growth, they would not be required to “mine their environment” for every last bit of export income as the IBRD/IMF SAP agreements force them to do. Nor would countries like Bolivia, Burma, Afghanistan, Columbia, Laos and others need to trade drugs for a good quality of life of their peasants. We need to strongly support the Jubilee 2000, with debt/environment trade-offs. These policies if widely implemented would enable rising mean living standards in the Third World, would thereby help reduce population growth. Transfer of wealth should be conditional upon reduced arms spending in Third World nations, increased spending upon education of women and universal application of family planning programs.

Genuine Progress Indicators need to replace GNP/GDP indicators everywhere, complimenting regular updates on ecological footprints, with individual communities creating their own Local Agenda 21 indicators for sustainability, like those of Sustainable Seattle and the Oregon Option. In enterprises audits need to use triple bottom line measures (accounting for financial, social and environmental capital, stocks and flows), with Natural Step programs in all countries. To this mix needs to be added an immense flowering of human creativity. Our “mixed economy” urgently needs the “missing” or “Third Sector” of LETS systems, Community Credit Unions, 2nd generation Worker, Producer, Housing, Consumer, Market and Credit Cooperatives of all kinds, Ethical Investment Fora, ESOPs, and Land-Sharing Intentional Communities. Such financial and economic systems will support the other developments required, described below. Urban Policies need to promote telecommuting need to replace physical commuting, using improved public transport systems where needed. Urban infill needs ecological corridors and bio-design is essential, making cities self reliant as regards their own food supply. Re-empowerment of local government by direct democracy using new technologies (Internet Polling etc) linked to authentic debate and community public education programs would strengthen local decision making structures based upon Bioregionalism. Community Economic Auditing, tracing the connections between financial, social and environmental capital stocks and flows into and out of communities, with annual “community shareholders meetings” could become the most popular (and dramatic) event on everyone's local calendar. There is no shortage of employment here, there is enough work for everyone, we merely lack the will to make these things happen.

By themselves even these strategies are not sufficient, because they address the social, economic, political and environmental symptoms of our interlocking problematique, not its cause. The cause as we have seen above is a cancerous and obsolete individual egotistical consciousness that promotes treats the earth as an inanimate object of our desires, raising rising consumption levels, through its hierarchical decision making, adversarial political and legal systems, and rigid forms of social

stratification within and between nations and unceasing capital accumulation. Unless this toxic morality, dangerous ethical system and limited consciousness is directly addressed, all structural reform effects will be co-opted to keeping the present destructive chain of events in place.

As our Industrial Growth Civilisation continues to get deeper and deeper into its terminal crisis, as our levels of fear and uncertainty rise, the tendency will be to react with violence, seeking people to blame. In a nuclear armed world this just escalates our difficulties, as fighting violence with violence will merely escalate our problems, and leave a world with levels of destruction too costly to repair.

So we also need the work of our Hearts. The question we need to face is how can we build a rapid shift in consciousness on a truly massive scale. How can we do this in the Gaia Movement? We need to learn and practice the skills required for the non-violent resolution of conflict at every level. We need to improve the practice of non violence in our families, between our families, in our communities, between our communities, within and between our regions and nations. But much more is required. Regular Experiential Deep Ecology workshops promote and train facilitators in Joanna Macy's Despair and Empowerment Work is part of the answer. Intentional Community Building Weekends bring large numbers of people together to give them an experience of "authentic high quality low consumption community life" at the same time as training people in the skills of community building could be another part. But much more is needed too. We need to preserve the indigenous knowledge that is being lost at a prodigious rate. As Deep Ecology shows us, the core principles for a new set of post-industrial Life Sustaining values are

1. The flourishing of human and non-human life on Earth has inherent value. The value of non-human life forms is independent of the usefulness of the non-human world for

human purposes.

2. The richness and diversity of life forms are also values in themselves and contribute to the flourishing of human and non-human life on Earth.

3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.

4. Present human interference with the non-human world is excessive, and the situation is rapidly worsening.

5. The flourishing of human life and cultures is compatible with a substantial decrease of human population and consumption. The flourishing of non-human life requires such a decrease.

6. Significant change of life conditions for the better requires change in policies. These affect basic economic, technological, and ideological structures.

7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to a high standard of living. There will be profound awareness of the difference between big and great.

8. Those who subscribe to the foregoing points have an obligation, directly or indirectly, to participate in the attempt to implement the necessary changes.

From our experience we argue in the Australian Gaia Foundation that if we cannot build a truly sustainable 21st century society in Perth, Western Australia, the most isolated city of the planet, where else are we going to be able to succeed. With a single city of 1.7 million people, in a state of 2.4 million, occupying an area 1/3rd the size of continental USA, if we cannot succeed here, we will not be able to succeed anywhere on Earth. To this end we have run and supported more than 611 projects in 23 years. It is in this environment that we have developed the power and the promise of Dragon Dreaming. After the millennial long multigenerational project of civilised cultures to control chaos and kill the dragon in the name of imposing order and control, we need to learn to dance with the fears of our dragons, to liberate our creativity in new ways as only this will be sufficient to ensure the continued thriving of complex life, human and more than human, on the blue green jewel sustained by the planetary feedback systems of Gaia.

But such collapses have happened before. History holds the record of many collapsing civilisations.

For example, in the last quarter of the second millennium, circa 1200BC, Bronze Age Europe suffered an unexplained breakdown from which it did not recover for nearly 1000 years. The eastern Mediterranean Bronze Age civilisation ended in about 1225-1175 BCE during a catastrophe that swept across the entire region, affecting Mycenaean Greece (Teichos Dymaion, Pylos, Nichoria, The Menelaion, Tiryns, Midea, Mycenae, Thebes, Lefkandi, Ioklos), Crete (Knossos and Kydonia), Anatolia and the Hittite empire (Troy VI, Miletus, Tarsus, Hattusas, etc.), Cyprus, Syria (Ugarit, Kadesh, Aleppo, Carchemish, etc.), the Southern Levant (Hazor, Meggido, Bethel, Ashkelon, etc.), and (to a lesser extent) Egypt. The crisis peaked in the 1180s and collapsed ignominiously during the reign of Ramesses III in Egypt (virtually the last of the great pharaohs). The Late Bronze Age civilised and literate regimes in the Eastern Mediterranean region had been stable palace-centered, wealthy, and relatively peaceful, but what followed was a Dark Age. Populations crashed. Some 90% of Greek settlements were abandoned. Literacy disappeared over large areas. There are few inscriptions in Egypt or Mesopotamia in the period as well. With the recovery of civilisation centuries later in the iron age came also the development of alphabetic writing, the growth of nationalism, republican forms of government, and eventually the growth of Greek rationalism, Jewish monotheism, Chinese philosophy and Indian gurus and sages.

Various alternative explanations have been put forward for the catastrophe, but only climate change leading to a 'general systems collapse' makes any sense. Trade was disrupted; cities were abandoned; political structures were destroyed. Waves of invaders descended on the remnants. Crete, having barely withstood a series of terrible natural disasters, had already fallen to the Mycenaean Greeks, before Mycenae itself was destroyed. Within the space of a single century, many of the established centers passed into oblivion. Tribes overran the Aegean from the interior. The Hittite Empire in Asia Minor came to an end. Egypt itself was besieged by an unidentified 'sea people'. Every city from Troy in the north to Gaza in the south shows evidence of destruction, many of them never recovering later. The Urnfield people survived in Central Europe relapsing into a long

passive era, which only ended in 800 BCE with the appearance of the Celts. Greece was plunged into its archaic Dark Age, which separated the legendary era of the Trojan Wars from the recorded history of the later city-states. Civilisation, when it recovered after centuries of backwardness, was never the same again.

Arnold Toynbee in the “Study of History”⁵⁰ from his study of 21 full and 5 arrested civilisations argues that the collapse of a civilisation occurs when a “creative elite” becomes a “parasitic elite”. This produces an internal and an external “proletariat” with only marginal loyalty to maintaining the structures and institutions of the civilisation. By attacking or withdrawing their support, the civilisation comes to an end.

Joseph Tainter in “The Collapse of Complex Society”⁵¹ based on 3 detailed case studies argues that the increased complexity of a civilisation produces diminishing returns, so that each increase in complexity produces less benefit than the previous one. Eventually a situation is reached, he argues, when increased complexity is at a cost rather than producing a benefit, and the system collapses.

Jarred Diamond in his book “Collapse: how societies choose to fail or succeed”⁵² shows from an examination of 41 case studies that cultures collapse for the following reasons:-

- Population grows beyond what the local environment can sustain
- Trade from long distances to provide needed resources to maintain the culture is reduced
- Important environmental services are destroyed or depleted – eg forests and fertile soils
- Gaps between “rich” and “poor” increase – reducing loyalty of the poor for the rich
- Climatic change puts great pressure on food production systems, causing starvation
- Increased violence within and between cultures as a result of the increased pressures (above)

Cultures that succeed, he suggests, manage to halt or reverse these problems, either from actions from above, by the elite, or from below, from the grassroots.

Of the civilisations that have existed, the vast majority collapsed when, through their memplexes structure and organisation, they either undermined or could no longer be sustained by the ecological system upon which their culture depended. A civilisation may be said to “die” when

- A. *The area under its control starts to shrink*, growing smaller and smaller over time (as happened with the later Roman - Byzantine Empire)
- B. *The population of people under its control starts to collapse* - with death rates and emigration exceeding birth rates and immigration, or

- C. *Its wealth falls* to levels which no longer distinguish a leisured elite from the general population, and the culture reverts to tribal or chieftain structures
- D. *The state structures of a civilisation get replaced* with a very different social structure or culture, as happened in Western Europe with the fall of Rome.
- E. *The ideology at the heart of that civilisation loses meaning* and is dismissed by people who would have once been its supporters, adherents or disseminators.

The death of a civilisation can occur in one of three ways.

1. The civilisation may be incorporated into another civilisation that has evolved a greater proficiency in the accumulation of land, people and wealth than it did itself, and so become a small but different part of this larger second civilisation. This is what happened to the Egyptians, becoming part of the Assyrian, Persian, Greek and Roman Empires, before becoming incorporated into the world of Islamic civilisation, and now today being incorporated into our Global Industrial civilisation.

OR

2. If there is not a second civilisation with which a dying civilisation is in contact, the civilisation may cannibalistically consume itself. This will destroy its character and thus lead it to revert to either a system of local chieftains or revert to a system of warring tribes, in which the memory, and the arts of civilisation itself, may be lost. This happened in Easter Island and to the Lowland Mayas, and nearly happened in the Dark Ages at the end of the Bronze Age, and in the Dark Age after the fall of the Western Roman Empire in Europe.

OR

3. Occasionally a civilisation may act as an incubator or chrysalis for a new culture. Thus the Roman and Byzantine Empires acted as the incubator for the memplexes of new civilisations that emerged from them, namely Western and Eastern Christendom. Western Christendom grew out of the post Roman Dark Age, whereas Eastern Christendom was already expanding before Constantinople, all that remained of the Byzantine Empire, became absorbed into the Turkish part of Islamic Civilisation. The Global Industrial Growth Civilisation grew out of the chrysalis of Western Christendom.

Today we are perched on the edge of another such period. As our Global Industrial Growth Civilisation is the only one of its kind, collapse of this civilisation will result in this second case, unless it can incubate a new and different culture from within itself.

But how will it occur? In many ways it is starting already.

The Nigerian Environmental Study/Action Team (NEST) and Global Change Strategies International (GCSI), Canada hosted a two day targeted public awareness raising campaign for non governmental organisations, Educators and Media Practitioners on the effects of Climatic Change, in Ibadan some time ago. The workshop, which theme was "Nigeria and Climate Change: Roles for NGOs, Educators, and Media Practitioners" focused on the fine points of climate change and why it is of such serious concern to Nigeria.

Professor Okali, Chairman of NEST observed that Nigeria was highly vulnerable to climate change's general impact, especially from the point of poverty and underdevelopment. He explained that the nation lacked the capacity to institute early warning system, raise protective barriers, coupled with poor disaster management and slow relief provision. Thus, he said the nation needed to plan for impact of global action on climate change, meet obligations on United Nations Framework Convention on Climate Change (UNFCCC) for benefits and exploit opportunities such as the Clean Development Mechanism (CDM).

According to him, lack of preparedness, limited resources and no worked out adaptation strategies there was danger of general systems collapse marked by economic losses, disruption of development and poverty alleviation programmes. Others are incidences of displaced populations, ecological refugees, heightened resource sharing conflicts and social conflicts.

Nigeria, he explained had a long strategic coastline, which was of economic value, saying that sea level rise would cause disaster to settlements, and livelihoods through loss of freshwater, fisheries, and vegetation resources.

It would exacerbate desertification, leading to drought and water shortage and drastic reduction of hydro electric power. He explained that 2/3 of the country was sub-humid to arid and that dominant impact of climate change was reduction of soil moisture and run-off in these regions. Food security would be threatened, because of dislocation of food production systems from shift in seasons, changing ocean currents, disruption by disasters, population displacements, losses from disasters like flood, and slow adaptation. Also expected are reduction in biological production caused by high temperature effect on grain production, increased water stress, pest and disease increase. On health implications, he said there would be heat stress, undernourishment, malnutrition, vector borne diseases like malaria extended range, and that flooding would cause cholera, and bilharzias. Warming and lowered humidity would cause meningitis, and respiratory diseases from increased air pollution. Climate Change is also expected to affect transport and industry, which is linked mainly through dependence on energy, extreme weather phenomena would disrupt infrastructure.

The pattern of the rise and fall of civilisations is thus implicit in the dynamics of civilisation itself, patterns established which led to the growth of patriarchal elite cultures at the very dawn of civilisation. These cultures, through gaining the benefits and passing costs on to others only survive as a result of suppressing ecological awareness of the consequences. As the ancient Sumerians realised, we humans do indeed live inside the body of a living ecosystem upon which we all depend, and whose limits we defy at our peril. Nevertheless the cultural condition of patriarchal civilisation was achieved first by the rejection of a balanced reciprocity of men and women, previously maintained through a divine sacred marriage, in favour of a belief that creation occurred through reassembling the corpse of a slain divinity. This new structures became the basis of the first civilisations on Earth. Until we can recover from this ecological insanity, balancing life as expressed in such original myths as the Babylonian tale of Atrahasis, the exceedingly wise, and avoid the literal cultural dead end of the patriarchal tragic hero Gilgamesh, who was destined to fail, we too are doomed to repeat again and again the historical cycle of civilisation's own eventual failure, collapse and fall. And in a global culture, where we have only one surviving civilisation, dependent so utterly upon finite and depleting resources of fossil fuels, the question becomes – how do we survive the planet-wide Dark Ages that are coming?⁵³

These studies of the collapse of civilisations show that to increase our chance of survival, and help minimize the death and destruction of the Dark Ages there are seven things we can start upon now.

- 1stly: Build inclusive caring and sharing communities as if our lives depend upon it. Our lives will depend upon it, but few of us truly understand what community really is. Developing community is essential to all other factors and is the second of the three objectives of all Gaia based Dragon Dreaming projects.
- 2ndly: Avoid dependence upon complex IGC systems that risk destroying living complexities. They will collapse hard and fast. The age of peak oil is upon us. We need radical simplicity and downsizing. This is only possible with community, and it will but time that other factors depend upon.
- 3rdly: Cultivate and maximize creativity – increase our social, political, economic, technological, scientific and artistic creativity, spiritual and ecological creativity. This is only possible if we have more time, as leisure increases creativity, and if the new innovations have time to spread.
- 4thly: Cultivate non-violent wisdom. In collapse IGC perpetuates warring militant ignorance and fundamentalisms of all kinds. Fighting violence with more violence doesn't work, but only escalates the situation. Only non-violent wisdom is an answer to such militant ignorance.
- 5thly: Preserve knowledge to cultivate wisdom – it gets swamped by understanding, information, then mere data and finally superstition. Dark ages lose important knowledge

that takes centuries to rediscover. We currently lose a language every two weeks together with the ecological reality on which the language was based.

- 6thly: Adopt inclusive Earth-centred systems of meaning within all faith traditions, that help maintain mindfulness, promote interconnectedness and heal all separations. We urgently need, as David Tacey shows, in “The Edge of the Sacred”, to re-sacralize the Earth.
- 7thly: Build responsive economic and financial systems and institutions that support the other six objectives effectively. Our current financial systems and institutions rather than supporting such developments, as Magrit Kennedy and others have shown, rather weaken all 6 developments.

The good thing about this list, even if collapse does not occur, all seven are positive developments urgently needed. In this age of US hegemony these forces of the civil society have been called “the second world superpower”, but will the second world superpower be creatively “powerful” enough to usher in a life sustaining culture before the Industrial Growth Civilisation inevitably collapses.

Like many earlier now extinct cultures, we have forgotten how we can individually and collectively live sustainably on our planet, and we may, like many others, be refusing to take responsibility for the consequences of our actions, believing that someone, somewhere will fix it all for us. After all, what can one person do? And in our cities and towns we have the strange phenomenon of hundreds of millions of people all wondering “What can one person do?” This is a double forgetting, as not only have we forgotten all of this, our culture has even forgotten that it forgot. It is a strange form of autistic disconnectedness that characterises our world. Little wonder as discussed earlier that the numbers of autistic individuals in our world continues to increase.

The costs of such a view therefore, seem invisible to us too, and yet they are enormous. Anything that stands in the way of the memes of “atomisation” of the separated individual gets swept aside, destroyed or devastated. Sustainable third world communities, that have existed for thousands of years are destroyed by the corrosive acid of addictive consumerism, fostered, “pushed” by television advertising promoting “western lifestyles” which have assumed a global reach. Given these trends it is no wonder that for so much of the time when living in cities I feel that I am acting like a sleep-walker, a zombie in shock, numbed and locked in denial like victims of some social or cultural trauma. We all see how pristine environments get mined for new consumer resources, or turned into “tourist commodities” for a new eco-tourist market. In the search for new excitement, new escape, to satisfy new “wants” or addictive cravings with new products, nothing seems inviolate. Al Gore, who despite winning the election failed to become President of the USA by a refusal of the courts to allow all votes to be properly counted, even went so far as to claim we are addicted to consume even the living Earth itself. In our society it is hard work trying to stay awake and aware, trying to hang on to our greater sanity. All intermediary structures that existed prior to the appearance of the Industrial Growth Civilisation; the extended family, the neighbourhood, the community, the village, region, state or nation, even the living Earth itself that would seek protect

the individual person from the power of the corporation are seen as suspect, or illegitimate. They are to be swept away by the globalisers, or co-opted to its needs for limitless growth. This dysfunctional behaviour is kept in place by these forms of mass insanity.

One thing is certain. Any system that cancerously feeds upon itself, demanding ever increasing economic growth as the sign of its health, like a junkie needing an ever bigger fix, cannot long survive. Insanity results when work becomes the addictive means to an end, and that end is to satisfy one's equally addictive wants. But in order to keep the economic system growing new wants and desires need to be continually created. Advertising has become one of the world's biggest and most lucrative industries, brainwashing new generations of consumers. In its distractions, denial and avoidance, it seeks to prevent us ever really coming to obey the injunction of the ancient Oracle at Delphi of "Know Thyself" and "Nothing in Excess". Forever trapped as teenagers into our adult years, the modern world "system" seeks to stop us from ever really coming to truly "Knowing Ourselves" or living in the balance of "Nothing in Excess". At what a cost!

Already a serious reduction in human population on Earth is inevitable. The question only remains, how will this be achieved - by the natural forces of nature, the increase in war, pestilence, famine and disease, as in the past, or by a culture sufficiently enlightened to be able to adapt sustainably to the dwindling environmental realities in which it finds itself. If it is the former, we are on the cusp of a Dark Ages more severe than any yet seen in history. If it is the latter, we may yet, by the skin of our teeth, manage to find a way through to survival and security for our children's children, of a kind previous cultures have only dreamed about.

In either case it is now up to us all, as groups and individuals, to start preparing as best we can for the world that is to follow. And time is running out. The collapse of the Western Roman Empire, that took nearly three centuries to achieve, was limited by the speed of transport and communications. Their environmental depredation was miniscule by comparison to those of the modern world. And our speed of transport and communication is ensuring that everything is happening faster and faster. Given this reality what resources exist that enable us to recover our sanity? Perhaps Gaia itself, through Dragon Dreaming can help.

¹ Here I accept the premise of "World Systems Analysis" developed principally by Immanuel Wallerstein, Samar Amin, Giovanni Arrighi and Andre Gundar Frank, that the world comprises a single integrated hierarchical system comprising a structure of socio-political, economic, cultural and ideological elements, and that nation states are not, and never have been, completely autarchic elements, but since their creation in international law in the Treaty of Westphalia in 1648, as confined in the Treaty of Utrecht in 1715, have been parts of a systemically integrated economy that has spread over time to cover the entire planet.

² The global environmental system, discussed by “geophysicologists” as “Earth Systems Theory”, has developed as a result of the debate about the Gaia Hypothesis of James Lovelock and Lynn Margulis.

³ This concept adopted for the first time its modern guise, in the inauguration speech of US President Harry S. Truman in 1947, when following example the Marshall Doctrine which had enabled the redevelopment of war-torn Europe, he spoke of the need to “develop” those societies which had not benefited from Western scientific and technical progress.

⁴ Greeks spoke of Barbaroi (“stutterers”), and considered anyone who did not accept the process of Hellenisation, as barbarians. Romans equally saw fluency in classical Latin as the hallmark of civilis, the townspeople recognised as superior, from which our word civilisation comes. Other cultures have adopted similar standards to which those they recognise as “inferior” should aspire.

⁵ After two hundred years of progress since the elimination of the slave trade by ships of the British Empire, the number of slaves world wide is growing again. In West Africa, ships carrying slaves once again are throwing their human cargo overboard. In India and Pakistan, debt slavery continues to be a problem despite its illegality. Even in the USA, with over 2.3 million prisoners, often contracted out to work as unpaid workers for multinational corporations, a new form of privatised prisons is seeing the return of slavery, a high proportion of them being black.

⁶ The late Robert Theobald, the independent futurist who invented the term “the Information Society”, spoke of the way, as a result, “things are getting better and better, and worse and worse, faster and faster”.

⁷ The discounting of the future has been identified in the Pearce Report, “Blueprint for a Green Economy”, as one of the major factors preventing the growth of a truly sustainable economy.

⁸ Stress related disorders, environmental cancers, auto-immune diseases, allergies, and rising levels of infertility are all “diseases” symptomatic of rapid environmental and cultural change.

⁹ Eckhart Tolle “Now”

¹⁰ Greenberg Quinlan Rosner Research on the “Coming of Age in America” report number 3 (<http://www.youngvoterstrategies.org/index.php?tg=fileman&idx=get&id=1&gr=Y&path=Research&file=Youth+Monitor+Part+III.pdf>. January 2 2008) reports that 87% of young Americans think environmental disasters are likely, 81% expect another terrorist attack on the USA, 71% expect environmental damage from global warming, 69% expect large scale riots, 58% expect World War III, and 44% expect a nuclear attack on the USA. It was findings such as this in the late 1980s that led the Peace Education Foundation, and the newly formed Gaia Foundation of Western Australia, to engage in the “Pathways to the Future” program, mentioned in a future chapter.

¹¹ Economic comes from the Greek “oikos”, meaning “household”, and “nomos”, a “steward”. Development comes from “de” the suffix meaning “the contrary”, “volup” from the later Latin, meaning “to enclose, conceal or hold down” and “-ment” means “a process of”.

¹² “Too much and too long, we seem to have surrendered community excellence and community values in the mere accumulation of material things. Our gross national product ... if we should judge America by that - counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for those who break them. It counts the destruction of our redwoods and the loss of our natural wonder in chaotic sprawl. It counts napalm and the cost of a nuclear warhead, and armored cars for police who fight riots in our streets. It counts Whitman's rifle and Speck's knife, and the television programs which glorify violence in order to sell toys to our children.

“Yet the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages; the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to our country; it measures everything, in short, except that which makes life worthwhile. And it tells us everything about America except why we are proud that we are Americans.”

Bobby Kennedy at University of Kansas, March 18 1968. From <http://www.mcombs.utexas.edu/faculty/Michael.Brandl/Main%20Page%20Items/Kennedy%20on%20GNP.htm> January 2, 2008.

¹³ Before Adam Smith, the first attempts of estimating national wealth were initiated in England and France in 17th century. Pierre Boisgillebert (1646 – 1714) in France assumed that it was the result of

the agricultural productivity of its lands, whilst William Petty (1623 – 1687) in England in 1665 assumed wealth was the annual income and that this was equivalent to annual consumption of the total population. In 1843, George Tucker prepared the first national income estimation of America. In that century, many European countries prepared official estimation usually for taxation purposes.

¹⁴ James E. Meade, 1907-1995 and Sir John Richard Nicholas Stone, 1913-1991 “*National Income and Expenditure*” (1944) presented a system by which GNP could be collected.

¹⁵ Hazel Henderson (1981) “Politics of the Solar Age” (Doubleday) and (1980) “Creating Alternative Futures: The End of Economics” (Pengee). Henderson is an independent economist who was inspired by the fact that economics fails to take account of the cost of child care or the work of women in the domestic economy as part of economic wealth. Kuznets had earlier tried to get such costs internalised into the figures of the GNP but failed.

¹⁶ This accounting for domestic, community and environmental “externalities” as a way of changing the National Accounts figures were suggested in the 1940s, but they have been resisted amongst economists because of difficulties as to how these factors could be measured in financial terms.

¹⁷ Herman E. Daly and John B. Cobb (2nd Edition, 1994), “For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future” (Beacon Press), tried to popularise this method. While it has been used by various groups, such as Clive Hamilton of the Australia Institute, and the Index of Sustainable Economic Welfare, or the Genuine Progress Indicator, has been calculated for many nations, it is still resisted by conventional economists.

¹⁸ Since the 1955 Bandung Conference, following the suggestion of Nehru, we have spoken of the “Third World” to distinguish those countries which sought a pathway to “development” which was neither Capitalist or Communist. Irving Horowitz (1966) made use of these terms in his “Three Worlds of Development: The Theory and Practice of International Stratification” (Oxford University Press).

¹⁹ This is true of most nations. India, USA, Australia and the former Soviet bloc, all show widening gaps between “have” and “have-not” sections of the population, with the situation of the poorest worsening at the same time we see rapid increases in the income of the richest.

²⁰ These social programs began as a result of the “corporate state” structures of Fascist Italy and Nazi Germany, contributing to their recovery from the 1930s Depression. They were picked up by Roosevelt’s “New Deal”, and after the war were incorporated into the Butler and Beveridge plans for the expansion of National Education and Health Schemes in Britain. They became an important part of the “mixed economy” that moderated the socially divisive aspects of Capitalism, needed to assist the “free world” in combating the competing ideology of “international communism”. Winding back Welfare State spending on Health, Education and Welfare since the fall of Communism, has become part of the neo-conservative “Washington Consensus” of the IMF, World Bank and World Trade Organisation.

²¹ See Klein, Naomi (2007), “The Shock Doctrine: the rise of disaster capitalism” (Metropolitan Books)

²² See John R. Jay “Conservatism, Authoritarianism And Related Variables: A Review And Empirical Study” <http://jonjayray.tripod.com/ma.html> from 7 September 2005 for a good analysis of these.

²³ Klein, Naomi op cit.

²⁴ Worldwatch Institute “Vital Signs, 2001-2002” (Earthscan, NY)

²⁵ The utilisation of the mineral resources of Antarctica could change, in a resource hungry world. See Maarten J. De Wit (1985) “Minerals and Mining in Antarctica, Science and Technology, Economics and Politics” (Clarendon Press)

²⁶ The US Business Cycle Dating Committee, National Bureau of Economic Research, monitors such cycles. For example see <http://www.nber.org/cycles/november2001/> (31 December 2007)

²⁷ Harold C. Brookfield (1975) “Interdependent Development” (Mentuen, examines such business cycles as Schumpeter’s.. For a list of Schumpeter’s works see <http://cepa.newschool.edu/het/profiles/schump.htm> (31st December 2008)

²⁸ Korten, David (2001), “When Corporations Rule the World” (Berrett-Koehler)

²⁹ This was predicted in the 19th century. For example "Lord Kelvin startled us not long ago by affirming that there was only oxygen in the atmosphere sufficient to last mankind for some 300 years, and that the world was doomed to die of suffocation. Everyone knows that in an atmosphere devoid of oxygen no animal being can live for long. Put a mouse under an air-tight glass containing some burning substance that exhausts the oxygen, and it will be speedily suffocated. Thus will it be (so says Lord Kelvin) with man, who is himself lighting the fires for the suffocation of his progeny.

On an average it requires three tons of oxygen to consume one ton of fuel, and the oxygen that exists in our atmosphere is practically all the supply available for the purpose. As shown by the barometer the average weight of the air is 14.9 pounds to the square inch, which gives a total weight for the earth of 1,020,000,000,000 tons of oxygen. At the rate of three tons of oxygen to one ton of fuel, the weight of fuel which can be consumed by this oxygen is 340,000,000,000 tons.

Now to see how the oxygen can keep pace with the fuel. The whole world consumes about 600,000,000 tons of coal a year, and to this must be added the consumption of oxygen by wood and other vegetable substances which raises the equivalent coal consumption of the world to not less than 1,000,000,000 tons a year.

Thus, even at the present rate of fuel consumption there is only oxygen to last 340 years, and long before this time the atmosphere would have become so vitiated with carbonic acid gas, and so weakened in oxygen, that either we should have to emigrate to some other sphere, or else give up the habit of breathing altogether.

Following in Lord Kelvin's footsteps, Professor Rees, a prominent American scientist, has been going further into the question of the exhaustion of the air supply of the world. He gives definite warning of the coming "failure" of the air.

"Free as the air we breathe," he writes, will, in the distant future, become an out-of-date, misleading expression. Air will no longer be free, for it will be manufactured and sold like any other necessary. Those who will not work for their daily air supply, and who cannot afford to buy it, will perish, for Nature will have exhausted her supply. The artificial air will be stored up in enormous reservoirs, and to these receptacles applicants will come for their daily supply of oxygen. This will then be carried home and doled out to the family as part of the day's means to support life. The manufactured oxygen will be breathed in as a diver inhales the air supplied him when he sinks beneath the waves.

"'Died from air starvation' will be a common verdict in the coroners' courts of the future, for 'no money, no air,' will be the rule of life. The wealthy will gain a reputation for charity by free gifts of air to the aged poor at Christmas time. Men and women will no longer be able to look at each other with eyes of love, for everyone will be clothed in a great air helmet, like a diver of to-day."

<http://www.forgottenfutures.com/library/wend/wend.htm> January 2, 2008

³⁰ Fine, Ben and Jomo K.S. (2005) "The New Development Economics: Post Washington Consensus Neoliberal Thinking" (Zed Books) examines the Washington Consensus of the World Bank, the International Monetary Fund, and the World Trade Forum, through its "structural adjustment" and development loans, have forced poor countries to dismantle social welfare, education and health structures, privatise assets, and replace import replacement and economic self sufficiency programmes with measures which benefit the rich.

³¹ Garret Harden's book "Tragedy of the Commons" drew upon an argument used since the days of Aristotle, suggesting circumstances where individually beneficial actions were collectively disastrous. Conventional economics suggests that the way to overcome this problem was to privatise the asset, destroying the collective control. Used in many areas, including certain kinds of Darwinism, it suggests that altruism or acting in collective interest was impossible. As we shall see later in this book, the need for collective action, rather than being abolished in such circumstances, is augmented.

³² Kreps, David (1990), Game Theory and Economic Modelling (Oxford University Press)

³³ Britain for instance, at that time contained Gaelic speaking Scots and Irish, Welsh and Cornish speakers, under the authority of a dominant English speaking population. France was divided linguistically between Langue d'Oil (modern French) and Langue d'Oc, a language having more in common with Catalan in Spain than with French. It also had important Breton speaking population. Spain in addition to the Catalan population, had people speaking a Galician dialect closer to Portugese, and Basque, which of course still is probalematic for the Spanish government.

³⁴ Phillips, Keven (2006) "American Theocracy: the peril and politics of radical religion, oil and borrowed money in the 21st century" (Viking Press, ISBN 0-670-03486X)pp.325-7

³⁵ See <http://www.globalissues.org/Geopolitics/ArmsTrade/Spending.asp>

³⁶ Thomas Malthus "An Essay on Population" Chapter 2
<http://www.ac.wvu.edu/~stephan/malthus/malthus.2.html>

³⁷ Eva M. Hubback "The Population of Britain" Pelican Penguin Books Lond.1947

³⁸ Carlo M. Cipolla (1962) "The Economic History of World Population" Pelican Books Lond.

³⁹ Bjorn Lomborg (2001) "The Skeptical Environmentalist: Measuring the Real State of the World" (Cambridge University Press) argues that environmentalists have exaggerated their case in the name of gaining political power.

⁴⁰ This is also the conclusion of Robbie Robertson (2003) in his recent book "Three Waves of Globalisation: a History of a Developing Global Consciousness" (Zed Books). He shows that the earlier phases of globalisation, in not addressing problems of unequal distribution of the benefits, finished in periods of war and revolution.

⁴¹ Russell Claire and W M S Russell. (1999), "Population Crises and Population cycles" (the Galton Institute, London) ISBN 0-9504066-5-1

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⁴² Heinberg, Richard (2003) "The Party's Over: Oil, War and the Fate of Industrialised Society" (New Society Publishers), also (2004) "Power Down: Options and Actions for a Post-Carbon World" (New Society Publishers), and (2007) "Peak Everything: Waking up in a Century of Declines" (New Society Publishers)

⁴³ Diamond, Jarrad (2004) "Collapse: How Societies Fail or Succeed" (Viking), although it did not address the issue of Peak Oil, showed how through the destruction of forests and increased rates of soil erosion, when coupled with environmental change, were three of the major factors, together with rising levels of violence and the collapse of long-distance trade, that led to the collapse of a large number of societies around the world. Tainter, Joseph (1996) "The Collapse of Complex Societies" (Cambridge University Press), had previously shown how we are in an age of negative returns to complexity, where further increases in complexity, are reducing the quality of life. This is what happened in a number of other societies, like the third to fifth century Western Roman Empire. Jacobs, Jane (2005) "Dark Age Ahead" (Vintage), shows how the depletion of Social Capital in important social institutions is propelling the USA in particular and North America in general in the direction of a collapse analogous to that of ancient Rome. Berman, Morris (2006), "Dark Ages America: the Final Phase of Empire" (W.W. Norton), shows how the rise of religious based obscurantism, mass ignorance and political fascism in the USA have foreclosed the US future.

Homer-Dixon Thomas (2006), "The Upside of Down: Catastrophe, Creativity and the Renewal of Civilisation" (Island Press), integrates much of the other work by showing how a falling energy return on investments produces a collapse of civilised life, but, based upon the work of "Panarchy", suggests that collapse can be a time of enormous creativity and cultural renewal. Finally in Jensen, Derrick (2006), "Endgame: the Problem of Civilisation" (Vol I and II, Seven Stories Press), the author shows that all civilisations are the result of exploitative power and domination of nature and other humans, and the end of civilisation would be a good thing.

⁴⁴ Karl Marx (1852) wrote "Hegel remarks somewhere that all great world-historic facts and personages appear, so to speak, twice. He forgot to add: the first time as tragedy, the second time as farce" ("The Eighteenth Brumaire of Louis Napoleon,")

⁴⁵ Unlike democratically run cooperatives, run on the basis of "one cooperator, one vote", our corporations are based upon votes proportional to one's capital shareholding. This gives control to the wealthy and disenfranchises the poor.

⁴⁶ At the moment, China, whilst only consuming 8% of the worlds total oil production, is responsible for 37% of the world's increased demand for oil. This figure is unlikely to decline and may well increase.

⁴⁷ <http://www.wri.org/biodiv/intl-ii.html> 24 June 2002

⁴⁸ *A New Digital Georeferenced Database of Soil Degradation in Russia* by Vladimir Stolbovoi and Günther Fischer <http://www.iiasa.ac.at/Publications/Documents/IR-97-084.pdf>

⁴⁹ This analysis has been in part drawn from the recent book by Richard Heinberg (2003) "The Party's Over: Oil, War and the Fate of Industrial Societies" (New Society Press)

⁵⁰ Arnold Toynbee, (1987) "A Study of History" (Abridged in 2 volumes) (Oxford University Press)

⁵¹ Joseph Tainter, (1990) "The Collapse of Complex Society" (Cambridge University Press)

⁵² Jarred Diamond, (2004) "Collapse: how societies choose to fail or succeed" (Viking Press)

⁵³ Robert D. Kaplan (2000) in "The Coming Anarchy: Shattering the Dreams of the Post Cold War" foresees a host of terrors in the post Cold War, stemming from the volatile democracies of the ex USSR, tribalism, civil war, and ethnic violence in Africa and the Middle East, widespread famine and disease as the rift between the boundless technology of wealthy nations sees the rest of the world slip into chaos. Morris Berman in his fourth book, "The Twilight of American Culture" (2000) shows that a collapse of civilisation is well underway in contemporary USA. This view would seem confirmed by the earlier economic writings of Ted Trainer "Abandon Affluence" (1985), and "Developed to Death; Rethinking Third World Development". It would appear that the question now confronting us should be not, how can the collapse into a Dark Ages be prevented, but how can their "darkness" be minimised. Morris Berman, suggests that a 21st new monasticism involving sustainable community living, a love of learning, voluntary simplicity, and earth-based technologies are urgently needed to minimise the difficulties expected. Writers like Thom Hartman, Richard Heinerg and Ted Trainer would support this view.