Nihilism Incorporated

European Civilization and Environmental Destruction

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Contents

PREFACE

In this work I have attempted to explain the failure of humanity to effectively confront the global environmental crisis, and thereby to show what is required to overcome it. It is argued that the destruction of the environment on a global scale is the final outcome of the expansion and domination of the world by European civilization, a civilization which is inherently destructive and implicitly nihilistic. The failure to respond to a crisis threatening all humanity and most other life forms is symptomatic of this nihilism. Environmentalists have failed because they have not fully appreciated the nature of this civilization, an appreciation which requires an understanding of the history and dynamics of European culture and its offshoots from Ancient Greece to the present. This focus on culture does not exclude concern with the economic determinants of environmentally destructive behaviour. The work is designed to facilitate a deeper understanding of the imperatives of global capitalism, and at the same time to reveal the possibilities open to people to create a social order free of these imperatives.

Nihilism Incorporated (and its sequel, *Beyond European Civilization*) were conceived in courses of lectures on environmental philosophy given at the University of Queensland in 1981 and at the University of Western Australia in 1983. However the writing of these books has taken place over an extended period, and further research has brought me into contact with specialists in a wide range of disciplines. This forced me to question anew the nature of inquiry, of questioning the past and constructing historical narratives, and of understanding and describing other cultures and societies. This in turn has created another problem - to what audience are these works addressed? Initially I struggled for a compromise between readability for a general audience and the standards of intellectual rigour set by the diverse and to some extent competing disciplines whose domains I had invaded. I have now come to realize that it is the acceptance of and accommodation to existing audience differentiations which fractures efforts to confront the problems of society, that it is essential to work towards the creation of an audience which destroys such differentiation if a movement able to solve these problems is to be created. These books are meant as an attempt to undermine institutionalized audience differentiation.

Carrying out research and writing the books involved swimming against a number of different streams. Consequently I feel very deeply indebted to those who have supported my research. This includes students of environmental philosophy at the institutions I have taught, my colleagues in Perth: Ruth Barton, Michael Booth, Robert Flower, Barry Maund, Graham Priest, Ian Rowe, Leigh Smith and Peter Vintilla; Charles Birch who encouraged me to continue my work despite an academic environment unfriendly to efforts to transcend disciplinary boundaries, Robert Cohen for hosting my research at Boston University, Valeria Russo for sharing her profound knowledge of Marxist history of science, Douglas Weiner, whose work on Soviet environmental history and Russian culture added a whole new dimension to my work, and Val Plumwood and Richard Sylvan who have read pieces of my work and encouraged my efforts. I am particularly indebted to Richard

Sylvan for his assistance in publishing the work. I am also indebted to a number of institutions. These include the Western Australian Society for the History and Philosophy of Science and Curtin University for granting me a research fellowship in 1984, the Australian-American Educational Foundation for granting me a Fulbright Post-doctoral Fellowship in 1985, the Center for the Philosophy and History of Science, Boston University for hosting my stay in U.S.A., and Curtin University again for a further research fellowship in 1988. Finally I am indebted to my parents, Nene and Frank Gare, and my wife, Jennifer, to whom this book and its sequel are dedicated.

30th May, 1993.

INTRODUCTION

Mexico City was described in a lead article in *Time* magazine. The article began:

> When the ragged and exhausted Spanish conquistadors first beheld the lake-encircled capital of the Aztecs one November morning in 1519, they were stunned by its grandeur. A shining metropolis of some 300,000 people, far larger than any city in Europe, Tenochtitlan displayed immense stone temples to the gods of rain and war and an even more immense royal palace, where Aztec nobles stood guard in jaguar-head helmets and brightly feathered robes. In the nearby marketplace, vendors offered an abundance of jungle fruits and rare herbs and skilfully wrought creations of silver and gold. 'The magnificence, the strange and marvelous things of this great city are so remarkable as not to be believed,' Hernando Cortés wrote back to the imperial court of Charles V. 'We were seeing things,' Bernal Díaz del Castillo recalled in his memoir of the Spanish invasion, 'that had never been heard of or seen before, nor even dreamed about.'
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> A newcomer today is more apt to arrive by air, and before he even glimpses the dried-up bed of Lake Texacoco, now edged with miles of slum hovels, the first thing he sees is the almost perpetual blanket of smog that shrouds the entire city. It is an ugly grayish brown. There is something strangely sinister about it - a cloud of poison. The pilot orders the seat belts tightened and announces an imminent descent into the murk and filth.[1]

The lakes and flower gardens of Tenochtitlan have disappeared. In the last quarter-century Mexico City has lost 75% of its woodland, and 14 million saplings planted between 1976 and 1982 withered and turned yellow within a few years. Drawing water from the subsoil has caused parts of the city to sink, sometimes up to 30 feet. Caged birds placed in the middle of the city die within two hours and birds, their lungs laden with lead and cadmium, have begun to drop from the sky. 70% of newborn babies now have high lead content in their blood. The level of ozone tripled between 1986 and 1988. Pollution is killing 30,000 children each year through respiratory and gastro-intestinal diseases, and may be responsible for the deaths of 100,000 people a year. The vast majority of Mexico City's population of more than 20 million, the descendants of the Aztecs, are living in the appalling poverty of the slums, more than 3 million without sewage facilities.

Mexico City symbolizes the success with which Western European civilization has conquered and subjugated almost every other civilization and culture over the past five hundred years, the impoverishment of the survivors of this conquest, and

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1. Otto Friedrich, reported by Ricardo Chavira and David DeVoss, 'A Proud Capital's Distress: Overcrowded, polluted, corrupted, Mexico City offers the world a grim lesson', *Time*, August 6, 1984, pp.14-21.

the future in store for the world if this civilization continues to progress on its present path. It symbolizes the strengths and weaknesses of this civilization: the prodigious developments in technology, and the systematic blindness to, and incapacity to deal with, the destructive side-effects of these developments. This failure is most fully manifest in the destruction of the natural environment and the oppressive environments people are creating for themselves.

Environmental degradation is the most important complex of problems ever confronted by humanity. Humans are interfering with the world's ecosystems so severely that they are beginning to undermine the conditions for their own continued existence. They are polluting the air, the oceans and the land. They are rapidly exhausting the reserves of minerals and destroying the resources of the world on which civilization depends, while destroying other life forms on a massive scale. At the same time humans are increasingly enclosing themselves in built environments which isolate them and fragment their lives, destroy their health and reduce them to either the dehumanized instruments of military-industrial complexes, or to abject poverty. The problem of the environment is also the problem of over-population, the disproportionate consumption of resources by Western nations and the starvation of those in the Third World who lose out in the struggle for the remainder. If present trends continue the total destruction of civilization is probable within a few hundred years - and the extinction of the human species is a real possibility.

This situation also presents the greatest intellectual challenge of the era. It undermines the traditional idea of economic progress - the ultimate evaluative concept and the virtual *telos* of European civilization. It brings into question the economic, legal, political and ethical institutions of modern societies and the modes of thought on which they are based, including the natural and social sciences and the institutions supporting them. In doing so, it opens up the most fundamental questions about human existence: the nature of knowledge and value, of meaning and rationality, and of the significance of life itself. Confronting the environmental crisis requires a complete review of the way we think of ourselves and our place in the world.

But in presenting these social and intellectual challenges to humanity, environmental problems reveal not only the total inadequacy of prevailing modes of thought, but also the nihilistic attitudes which dominate the modern world. They reveal the imperviousness of governments to the obvious irrationalities of the present economic order and their unwillingness to do anything to seriously tackle the world's long-term problems. They reveal a political world dominated by politicians, corporation chiefs, bureaucrats, media, military and intelligence moguls who are devoid of ideals and principles and for whom the struggle for power has become mere sport. The recent patina of concern for the environment shown by opportunistic politicians can hardly be taken seriously. They remain committed to economic growth, deregulation of the market and consumerist values which together make increasing environmental destruction inevitable. The attitude of corporation chiefs to environmental problems is illustrated by the announcement of British Petroleum that to refurbish its image as an environmentally sensitive corporation it will paint its service stations a more conspicuous green. The environmental crisis also reveals widespread indifference by most people in the affluent countries to the damage they are doing to nature, to the poor of the world and to future generations. It makes apparent their fascination with military power and their readiness to support oppression to force others to bear the costs of their own life-styles. And it reveals the poverty of the academic world, a world in which education is being reduced to vocational training, knowledge to a commodity and all critical discourse

is being eliminated. Most academics do not even question the fragmentation of inquiry and the noise explosion engendered by the publish or perish syndrome, though this is now burying knowledge rather than advancing it. And what may be worse, where fundamental intellectual and social problems are excluded from consideration in mainstream academic life because they cannot be encompassed within established disciplinary boundaries.[2] Such pusillanimity reflects the tacit acceptance of the prevailing world-orientation according to which the world itself is devoid of meaning, life is just a struggle for survival and for power in which the destruction of the weak is inevitable, knowledge is simply a means to control the world, and the only real values in life are survival, pleasurable stimuli and entertaining distractions. The belief that there is something more noble to life has lost its foundations. As Nietzsche wrote of the modern predicament: 'the highest values devaluate themselves. The aim is lacking; "why" finds no answer.'[3] This nihilism must be confronted if humanity is to meet the challenge of the environmental crisis.

In this work it will be argued that environmental problems and the nihilism underlying the failure to confront them are manifestations of basic deficiencies in the world-orientation which dominates throughout the world. The roots of these deficiencies will be shown to lie in metaphysical notions that originated in Ancient Greece, were developed in medieval Europe, incorporated into mechanistic materialist science, assumed by economic theory and institutionalized in capitalist society. With the development of capitalism and the elaboration of mechanistic materialism into evolutionary theory, Social Darwinism and information theory, these notions have come to inform almost all the practices of those people who now dominate the world. They underlie the concepts in terms of which people define themselves, their relationships to each other, to society and to nature. They provide the basis on which people make their decisions about how to live and what to do. In this way they largely have come to constitute the existing social order so that people are enmeshed in a framework of defective concepts which defines their reality and limits their comprehension: they have great difficulty in perceiving or thinking about anything not intelligible in terms of these concepts. It is not only that these concepts have blinded people to the intrinsic value and fragility of their world, though this is important. By disorienting them and frustrating their potentialities, they have also engendered aggression, nihilistic violence and destructive social dynamics which exceeds the comprehension of most people. Environmental problems reveal the deep-rooted nature of these deficient metaphysical notions.

By revealing the defective assumptions underlying the environmental crisis I will show the necessity for a ‘metaphysical revolution’ – or in postmodern terminology, the necessity for a new ‘grand narrative’. However, before the kind of fundamental reorientation required to overcome the environmental crisis can be seriously entertained it is necessary to comprehend the assumptions which dominate the existing social order. People take such assumptions so much for granted that until these are exposed I is impossible to appreciate that the world could be understood in a fundamentally different way. Questioning these assumptions presents difficulties unlike those confronting any other intellectual pursuit. Societies have developed in such a way that the forms of thought which have been embodied in all their major social institutions presuppose their validity. To challenge the prevailing

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2. Increasingly, natural scientists are addressing the issues, but social scientists, economists and philosophers who have taken up environmental issues have been marginalized by their academic colleagues.

3. Friedrich Nietzsche, *The Will to Power*, tr. Walter Kaufmann, N.Y.: Vintage, I, 2, p.9.

metaphysical assumptions and to attempt to develop an alternative metaphysics is to set out on tasks which have been more than simply censured. This enterprise is now barely acknowledged to have any meaning at all, and the forms of reasoning associated with it have almost no acknowledged status.

This presents the problem of where to begin. The approach I will adopt will be to assume the validity of the new metaphysics as a starting point and to analyse the ideas and modes of thought dominating the modern world from this perspective. The prevailing metaphysical assumptions and their deficiencies are exposed by using the new metaphysics as a framework for analysing environmental problems, the deficiencies of prevailing ethical and political thinking (manifest in the intellectual responses to these problems), and the relationship between modes of thought, social dynamics and environmental destruction in the evolution of Western European civilization. In this way I hope to establish an initial plausibility for this metaphysics.

In the sequel to this work, *Beyond European Civilization: Marxism, Process Philosophy and the Environment*, I will show how a metaphysical revolution can be effected. To begin with, I will examine the established opposition to the dominant Western European forms of thought: Marxism. To evaluate Marxism I will analyze the metaphysical roots of Marx's thought. Marx mediated between two metaphysical traditions: a radical form of Neoplatonism and mechanistic materialism, and partially transcended both of these and developed idea which can only be interpreted in terms of a Heraclitian or process view of the world; but Marx never fully transcended either Neoplatonism or mechanistic materialism, and the consequent inconsistencies in his thought have been manifest in the way Marxism was developed and incorporated into Soviet society. While this shows that Orthodox Marxism could not be regarded as a real alternative to forms of thinking which dominate people in the West, there is reason to hope that the Heraclitean aspects of Marxism, which were submerged in the Soviet Union and in Orthodox Marxism, could have some potential. What is required is the consistent reformulation of Marxist thought through process philosophy before this potential can be realized.

This will show that if environmental problems are to be seriously confronted and society transformed accordingly, then one of the most important practical tasks confronting humanity is the development of a new metaphysics. In the remainder of *Beyond European Civilization*, a version of process philosophy, which is assumed in the present work and which will have been assumed up to this stage of *Beyond European Civilization*, will be presented and explicitly defended. A dialectical theory of knowledge, in which the goal of disciplined inquiry is taken to be understanding, is defended, showing the indissociable relationship between science and metaphysics. A categorial scheme is outlined and it is shown how this systematizes the alternative grand research programme for the sciences inspired by process philosophy. In terms of this scheme, the world is understood as a process of creative becoming continually generating emergent processes. Humanity itself is then represented and explained as a complex of emergent processes, thereby resolving the most important problems in the philosophy of mind and philosophical anthropology: the relationship between mind and body, consciousness and the world, thought and action, freedom and determination, and the individual and society. This conception of humanity is used to formulate a new ethical and political philosophy, the foundations for a reflexive, critical science of humanity - designed to reveal to people what they are and what role they can take in the creation of the future, and to elaborate a new grand narrative of liberation. It is shown how this will enable people to transcend the prevailing nihilism, to effectively confront the

environmentally destructive tendencies of society and to create new forms of relationships between people and between humans and the rest of nature. In this way this metaphysics is offered as the foundation an alternative culture to oppose and to replace the culture which underlies the existing economic, social and political world order; the foundation for a new, environmentally sustainable civilization.

1

ECOCIDE AS APPLIED NIHILISM

This chapter will explore the dimensions of the contemporary environmental crisis. This is a more difficult task than it appears. The view of environmentalists was summed up by Thomas Sancton when he argued in *Time* magazine:

> Let there be no illusions. Taking effective action to halt massive injury to the earth's environment will require a mobilization of political will, international cooperation and sacrifice unknown except in wartime. Yet humanity is in a war right now, and it is not too draconian to call it a war for survival. It is a war in which all nations must be allies.[1]

But this is not the view of the business leaders, politicians, bureaucrats and technocrats who dominate the world. Such people are more inclined to believe, as Herman Kahn and his colleagues argued in opposition to environmentalists, that: '200 years ago almost everywhere human beings were comparatively few, poor and at the mercy of the forces of nature, and 200 years from now, we expect, almost everywhere they will be numerous, rich and in control of the forces of nature.'[2] Establishing that there is an environmental crisis is not simply a matter of pointing to the facts to refute this view. The way the situation is interpreted is largely an expression of people's basic assumptions about the nature of the world and their place within it.

According to the assumptions of most people in positions of power, there cannot be an environmental crisis. There can only be more or less efficient control of nature, and separate, isolated environmental problems which can be treated independently of each other. Since life is assumed to be essentially a struggle against others for survival, problems are taken to be of significance only when someone's own interests are affected. The destruction of other businesses, other people and other species is just part of life, part of economic, political and evolutionary progress in which the weak and inefficient are being weeded out by the strong and efficient. Those who see a global environmental crisis on the other hand, do so because they are tacitly rejecting such assumptions. Environmentalists tend to see ecosystems not just as groups of individual organisms but as fragile communities. They tend to see a global politico-economic order threatening the stability of the world ecosystem as a whole. More significantly, despite the prevailing culture, many environmentalists see intrinsic value in the world: in non-human life, in the lives of the impoverished in the peripheries of the world economy,

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1. Thomas A. Sancton, 'Planet of the Year', *Time*, Jan.2, 1989, p.14.

2. Herman Kahn, William Brown and Leon Martel *The Next 200 Years: A Scenario for America and the World*, London: Associated Business Programs, 1977, p.1.

in human potentialities beyond the capacity to survive and consume, and in the future of humanity and of life on earth. They refuse to accept the nihilistic implications of the prevailing culture. As such they are seen as immature, wooly-minded idealists unable to face reality.

Between these poles lie a multiplicity of perspectives on the environment associated with different standpoints, different social and cultural contexts and different life experiences. Environmental problems are defined differently through different social systems and discursive formations - scientific, political, economic, educational and legal, and through different media, quite apart from how they are defined through different cultures and from the standpoints of different regions, different nations and different social classes. Such a multiplicity of perspectives highlights the problematic status not only of any claim that there is a global environmental crisis, but also the 'God's eye' perspective assumed by any effort to characterize the global situation.[3] It has to be recognized that the very idea of a global environmental crisis is a social construct produced by a certain class of people from particular social, cultural and institutional standpoints.

That the global environmental crisis is a construct from particular standpoints will be accepted here, not in order to subvert its claim to truth, but to show how it is possible to achieve a global perspective from particular standpoints, and to defend such a construct as essential to humanity's continued self-creation as a viable process within nature. To do this, and to reveal the nature and extent of environmental problems, an orientation to the world in terms of which the situated nature of all such aspirations, concerns and values are acknowledged, but the aspiration to achieving a global perspective from which the concerns and values of the environmentalists can be justified, will be presupposed. The environmental situation will be described from this orientation and this global perspective, bringing together the variety of issues which have aroused the concerns of people from all walks of life by seeing the world as consisting of interacting processes with various degrees of stability, dependence and independence. The dominant social processes will be portrayed as destructive of the processes of nature on which humanity is dependent, and destructive of other social processes which could control these destructive processes. The picture which will be conveyed is one in which, as Richard Barnet put it: 'There is a misfit between politics and the natural order which neither economists nor scientists nor corporate executives nor government bureaucrats quite understand.'[4] It is a world in which people are living and acting rationally in terms of prevailing assumptions; but in doing so are producing effects far beyond their intentions. They remain blind to these effects because they continue to interpret the world in terms of these assumptions.

The Degradation of Non-Human Life

Such blindness is clearly evident in the degradation of non-human life. Nearly forty per cent of the earth's land-based photosynthetic activity is now devoted to human needs or has been destroyed by human activity.[5] Wilderness areas consisting of unique species and ecosystems are being destroyed to make way for domesticated forms of life, while domesticated forms of life are being denatured through breeding

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3. On this see Niklas Luhmann; in *Ecological Communication*, tr. John Bednarz, Cambridge: Polity Press, 1989.

4. Richard J. Barnet, *The Lean Years*, London: Abacus, 1981, p.16.

5. Peter M. Vitousek et. al., 'Human Appropriation of the Products of Photosynthesis', *Bioscience*, June, 1986.

in order to eliminate features not useful to humans. Agriculture throughout the world is being reorganized into large scale, highly mechanized agribusinesses which subordinate everything to the goal of maximising profits. 'Economic progress' is rapidly leading to the state of the world predicted by J.S. Mill:

> ...with nothing left to the spontaneous activity of nature; with every rood of land brought into cultivation, which is capable of growing food for human beings; every flowery waste or natural pasture ploughed up, all quadrupeds or birds which are not domesticated for man's use exterminated as his rivals for food, every hedgerow or superfluous tree rooted out, and scarcely a place left where a wild shrub or flower could grow without being eradicated as a weed in the name of improved agriculture.[6]

Farms are becoming factories in which '[a]nimals are treated like machines that convert low-priced fodder into high-priced flesh, and any innovation that results in a cheaper "conversion-ratio" is liable to be adopted.'[7] Exemplifying this, the three billion chickens killed each year in USA have been bred for easy packaging and are grown factory fashion in filthy, highly overcrowded conditions. The control of life to maximise profits is accelerating with the development of genetic engineering and the construction of 'trans-genic' animals: animals in which genetic material from one breed of animal is spliced onto the genetic material of others. And it is not only farm animals that are caught up in the industrial system. In the United States alone up to 200 million animals, including 250,000 monkeys and apes, are killed annually in experiments testing the toxicity of new chemicals.[8] As a consequence, chimpanzees are now threatened with extinction.

All forms of life, human and non-human, which do not serve the immediate purposes of agribusiness or which compete with it are being displaced or destroyed. There has always been extinction of species. However no species in the past has had as big an impact on other species as humans. Between 1600 and 1900 increased human activity led to the known extinction of roughly one species every four years.[9] Since then the rate of extinction has accelerated alarmingly. As Paul and Anne Ehrlich argued, 'only in the last half century has it become clear that humanity has been forcing species and populations to extinction at a rate greatly exceeding that of natural attrition and far beyond the rate at which natural processes can replace them.'[10] It has been estimated that by the year 2000 up to 20% of all the species which existed in 1975 will have been irretrievably lost.[11] If present trends continue the result will be a biological catastrophe greater than all the mass extinctions of the geological past, including that which led to the extinction of the dinosaurs.

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6. J.S. Mill, *Principles of Political Economy* [1848 and later] *Collected Works*, Vol. III, Toronto: University of Toronto Press, 1965, p.756.

7. Peter Singer; Animal Liberation: A New Ethics for Our Treatment of Animals N.Y.: Avon Books, 1975, p.94.

8. Richard Ryder, 'Experiments on Animals' in *Animal Rights and Human Obligations* Tom Regan; and Peter Singer; eds, New Jersey: Prentice-Hall, 1976, pp.33-47, p.34.

9. Norman Myers, The Sinking Ark: A New Look at the Problem of Disappearing Species, Oxford, N.Y.: Pergamon Press, 1979, p.4f.

10. Paul and Anne Ehrlich, *Extinction*, London: Victor Gollancz, 1982, p.xiii.

11. *The Global 2000 Report to the President*, Gerald O. Barney, Study Director, Harmondsworth: Penguin, 1982, p.3.

The Limits of Resources

While efforts to dominate nature increase, people are increasingly being denied the minimum requirements for life. More than a billion people suffer from serious hunger or malnutrition for at least part of the year, with infants, growing children and pregnant mothers being the most affected.[12] Although it is very difficult to estimate precisely, somewhere around 50,000 people now die each day as a result of malnutrition. Those who survive malnutrition are frequently permanently affected by it. The poor of the world are also facing a 'firewood crisis,' and firewood now consumes a third of their incomes.[13] This situation is worsening.

Deprivation is a consequence of the general destruction of the world's resources: arable land, vegetation, water, fish, minerals and energy. The effect of farming has been to reduce the fertility of the land and destroy vegetation. It has been estimated that, against the 1,500 million hectares of land currently in use for crop production, nearly 2 billion hectares have been lost in historical times.[14] Much of this has been due to soil erosion. K.W. Butzer has estimated that in 150 years the agricultural soil resources of USA have been cut by half, and in some areas such as Oklahoma, a single generation sufficed to destroy almost 30% of the soil matter.[15] However this is insignificant by comparison with the rate of soil destruction in the Third World, and, world-wide, net annual soil loss is now some 26 billion tons.[16] Along with this, 80% of the dry rangelands, 60% of the rain fed croplands, and a third of all irrigated lands on earth are affected by the march of the deserts. 45 million square kilometres are in immediate danger of turning into desert, putting the lives of 850 million people at risk.[17] And about half the world's irrigated land has been damaged to some degree by salinity, alkalinity and waterlogging.[18] 27 million hectares of agricultural land were lost to production in 1980 and this will increase to 100 million hectares per year by 2000.[19] As a consequence of such degradation, grain production has peaked. While between 1950 and 1984 grain production increased by 3% a year, between 1984 and 1989 it increased by only 1 percent, despite billions of dollars invested in agriculture and a 14% increase in the use of fertilizers. At the same time the accelerating destruction of forests is threatening the livelihood of the 140 million people now living in and around closed forests.[20]

Pesticides, fertilizers and modern breeding practices which have been hailed as the saviours of humanity in the struggle for food are now beginning to threaten its supply. In recent years there has been some relief from famine with the cultivation of hybrid strains of rice which produce yields on average three times greater than the old strains. This is the so-called Green Revolution. But this rice produces grain

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12. Lester R. Brown and Erik P. Eckholm 'Man, Food, and Environment' in William W. Murdoch, ed., *Environment: Resources, Pollution and Society*, Sunderland Mass.: Sinauer, 2nd ed. 1975, pp.67-94, p.70.

13. On the firewood crisis, see Bina Agarwal, *Cold Hearths and Barren Slopes*, London: Zed Books, 1986.

14. See Essam El-Hinnawi and Manzur-Ul-Haque Hashmi, *Global Environmental Issues*, for the U.N. Environment Programme, Dublin: Dublin: Tycooly, 1982, p.194f.

15. K.W. Butzer, 'Accelerated Soil Erosion: A Problem of Man-Land Relationships' in *Perspectives on the Environment*, Ian R. Manners and Marvin W. Mikesell eds, Washington: Assoc. of American Geographers, 1974, pp.57-78, p.71.

16. Lester Brown et. al. eds, *State of the World: 1988*, N.Y.: Norton & Co., p.6.

17. From the first report of the Drylands Project, United Nations Environmental Programme, 1987; reported by Julian Cribb, 'Drylands dilemma is a heritage of disaster', *The Australian*, Wednesday, July 22, 1987, p.16.

18. The Global 2000 Report to the President, p.33.

19. El-Hinnawi and Hashmi, *Global Environmental Issues*, p.194.

20. See The Vanishing Forests: A Report for the Independent Commission on International Humanitarian Issues: London, Zed Books, 1986, p.16.

which is deficient in protein, it requires the continual application of fertilizer, it is exceptionally vulnerable to pests and requires enormous quantities of pesticides, and since the same rice strain is now cultivated throughout entire countries there are likely to be years in which crops sustain catastrophic pest damage. Fertilizers are now acidifying the soil and crop yields have started to decline as a consequence. If the same methods of agriculture continue to be used, the soil will be so damaged that there will be lower yields than with the original crops. By then, however, the original strains will no longer be cultivatable, even if they are preserved: old strains are dying out, eroding the genetic potential of crops to adapt to new situations which might arise in the future. Farmers who formerly raised fish in their rice paddies are now deprived of this protein source by the high levels of pesticide in the water. Pesticides are also less effective and increasingly destructive in their side-effects, not only in rice paddies, but in agriculture throughout the world. They are disrupting ecological systems, destroying natural predators and weakening the natural defences of crops, while the pests themselves are becoming immune to the pesticides. Thus in the United States, despite a ten fold increase in the use of pesticides, there was a two fold increase in crop losses due to insects between the 1940s and the 1970s.[21] And monocultural cropping, together with the reduction of genetic diversity through controlled breeding, has increased the likelihood of devastating crop disease.

Despite such problems people still hold out hope for some technological fix, most recently from biotechnology. However genetic engineering has proved more difficult to apply to agriculture than its champions expected, and there is little reasons to believe that expectations will ever be fulfilled. As Lester Brown and John Young have noted:

> As recently as 1984, one writer predicted that "in 5 to 10 years, Saudi Arabia may look like the wheat fields of Kansas." The unfortunate reality in 1989 - when Kansas lost over a third of its wheat crop to drought - was that the fields of Kansas came to resemble the still fallow Saudi Arabian desert.[22]

Further disruption of agriculture will occur as the effects of greenhouse gases come to be felt. Increasing temperatures will also raise the sea level from somewhere between half a metre and two metres over the next century. This will affect 5 million square kilometres, an area encompassing one third of the world's cropland and home to a billion people.[23] A three metre rise would be enough to flood almost all of Bangladesh, (which in 1988 suffered devastating floods due to overclearing of trees in the catchment areas of the Ganges and Brahmaputra Rivers).

Development of cities, the growth of population and new forms of agriculture and industry are producing a critical shortage of water in many parts of the world, including some areas within the affluent nations. While water resources are being developed in many places the benefits from this will be short-lived and the effects frequently deleterious in the long run. A considerable amount of the water now being exploited throughout the world derives from underground aquifers which are being used up faster than they are being replenished.[24] Dams frequently silt up,

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21. See J.C. Harsanyi, 'Rule Utilitarianism and Decision Theory', *Erkenntnis*, Vol.II, 1977, pp.25-54.

22. Lester R. Brown and John E. Young, 'Feeding the World in the Nineties' in *State of the World 1990*, Lester R. Brown et.al. eds, Sydney: Allen & Unwin, 1990, p.68.

23. Jodi l. Jacobson, 'Holding Back the Sea', in *State of the World 1990*, Lester R. Brown et. al. eds, Sydney: Allen & Unwin, pp.79-97.

24. The Global 2000 Report to the President, Ch.9

while irrigation tends to salinate the soil. The damming of the Nile illustrates this. Unlike the irrigation from the Tigris and Euphrates Rivers in ancient Babylonia which led to salination of the soil and the consequent destruction of this civilization, irrigation from the Nile has been conducted for thousands of years without deleterious effects because flood waters have been allowed to run off irrigated land. The construction of the Aswan Dam has changed this and irrigation is now leaving deposits of salt. This is exacerbated by the residues of the expensive fertilizers which are now required because silt is deposited in the dam rather than on the land. Furthermore less water is now available for irrigation because a third of the water in the dam evaporates, the reduction of fresh water entering the Mediterranean Sea has resulted in the destruction of the Egyptian sardine fishery, and irrigation canals have brought about a proliferation of the snails which carry schistosomiasis. The quality of much available water in the world is decreasing because of pollution and salination, and the major problem remains of getting water to where it is needed. The prospects of overcoming this water shortage through desalination and purification of local water or by towing icebergs from the South Pole are limited because of the costs in work, energy and materials required for this purpose.

The oceans which in the past have been regarded as a vast under-utilized resource are now beginning to reveal their limits. Despite developments in technology and greater efforts to catch fish, catches have been falling since 1970.[25] The improved technology is also driving some important species of fish, such as the bluefin tuna, to extinction. The Peruvian anchovetta, which once provided about 10 million tonnes of fish a year, has yielded almost nothing since a final, disastrously large harvest in 1970-71. In 1992 the Atlantic cod stocks off the coast of Newfoundland collapsed through overfishing. The vast schools of herring have all but disappeared from northern European waters, and the breeding grounds of fish such as estuaries and coastal marshlands are being destroyed all around the world. Pollution is also affecting catches. There has been so much pollution in the seas off the coast of USA that fish catches have dropped by a third, and those caught are often riddled with toxic chemicals and suffering from finrot, a new disease where the fins of contaminated fish erode and their internal organs disintegrate. On the other side of the Atlantic poison algae, fed by chemical fertilizers washed into the sea by northern European rivers, killed millions of fish as it drifted along the Danish, Swedish and Norwegian coasts in 1988. Another by-product of pollution has been a continuing fall off in the level of oxygen in the Baltic Sea. If such effects spread, and they are likely to with such developments as off-shore oil wells, the effects on ocean life could be disastrous.

The Threat to the World Ecosystem

Humanity's transformations of nature are now beginning to interfere with the complex self-stabilizing processes of the world ecosystem through which optimum conditions for life, particularly human life, are maintained, and on which its stability and resilience depends. It has been convincingly argued by James Lovelock in his book *Gaia* that the whole of life on earth functions as an ecosystem which maintains the conditions for its continued existence:

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25. *The Global 2000 Report to the President*, p.105; John Gulland, 'The Harvest of the Sea' in Murdoch *Environment*, 2nd ed. pp.167-189; and 'How to Fish' in *The Economist*, 10-16 December, 1988, pp.95-98.

> ...the entire range of living matter on Earth, from whales to viruses, from oaks to algae, could be regarded as constituting a single living entity, capable of manipulating the Earth's atmosphere to suit its overall needs and endowed with faculties and powers far beyond those of its constituent parts.[26]

The original reasons for proposing this hypothesis were the evidence that over 3,500 million years the earth's climate has changed little despite changing output from the sun, changing surface properties of the earth and changing composition of the atmosphere. Also the chemical composition of the atmosphere bears no relation to the expectations of steady-state equilibrium but, as with the climate, is maintained at an optimum value for life. For instance the surface temperature of the earth has been maintained at a constant temperature from between 15°C and 30°C (or between 288°A and 303°A) despite increases in the sun's radiation over the last 4 billion years of somewhere between 1.3 and 3.3 times.[27] Lovelock pointed out that relatively small departures (in absolute terms) from these optimum levels would have had disastrous consequences for life.

If the world can be considered to be one large ecosystem, then it can be expected that it will have many of the characteristics of particular ecosystems. Studies of these have shown them to be self-stabilizing with varying degrees of resilience.[28] Interference with ecosystems might appear to have no appreciable effects while undermining this resilience. Only when there is a sudden collapse of the ecosystem is this weakness revealed. This was dramatically illustrated in the case of Lake Erie which was transformed from an ecosystem comprising a large and varied population of fish to a simple ecosystem consisting of a far smaller variety of fish in a very short time period.[29] As C.S. Holling wrote of this:

> Whatever the specific causes, it is clear that the precondition for collapse was set by the harvesting of the fish, even though during a long period there were no obvious signs of problems. The fishing activity, however, progressively reduced the resilience of the system, so that when the inevitable unexpected event occurred, the populations collapsed.[30]

This same fate is now befalling the world-ecosystem: its resilience is being reduced, paving the way for collapse, or at least, radical modification.

The stability of the world ecosystem, as with most ecosystems, depends on its diversity.[31] Yet the domestication of nature, mainly by agriculture and forestry, is destroying complex ecosystems and replacing them with simple ones. These are frequently unstable and give way to deserts. In *The Global 2000 Report to the President* it was estimated that each year 8 million hectares of cropland and grassland are being reduced to barren wasteland, while forests are now disappearing at a rate of 18-20 million hectares a year, an area about half the size of California,

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26. J.E. Lovelock *Gaia: A New Look at Life on Earth* Oxford, O.U.P. 1979, p.9.

27. James Lovelock and Sidney Epton, 'The Quest for Gaia' in *New Scientist*, 6th February, 1975.

28. C.S. Holling 'Resilience and Stability of Ecosystems' in *Evolution and Consciousness*, Erich Jantsch and Conrad H. Waddington eds, Reading, Mass.: Addison-Wesley, 1976, pp.73-92.

29. This collapse is described by Barry Commoner; in *The Closing Circle: Confronting the Environmental Crisis*, London: Jonathon Cape, 1971, Ch.5.

30. Holling, p.79.

31. James Lovelock has shown why diversity results in stability in *The Ages of Gaia*, Oxford: O.U.P., 1988, Ch.3, 'Exploring Daisyworld'.

out of the 2,600 million hectares of closed forest remaining.[32] Satellite photography now shows that the situation is much worse: 30 million hectares of forest are being destroyed annually. About two-thirds of this is rain-forest which contain 40% of the world's species. Furthermore, despite some efforts to reverse the trend, the rate of forest destruction is increasing.

Humans are also beginning to affect the world ecosystem by increasing the temperature of the atmosphere.[33] The single most important cause of this is the increasing level of carbon dioxide in the atmosphere. Fossil fuel combustion and destruction of forests acting as carbon "sinks" are the most important causes of this. It is now believed that a doubling of the concentration from the background 270 ppm will increase the average temperature of the earth by 2.0°C. Prior to 1974 the CO_2 concentration was increasing at a rate of 4% a year. This was reduced to 1% a year by huge increases in the price of oil, the spread of nuclear power stations and a global recession, but by 1988 this had again risen to 3.7%. Other greenhouse gasses - methane, chlorofluorocarbons and nitrous oxide, are between them responsible for as much heat retention as CO_2. Methane levels are increasing at a rate of 1.1% a year, and its concentration has increased from 0.7 to 1.68 parts per million over the past three hundred years.[34] The heating process associated with the greenhouse effect was hidden in the Northern Hemisphere between 1940 and 1970 by the cooling effect of volcanic activity. However since 1970 temperatures have continued the upward trend which began in the 1880s when the levels of carbon dioxide first begun to increase significantly. The 1980s was the warmest decade on record, and the US Environmental Protection Agency has warned that the greenhouse effect will be felt even more acutely in the 1990s.[35] The greenhouse effect is expected by most scientists to increase temperatures throughout the world by between 2.5°C and 5.5°C over the next hundred years - a change greater than the change between the last ice age and the present. However the change could be greater than this, as the heating of the atmosphere will destroy large tracts of forest and affect humus in the soil, which could release more CO_2 into the atmosphere than will be released by burning fossil fuels. At the same time the amount of CO_2 absorbed by the oceans will decrease from 40% to 25%.[36] It is important to note that this change in temperature will be unequally distributed. Only slight changes will occur at the equator, while towards the poles the temperatures will increase by three times the average. This will radically change weather patterns. The 1988 drought in USA, which can be directly attributed to the greenhouse effect, foreshadows permanent reductions in rainfall, hotter summers and colder winters in the temperate regions of the world, including both USA and Europe.[37] And the greenhouse effect is only part of the problem. Humans are increasing their generation of heat at an exponential rate. While this is of no great significance at present, it has been estimated by Robert Ayers and Allen Kneese that if energy emission continued to increases at the present

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32. The Global 2000 Report to the President, p.2 and 118.

33. On this see John Griffin, Future Weather: Carbon Dioxide, Climate and the Greenhouse Effect, [1982], Harmondsworth: Penguin, 1983; and Hole in the Sky: Man's Threat to the Ozone Layer, N.Y.: Bantam, 1988, Ch.5.

34. *New Scientist*, 30th June, 1988, p.45.

35. If CO_2 were ever to reach 1% of the atmosphere the increase in temperature would no longer be linear, and the temperature on earth would rapidly increase to boiling point. See Lovelock, *Gaia*, p.45.

36. See Fred Pearce, 'Forgotten feedback disrupts the greenhouse', *New Scientist*, 10 Dec. 1988, p.24, reporting on the work of Gundolf Kohlmaier.

37. Ian Anderson, 'Greenhouse warming grips American corn belt', *New Scientist*, 30th June, 1988, p.35, and Gribbin, *The Hole in the Sky*, p.98ff.

rate, in 250 years it would be equivalent to 100% of the absorbed solar flux. This alone would increase the earth's temperature by 50°C.[38]

At the same time the amount of ozone in the upper atmosphere, which at present is shielding the earth's surface from ultra-violet radiation, has been reduced by 2 per cent, and a large hole has appeared over the South Pole and a smaller hole over the North Pole. This is almost certainly due to the increasing levels of chlorofluorocarbons, methyl chloroform, carbon tetrachloride and nitrous oxide in the atmosphere.[39] Some idea of the effect this will have can be gained from the way wild animals, domestic animals and humans in Tierre del Fuego, the southernmost part of South American, have been blinded. But apart from damaging humans and other forms of life, the destruction of ozone is likely to completely destabilize the world's climate. It is hard to estimate the extent of the threat posed by this development. John Gribbin who had published a book in 1982 arguing that there are far more important things to worry about than the greenhouse effect,[40] published another in 1988 on the effect of ozone depletion in which he completely reversed his position. In this he pointed out that the depletion of ozone together with the greenhouse effect will result in a drop in temperature of the upper stratosphere by 30°C. The effects of this when combined with heating in the lower atmosphere are likely to be dramatic. As Gribbin wrote:

> Changes in the circulation of the atmosphere over the Southern Hemisphere are now clearly implicated in establishing conditions that allow chlorine compounds to produce a dramatic decrease in ozone concentrations over Antarctica each spring. The 'worst case' scenario that might result from this would be if the depletion of ozone itself caused a strengthening of the atmospheric conditions that set up the chemical containment vessel. Such a positive feedback could change the climate of at least the Southern Hemisphere and perhaps the whole globe, into a state that has never been experienced by human beings.[41]

Since the records of past climates frozen in the Greenland ice sheet reveal that the last the steady weather of the last 10,000 years, the period of the emergence and development of civilizations, has been highly abnormal, even freakish, it is unlikely future climates will be favourable to humanity.[42]

All this is associated with an increasingly rapid destruction of non-human forms of life. This destruction of vegetation parallels and interacts with the levels of pollution in the atmosphere. With less vegetation there is a reduced rate of absorption of pollutants. This is particularly true of carbon dioxide since rainforests have always played a major role in removing carbon from the air and burying it. The destruction of the Amazon forest alone is estimated to be responsible for 10% of CO_2 emitted into the atmosphere each year. Pollution in turn interferes with the growth of vegetation. The most significant manifestation of atmospheric pollution is

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38. *Economic and Ecological Effects of a Steady State*, Resources for the Future Reprint No. 99, December 1972, p.16, cited by Robert Heilbroner in *An Enquiry Into The Human Prospect*, N.Y.: Norton & Co., 1975, p.51.

39. See Richard S. Stolarski, 'The Antarctic Ozone Hole', *Scientific American*, Jan. 1988, Vol.258. No.1, pp.20-27, and Gribbin, *The Hole in the Sky*.

40. In *Future Weather* Gribbin concluded that: 'The puzzle of future weather is fascinating, but it is nothing compared with the real problems facing the world today, and it would be a mistake to divert too much attention to the possibilities of either a greenhouse Earth or a Little Ice Age.'(p.253).

41. Gribbin, *The Hole in the Sky*, p.152f.

42. Research on this was reported in *The Age* (Melbourne), Mon.19, Feb., 1996.

the acid rain of Northern Europe and North America.[43] The U.S. Forest Service has found that the annual growth of yellow pines declined by 30 to 50% between 1955 and 1985, and this seems to be a typical effect of increased pollution on temperate forests.[44] In Europe, where pollution is greater, the forests are dying. The destruction of rainforests is reducing the cloud cover, reducing the amount of heat reflected from the earth. Consequently this destruction of life is even more significant than it appears to be, and could prevent an adequate response on the part of the world ecosystem to the rising temperatures.

These are only the most dramatic examples of humanity's destruction. It is unknown what long term effects the build up in nature of chemically stable pesticides will have.[45] One effect has been the 'feminization' of males of all species, which now have lower sperm counts and smaller penises.[46] It has been estimated that 25 per cent of all the DDT produced is now in the ocean,[47] and it has been shown that synthetic chemicals in widespread use affect the species composition of plankton. Plankton, the foundation of the ocean ecosystem, is also under threat from the depletion of ozone, as it is destroyed by ultra-violet light. This will affect the oceanic food chain and further reduce the absorption of CO_2; and it could also affect the role of plankton in the ocean's governance of the cycles that rule the biosphere.[48] And as James Lovelock has noted, it is unobserved areas which are likely to be most important to the future of life on earth:

> The really critical areas which need careful watching are more likely to be in the tropics and the seas close to the continental shores. It is these regions, where few do watch, that harmful practices may be pursued to the point of no-return before their dangers are recognized; and so it is from these regions that unpleasant surprises are most likely to emerge. Here man may sap the vitality of Gaia by reducing productivity and by depleting key species in her life-support system; and he may then exacerbate the situation by releasing into the air or the sea abnormal quantities of compounds that are potentially dangerous on a global scale.[49]

The final state produced by this destabilization is likely to be very unfavourable to most existing life forms - including humans. In 1988 Lovelock remarked to John Gribbin: 'People sometimes have the attitude that "Gaia will look after us." But that's wrong. If the concept means anything at all, Gaia will look after *herself*. And the best way for her to do that might well be to get rid of us.'[50]

The Exhaustion of Reserves

43. See *The State of the Environment*, Paris: OECD Report, and Fred Pearce, *Acid Rain*, Harmondsworth: Penguin, 1987.

44. Brown et. al. *State of the World 1990*, 1990, p.6.

45. Rachel Carson;'s book *Silent Spring*, N.Y.: Fawcett Crest, 1962 remains a good account of the danger of pesticides.

46. On this, see Gail vines, 'Some of our Sperm are Missing', *New Scientist*, No. 1992, 26 August, 1995, pp. 22-25.

47. Barry Commoner, The Closing Circle: Confronting the Environmental Crisis, London: Jonathon Cape, 1972, p.227

48. William Ophuls;, *Ecology and the Politics of Scarcity*, San Francisco: Freeman, 1977, p.24

49. Lovelock, *Gaia*, p.121.

50. Gribbin, *The Hole in the Sky*, p.161.

The extraordinarily rapid increase in consumption of non-renewable mineral reserves has been well documented.[51] Between 1954 and 1980 Americans consumed more minerals than the rest of mankind in all previous history.[52] Each person in the US now requires 40,000 lbs of minerals a year, Europeans and Japanese are beginning to consume reserves at a similar rate, and there are a number of newly industrializing nations making their own demands on the world's reserves. At this rate it seems inevitable that problems will arise.

However there is considerable dispute about the significance of this. Preston Cloud estimated in 1973 that by the year 2042, current rates of consumption would have exhausted half the presently known recoverable reserves of half the world's now useful metals.[53] Discovery of further reserves have shown this date to be mistaken, and it is being argued by a number of people that the earth is so resourceful that there will never be a minerals shortage. The most notable proponents of this view have been Herman Kahn and his colleagues.[54] They have pointed out that new reserves have been discovered far beyond what had been anticipated in the early 1970s.[55] However increased reserves alone are of little significance if there is an exponential rate of increase in their consumption. Their basic argument is that there cannot be shortage because minerals are so abundant. It is simply a matter of developing the technology to exploit the diverse forms, extracting minerals from lower concentrations and digging deeper into the earth's crust; and in those rare cases where minerals are approaching exhaustion, of working out how to substitute different minerals. And, they argue that ultimately ore could be extracted even from sea water and high grade rocks. In relation to energy it is admitted that there is an imminent shortage of petroleum, but it is argued that substitutes for this will be found. When all the possible sources of energy are considered: other fossil fuels, geothermal, solar, nuclear fission and fusion, it is clear that there can be no greater problem than the development of the technology to exploit them.

This interpretation of the situation ignores the increased work and energy required to extract minerals, the lower efficiency of substitutes, and the effect of increased demand for work, energy and substitutes occurring simultaneously. Only six minerals are abundant in the earth's crust, and the concentrating processes which have produced easily exploitable ore bodies only occur near the surface.[56] Once these are used up, there is an enormous leap downwards in the grade of ore, and to obtain mercury, tin, zinc and other scarce metals from rocks as suggested by Kahn would require a staggering amount of effort, energy and environmental destruction. To obtain 400 tons of zinc (US annual demand is 1,300,000 tons) would require the processing with perfect efficiency of 5 million tons of rock.[57] The absurdity of anticipating being able to substitute for scarce metals is evident from the table of possible substitutions listed by Kahn. He proposes zinc as a substitute for lead,

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51. See Earl Cook, 'Limits to Exploitation of Nonrenewable Resources' in Herman E. Daly, ed., *Economics, Ecology, Ethics: Essays Toward a Steady-State Economy*, San Francisco: Freeman, 1980, pp.82-99.

52. Richard Barnet;, 'The Minerals Plunder' in *The National Times* July 6 to 12, 1980, p.43f. reprinted from the *New Yorker*. See also Richard Barnet, *The Lean Years*, London, Abacus, 1980, esp. Ch.5.

53. Preston Cloud, 'Mineral Resources in Fact and Fancy', in Herman E. Daly, ed., *Toward a Steady-State Economy*, San Francisco: Freeman, 1973, pp.50-75, p.74.

54. See for instance Julian Simon and Herman Kahn *The Resourceful Earth*, Oxford: Blackwell, 1984.

55. Kahn et.al. The Next Two Hundred Years, Ch.4.

56. Ophuls, Ecology and the Politics of Scarcity, p.67.

57. Ibid. p.69.

though zinc is scarcer than lead; and at the same time, tungsten as a substitute for molybdenum and molybdenum as a substitute for tungsten.[58]

The question of energy is more complex, since it is usable energy that matters, and diverse uses require diverse forms. Thus while as much energy arrives in the form of sunlight every two weeks as is contained in the entire reserves of fossil fuels, it is difficult to use this.[59] The reserves of the most useful form of energy, easily transportable liquid, are running out. If petroleum continues to be consumed at the present rate reserves will be used up in 110 years if all hypothetical and speculated reserves prove to exist.[60] Optimism about energy supplies are generally a manifestation of the failure to take into account the complete context of the problem.[61]

One proposal for obtaining liquid fuel is through the liquefaction of coal, but quite apart from the increased pollution this would produce it would also require the use of astronomic amounts of water. Another suggestion is that crops be developed for the production of ethanol, but studies of this have shown that it requires as much energy to produce energy in this way as is yielded.[62] Furthermore, enabling the rich to continue driving their cars by this method involves converting land from food production to fuel production, which inevitably results in more starvation. This has occurred in Brazil where the production of alcohol from sugar cane has also led to the pollution of rivers, and peasants forced off their lands are destroying the Amazon forests in their struggle for survival.

Where energy in general is concerned it is still thought by many that nuclear fuel is the answer. The fire at Chernobyl nuclear power plant in April, 1986 should dispel any illusions about the safety of this form of energy. This led to the release of 50 million curies of radioactive iodine and 6 million curies of radioactive caesium in the first week after the disaster, while another 6 million curies of radioactive strontium were released within the borders of the Soviet Union.[63] It is now thought that up to 10,000 people have died as a result of exposure to such pollution. Despite raising the 'permissible' annual dosage of radiation to 20 times the top international level of 0.5 rems, 20,000 sq km of agricultural land north and east of Chernobyl have had to be abandoned for normal use. This will not be a short term measure, as radioactive strontium which binds strongly to the soil has a half-life of 30 years and will contaminate the environment for centuries. Outside the former Soviet Union record levels of radioactive caesium have been found in wild animals, lake fish, wild mushrooms and forest berries. Apart from such dangers, without breeder reactors there will be a serious shortage of usable uranium within a few decades, and if breeder reactors are used there will be all the problems associated with the production of plutonium which can be used in nuclear bombs, which is highly toxic and which has a half life of 25,000 years. There are also shortages of helium and water for cooling. Helium is in short supply, and projections into the future have suggested that in the US, if the nuclear path had been adopted, by the year 2000

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58. Kahn et. al. *The Next 200 Years*, p.87.

59. Nicholas Georgescu-Roegen; 'Selections from "Energy and Economic Myths"' in Daly; *Economics, Ecology, Ethics*, pp.61-81, p.70.

60. William Ophuls, *Ecology and the Politics of Scarcity*, p.88. *The Global 2000 Report* gives a lower figure (see p.190), while a higher figure is given by P.R. Odell and K. E. Rosing in *The Future of Oil*, 2nd ed., London: Kogan Page, 1983.

61. Certainly a more optimistic stance is justified than prevailed in the early 1970s. See Peter R. Odell, 'Draining the World of Energy' in R.J. Johnston and P.J. Taylor, *A World in Crisis? Geographical Perspectives*, Oxford, Basil Blackwell, 1986 for a more recent account of the issue.

62. See Juan Martinez-Alier, *Ecological Economics*, Oxford: Basil Blackwell, 1987, pp.21-26.

63. See Zhores Medvedev, *Gorbachev*, Oxford: Blackwell, 1987, pp.259-267 for an account of this.

water equal to between one third and a half of all the fresh-water runoff in USA would have been required for cooling.[64] If nuclear fusion is ever effectively mastered, this will produce even more dangerous radioactive wastes than nuclear fission reactors. Filling the energy needs of Britain would produce 100,000 tons of unsafe waste each year.[65]

Kahn and his colleagues have posed the problem of mineral depletion and energy shortages in a way that skirts around the real issues. These have been stated succinctly by Earl Cook:

> To society ... the profit from mining (including oil and gas extraction) can be defined either as an energy surplus, as from the exploitation of fossil and nuclear fuel deposits, or as a work saving, as in the lessened expenditure of human energy and time when steel is used in place of wood in tools and structures.... The ultimate limit to exploitation of earth resources then is the limit of net energy profit (or work savings).[66]

Energy and work costs for the recovery of minerals have begun to increase with great rapidity as decreasing grades of ore are having to be used.[67] This increase has been disguised until recently because of the decreasing costs of energy used. Now that the limits of exploitation of energy itself has been reached, and now that the costs of recovery for some minerals are moving up the steeper parts of their exponential curves, the limits to exploitation of reserves of minerals are beginning to be recognized. Underlying this problem is the inevitability of failure in attempting to solve resource shortages through improved technology alone. According to the second law of thermodynamics, all creation of useful order destroys at least an equal amount of such order. Improved access to solar or nuclear energy will not solve the problem because such energy cannot offset the dispersion of minerals and the pollution associated with refining ores and using machinery. And as Georgescu-Roegen pointed out, 'since no practical procedure is available at human scale for transforming energy into matter ... accessible material low entropy is by far the most critical element from the bioeconomic viewpoint.'[68]

Population Growth and Inequitable Resource Use

Both a cause and effect of environmental problems, the human population of the world is growing inexorably. Throughout human history the rate of population growth has been accelerating. This is clearly evident from the rapid reduction in doubling times for the world population throughout history:[69]

Doubling Times For Human Population Growth

Date	Est. World Population	Years required to double

64. Ophuls, The Politics of Scarcity, p.91.

65. As reported by Britain's National Radiological Protection Board (NRPB). Reported in *The Economist*, Vol.305, No.7530-31, 26 Dec. 1987 - 8 Jan. 1988, p.106.

66. Earl Cook, 'Limits to Exploitation of Nonrenewable Resources', *Science*, Vol.191, 20th February, 1976, pp.677-82, p.677.

67. Ibid. p.97

68. Nicholas Georgescu-Roegen, 'Selections from "Energy and Economic Myths"', in Herman E. Daly ed. *Economics, Ecology, Ethics*, p.69f.

69. Paul Ehrlich, Anne Ehrlich, Robert Holdren, *Human Ecology: Problems and Solutions*, San Francisco: Freeman, 1973.

8000 B.C.	5 million	
1650 B.C.	500 million	1,500
1850 A.D.	1,000 million	200
1930 A.D.	2,000 million	80
1975 A.D.	4,000 million	35

Globally, there has been scarcely any reduction in these trends, as is evident from figures on world population growth by decade between 1950 and 1990:

Year	Population (billion)	Total increase (million)	Annual increase (million)
1950	2.515		
1960	3.019	504	50
1970	3.698	679	68
1980	4.450	752	75
1990	5.292	842	84

While the extent of global problems can be judged by considering aggregate figures, this obscures the real nature of the problem. Population growth is not uniform throughout the world. Affluent countries are often characterized by negative population growth, while it is in the poor peripheries of the world that population is growing most rapidly. These different rates of population growth are not unconnected. The global economy functions as a system consisting of economic core zones competing with each other and increasing their flow-throughs of energy and materials with low population growth, and peripheral regions of the world economy with high rates of population growth yielding resources to core zones.[70] In this competition the core zones are increasing their power to dominate and exploit the peripheries, and inevitably compete more intensely for control over their resources and reserves, while the peripheries themselves are progressively impoverished as their resources are destroyed and reserves exhausted. The disruption, impoverishment and consequent insecurity of people in the peripheries impels them to have as many children as the can.[71]

The system as a whole engenders more intense exploitation of the environment. The search for new reserves and resources has driven European imperialism since the fifteenth century. It led to the European drive for total world domination in the nineteenth century and has culminated in the global power conflicts of the twentieth century. It is impossible to account for the First and Second World Wars and the subsequent Cold Wars except in terms of the expanding economies of the core zones of the world economy requiring more resources and reserves than available within their borders. In the first half of the twentieth century, Germany, Japan and Italy, as latecomers to industrial capitalism, were struggling to gain secure access to external resources and reserves. The recognition of the imminent shortage of these by the powerful nations of the world since the Second World War has been responsible for the increasing levels of military expenditure and growing oppression throughout the

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70. On this see Stephen Bunker, *Underdeveloping the Amazon*, [1985], Chicago: The University of Chicago Press, 1988, esp. Ch.1.

71. That this is the situation has been argued by Richard Newbold Adams, *The Eighth Day*, Austin: University of Texas Press, 1988, p.133ff. and p.242.

world. Today, however, the struggle for control of resources in the peripheries of the world economy has replaced old fashioned imperialism centred on the control of territory. This neo-imperialism has frequently resulted in the destabilisation of reformist governments and the imposition of corrupt military or semi-military dictatorships in Third World countries.

This is what has been referred to in the United States as defence of the 'Free World'. But 'free' here refers to the freedom of enterprise, of American based transnational businesses to extract raw materials or produce commodities for the world market; freedom to exploit the available human and natural resources and to destroy the environment.[72] It has nothing to do with democratic governments and has included some of the world's most barbarously oppressive regimes. Kennedy's ambassador to Brazil and later Assistant Secretary of State for Inter-American Affairs, Lincoln Gordon, described the overthrow of the democratic government of Brazil in 1964 and its replacement by a military dictatorship as 'the single most decisive victory for freedom in the mid-twentieth century' and 'one of the critical points of inflection in mid-twentieth century world history.'[73] That this regime subsequently murdered its effective critics and initiated the onslaught on the forests of the Amazon basin which is today the single most important threat to the world ecosystem meant nothing to the defenders of 'freedom'.

Eighty five percent of materials consumed in the world economy are now used by less than 20% of the world's population. USA imports more than 95% of its mica, strontium, cobalt, manganese and titanium and over 80% of its aluminium, asbestos, platinum and tin. It imports more than half of 23 of 38 basic minerals. The EEC countries and Japan import even higher percentages of their minerals, mostly from the Third World. The developed countries import more than twice the value of food from the underdeveloped countries as they export, even without taking into account the fish taken by the wealthy nations from the waters surrounding Third World countries. Generally the food exported by the poor countries is of a higher nutritional value than that imported. Three-quarters of the fruit and vegetables consumed in the US come from the Third World.[74] And the First World is importing huge amounts of timber and forest products, destroying Third World forests at ever increasing rates.

The USA is not the only country responsible for exploiting Third World countries. Western European nations, and France in particular, are actively involved in supporting oppressive governments in Africa to maintain control over their investments. France maintains a standing army for just this purpose, and in 1977 and 1978 provided logistic support to Belgian and Moroccan troops who had been sent to prop up the corrupt government of Zaïre, the source of many of France's minerals. However, since the Second World War it has been the United States which has been most responsible for oppressing people in the Third World. Its actions directed towards undermining democratic governments have not been *ad hoc* responses to particular situations but have been part of a long term strategy worked out during and after the end of the Second World War. Realizing that they would be the dominant power, US policy planners worked out what areas of the world would need to be controlled in order to ensure their supply of resources. These included most of

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72. Noam Chomsky; designated this the Fifth freedom: 'the freedom to rob and exploit ... the one that really counts.' *Turning the Tide: US Intervention in Central America and the Struggle for Peace*, Boston: South End Press, 1985, p.47. See also Noam Chomsky, *The Culture of Terrorism*, London: Pluto Press, 1988.

73. Cited by Noam Chomsky in *Towards a New Cold War*, N.Y.: Pantheon, c.1983, p.24.

74. These figures are given by F.E. Trainer;, *Abandon Affluence*, London: Zed Books, 1985, pp.130f and 142ff.

the world. US planners also realized that they would be in competition with indigenous populations for these resources. One of the principle architects of this was George Kennan, the Director of the Policy Planning Staff of the Department of State. His ideas and basic commitments can now be more clearly understood in the light of recently declassified planning documents. Kennan, the inspiration behind the policy of 'containment' of communism, based his policy recommendations on the belief that '[i]ndustrial capacity, together with access to raw materials necessary to sustain it, was the key to power in the world'.[75] Breaking with the tradition based on universalist principles, that is, the concern with international justice which had been characteristic of the administration of Franklin Roosevelt, he argued in a top secret document PPS 23 in 1948:

> [W]e would be better off to dispense now with a number of the concepts which have underlined our thinking ... We should dispense with the aspiration to "be liked" or to be regarded as a repository of a high-minded international altruism. We should stop putting ourselves in the position of being our brothers' keeper ... We should cease to talk in vague and - for the Far East - unreal objectives such as human rights, the raising of the living standards, and democratization. The day is not far off when we are going to have to deal in straight power concepts. The less we are then hampered by idealistic slogans, the better... We should make a careful study to see what parts of the Pacific and Far Eastern world are absolutely vital to our security, and we should concentrate our policy on seeing to it that those areas remain in hands which we can control or rely on.[76]

In carrying out this policy the US government engineered or supported the destruction of relatively democratic governments in Iran, Guatemala, Ecuador, the Congo, Brazil, Dominica, Peru, Indonesia, Cambodia, Ghana, Chile, Greece and Timor in their efforts to keep these nations in the Free World.[77] Since the early 1970s a major concern of the United States government has been that the sources of raw materials within the dollar zone are rapidly being exhausted so that the US has had to rely on countries which are considered unstable.[78] So while the most well known instances of US intervention have been into Central and South America and South East Asia, USA is becoming increasingly involved in Africa. As Fred Halliday noted in 1982.

> Western and Japanese dependence on raw material imports from the Third World is, moreover, by no means confined to petroleum. The strategic minerals essential to military production are also mainly extracted from underdeveloped areas - in this case, above all, Southern Africa. The tougher attitude of the

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75. John Lewis Gaddis, 'The Strategy of Containment', in Thomas Etzold and John Lewis Gaddis, eds. *Containment: Documents on American Policy and Strategy, 1945-1950*, N.Y.: Columbia University Press, 1978, pp.25-37, p.27.

76. From an excerpt in Etzold and Gaddis, *Containment*, p. 227. The full document can be found in *Foreign Relations of the United States*, (FRUS) 1948, I (part 2). It is discussed along with other documents of a similar ilk by Noam Chomsky; in *Turning the Tide*, pp. 47ff. Kennan was eased out of his position in 1953 because of his lack of toughness towards the Communists and replaced by Paul Nitze, and recently, expressed concern about the possibility of a nuclear war. For a full study of Kennan and his policies, showing Kennan's concern with controlling resources, see Barton Gellman, *Contending with Kennan: Towards a Philosophy of American Power*, N.Y.: Praeger Press, 1984. It is noteworthy that this, like other studies of Kennan and Kennan's own memoirs do not refer to PPS 23.

77. For the global role of the C.I.A. see William Blum, *The CIA: A Forgotten History*, London: Zed Books, 1986.

78. See Yann Fitt, Alexandre Faire and Jean-Pierre Vigier, *The World Economic Crisis: U.S. Imperialism at Bay*, tr. Michael Pallis, London: Zed Press, 1980.

> Reagan Administration towards the advance of national liberation forces in this region finds part of its explanation in Washington's resolve to keep a firm protective grip on these minerals, whether cobalt (Zaïre), chromium (Zimbabwe), uranium (Namibia), or manganese (Gabon, South Africa): not to speak of the gold mines of the Rand itself.[79]

It is the tensions generated between and within nations by this struggle for increasingly scarce resources which underlies the growth in military spending throughout the world.[80] In 1990 some $US700 billion dollars was spent on the military, about 7% of the world's G.N.P. (in the run-up to the first two world wars it was never more than 3%). The military employed 60 million people and the research efforts of half the world's scientists. In absolute terms, the US spends more than any other country on the military, and in 1984 64% of its scientific research and development expenditure was on armaments. The ratio of military expenditure to fixed capital investment in the United States was then 46 to 100.[81] Scarce reserves are increasingly being used up in the struggle for their control.

However the First World does not dominate the Third World by sheer force. They could not succeed in their exploitation of the Third World without support from within. The success with which the US governments have been able to prosecute this policy, to undermine democratic governments and install repressive regimes, has been due to the increasing numbers of people in the Third World willing to act on their behalf in opposition to their own people and in return for a share of the spoils. Such support has been forthcoming as the resource crisis has made it increasingly obvious that it is impossible for all countries to enjoy the affluence of First World nations. As Dudley Seers noted in his analysis of the relationship between the present economic crisis, the crisis of resources, and the political situation within the Third World:

> Whereas dictatorships were rare in the mid-1960s, they are now very common. By 1980 there were over fifty governments in the world dominated by the military, of which the great majority were described as 'repressive'... The explanation seems to be, in brief, that the bureaucrats, traders, and white-collar (as well as blue-collar) employees in the modern sector, public and private, have become increasingly determined that they and their children shall continue to enjoy the modern lifestyle, largely imported, whatever the brutality and whatever the inflows of aid and private capital needed to ensure this.[82]

Since this was written, a facade of democracy has been resurrected in many Third World nations, particularly in South America. However this merely disguises the extent to which real policy choices have been denied to the populations of these countries.[83]

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79. Fred Halliday;, 'The Sources of the New Cold War', in New Left Review ed. *Exterminism and Cold War*, Verso, 1982, pp.289-328, p.316.

80. This is argued by Noam Chomsky, 'Strategic Arms the Cold War and the Third World' and Fred Halliday in 'The Sources of the New Cold War', in *Exterminism and Cold War*, pp.223-236 and 289-238.

81. Chomsky, *Towards a New Cold War*, p.32, citing Seymour Melman.

82. Dudley Seers, *The Political Economy of Nationalism*, Oxford: Oxford University Press, 1983, p.6f.

83. For an analysis of the present state of the world, see Noam Chomsky, *World Orders, Old and New*, London: Pluto Press, 1994.

Political oppression does not end with the subjugation of people in the Third World. A new dimension to the struggle for resources is emerging with what amounts to a deliberate exclusion by affluent nations of large proportions of their own populations from participation in their economies. This is evident in the consistent, if unsteady growth in unemployment in the OECD nations since the early 1970s (from 5 million in 1967 to 32 million in 1982) associated with the promotion of precisely those economic theories and strategies which led to the Great Depression of the 1930s. As Dudley Seers again points out:

> No evidence whatever is put forward for the assumption that Northern governments wish to reduce unemployment, even in their own countries. The governments concerned have justified monetarist policies as being designed to 'fight inflation' and set the stage for economic growth. But this does not quite ring true. Would any sane government with that ultimate objective forgo for years much investment in their industries, on which eventually growth depends, just to reduce by a few points the annual rise in the consumer price index - to rates which they may not be able to maintain anyway? An alternative hypothesis would be that to run the neo-colonial system is very difficult now, without heavy unemployment. It would not be necessarily ignorant or short-sighted for governments in the North to calculate (though it might be unwise to state publicly) that a rise of even 5% in the national products of OECD countries would make OPEC and its member governments far too powerful, and also lead to sharply higher prices for metals (as well as agricultural products).[84]

Economic policies which have made life insecure for the majority of young people in advanced Western nations have contributed to negative population growth.

The Urbanization of Humanity

Corresponding to the degradation, destruction and exhaustion of the natural environment, people are enclosing themselves in built-up environments which are destroying their health, their human potential, and in particular, their capacity to respond to the world's environmental problems. One of the major recent changes in the world has been the growing proportion of people who live in cities, and the increasing size of these cities. This is not simply a function of population growth but is also a consequence of the destruction of rural communities as land is taken over by large scale agribusinesses. Between 1800 and 1950 the world's population increased by a factor of 2.6 while the number of people living in settlements over 20,000 increased by a factor of 23.[85] In 1850 there were only four cities in the world with more than a million people. In 1950 there were about a hundred such cities, and by 2000 there will be over 1000 cities of this magnitude.[86] In 1950, 29% of the world's population lived in urban settlements. This had increased to 39% in 1975 and it is projected that this will approach 50% by 2000. The cities in less developed countries in particular are expected to grow rapidly between now and 2000. Then,

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84. Dudley Seers, *The Political Economy of Nationalism*, Oxford: Oxford University Press, 1983, p.158. See also G.F. Ray, 'Europe's Farewell to Full Employment?' in Daniel Yergin and Martin Hillenbrand, *Global Insecurity*, Penguin: Harmondsworth, 1983.

85. The Global 2000 Report to the President p.241ff.

86. Gwen Bell and Jacqueline Tyrwhitt 'Introduction' to *Human Identity in the Urban Environment*, Gwen Bell and Jacqueline Tyrwhitt, eds, Harmondsworth: Penguin, 1972, p.15.

Mexico City will house 32 million persons and Sao Paulo more than 26 million. The growth of cities is putting extreme pressure on sanitation, water supplies, health care, food, shelter and jobs. Some idea of life in these cities can be gained by considering one example: Calcutta. Here 70% of families live in one-room houses, half the houses have no indoor toilets, there is only one water faucet for every 25 slum dwellings and 600,000 people are without housing altogether and live and die on the streets.[87] The condition of life in such cities is likely to get worse in the future. Most population growth will occur in the slums and shanty-towns.

Such environments are associated with increasingly high levels of pollution.[88] While there is some overlap, the problems of pollution can be divided between those associated with the general environment and those associated with places of work. It is now realized that the air we breath, the food we eat and the water and milk we drink are all polluted to some degree, and there is now so much toxic waste being produced (one metric ton per person each year in the United States) that escaping from it is becoming impossible. Every year more than 3,000 new chemical products enter the environment, and of the 48,000 chemicals listed by the EPA, next to nothing is known about the toxic effects of 38,000 of these. Fewer than 1,000 have been tested for acute effects, and only about 500 for their cancer causing, reproductive or mutagenic effects. Occupational pollution has been recognized as a problem since the Romans realized that people who worked in lead mines suffered from general ill health. However such problems were seldom taken seriously by those in power because the health of workers were not held to be of any great significance. This is still largely true, especially in Third World countries, despite the increasing occupational pollution workers are now being subjected to.

Research has revealed associations between pollution (and additives to foods, pesticides etc.) and birth defects, mutations, cancer and heart disease, and various chronic illnesses, particularly respiratory diseases such as asthma. The most carefully analysed relationships have been those between pollutants and cancer, the great majority of which are now recognized to be due to environmental factors. However heart disease has also been shown to be closely associated with exposure to some pollutants. Both cancer and heart disease have been shown to be strongly correlated with the levels of sulphur dioxide, oxides of nitrogen, carbon monoxide and particulate sulphate. There is a positive correlation coefficient of cancer with sulphur dioxide of 0.56 and with nitrogen dioxide of 0.48; and of arteriosclerotic heart disease with sulphur dioxide of 0.48 and with nitrogen dioxide of 0.31.[89]

Cancer is the most striking illness caused by pollution. As Samuel Epstein wrote of this disease in the US in his monumental *The Politics of Cancer*:

> If one thousand people died every day of cholera, swine flu, or food poisoning, an epidemic of major proportions would be at hand and the entire country would be mobilized against it. Yet cancer claims that many lives daily, often in prolonged and agonizing pain... Cancer is now a killing and disabling disease of epidemic proportions. More than 53 million people in the United States (over a

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87. Otto Friedrich 'And if Mexico City Seems Bad...', *Time*, August 6, 1984, p.22f.

88. The extent to which people are being exposed to pollution has been revealed by James Bellini in *High Tech Holocaust*, Richmond: Greenhouse Publications, 1987.

89. Richard J. Hickey, 'Air Pollution' in *Environment: Resources, Pollution and Society*, William W. Murdoch ed., 1st ed., Stamford: Sinauer, 1971, pp.189-212, p.201.

> quarter of the population) will develop some form of cancer, from which approximately 20 percent of the US population will die.[90]

Between 1900 and 1960 the number of deaths from cancer in the USA increased more than six fold. Half of this increase, about 44% of the total, was due to factors other than increased population and life expectancy; that is, pollution.[91] Epidemiological studies have led to the conclusion that environmental factors cause between 70 and 90 percent of all cancers.[92] As Epstein put it, 'Just as germs cause infections, so do certain chemical and physical agents, carcinogens, cause cancer.'[93] More people are dying of cancer because they are more exposed to carcinogens. The prospect for the future is even worse than it appears from this because pollutants act synergistically, that is, they reinforce each other. For instance while people who smoke are 15 times more likely to die from lung cancer than those who do not, and people who work in uranium mines are 4 times more likely to die from lung cancer, those who both smoke and work in uranium mines are 120 times more likely to die from lung cancer than those who do neither.

While the main focus of attention has been the effects of general pollution on people in the wealthy countries of the world, the most deleterious pollution is that associated with the work-place, with the worst affected being in the poorer countries of the world. Pollution which affects the affluent in the cities of the wealthy nations is being attacked with some vigour while little effort is made to combat worker exposure to toxic substances. In the US there are official standards for less than 500 of the tens of thousands of toxic substances to be found in the workplace, and there is a wide disparity between what is considered acceptable for the general public and what is acceptable for workers. It is consequently hardly surprising that the life expectancy of blue-collar workers is 15 to 20 years less than teachers who are not exposed to occupational pollutants.

Over recent years wealthy countries have begun to 'export' their pollution to poorer countries by exporting toxic chemicals or by transferring to them their most polluting industries, the most well known instance being Union Carbide's factory in India which in December, 1984 leaked chemicals which killed more than 3,100 people and injured more than 200,000 others, 86,000 permanently. The extent of deleterious pollution in the Third World has only just begun to be investigated. One of the worst places is Brazil where preliminary figures reveal pollution to be largely responsible for its high infant mortality. Cubatao in particular is famous for its pollution, and associated with this, for the number of babies born without brains (anencephaly).[94] 32.4 babies in every ten thousand live births in Cubatoa die from congenital defects, with 52% of these deaths being due to congenital anomalies of the central nervous system, as compared to 29% elsewhere in Brazil. 6.5 in ten thousand are anencephalic.

Even the affluent of the wealthy nations have not been able to fully escape the deleterious effects of environmental degradation. And it is not only the diseases which cause death which are important. Degenerative diseases are occurring faster

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90. Samuel S. Epstein, *The Politics of Cancer*, San Francisco: Sierre Club Books, 1978, p's.1,8.

91. Samuel S. Epstein and Dale Hattis 'Pollution and Human Health' in Murdoch, *Environment*, 2nd ed. pp.195-221, p.208.

92. Epstein The Politics of Cancer, p.23.

93. Ibid. p.2.

94. Roque Monteleone-Neto et.al. 'Birth Defects and Environmental Pollution: the Cubatao Example', in Prevention of Physical and Mental Congenital Defects, Part B: Epidemiology, Early Detection and Therapy, and Environmental Factors, Alan R. Liss, Inc., 1985, pp.65-68, p.66.

than can be explained by the longer expectancy of life.[95] Chronic disabilities which people have come to accept as a normal part of life or of growing old: asthma, myopia, headaches, allergies, ulcers, depression, neuroses, dental caries, high blood pressure and senility are in fact the products of the environment we live in. The Mebans in the Sudan have been found to be completely free of blood pressure, obesity, coronary thrombosis, duodenal ulcers, ulcerative colitis, allergies, bronchial asthma and dental caries.[96] Like a number of African tribes who accepted as normal the hideous sores of primary and secondary yaws, we have become accustomed to chronic dis-ease. One of the symptoms of this is the rapid growth of the field of medicine and the amounts spent on health care by the affluent. As André Gorz has noted: 'People are medicating themselves more because they are more morbid, and the very rapid increase in their medical consumption doesn't at all keep their morbidity from increasing right along with it.'[97]

The rise of the medical profession, including psychiatry, amounts to an effort to refabricate people by excisions, admixtures of chemicals and psychotherapy to live in environments which are increasingly pathogenic and soul destroying. But while the development of medicine is celebrated as one of the major achievements of our society, close investigation has revealed most of its claims to success to be false.[98] The great scourges: cholera, typhoid and tuberculosis for instance, had practically disappeared before treatment of them had been developed. It is the environment, living conditions, lifestyles and hygiene which have been the true causes of changes in incidence of disease, and the environment is now beginning to generate new diseases. Some of these diseases can be effectively prevented or treated by medicine, but the major effect of medicine is to prolong the length of illness before death and to reduce infant mortality, resulting in the survival of large numbers of people who limp through life with permanent disabilities. Life expectancy of Americans once they have reached the age of 45 has increased scarcely at all since the nineteenth century, and what increases there have been are due to the prolonging of illness rather than to increasing the healthy years of life.[99]

The Degradation of Humanity

There are more subtle consequences to living in cities, and these affect the affluent as well as the poor. Living in a world where everything has been formed for human purposes detached from the natural world changes the nature of human life. Previously the products of human activity were always seen in a context of a dynamic nature as achievements fulfilling human purposes. In large cities the environment is almost entirely a human production and is impregnated with sedimented human purposes which impose their logic on its individual members. As Winston Churchill asserted: 'We shape our buildings, and afterwards they shape us.'[100] In modern cities today this means reducing people from members of a community to exchangeable units without individuality, mere instruments at best,

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95. André Gorz;, *Ecology as Politics*, tr. Patsy Vigderman and Jonathon Cloud, Boston: South End Press, 1980, p.159.

96. René Dubos;, *Man Adapting*, New Haven and London: Y.U.P., 2nd ed. 1980, p.240.

97. Gorz, Ecology as Politics, p.168.

98. See Ivan Illich, *Medical Nemesis: The Expropriation of Health*, New York: Pantheon, 1976.

99. Dubos, *Man Adapting*, p.230.

100. Cited by René Dubos in 'The Crisis of Man in His Environment' in Bell and Tyrwhitt, *Human Identity in the Urban Environment* pp.178-184, p.183.

superfluous rubbish at worst. The effects of this have been pointed out by Samir Amin:

> Why ... is it that we love the old cities, we even love Manhattan, but no one, not even the city planners who conceived it, dares defend the perfect functionalism of the latest 'achievements' of post-war capitalism?... Perfect functionalism is necessarily compartmentalized and linear. It is always functionalism in relation to some one thing, not in relation to the whole. Add it up; the fastest possible means of transportation...(to go to work), the quickest possible places to rest (to regenerate labor power), the closest possible places to shop.[101]

Under the superficial glitter and diversity of cities, the life-worlds of most people are being progressively impoverished. Irrespective of climate, topography or language, from Washington to Tokyo, from Anchorage to Melbourne, the same pattern is unfolding.

In modern cities the space of offices and office buildings, shops and shopping centres, of factories, of schoolrooms and schools, streets and suburbs, is organized to ensure that people conform to social norms, that they perform the tasks expected of them and that they do not use it in any other way than is prescribed for them. Foucault contrasted this with the cities of the past:

> Antiquity had been a civilization of the spectacle. 'To render accessible to a multitude of men the inspection of a small number of objects': this was the problem to which the architecture of temples, theatres and circuses responded. With spectacle, there was a preponderance of public life, the intensity of festivals, sensual proximity. In these rituals in which blood flowed, society found new vigour and formed for a moment a single great body. The modern age poses the opposite problem: 'To procure for a small number, or even for a single individual, the instantaneous view of a great multitude.'[102]

Private space is then defined as rigidly distinct from this public space, but it also serves the requirements of the economy. It is essentially the space which neutralizes people's political power and where labour power is recuperated, where, as Samir Amin wrote: 'men sink into the necessary state of stupor ... where they make a feeble effort to withdraw into themselves ... where they are bored.'[103] The space within which people are free to determine their goals and relationships, where they can act with spontaneity, is rapidly being defined out of existence.

The effect of these developments is to have destroyed the human community. As Martin Pawley argued in *The Private Future*, there is now nothing but a vacant, terrorized space between the government - which controls and maintains production - and the isolated consumer, who increases his consumption in proportion to his isolation.[104] The life of dialogue has been replaced by passive consumption of the products of the mass media in which information is decontextualized, and irrelevancies invested with a quasi-relevance, creating 'a neighbourhood of strangers and pointless quantity; a world of fragments and discontinuities.'[105] Modern cities

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101. Samir Amin, 'In Praise of Socialism', *Monthly Review*, September 1974, pp.12-13.

102. Michel Foucault, *Discipline and Punish*, tr. Alan Sheridan, Harmondsworth: Perigrene, 1979, p.216.

103. Amin, 'In Praise of Socialism', p.13.

104. Martin Pawley, *The Private Future*, London: Thames and Hudson, 1973.

105. As Neil Postman; put it in *Amusing Ourselves to Death*, [1985] London: Methuen, 1987, p.72.

isolate people from each other and 'serialize' them. People are constituted as separate individuals related to each other and for each other by their exterior conditions as a contingent gathering. Consequently, as Sartre put it: '...isolation becomes, for and through everyone, for him and for others, the real social product of cities.'[106] This is the condition described by Miroslav Holub in his poem *Subway Station*:[107]

This evening Mr Howard T. Lewis,
of unknown address, gloomy and tired,
wearing a grey overcoat and brown hat,
having decided to take the B.M.T., Carnarsie Line,
met at the last station on 8th Ave.
a man in a grey overcoat and brown hat
whose face, gloomy and tired, was
the face of Mr Howard T.Lewis,
while by the barrier at the end of the empty platform
stood a man in a grey overcoat, of gloomy appearance
whose face was also the face
of Howard T.Lewis and gazed dumbly
at the bottom of the dirty steps down which came
a man in a brown hat, gloomy and tired,
with a face that was the face of Howard T.Lewis.

And then through the worn wooden spokes
of the turnstile came a woman, tired and gloomy,
of unknown address with a handbag and in a brown
hat whose face was the face
of all men and therefore also of Howard T.Lewis and
the steps in the distance and the nervously muffled steps
near by, steps of figures bowed by the murkiness
and pale from the light were the steps
of Howard T.Lewis, steps from an unknown address
to an unknown address, now and then
the turnstile turned again with a snap like a head
dropping in the basket, or behind the barrier
could be seen a figure without sex and of no
address, but otherwise completely like
Howard T.Lewis, steps were heard,
heads, spokes, distances, lights and tunnels
sucked in the sign 8th Ave. 8th Ave. 8th Ave.
in droning crescendo.

When the train left a stray wind
scattered the pages of a paper in which there was
a report on the unknown
address, fate and identification
of a man in a grey overcoat and brown hat,
gloomy and tired.

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106. Jean-Paul Sartre, *Critique of Dialectical Reason*, [1960], tr. Alan Sheridan-Smith, London: NLB, 1976, p.257.

107. Miroslav Holub, *Although*, London: Cape, p.16f.

The privileged, usually people of European origin, live highly regulated lives moving between their comfortable houses to their hermetically sealed office blocks, shopping malls, fast food outlets, international airports and so on according to fixed schedules in accordance with increasingly accurate clocks and watches. Membership of this privileged strata is dependent upon permanent conformity, with individuals being required to be the right colour, account for each year of their lives, speak with the right accents and display the correct mannerisms to be acceptable for each successive stage of advancement. Any deviation can derail a person's career. With the exception of a small and ruthless minority, the only power even successful individuals can aspire to is to become bigger cogs with pre-defined functions. Power is formally in the hands of experts, but each expert is an exchangeable cog. People who dream of a better world, who step outside the prescribed roles to take up causes or to attempt to realize ideals, soon discover how costly this can be. For the upwardly mobile without such dreams, living has become mechanized for the instant gratification of needs at the expense of a complete loss of power to shape their lives or to contribute to the direction of society. Many accept these pre-packaged lives from school to university to work career to retirement home to morgue with equanimity; others live in quiet desperation. Some superficial non-conformity is allowed to members of the working class, but at the expense of low status, permanent insecurity, and even greater powerlessness. Below these are the increasingly large number of people for whom there is no place for in the economy, defined as parasites, deprived of all sense of self-worth and dignity and utterly powerless to protest against their position.

Defence of the Existing Order

So far the general degrading of nature, the threat to the world's ecosystem, the destruction of resources and imminent exhaustion of reserves, the pollution and the degradation of human life associated with the agglomeration of the world's population in built-up environments and increasing impoverishment, oppression and organized violence which is exacerbating all the other problems and preventing their solution, have been described. However there are also the inter-relationships between side effects of these problems: attempts to address each of these major problems will lead to increasing demands for raw materials and will cause more pollution. To increase food supply will require the use of more energy and resources to produce fertilizers and pesticides, which in turn will further destroy the soil and cause more pollution. The impoverishment of people will generate increased population and this in turn will lead to greater concentrations of people in urban centres. Any breakthrough in the production of energy will cause more heat pollution, which itself could destroy the conditions for life on earth. But perhaps the most important problem is that increased exploitation of reserves and resources will increase the intensity of struggle between people and nations, forcing countries into greater competition. This will not only use up more materials in armaments and military activity, but will intensify the competition for economic growth to support larger military forces, create more resource shortages and intensify the arms race in a vicious circle. Greater military competition and societies more fully mobilized to maximize economic growth will result in greater propensity for war, including nuclear war. At the same time fewer people will be left with the means to even think about the long-term problems facing humanity or their root causes. The problem of

such unintended side-effects was summed up by Richard Adams in his argument against those who assume that it is running out of energy which is the main problem:

> ...the problem is both larger and more strategic: it is not where will energy come from, but where it is leading us. If we were to obtain ... a reliable and endlessly expandable source of energy, the real problem would be precisely that it would lead to ever greater complexity and indeterminacy, producing nonlinearities beyond the coping ability of human intelligence.[108]

Yet there are many who believe that environmental problems are an insignificant by-product of world economic progress. A closer examination of these thinkers will reveal more clearly the blinding effect of prevailing assumptions.

Kahn and his colleagues argued that 200 years ago there were few people in the world, they were poor and at the mercy of the forces of nature, while 200 years from now there will be large numbers of people, they will be rich and in control of the forces of nature. Such optimism about the future is almost always associated with a fixation on the promise of technological development and economic growth. Human progress is seen as developing mastery over nature, and it is argued that technology has been continuously improving the conditions for humanity. Each technological challenge has resulted in innovations which have not only solved the original problems, but have been a real improvement on the original conditions. There is no reason to think that such technological advances will not continue to occur, provided enough money is spent on technology. Associated with this technological optimism is the belief in economic growth, which is supposed to have lifted people out of their poverty and put them in a position where they are already, or soon will be, free of the tyranny of nature.

It is this more than anything else which reveals the simplistic thinking of the optimists and their blindness to context. It is this more than anything else which exposes the illusions of people who have come to see the world in terms of a linear notion of progress. Not only does the notion of economic growth as it has generally been formulated ignore the destructive effects of humans on their environments, but it also ignores the actual changes which have taken place in the quality of people's lives. Since growth is seen in terms of activity in an exchange economy, the transformation of a subsistence economy into a market economy is always seen as economic growth, no matter how worse off the lot of the general population. An economy which destroys people's health and thereby generates spending on treatment, is seen as more economically advanced. The inadequacy of using the exchange of commodities as a measure for economic well-being should be immediately evident from the Japanese 'economic miracle'. Nominally the wealthiest people in the world, the conditions of life for most Japanese is if anything, now deteriorating. The main component of increased wealth is simply higher prices for resources, in particular, land. What was previously free or cheap is now a major cost of living, while entirely new needs requiring more expenditure have also emerged. And one third of Japanese workers now suffer from nervous and mental disorders caused by stress.[109]

In actual fact, while technology has continually improved throughout history, the amount of work people have had to do has generally increased, while the conditions of life for the majority of the population have generally deteriorated. It has been

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108. Richard Newbold Adams, *The Eighth Day*, Austin: University of Texas Press, 1988, p.241.

109. Jacabo Schatan;, *World Debt*, London: Zed Books, 1987, p.66.

pointed out by Marshall Sahlins that people in traditional societies, notably the Australian Aboriginals in Arnhem land and the Bushmen of the Kalahari desert, live in a state of affluence in which all their requirements can be met with a minimum amount of effort. Of the two thirds of Bushmen who work at all, the work week is approximately 15 hours not counting cooking and preparation of implements, while the Australian Aboriginals work for only four or five hours a day, including cooking and preparation of implements.[110] In each case, the tribesmen are completely confident of their ability to obtain a livelihood.

As documented by Eric Wolf in *Europe and the People Without History* and John H. Bodley in *Victims of Progress*, it is these original affluent societies which have suffered most over the last few hundred years.[111] When the English arrived in Australia in 1788 there were between 850,000 and 1,250,000 aboriginals.[112] By 1950 there were only 40,000 full blood aboriginals left, mostly living as despised, impoverished outcasts in a land they had inhabited for at least 40,000 years.[113] American Indians suffered a similar fate, both in North and South America. In Africa, European colonists inflicted massive destruction on traditional societies well into the twentieth century. When the Belgians took over the Congo basin and set about exploiting it to obtain rubber latex for the manufacture of tyres, they also set about exterminating all those who would not work for them, paying a bounty for the ears and hands of such people. In this way they reduced the population of the Belgian Congo from 25 million to 15 million people in twenty years.[114]

The conditions for people in non-European civilizations were in many cases better before the era of European imperialism than they have been since, and before the nineteenth century non-Europeans, the Chinese in particular, were certainly not at the mercy of nature.[115] The state of affluence of these people was such that Europeans could only obtain goods from these countries by virtue of their military prowess, since in most places non-Europeans were not in need of anything that Europe could offer them. While in 1700 people in the Middle East were suffering as a result of the corruption and decline of the Ottoman empire, and in northern India under the yoke of the Mughals, other areas of the world were prospering before Europeans began to intrude. An historian of Indonesia noted that: 'when the first Dutch merchants and sailors had come to the island world of the Indies, they had been amazed by the variety of its nature and civilization, and the more observant among them had recognized that southern and eastern Asia were far ahead of western Europe in riches as well as in commercial ability and mercantile skill.' In the eighteenth century the Chinese emperor pointed out to George III that 'our celestial empire possesses all things in prolific abundance' and therefore had little need of English goods.[116] To overcome this problem the British introduced opium into

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110. Marshall Sahlins;, 'The Original Affluent Society' in *Stone Age Economics*, London: Tavistock, 1974, p.1-39.

111. Eric R. Wolf, *Europe and the People Without History*, Berkeley: University of California Press, 1982; and John H. Bodley, *Victims of Progress*, Menlo Park, California, 1982. See also papers in A. Ugaldo, ed., *Studies in Third World Society*, Austin, Texas, 1986.

112. Noel Butlin, *Our Original Aggression*, Sydney: George Allen & Unwin, 1983.

113. The subjugation of the Australian continent by Europeans has been poignantly described by William J. Lines, *Taming of the Great South Land*, Sydney: Allen & Unwin, 1991.

114. Mark Twain;, *King Leopold's Soliloquy*, New York: International Publishers, 1961, p.52.

115. For a comparative study of societies when Western Europe gained ascendency and developed capitalism see E.L. Jones, *The European Miracle*, Cambridge: Cambridge University Press, 1981.

116. Keith Griffin, 'Underdevelopment in History' in *The Political Economy of Development and Underdevelopment*, ed. Charles K. Wilber, 2nd ed. New York: Random House, 1979, pp.77-90, p.79. See also A.J.S. Reid, 'The Origins of Poverty in Indonesia' in James J. Fox et. al. *Indonesia: Australian Perspectives*, Canberra: A.N.U. Press: 1980, pp. 441-454.

China which led to the Opium War when the Chinese tried to put a stop to this trade. The British won. Trade with India was developed by destroying its textile industry and forcing Indians to buy British cotton goods. By the twentieth century European imperialism had totally destroyed the civilizations of the Americas, and contributed to the impoverishment of Egypt, the Middle East, India, the East Indies and China. India and China were left subject to devastating famines.[117] And the effect of 'economic growth' in the twentieth century has often been associated with a reduction in production per head of population. Thus it was possible to declare on the basis of figures published in 1955 that 'the economic well-being of the average person in the world outside the USSR was in 1956 less than in 1913 and perhaps less than in 1900.'[118] With the incredible growth of poverty in Africa, in parts of Asia and Central and South America, it is evident that this trend is continuing. The legacy of 200 years of European progress has been the destruction or impoverishment of most other societies and civilizations, culminating in a world economic system in which the majority of the world's population live in permanent poverty with little hope for the future.

The most significant effect of improvements in Western technology has been to facilitate the greater exploitation by some groups of people by others. One of the greatest areas of technological progress has been in the means of oppression, ranging from military hardware and the means to coordinate its use to computerized spying technology and the technology of mind control. However even the standard technology of industrial production is intimately associated with exploitation. It is often a way of reducing the labour time expended by some people by forcing others to spend at least equal time producing the means for them to do so. This is not to say that some technology does not have the potential to reduce people's workload, but this potential is probably overestimated, and is unlikely to be realized without radically changing the economic organization of the world.

One example illustrating this is the vast technological advances in transport. Ivan Illich calculated that the amount of time put in by the average American for travelling and paying for travel amounts to one hour for every five miles, the same as for those who walk.[119] However this calculation is based on averages of expenditure, income, time worked and time spent in travelling by Americans and does not take into account the different amounts of time required by different groups to pay for their travel, nor does it take into account the cheap labour of Third World countries involved in mining, refining, manufacturing and shipping necessary for the production of the means for this travel. If this is taken into account, the labour time facilitating each five miles travelled in USA is even greater than one hour. The importance of the technology is that it has made it possible for some people to save time travelling at the expense of others.

The improvement of life for people in the West since the nineteenth century has been largely the consequence of the increase in workload and further impoverishment of people in the economic peripheries who have supplies cheap commodities to the West. Before the Second World War this was achieved for the most part by direct colonial rule by European nations of the rest of the world. Since then it has been achieved by direct and indirect intervention in Third World nations to saddle them with oppressive dictatorships willing to act in the interests of the

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117. For the history of this see Andre Gunder Frank, *Dependent Accumulation and Underdevelopment*, New York and London: Monthly Review Press, 1979.

118. Arghiri Emmanuel;, *Unequal Exchange*, New York: Monthly Review Press, 1972, p.262.

119. I.D. Illich, *Energy and Equity*, New York: Harper and Row, 1974, p.19.

wealthy nations, particularly the USA, by orienting their economies away from home consumption towards the world market. Andre Gunder Frank described the effect of this in 1984:

> In the case of Brazil ... since the military coup in 1964, wages were reduced by over 40%. In Argentina, since the military coup in 1976, wages were reduced by over 50%. But already before the coup real wages were going down as a result of the economic policy of the right wing of the Peronist government in 1974-75. In Chile, real wages since the coup were reduced by two thirds, that is to say, from an index of 100 almost to an index of 30, and unemployment increased from 4% to 20%, fell to 12% and rose to 30%. To be able to do this it was necessary first to destroy or to control the unions, to eliminate - often physically - the leadership, to repress all political opposition, and to throw people in jail, torture them, murder them, exile them, and so forth.[120]

The International Labour Organization reported in 1987 that real incomes of labourers had fallen by up to 40% in South America and Africa south of the Sahara.

So-called economic progress is also proving increasingly costly to the members of affluent countries. The new international division of labour forces workers in Western societies to compete with the oppressed workers of the Third World while at the same time Western governments are financing their military budgets by cutting down on social services, welfare, health and education expenditure, thereby simultaneously reducing the size of the middle class.[121] It has been argued that capitalism has now transcended all national boundaries, and that the notion of a separate Third World no longer makes sense.[122] But with very few exceptions the conditions of life in the Third World are not improving or actually deteriorating, while the loss, or abandonment, of State sovereignty over their economies of First World countries has led to a growing deterioration of conditions for the majority of the population. Throughout the 1980s some 30 million people in the industrialized (OECD) nations were jobless. A study undertaken by physicians headed by Dr J.L. Brown entitled *Hunger in America: The Growing Epidemic* found that 20 million Americans were suffering from chronic hunger, and that the problem was worsening.[123] Three million Americans were homeless. Looking at the effects of agribusiness on North American agriculture, Jon Bennett pointed out:

> Parallels with the poorer South are increasingly apparent: fewer and fewer people control greater amounts of land; absentee landowners - a landed 'aristocracy' - is beginning to emerge; and the cost is measured in terms of joblessness as rural communities are gutted. Here, as in the developing world, wages are inappropriate to the needs of the struggling families, and a reckless disregard for conservation bodes ill for future generations.[124]

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120. Andre Gunder Frank, *Critique and Anti-Critique*, N.Y.: Praeger, 1984, p.213f.

121. Folker Frobel, Jürgen Heinrichs and Otto Kreye, *The New International Division of Labour*, [1977] tr. Peter Burgess, Cambridge: Cambridge University Press, 1980.

122. Nigel Harris;, *The End of the Third World*, Harmondsworth: Penguin, 1986.

123. *Harvard University Gazette*, Vol. LXXX, No.24, March 1, 1985, p.1.

124. Jon Bennett with Susan George, *The Hunger Machine*, Cambridge: The Polity Press, 1987, p.188.

Then in 1990 the world went into a deep recession. The current economic crisis heralds not the end of the Third World, but the beginning of the end of the First World.

Where there are better conditions associated with improvements in the efficiency of production, this is almost always offset by additional costs elsewhere, manifest in the continual production of new necessities which individuals must pay for to participate in the economy. Ivan Illich pointed out that not only do people in America spend the same amount of time travelling each mile as do people in societies deprived of traffic industries, but they are forced to spend a vastly greater proportion of their lives travelling and paying for travel. While people in traditional societies spend 3% to 8% of their time travelling, people in USA spend 28% of their time travelling or working to pay for their travel. And this is fairly typical of the apparent advances in Western societies.[125] In his essay on 'The Growth of Affluence and the Decline of Welfare', E.J. Mishan described similar cases in which what is represented as improvements in the quality of life are actually part of its deterioration. Books, journals, education, newspapers, vacations to recover from stress, employment agencies, marriage bureaus and the like were simply not needed in more traditional societies. The growth in modern education is not an advantage to the individual. Individuals have to spend more of their lives studying in highly competitive environments just to be employable. As Mishan pointed out, 'This sort of education is not education in the classical sense. It is not education in the humanities. It has no affinities with art or culture of civilized living.... [T]he universities, the centres today of what cynics call the knowledge industry, are, in the nature of things, no longer able to produce educated men, men of cultivated intelligence. They are geared to produce specialists...'[126] More must be spent on medicine to combat increasing disease. The increased mobility in modern life, whether associated with moving between workplaces or exchanging friendships and spouses, is not a liberation from old constraints. It is the imposition of lifestyles which demand of people that they give themselves totally to their careers to succeed, that they acknowledge no other constraints.

Social life has deteriorated accordingly.[127] There has been a breakdown of communities, the family, all the institutions which gave people's lives meaning and direction, while the increasing stress of meaningless work and intensified competition has produced an increasingly instrumental orientation in interpersonal relations. Mishan has described the effects of this:

> The unavoidable frustration resulting from this act of social vandalism has, alas, only aggravated man's lust for power and sparked his hopes with technological fantasies that can only remove him further from human fulfilment. The resulting despair has begot a craving to pierce more wantonly the seeming repressive integument of the social order, a craving expressed in the feverish search for

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125. On the low correlation between economic growth and social welfare, particularly when ability to sustain such welfare is taken into account, see Herman E. Daly and John B. Cobb, Jr., 'Misplaced Concreteness: Measuring Economic Success', *For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future*, Boston: Beacon Press, 1989, Ch.3.

126. E.J. Mishan, 'The Growth of Affluence and the Decline of Welfare' in Daly ed. *Economics, Ecology, Ethics*, pp.267-281, p.272.

127. As described by E.J. Mishan in *The Costs of Economic Growth*, [1967], Harmondsworth: Penguin, 1969.

novelty and excitement which, while admirably serving the forces of economic expansion, leads unerringly to the totalitarian state.[128]

Conclusion

Optimism about the future is due to the failure to consider the full range of environmental problems, and to indifference to the suffering of others. These problems cannot be understood in isolation from each other, or from other political, social and economic problems, either within nations or between nations; and they are forcing an awareness of the blindness of the modes of thought which try to do so. Such optimism therefore manifests the general problem which has been revealed by this chapter: the domination of society by a linear, abstracting form of thinking which blinds people to the side-effects of their efforts to control the world: the destabilization of the world ecosystem, the exhaustion of reserves and the destruction of resources, the growing conflicts between people and the concomitant militarization of societies, pollution, and the impoverishment of social and cultural life. This form of thinking has also blinded people to the significance of what is being affected or degraded: other life forms, ecosystems, people in the economic peripheries, future generations, and ultimately, their own lives. The environmental crisis reveals the need for developing modes of thought capable of analysing the inter-relationships between such diverse problems and for appreciating the significance and meaning of life. And it raises fundamental ethical and social issues. Why should people concern themselves with non-human life, future generations, oppression in the economic peripheries or the plight of the poor? And why in fact do so few people do so? In raising these issues environmental problems reveal the nihilism pervading modern civilization. Finally, the question presents itself of how can those who do accept responsibility for these problems act effectively. In the following chapter the efforts to address these problems will be examined, and it will be shown that even the ideas of those who have confronted environmental issues are vitiated by the prevailing forms of thought.

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128. Mishan, 'The Growth of Affluence and the Decline of Welfare', p.279f.

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RESPONSES TO ENVIRONMENTAL PROBLEMS

While there has been spasmodic concern about the environment since the nineteenth century, it was only in the late 1960s and early 1970s that it became a major international issue. Then after 1975, interest in environmental problems subsided, except in West Germany.[1] The economic crisis which began in 1973 and continued to worsen until 1982 forced environmental problems out of the limelight. Only after 1986 with unemployment temporarily in decline, after the Chernobyl nuclear reactor melt-down, with evidence of the greenhouse effect, with a hole in the ozone layer, and with increasing levels of pollution, did the environment become a major issue again. However by mid-1991, interest in the environment was again waning and up until 1996 has continued to wane. Under these circumstances, although green movements have gained some power and a number of green parties have been able to establish themselves, only superficial environmental problems have been addressed to any effect.[2] There have been a few efforts in the more affluent nations to do something about environmental problems of immediate economic significance or which have captured the public imagination - economising on the use of oil, sending some food to the latest victims of famine, reducing the visible forms of pollution or the pollution which is obviously killing people in the immediate vicinity, saving a few wilderness areas and preserving a few species of animals. More recently there has been some international co-operation to consider controlling the production of chlorofluorocarbons and international condemnation of Brazil's destructive economic policies towards the Amazon. A United Nations commission, headed by the Norwegian Prime Minister Gro Brundtland, has also investigated the more general relationship between environmental problems and economic development.[3] And there has been a major international conference on the environment. But, for the most part, these efforts have been merely reactive, dealing with problems in isolation without any effort to address their basic causes. Action has often been cosmetic, designed for electoral success or public relations rather than practical effect. When seen against the background of all the problems

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1. On the decline of the early environmentalist movement see Francis Sandbach, *Environment, Ideology and Policy*, Oxford: Blackwell, 1980, pp.1-20.

2. For the history of the global environmental movement see John McCormick, *Reclaiming Paradise*, Bloomginton: Indiana University Press, 1989.

3. The findings of this commission were published as *Our Common Future* by Oxford University Press in 1987. For a critique of this, see Thijs De La Court, *Beyond Brundtland: Green Development in the 1990s*, [1980] tr. Ed Bayens and Nigel Harle, London and New Jersey: Zed Books, 1990. See also William E. Rees, 'Sustainable Development: Economic Development and Ecological Realities', *The Trumpeter*, Vol.5, No.4, 1988, pp.133-138.

discussed in the previous chapter it should be immediately evident just how inadequate these responses have been.[4]

It is clear from the way the environmental movement lost momentum in the 1970s and again in the 90s that it is almost impossible to mobilize people to the extent necessary to deal effectively with environmental problems while they are economically insecure; and people will continue to be insecure for as long as the world economy continues to develop along its present path. However current economic instability is itself largely a surface manifestation of the far more serious environmental crisis:

> We are entering a period in which resource limits can no longer be ignored, nor can the interests of different sections of the world be assumed compatible: to solve one country's problems may well be to aggravate those of another... The [economic] crisis is not just a cyclical downturn nor even ... the slack phase in a hypothetical Kondratieff cycle... [It is] the culmination of a period of increasing strains on the world's productive structures, natural resources, and political systems. Thus a swift rise in world output would soon reveal shortages in oil, various minerals, and food, and increased international tension...[5]

The soaring prices for minerals, for wheat, wool and other primary products after 1987 bore out Seers' predictions.

The failure to address the full extent of environmental problems and their causes, and the failure of green political parties after some initial electoral successes, suggests an intellectual failure and a failure of imagination to face up to the magnitude and complexity of the crisis confronting the world. In this chapter the intellectual responses to the environmental crisis will be examined - with the exception of the work of Marxists and those ecological economists who are so alien to the spirit of European civilization that, until very recently, they have been unable to gain formal recognition within any Western country.[6] Marxists and ecological economists will be examined in later chapters.

Because of the diversity of approaches taken only the major trends in environmentalism will be presented, although inevitably this will not do justice to all those involved. But the major concern will not be with particular limitations, but to show that there is something fundamentally wrong with our culture - with the way people think about problems, particularly ethical and political problems. Dominant cultural forms have made it almost impossible to get the fundamental problems of society into perspective. To confront environmental problems it will be necessary to radically transcend the modes of thought which at present pervade society, to develop fundamentally new ways of thinking about the world and our place within it. Ethical ideas have come to be isolated from general discourse. Unless they reinforce tendencies which manifest more deeply rooted conceptions people have about themselves and their place in the world, they have become virtually irrelevant to the way people live.

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4. For a good overview of the successes and failures of the environmentalists see Jonathon Porritt; & David Winner, *The Coming of the Greens*, London: Fontana, 1988, and John McCormick, *Reclaiming Paradise: The Global Environmental Movement*, Bloomington: Indiana University Press, 1989.

5. Dudley Seers, *The Political Economy of Nationalism*, Oxford: Oxford University Press, 1983, p.1.

6. Juan Martinez-Alier pointed out in the concluding chapter of *Ecological Economics* (Oxford: Blackwell, 1987) that: 'There have never been university chairs in ecological economics. Our writers lacked an academic forum (because of the separation and professionalization of the sciences) where their arguments could be presented. There was also a crucial absence of plausible political groups, outside academia, which could adopt them as ideologues.' (p.234)

One of the most important effects of prevailing metaphysical assumptions has been the prevalence of the dogma that interpretation of the world is separate from ethics and political philosophy, that scientific knowledge is separate from evaluation. Yet those scientists who attempt to explain environmental problems almost invariably make proposals for dealing with them on the basis of their explanations, and these proposals are taken far more seriously than the arguments of philosophers. The chapter will therefore begin by examining the proposed explanations of the problems and the associated proposals for solutions, showing the relationship between the nature of explanations and the proposals before looking at the work of philosophers and political theorists. Efforts have been made to account for environmental problems in terms of attitudes to nature, population growth, the nature of technology, and economic growth. Each of these will be examined in turn, showing how a defective notion of causation has led to simplistic diagnoses and to proposals which are not only inadequate, but which are oppressive and dangerous.

Attention will be turned to what philosophers and some philosophically oriented political scientists have said about environmental problems and three trends in environmental philosophy - representing the major stances in modern ethico/political thinking - will be identified.[7] The first follows the mainstream of ethical thought and attempts to extend rights theory and utilitarianism to encompass our relationship to future generations, animals and plants. It is characterized by a belief in moral progress in which irrelevant forms of moral discrimination are being overcome. Rights theory, utilitarianism and the notion of moral progress are the ethico/political doctrines which have been formulated on the foundation of the 'scientific' view of the world. The second trend is associated with Christianity. It is characterized by efforts to draw on the Christian tradition of thought and to defend Western thought and institutions against those who have argued for a radically new ethics and radical political action. The third trend associated with the 'deep ecologists' belongs to the tradition of 'romantic expressivism'. It is characterized by efforts to develop new ways of seeing people in relation to each other and to nature as a foundation for a new ethical and political philosophy and a new social and economic order. Arguing that we are part of nature, that nature has intrinsic value, and that the goal of life is to realize our potential, they come nearest to developing their ideas in terms of a new metaphysics.

Attitudes to the World

The effort to explain the environmental crisis in terms of the attitudes to nature dominating Western society has produced more controversy and resulted in more research than any other proposed explanation. While the foremost contributors to this debate are Lynn White, Clarence Glacken,[8] Robin Attfield, Hans Jonas, John Passmore and Yi-Fu Tuan, there are also a great number of lesser known

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7. These three trends have been identified by Charles Taylor in *Sources of the Self*, Cambridge: Harvard University Press, 1989. See especially p.495ff. for a summary of these.

8. Clarence Glacken's *magnum opus* is *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*, Berkeley, LA: University of California Press, 1967. However Glacken has contributed a number of papers to this problem including 'Changing Ideas of the Habitable World' in William L. Thomas (ed.) *Man's Role in Changing the Face of the Earth*, Chicago: University of Chicago Press, 1956, pp.70-92 and 'Man Against Nature: An Outmoded Concept' in Harold W. Helfrich Jr. *The Environmental Crisis*, New Haven and London: Yale University Press, 1970. The works of the other thinkers referred to here will be footnoted later.

contributors. The thinker who has argued the strongest thesis along these lines, and who has consequently aroused the greatest controversy, is Lynn White.[9]

White argues that: 'What people do about their ecology depends on what they think about themselves in relation to things around them,'[10] and that the forms of thinking which have led to environmental problems in Western society have their roots in Christianity. According to White, Christianity accepted the Judaic conception of linear time and developed a view of both God and man as transcending nature. This was a radical break from pagan notions of a cyclical time and a world inhabited by spirits. However Eastern and Western Churches developed these ideas in different directions. While the Greek Churches of the East believed that sin was intellectual blindness and salvation was to be found in illumination, orthodoxy, or clear thinking, the Latin West believed sin was a moral evil and salvation was to be found in right conduct. As White wrote: 'The Greek saint contemplates; the Western saint acts.'[11] Finally, while both Greeks and Latins saw understanding nature as a means of attaining a better understanding of God, the Greeks saw nature as a symbolic system through which God speaks to us while the Latins attempted to understand God by discovering how his creation operates. The effect of these ideas of the Latin West in medieval society was to promote the development of technology and the domination of nature, conceived of as part of the perpetual progress of humanity. And White has provided overwhelming evidence that there was a far greater emphasis on developing technology in Western Europe than in any other civilization right from the beginning of the feudal era. This provided the impetus which led to the global imperialism of Western Europe, to the development of mechanistic science, to the emergence of industrial capitalism, and finally to the global ecological crisis.

Most of the criticisms of White's arguments are misdirected. They usually centre on White's interpretation of the Bible, and it is argued that the Bible justifies a much more positive view of nature than White allows. However White is not concerned with explicitly stated positions but with discovering the values which actually move people, and with showing how these were formed. Thus in a reply to his critics, he wrote:

> The artifacts of a society, including its political, social and economic patterns, are shaped primarily by what the mass of individuals in that society believe, at the sub-verbal level, about who they are, about their relation to other people and to the natural environment, and about their destiny.[12]

What White is concerned to point out is that the sub-verbal beliefs of Western society have their roots in Christianity. He acknowledged that no one publicly advocates pollution but also points out that the structure of values embedded in these sub-verbal beliefs gives priority to other goals than achieving a viable ecology. Unless we face up to this, he argues, the environmental crisis will not be overcome.

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9. Lynn White Jr. 'The Historical Roots of our Ecological Crisis', first published in *Science* Vol.155, (10 March, 1967) pp.1203-1207, republished in Ian G. Barbour (ed.) *Western Man and Environmental Ethics: Attitudes Towards Nature and Technology*, Reading: Addison-Wesley, 1973, pp.18-30. These arguments have been further developed in *Medieval Religion and Technology: Collected Essays*, Berkeley: University of California Press, 1978.

10. White in Barbour, p.24.

11. Ibid. p.26.

12. Lynn White, Jr. 'Continuing the Conversation' in Barbour, *Western Man and Environmental Ethics*, pp.55-64, p.57.

White's approach to explaining the formation and role of attitudes in the environmental crisis is more subtle than most other thinkers who have entered the debate. He rejects the idea that religious beliefs could be regarded as 'the cause' of environmental problems. He points out that the notion of cause is generally not used by professional historians since there is always more than one cause, and the search for causes always leads to deeper causes. He writes, 'It is this sense of pluralism, and the various strata of historical "causation," that led me to refer the metaphor of *roots*.'[13]

The weakness in White's argument lies elsewhere: in his analysis of the way beliefs attain and retain their dominance. Despite his claims to the contrary, White has not completely emancipated himself from the notion of cause as an event or factor which can be abstracted out to explain things. This is evident in his arguments against opponents, particularly Marxists, his failure to account for why these beliefs have persisted, and his argument that since the roots of the environmental crisis are religious, so must be its solution.[14] In attacking Marxists, White counterposes religious values and the economic-social-political component of human relationships as candidates for the basic explanatory factor in society.[15] These religious values are conceived extrinsically to society, as is evident from his reference to artifacts of society being 'shaped' by beliefs. Thus White's proposed solution amounts to the assumption that once the basic cause of the problem has been identified, then the problem can be solved by removing the cause; as though society were a machine to be repaired. What this reveals is that White is himself caught up within those sub-verbal beliefs which he is trying to reveal - that the world is a mechanical order to be controlled through causal intervention.

But the situation is more complex than this. If fundamental attitudes or beliefs account for people's relation to their environments one would have expected no environmental problems to have emerged in classical China. Yi-Fu Tuan has pointed out that the Chinese traditionally saw themselves as part of nature and had a deep respect for it.[16] They also recognized the importance of vegetation for preserving stream flows, soil, and keeping out invaders. Yet they still managed to destroy most of their forests. On the other hand Communist China adopted the Western idea that nature is to be subordinated, yet until recently it has had a far better record than traditional China in relation to environmental problems. The Communists, at least when Mao Ze Dong ruled, did much to reafforest the country, to conserve resources and to improve the environment in other ways.[17] Conversely, the Japanese still profess a special appreciation of nature, yet have subordinated their environment to their drive for industrial development.

White needs to go beyond simply showing that there are beliefs about the world deriving from Christianity which underlie the environmental destructiveness of Western European civilization - important as this is. He needs to consider why these beliefs have prevailed and how they influence social action, how they have become institutionalised and how institutions embodying them have gained ascendancy. He

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13. Loc.cit.

14. White, 'The Historical Roots of our Ecological Crisis' p.30.

15. White, 'Continuing the Conversation', p.57.

16. Yi-Fu Tuan, 'Discrepancies Between Environmental Attitude Behaviour: Examples from Europe and China' originally published in the *Canadian Geographer*, Vol.12 (1968), 176-91; reprinted in Paul Ward English and Robert C. Mayfield (eds) *Man, Space, and Environment* New York, London, Toronto: Oxford University Press, 1972, pp.68-81.

17. See Leo A. Orleans and Richard P. Suttmeier, 'The Mao Ethic and Environmental Quality' in *Science* Vol.170, 1970, 1173-76 and Qu Geping & Woyen Lee eds, *Managing the Environment in China*, Dublin: Tycooly, 1984.

needs to account for the stability of these institutions and for other institutions and social processes which they have engendered in turn. Finally, he needs to consider the relationship between the dynamics of these institutions and social processes and the beliefs which were the original cause of their emergence. By failing to extricate himself from the culture which he set out to explain, by failing to develop an adequate alternative to the mechanistic notion of causation, White seems to have been blinded to these problems.

Anticipating subsequent argument, I want to suggest that the beliefs about the world which actually affect the way people live are those which are articulated into the basic concepts or categories by which the world is defined in the practices of individuals and institutions, which underlie the organization of discourse and of the way people live. In the remainder of this chapter I will show how the categories which orient people towards the domination of the world vitiate in one way or another the work of environmentalists.

Population

The mechanistic notion of causation pervades the thinking of those who have argued that growth in population is the real cause of environmental problems. The foremost exponent of this view was Paul Ehrlich, although he now appears to have modified his views. His place as the foremost proponent of this explanation has been taken by Garrett Hardin. Ehrlich pointed out that population is growing exponentially. This is clearly evident from the figures cited from Ehrlich's books in the previous chapter. Efforts to reduce population growth have had little effect. In 1990, with a world population well over 5 billion, the time for population to double has been slowed from 33 years to just 39 years.[18] Ehrlich used such figures to support the Malthusian view that an increase in food together with a reduction in disease will result in an increase in population, which in turn will involve increasing demands for resources.[19] He further argued that as the limits are approached, the struggle for resources will become more intense and humans will destroy much of their environment. What we are now seeing is the beginning of this destruction.

The solution proposed by Ehrlich in his early work and in a more extreme form by Garrett Hardin, is encapsulated in what they called 'lifeboat ethics'. As the name suggests, the principle of this ethics is that people in the wealthy nations should recognize that there is a limit to the number of people who can be saved, and their primary concern should be to ensure that they themselves survive. It involves ceasing any attempt to aid the most impoverished of the Third World and concentrating on saving the First World and the wealthier Third World countries from destruction by imposing strict birth control.[20]

This analysis is based on the identification of population growth as an independent factor, as a mechanical process governed by its own laws. It is a simple consequence of evolution that people will struggle to reproduce to the fullest extent, since people so oriented have reproduced most successfully in the past.[21] The part played by society and culture is nothing more than to have improved the food supply

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18. See Paul R. Ehrlich and Anne H. Ehrlich, *The Population Explosion*, N.Y.: Simon and Schuster, 1990.

19. Paul R. Ehrlich, *The Population Bomb*, New York: Ballantine, 1968 Ch.1.

20. Ehrlich *The Population Bomb*; Garrett Hardin, *Exploring New Ethics for Survival*, N.Y.: Viking, 1972; 'Living on a Lifeboat' *Bioscience* 24, (October, 1974): pp.561-68; and *The Limits of Altruism*, Bloomington, Indiana University Press, 1977.

21. Ehrlich, *The Population Bomb*, p.34.

and reduced the mortality rate, thus releasing the natural constraints to the operation of the natural tendency of populations to grow. The increasing disruption of the environment is simply the effect of this cause. When the 'lifeboat ethic' calls for an abandonment of efforts to help the impoverished it assumes this analysis. It also implies that such measures will either force poor nations to develop birth control or reduce their populations through starvation.

But while overpopulation of the world is exerting enormous pressure on the world environment, the situation is far more complex than represented by Ehrlich and Hardin. To begin with it is not the impoverished who are responsible for the most important environmental problems. A very small proportion of the world's population is responsible both for most of the environmental destruction and most of the resource depletion. As Ivan Illich pointed out in 1974, Americans use more fuel for transporting people than is used for all purposes by all the Indians and Chinese, that is, nearly half the world's population, use for all purposes.[22] The nature of the technology used by the wealthy, including military technology, tends to be far more destructive of the environment than that used by the poor. Commoner has pointed out that the greatest environmental pollution has occurred since the Second World War and has argued that this can be largely explained by the use of newer production processes. For example, detergents, aluminium, plastic and inorganic fertilizers have been replacing soap powder, steel, wood and manure, lead has been added to petrol and there has been a rapid increase in the use of chlorine for the production of organic chemicals.[23]

The 'lifeboat ethic' conjures up the image of a benevolent group of people deciding against their inclinations who not to help. But the wealthy nations have become wealthy by subjugating the rest of the world, and as is becoming increasingly clear, the impoverishment of the Third World has been the result of Western European imperialism.[24] Moreover, the wealthy continue to bleed the impoverished of the world. As Roy Hattersly pointed out in 1986: 'In 1985, the net transfer of resources from the Third to the developed world was $22 billion. The truth is that the poorest parts of the world are still subsidizing the richest.'[25] In 1988 capital was flowing from the Third World to the rich at a rate of $43 billion a year.[26] The situation is far worse than it appears since the terms of trade are such as to allow the affluent nations to import artificially cheap goods from the Third World while exporting to them artificially expensive goods. The extent of the exploitation involved in this is hidden by the apparently small part trade plays between the industrialized nations and the Third World when measured in monetary terms. It appears to be only about 2½% of the gross domestic product of the industrialized nations. But if workers in the Third World were paid at the same rate as the workers in the industrialized nations, this trade would be nearer 25% of their gross domestic product.[27] And this does not take into account the nature of the products of trade, the enormous flow of energy rich products, non-renewable materials and high quality food from the Third World to the industrialized nations, an exchange in which the terms of trade have moved continuously against the producers of these products for

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22. Ivan Illich, *Energy and Equity*, New York: Harper and Row, 1974, p.11.

23. Barry Commoner, *The Closing Circle: Confronting the Environmental Crisis*, London: Jonathon Cape, 1972, Ch.8.

24. See for instance Andre Gunder Frank, *World Accumulation: 1492-1789*, New York: Monthly Review Press.

25. Quoted by Nick Rowling in *Commodities: How The World Was Taken To Market*, London: Free Association Books, 1987, p.174.

26. Cited from the World Bank in *The Guardian*, Jan.1, 1989.

27. This has been noted by Arghiri Emmanuel in *Unequal Exchange*, New York: Monthly Review Press, 1972, p.367f.

over a hundred years. A global leech is a more appropriate image for the affluent nations.

As for population growth, the most important generating condition of rapid growth is precisely this impoverishment of people which the 'lifeboat ethic' is promoting as a cure.[28] The rapid growth in population in non-European nations other than those in which the original inhabitants were exterminated and replaced by Europeans can be directly attributed to the social disorganization and consequent impoverishment produced by European imperialism. In the case of Indonesia, the Dutch had a deliberate policy of promoting population growth to facilitate further exploitation.[29] In recent decades, most instances of rapid population growth have occurred where people are insecure and impoverished, and where people, especially women, are uneducated.[30] When infant mortality is high and people are dependent upon their children to support them in their old age, people have as many children as possible. Variations in birth rates between poor countries result primarily from the distribution of income. Egalitarian societies have low birth rates.[31]

Technology

Some of those who have attributed environmental problems to modern technology have been aware of the limitations of prevailing notions of causation. This is true of both Barry Commoner[32] and E.F. Schumacher.[33] However while Commoner and Schumacher are at pains to emphasise the complexity of environmental problems, others, including some members of the appropriate technology movement, have a tendency to view technology as the causal factor responsible.[34] The questions asked by Dr Raúl Prebisch, director-general of the Latin American Institute for Economic and Social Planning, illustrates this way of thinking:

> If [the underdeveloped countries] have been unable to keep up with the major world trade flows, is not technology to blame? ... Can it be said that the higher capital-intensive level, especially in industry, is not the product of technology? Is not the population explosion likewise attributable to the advance of science and technology?[35]

This oversimplifies the problem and turns attention away from crucial considerations about social and economic relations within and between nations - relations which are important in their own right and which impact on technological development. In capitalist societies technology has to make a profit. There is a vested interest in developing the sort of technology which will give manufacturers

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28. The best study of this is Susan George's, *How the Other Half Dies*, Harmondsworth, Penguin, 1977, ch.2, 'The Population Myth'.

29. See Clifford Geertz, *Agricultural Involution*, Berkeley: University of California Press, 1968.

30. Nathan Keyfitz 'Population Growth: Causes and Consequences' in Murdoch *Environment* 2nd ed. pp.39-64, esp. p.58.

31. George, *How the Other Half Dies*, p.63. Kerala in India as compared to Bangladesh is a good example of this.

32. Barry Commoner, *The Closing Circle: Confronting the Environmental Crisis*, London: Jonathon Cape, 1972.

33. E.F.Schumacher, *Small is Beautiful*, London: Abacus, 1974.

34. See David Dickson;, *Alternative Technology and the Politics of Technical Change*, Glasgow: Fontana, 1974, p.159f. for a critique of this.

35. Cited by Dickson, p.159.

power over both their workers and a competitive edge in the international market. Ecological considerations, considerations about the requirements of the impoverished of the world and the effects on the quality of life of workers are irrelevant from the point of view of companies struggling against competitors to maintain their viability. In these circumstances the part played by technology is to entrench environmentally destructive economic organization rather than produce it. And frequently environmental problems are not related to technology at all. In view of the analyses of the reasons for population growth referred to above, it is difficult to justify Dr Prebisch's suggestion that it is science and technology that has caused population growth.

The failure to take into account the complexity of the relation of technology to society when technology is treated as a causal factor is also evident when it comes to action. The members of the appropriate technology movement tend to assume that having identified the cause of the problem in technology, all they have to do is change the technology. However their work in Third World countries has illustrated that when technology is introduced to a society it does not determine the nature of that society.[36] For instance when methane plants designed to use cow dung were introduced into villages in many Third World countries, the effect was often to enrich the wealthy villagers and to take away the fuel supply of the poor. Along with further impoverishment of the poor, this put greater pressure on other fuel sources, in particular, trees. What was seen as 'appropriate technology' further entrenched the existing, environmentally destructive economic order.

The problem of the relation of interpretation to action engendered by deficient notions of causation is evident in the work of Barry Commoner. Commoner is aware of the importance of context, and has criticised explanations which over-emphasize population growth and growing affluence on the grounds that they fail to take into account the context within which such environmental problems occur. Accordingly, in his investigation into the role of technology, he has examined in detail examples of environmental destruction. In fact he has devoted a whole chapter of *The Closing Circle* to this problem. To deal with it he works with two different concepts of causation. A holistic form of causation is used when considering ecosystems and life systems, but when technology is described as disrupting these systems, it is treated as an extrinsic 'independent' causal factor. A holistic form of causation is again assumed when considering the society which produces such technology. So while the type of technology is held to be largely responsible for environmental problems, technology is not taken to be an independent cause but a facet of more complex processes which can only be understood holistically. This leaves Commoner unable to offer any solutions and he concludes his book on a negative note:

> ...the world is being carried to the brink of ecological disaster not by a singular fault, which some clever scheme can correct, but by the phalanx of powerful economic, political, and social forces that constitute the march of history. Anyone who proposes to cure the environmental crisis undertakes thereby to change the course of history. But this is a competence reserved to history itself... That we must act is now clear. The question which we face is how.[37]

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36. On this see Nigel Pollard, 'Appropriate Technology: Really Appropriate or just a Misfit?' *The Ecologist*, Vol.13, No.1, 1983, pp.27-34.

37. Commoner, *The Closing Circle*, p.300.

Economic Growth

Some of the most important efforts to understand the environmental crisis are those initiated by The Club of Rome in the early 1970s. With variations, the members of the Club of Rome explain environmental destruction by economic growth. Their approach is to construct mathematical models of this growth by identifying a number of causal factors and examining the relationships between them. The best known of these are the models constructed by Jay Forrester (1971) and Dennis Meadows (1972).[38] In considering economic growth they have isolated population, industrialization, food production, pollution and consumption of non-renewable resources as factors causing environmental problems, and then shown how the growth of each of these affects the growth of the others. By projecting various possible rates of growth of these factors, they came to the conclusion that there will be a disaster within the next hundred years if growth continues at anything like the present rates.

While it can hardly be denied that the Club of Rome are correct to point out that exponential economic growth must end in massive environmental destruction, these early models manifest most clearly the limitations of conceiving the world in terms of interacting factors. Admitting a number of factors allows for a greater degree of complexity than analyses which focus on a single factor and consequently gives the appearance of a greater degree of realism. But this appearance is spurious. All these factors were considered in abstraction from their contexts, aggregated into single world indexes without any concern for the differences between regions, even between the rich and the poor countries, and with no effort to examine situations where the changes were occurring, where the changes were affecting the environment, or why the changes were taking place. Allowing for interactions between abstractions does not reconstitute this context, and at best only allows for a single level of interactions; a causal level at which a certain rate of exploitation of natural resources leads inevitably to a certain level of pollution, and that again has a certain effect on birth-rates, death rates and so on in the actual world. Most importantly, political and economic organizations and power relations within the world were totally ignored. Not surprisingly, the scenarios predicted have already been found to be grossly at variance with reality. Exponents of this approach have been unable to offer any guidance for action other than vague injunctions to slow the rate of growth which, without taking into account regional variations, implies freezing the world economic order at a state in which a billion people are suffering from malnutrition. The analyses bewildered people rather than oriented them for effective action.

Later studies produced by the Club of Rome successively struggled to come to better grips with political and economic contexts.[39] They divided the world into

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38. Jay W. Forrester, *World Dynamics*, Cambridge, Mass.: Wright-Allen Press, 1971; and Dennis L. Meadows et.al., *The Limits to Growth: A report for The Club of Rome's Project on the Predicament of Mankind*, [1972] London and Sydney: Pan Books, 1974.

39. See M. Mesarovic and E. Pestel, *Mankind at the Turning Point: The Second Report to the Club of Rome*, N.Y.: Dutton, 1974; Y. Kaya and Y. Suzuki, *Global Constraints and New Vision for Development: Japan Work Team of the Club of Rome*, Tokyo: COR Technical Symposium, 1973; Jan Tinbergen (Co-ordinator) et.al. *Reshaping the International Order: A Report to the Club of Rome*, N.Y.: Dutton, 1976; D. Gabor et. al. *Beyond the Age of Waste*, Oxford: Pegamon Press, 1978; and Auerlio Peccei and Daisaku Ikeda, *Before It is Too Late*, Tokyo: Kodansha International, 1984. The last of these, written as a sequel to *The Limits to Growth*, is Donella H. Meadows et.al,, *Beyond the Limits: Global Collapse or a Sustainable Future*, London: Earthscan Publications, 1992. For critiques of the work this group see *The Global 2000 Report to the President*, pp.607-681, and D.M. Gvishiani, 'Methodological Problems of Modelling Global Development' in A.D. Ursal ed. *Philosophy and the Ecological Problems of Civilisation*, Moscow: Progress Publishers, 1983.

regions and considered some of the political and economic problems engendering environmental destruction. These studies are important for identifying the magnitude of the problems, where some of the greatest economic irrationalities lie, and just how radical are the changes which need to be made in order to deal with them. But (with the possible exception of *Reshaping the International Order* coordinated by Jan Tinbergen) these have not succeeded in confronting the power relations within nations or in world politics, nor have they adequately confronted the cultural diversity of the world. To the extent that they have dealt with the issues of power they have been reduced to atheoretical descriptions.[40] They have not begun to identify those tendencies within the world and within particular societies which need to be subverted and those which could be fostered to overcome their problems. And they are unlikely to do so without a theoretical framework which allows for many levels and types of causation, including human adaptive behaviour.

The Ethics and Politics of Modernity: Rights Theory and Utilitarianism

A variety of thinkers has attempted to extend modern ethical and political doctrines, that is, doctrines which have been developed since the seventeenth century, to deal with environmental issues. Principal amongst these doctrines are 'rights theory' according to which certain beings have natural rights discoverable by reason on the assumption that society is based on a contract, and 'utilitarianism' according to which actions, principles and the organization of society can be judged in terms of whether they maximise happiness and minimize pain for the greatest number. They are correlated with efforts modify mainstream economic theory to take into account the environment and to facilitate the management of the market. Some environmentalists have attempted to extend rights theory to include future generations, animals and trees, while others have been more concerned to argue that people do not have the rights they thought they had in order to justify constraining people's behaviour. Utilitarianism has been invoked as a basis for condemning our present treatment of animals, and it is implicit in the work of those who have attempted to develop cost-benefit analysis to include the negative value of environmental destruction and pollution in policy decisions.

The issue of whether future generations can be held to have rights has been considered by a number of philosophers.[41] K.S. Shrader-Frechette typifies the way these philosophers have approached the issue.[42] Following M.P. Golding she holds that a moral community does not have to be based on an explicit contract between its members, but can be based on 'a social arrangement in which each member

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40. For example Aurelio Peccei, *The Human Quality*, Oxford: Pergamon Press, 1977; and Bohdan Hawrylyshsyn *Road Maps to the Future. Towards More Effective Societies. A Report to the Club of Rome*, Oxford: Pergamon Press, 1980.

41. Daniel Callahan, 'What Obligations Do We Have to Future Generations?' *The American Ecclesiastical Review*, Vol.164, No.4 1971, pp. 256-68; W.C. Wagner, 'Futurity Morality' *The Futurist* 5, No.5 1971: 179-199; M.P. Golding, 'Obligations to Future Generations' *The Monist*, Vol.56, No.1 1972, pp.85-99; E. Delattre, 'Rights, Responsibilities and Future Generations' *Ethics*, Vol.82, 1972, pp. 254-258; J.B. Stearns 'Ecology and the Indefinite Unborn' *The Monist*, Vol.56, No.4 1972: 612-625; J. Feinberg 'The Rights of Animals and Unborn Generations' in *Philosophy and Environmental Crisis* William T. Blackstone ed. Athens, Georgia: University of Georgia Press, 1974, pp. 43-68; R.M. Green 'Intergenerational Distributive Justice and Environmental Responsibility' *Bio-Science*, Vo.27, 1977, pp.260-265; P. Faulkner, 'Protection for Future Generations' *Frontiers*, Vol.42, 1978, pp.35-37; and Ernest Partridge ed. *Responsibilities to Future Generations: Environmental Ethics*, Buffalo, N.Y.: Prometheus, 1981.

42. K.S. Shrader-Frechette, 'Technology, The Environment, and Intergenerational Equity' in *Environmental Ethics*, K.S. Shrader-Frechette ed. Pacific Grove: Boxwood, 1981, pp.67-81.

derives benefits from the efforts of the other members.'[43] Against Golding, she argues that such a moral community can be intergenerational. The possibility of defending the existence of rights for future generations on this basis is seen to revolve around three questions: Is intergenerational reciprocity possible? Is explicit reciprocity a necessary condition for all social contracts based on self-interest? and Is it plausible to reason that we cannot know what notion of the good life future generations will hold and that therefore we cannot determine our obligations to them?

Two main answers to support the notion of rights have been proposed to the first question. The first, argued by Wagner, is that there is a reciprocity since in recognizing the rights of future generations we attain greater happiness and self-actualization. The second, argued by Faulkner, is that there is a reciprocity based on each generation paying past generations by taking responsibility for the conditions of life of future generations. However even if these arguments are not accepted, the notion that future generations have rights can be sustained by a negative answer to the question whether explicit reciprocity is a necessary condition of social contracts. Shrader-Frechette points out that Rawls' concept of justice based on choosing principles to govern society from 'the original position' (that is, behind a veil of ignorance from which one cannot know what one's position in society will be) does not involve reciprocity and can be applied between generations. Another argument is presented by Callahan that reciprocity is not a necessary condition for there being rights because it is possible for one party to choose to accept an obligation, as occurs when parents accept an obligation to their children. This could be seen to provide a prototype for relationships between present and future generations. However if we cannot know what future generations will want, then such arguments have no weight. Against this contention Feinberg has argued that we can know that future generations will have an interest in living space, fertile soil, fresh air and the conditions which sustain life and health more generally. It does not follow that because we are ignorant of specific aspects of what future generations want that we can assume that their interests will not be the same as ours.

One of the most vigorously debated issues in environmental philosophy centres on the question of whether animals have rights.[44] Because the idea of extending rights to animals is more radical than the idea of extending rights to future generations, this debate has led to more fundamental questions. Firstly it has led to a basic inquiry into the nature of rights. Two answers have been offered: that to have a right is to have a claim or an entitlement. Neither of these would rule out the possibility of ascribing rights to animals, although if a right is a claim then animals would need someone to claim for them. At this point the question arises of what kind of rights there are. It might be conceded that animals could be ascribed rights - as for instance when money is left to animals in a will - but the important issue is whether they can have natural rights. Can they have rights by simply being the kinds of beings they are? This then raises the further question of what sort of beings can have natural rights. Proposed answers to this are that they must be rational, that they must have free will, that they must have interests or that they must be sentient. Obviously the specified condition will affect the question whether animals have

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43. Golding, 'Obligations to Future Generations', p.91.

44. A number of papers on this subject representing the different positions argued for have been printed in Tom Regan and Peter Singer (eds), *Animal Rights and Human Obligations* Englewood Cliffs, N.J.: Prentice-Hall, 1976. Regan has produced a book arguing for animal rights: *The Case for Animal Rights*, Berkeley and Los Angeles: University of California Press, 1983. See also Peter Miller, 'Do Animals Have Interests Worthy of Our Moral Interest?' *Environmental Ethics*, Vol.5, No.4. 1983, pp.319-334.

rights, and also whether species, plants and ecosystems have rights. Those inclined to rule out animal rights on the grounds that the precondition for such rights is rationality or free will are left with difficult questions concerning young children and the mentally feeble.

The question of whether animals can be said to have interests has also been the subject of much argument.[45] R.G. Frey, for instance, has argued that animals cannot be ascribed interests because they lack a proper language and self-consciousness.[46] If sentience is the criterion for being able to ascribe natural rights to anything, then there would be no problems with ascribing rights to animals, though it would seem to exclude species, plants and ecosystems. This has led some philosophers to argue for panpsychism. However even if we conclude animals do have rights, we still have to face the question of what rights they have. Among the proposals are that animals have a right not to be treated cruelly, a right to life, and a right to property and liberty. Numerous arguments have centred on these issues.

Ascribing rights to species, plants or ecosystems is even more problematic. Those who wish to support this contention have generally extended the arguments that the basis for anything having rights is that they have interests, and they have then gone on to argue that species, plants and ecosystems do have interests.[47] However the major arguments in relation to rights for these entities have centred around whether it is possible to ascribe any kind of rights to them. The major defender of this possibility is Christopher Stone.[48] The basis of his argument is that in the Anglo-American legal system we already ascribe rights to non-people: corporations, municipalities, ships and some animals, and that the difficulty in thinking of natural objects as having rights is simply the novelty of it. The extensions of rights to slaves, women, children, and aliens had appeared unthinkable when they were first proposed. However according to Stone, legal systems create persons, property and rights; so his arguments are predicated on the assumption that there are no such things as natural rights. His real concern is to make the destruction of natural objects a cost by incorporating them into the legal system. As he puts it:

> Wherever it carves out 'property' rights, the legal system is engaged in the process of *creating* monetary worth. ... I am proposing that we do the same with eagles and wilderness areas as we do with copyrighted works, patented inventions, and privacy: *make* the violation of rights in them to be a cost by declaring the 'pirating' of them to be the invasion of a property interest.[49]

This simply does not answer the ethical problem.

Where the political problems associated with environmental preservation have been focussed upon, a different emphasis is placed on rights theory. Here the concern is to show that what people have come to accept as basic rights are in fact without foundation. The two most significant thinkers to argue along these lines are

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45. For opposition to this see Leonard Nelson, *A System of Ethics* trans. N. Gutman, New Haven: Yale University Press, 1956; and H.J. McCloskey, 'Rights' *Philosophical Quarterly* Vol.15, 1965, pp.115-27.

46. R.G. Frey, *Interests and Rights: The Case Against Animals*, Oxford: Clarendon Press, 1980.

47. See K.S. Schrader-Frechette, 'Ethics and the Rights of Natural Objects' in Schrader-Frechette ed. *Environmental Ethics*, pp.89-99. For opposition to this see Scott Lehmann, 'Do Wilderness Areas Have Rights?' *Environmental Ethics*, Vol.3, No.2, 1981, pp.129-146.

48. Christopher Stone, *Should Trees Have Standing?: Towards Legal Rights for Natural Objects* Los Altos, Cal.: William Kaufman, 1974.

49. Ibid. p.29.

Garrett Hardin and William Ophuls. Hardin argued in his now famous paper 'The Tragedy of the Commons' that the underlying cause of environmental problems is that where common property is concerned, individual interest does not coincide with the common interest.[50] Individuals will tend to exploit the commons to the maximum extent, the ultimate effect of which will be to destroy the commons for everyone. Those people who do not exploit the commons in this way through conscience might be publicly lauded, but privately will be regarded as simpletons, and such people will tend to be eliminated in the evolutionary struggle. The only solution to this, Hardin argued, is the coercion of people where the commons are concerned; that is, 'mutual coercion, mutually agreed upon by the majority of people affected.'[51] The exercise of this coercion is defended in a wide variety of instances where people had previously thought they had an inalienable right to do as they chose; for instance to have as many children as they wanted. But as Hardin wrote:

> When men mutually agreed to pass laws against robbing, mankind became more free, not less so. Individuals locked into the logic of the commons are free only to bring on universal ruin; once they see the necessity of mutual coercion, they become free to pursue other goals.[52]

William Ophuls recognized the 'logic of the commons' described by Hardin as a special version of Hobbes' 'state of nature' in which there is a war of all against all, and Hardin's solution of 'mutual coercion, mutually agreed upon' as equivalent to Hobbes' sovereign power, erected by the majority to constrain all men to be reasonable and peaceful.[53] While Ophuls' work provides a more thorough analysis of the political issues associated with environmental problems, essentially he has concurred with Hardin's diagnosis of the situation. Ophuls pointed out that traditional rights theory deriving from Locke has failed to draw Hobbes' conclusions because it was formulated as the New World presented apparently unbounded wealth to be opened up.[54] Modern political institutions have been based on this view of the world as a Great Frontier. However we are now in a 'closed' world similar to that existing when Hobbes was writing. When offering solution to the problem, Ophuls tried to exploit a number of ideas, but in essentials agrees with Hardin:

> The only solution is a sufficient measure of coercion. Following Hobbes, a certain minimum level of ecological order or peace must be established; following Rousseau, a certain minimum level of ecological virtue must be imposed by our political institutions.[55]

Utilitarians base their arguments on a different foundation. Although they frequently speak of rights, what is meant by 'rights' is fundamentally different. For rights theorists, rights exist whether they are recognized or not, while for utilitarians

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50. Garrett Hardin 'The Tragedy of the Commons' originally published in *Science* Vol.162, 13th Dec. 1968, pp.1243-1246; reprinted in Herman E. Daly ed. *Economics, Ecology, Ethics: Essays Toward a Steady-State Economy*, San Francisco: Freeman, 1980, pp.100-114.

51. Ibid. p.111.

52. Ibid. p.112.

53. William Ophuls, 'Leviathan or Oblivian', in Herman E. Daly ed. *Toward a Steady-State Economy*, San Francisco: Freeman, 1973; and *Ecology and the Politics of Scarcity*, op.cit.

54. Ophuls, 'Leviathan or Oblivian', p.222.

55. Ophuls, *Ecology and the Politics of Scarcity*, p.151f.

rights are accorded by society. The most well known effort to use utilitarianism as a basis for defending environmental concerns is that of Peter Singer. In his book *Animal Liberation*, Singer argued on utilitarian grounds that it is wrong to kill or inflict suffering on animals.[56] He bolstered his utilitarianism with the idea that moral progress consists in applying utilitarian principles to an expanding circle of beings. Thus 'difference of species' is seen as the last spurious grounds for moral discrimination. Singer's argument is not original. It simply, as Singer acknowledges, elaborates upon an argument of Bentham:

> The day *may* come when the rest of the animal creation may acquire those rights which never could have been withholden from them but by the hand of tyranny. The French have already discovered that the blackness of the skin is no reason why a human being should be abandoned without redress to the caprice of a tormentor. It may one day come to be recognized that the number of the legs, the villosity of the skin, or the termination of the *os sacrum* are reasons equally insufficient for abandoning a sensitive being to the same fate. What else is it that should trace the insuperable line? ... The question is not, Can they *reason*? nor Can they *talk*? but, *Can they suffer*?[57]

Where more general environmental problems are taken into account by utilitarians, these are usually considered in terms of cost-benefit analyses - which is essentially an updated version of utilitarianism and of Bentham's felicific calculus.[58] In general those committed to cost-benefit analyses accept the market as the best means of distributing resources and consumer goods, but acknowledge that there are some imperfections in the market which require government intervention. Cost-benefit analyses enable these imperfections to be identified and evaluated in monetary terms commensurable with market evaluations, on the basis of which appropriate compensations or public investments can be made, taxes imposed, and protective laws enacted. The development of cost-benefit analysis as a means of taking into account environmental destruction received a major boost with the National Environmental Policy Act in USA in 1970 which called for environmental impact assessments to consider the deterioration of the bio-physical environment.[59] They are most often used to evaluate what costs and risk levels can be justified for the benefits accruing from various environmentally degrading enterprises. However they also underlie efforts to develop environmental economics.[60]

While a number of different versions of cost-benefit analysis have been developed, the basic principles are all present in the Bayesian or estimated utility model. According to this model decision makers are confronted with a set of mutually exclusive and exhaustive possible future states of affairs and courses of action. Each combination of a state of affairs and an action yields an event to which a particular value or utility can be ascribed. Desired events are ascribed positive values and shunned events are ascribed negative ones. These are rendered

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56. Peter Singer, *Animal Liberation: A New Ethics For Our Treatment of Animals*, New York: Avon, 1977.

57. Jeremy Bentham, *The Principles of Morals and Legislation*, [1789], Ch.XVII, Section 1; cited ibid. p.7f.

58. See Alan Coddington, '"Cost-Benefit" as the New Utilitarianism', *Political Quarterly*, Vol.42, 1971, pp.320-25. For its relevance to environmental problems see Robert E. Goodin, *The Politics of Rational Man*, London: Wiley, 1976, pt. 4.

59. For a brief overview of the principles of environmental impact assessment see Michael Carley, *Rational Techniques in Policy Analysis*, London, Heinemann Educational Books, 1980, Ch.8.

60. See for instance David Pearce et.al,. *Blueprint for a Green Economy*, London: Earthscan Publications, 1989. See especially Ch.3 - 'Valuing the Environment.'

commensurable by being measured in monetary terms by asking people what they would be willing to pay to bring about or prevent an event or state of affairs. This renders choices commensurable with market evaluations. By multiplying the values ascribed by the probability that the events will occur and summing the products of every event associated with each action, a quantitative value for performing each action can be obtained. The action with the highest value is the rational one to perform. While as many as 50 differing methodologies for studying environmental impact have been identified, these are all variations of this approach.

Problems with Rights Theory and Utilitarianism

The most basic difficulty in the effort to extend rights theory and utilitarianism to environmental issues is the weakness of these doctrines in the first place. The modern theory of rights and utilitarianism have their origins in the efforts to replace the ethical and political thought of the disintegrating medieval society and world-orientation. They have been intimately associated with the rise of capitalism and mechanistic science, and assume a conception of nature as devoid of meaning and of society as nothing but a collection of egoistic individuals motivated by appetites and aversions. The secular doctrine of rights developed in the seventeenth century was formulated as an attempt to determine rights and obligations by the same resolutive compositive method (the method of analysis and synthesis) which had proved so successful in discovering the laws of nature.[61] The form in which this doctrine proved most successful was based on the idea that societies and political institutions are founded on social contracts or compacts expressing the self-interests of the contracting parties. Utilitarianism, developed in the eighteenth century by Helvetius and Bentham, is characterized by the attempt to found ethics and political philosophy entirely on subjective experience, recognizing only pleasure and pain as good and bad.

The immediate impetus for the development of rights theory was the need to find a basis for reconciling opponents within a disintegrating society characterized by violent religious, political and economic conflicts. Its major proponents were the rising capitalist classes who were attempting to justify their claims to political power on the basis of their growing economic power. Its major purpose was to provide a basis for distributing political and economic power in their favour.[62] The nature of claims to rights reflects this origin of the doctrine. As Simone Weil has pointed out:

> The notion of rights is linked with the notion of sharing out, of exchange, of measured quantity. It has a commercial flavour, essentially evocative of legal claims and arguments. Rights are always asserted in a tone of contention; and when this tone is adopted, it must rely upon force in the background, or else it will be laughed at... If you say to someone who has ears to hear: 'What you are doing to me is not just', you may touch and awaken at its source the spirit of attention and love. But it is not the same with words like 'I have the right...' They evoke a latent war and awaken the spirit of contention. To place the notion of

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61. A crucial transformation in the concept of rights had already occurred by the seventeenth century. Rights became something one *had*. See John Finnis, *Natural Law and Natural Rights*, Oxford: Calrendon Press, p.207. However it was only with Hobbes that rights were moved outside the juridical relationship altogether. (See ibid. p.208)

62. See C.B. McPherson, *The Political Theory of Possessive Individualism: Hobbes to Locke* [1962], Oxford: Oxford University Press, 1964.

rights at the centre of social conflicts is to inhibit any possible charity on both sides.[63]

Utilitarianism was developed within a society which had been reduced by commercialism to individuals and classes struggling for money. It reduced all nobility, all values, all meaning to the one quantifiable level of pleasure and pain, leaving the only reason to concern oneself with anything other than one's own pleasure: that it gives one pleasure to do so. This completely inverted the traditional way of thinking of the relationship between good and pleasure. Instead of pleasure being derived from what is good, what is good is defined as what is pleasurable. Thus the pleasure of the torturer and the satisfaction gained from achieving justice are equated. Since pleasure and pain are the only principles motivating people, there are no moral virtues or vices for which people can be held responsible, but only more or less efficient means of manipulating people - and from the very beginning utilitarianism was directed towards the efficient control of people.[64] The founder of utilitarianism, Helvetius (1715-1771), postulated the principle of the greatest happiness for the majority as a principle to be followed to achieve social stability.[65] Since humans are animated solely by 'a sentiment of love for pleasure, and of hatred for pain', then 'under a good legislation only fools would be vicious.'[66] It does not matter whether people are born virtuous since their sentiments are such that they can be made virtuous by skilful management. Bentham (1748-1832), who established utilitarianism as an influential doctrine in Great Britain, was primarily concerned to develop Helvetius' doctrine in relation to law and penal reform. His model for a prison, the *Panopticon*, was designed as a means to control people by keeping them under universal surveillance and as a laboratory which could be used to carry out experiments to alter behaviour, to train and correct people. Bentham took penal discipline as a model which could be applied to all the institutions of society. It was 'a new mode of obtaining power of mind over mind, in a quantity hitherto without example... Its great excellence consists in the great strength it is capable of giving to any institution it may be thought proper to apply it to.'[67]

In the form in which they were originally developed, rights theory and utilitarianism have been powerful forces in society. Where societies face disintegration the notion of forming a contract to prevent a war of all against all makes eminently good sense, especially when such an idea seems to accord with the atomistic, law governed view of the world purveyed by the science of nature. Utilitarianism is also plausible as a doctrine for maintaining a stable society and exercising social control. Being suitable for capitalist societies based on the selfish pursuit of individual interests, both these doctrines were adopted and have come to be important constituents of the economic organization and of the legal and political institutions of Western societies. But by becoming the reference point for ethical and political disputes, these doctrines have been extended beyond their original scope.

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63. Simone Weil, 'Human Personality' in *Simone Weil: An Anthology*, ed. Sian Miles, London: Virago, 1986, pp.69-98, p.'s 81 & 83.

64. The context and implications of Helvetius' doctrine have been analysed by Eric Voeglin in 'Helvetius and the Genealogy of Passions' in *From Enlightenment to Revolution*, edited by John H. Hallowell, Durham, N.C.: Duke University Press, 1975, pp.35-52.

65. Helvetius, *De l'Esprit*, sec.2, ch.24, *Oeuvres*, London, 1776, Vol.1, p. 300f.

66. Helvetius, *De l'Homme*, sec. 4, ch.22, *Oeuvres*, Paris, 1795, Vol,4, p.384; and *De l'Esprit*, sec.3 ch.17.

67. Jeremy Bentham, *Panopticon: or, The Inspection House, Works*, ed. Bowring, [1843], New York, Russell & Russell, 1962, Vol.4, p.39 & 66. The significance of Bentham's model has been examined in Michael Foucault;, *Discipline and Punish*, tr. Alan Sheridan, Harmondsworth: Penguin, 1977, esp. ch.3.

Rights have been represented as universal and independent of contractual bargaining between people with power, while utilitarianism has been upheld as defining the highest good rather than as merely a principle for maintaining social order. These extensions have destroyed the coherence of the doctrines and have revealed their limitations.

Where individuals are enjoined to acknowledge the claims of others who have no other basis for making this claim than the supposed contract on which society is based, the nature of this contract becomes questionable. In fact society cannot be based on a contract, since forming a contract is only possible insofar as there is a pre-existent society. People only develop the capacity to enter into contracts through being socialized, learning a language, and so on. It is impossible to conceive individuals in abstraction from their social relations. Society precedes not only contracts, but individuals. This leaves the notion of a social contract and any rights established in terms of it as fictional constructs which at most might be useful for adjudicating between opposing interests.

But the assumption on which the notion of contract is based is that individuals are motivated by self-interest. This is true even in the case of the most radical formulation of rights theory, that of John Rawls.[68] In his foundational scheme for determining rights, Rawls posits a situation in which one has to choose from behind a veil of ignorance about one's natural endowment and position in society the principles which should order society. Agreement about these principles is held to be possible because Rawls takes individuals in abstraction from society and assumes that they will base their judgements on what is in their best interests. He has taken rule utilitarianism, formulated this in terms of rights theory, and then identified the claim to rights as a claim for justice. In doing so he has debased the notion of justice and inadvertently elevated the principle of egoism. In conceiving relations in terms of rights, individuals can only be expected to be egoists, and therefore only to recognize rights claims based on the fiction of a contract when it is in their interests to do so. But it is in one's interests to recognize rights only when individuals have the power to threaten each other, and in fact these are the only cases where rights theory has been accepted as a basis for adjudicating between people. Rights claims have seldom been acknowledged in practice far beyond the community of those with the power to at least attempt to enforce their claims.

But even in these circumstances rights theory is inadequate since a condition for its success as a basis for adjudication is that it can provide an unequivocal answer as to what is right and wrong. But the notion of contract has been construed in different ways in order to defend various ethical and political claims, and different construals give different results. This has been clearly revealed by Alasdair MacIntyre who compared the conclusions of Rawls with those of Robert Nozick. Each of these thinkers had accepted as a starting point the idea that entry into social life is the voluntary act of rational individuals with prior interests who must ask the question 'What kind of social contract is it reasonable for me to enter into?'[69] On the question of whether taxes should be increased to pay social services, Rawls' version of rights theory based on the idea that what is right is what rational agents would choose if they were to choose from behind a veil of ignorance would not only support such a move, but would justify the claim that the underprivileged have a right to social services.[70] However Robert Nozick who argues that in a just society the only people

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68. John Rawls, *A Theory of Justice*, Oxford: Oxford University Press, 1972.

69. Alasdair MacIntyre, *After Virtue: a Study in Moral Theory*, London: Duckworth, 1981, p.227ff.

70. Rawls, *A Theory of Justice*, p.136 & 303.

entitled to appropriate anything for their use would be those who had justly acquired what they had by some original act of acquisition or by some just act of transfer, would claim that individuals have an inalienable right to their income and no government has a right to appropriate this and give it to someone else.[71] Despite the common starting point, the two positions lead to different conclusions and there is no way of choosing between them. So not only is the notion of rights based on contract a fiction, but it is a useless fiction.

The extension of utilitarianism was initially effective as a basis for reform because it placed the suffering of the poor and oppressed on the same level as the suffering of the wealthy and exalted. But the notion of human motivation assumed by utilitarianism is the same as that of rights theory, and undermines any basis for entreating concern for other people or life forms. If people are only moved by what is painful or pleasurable, and there is no other basis for judging actions, then there can be no reason to expect people to concern themselves with ensuring that society is ordered for the greatest happiness for the greatest number other than it will be of less pain and greater pleasure to oneself. While this was implicitly assumed by Helvetius and Bentham, it loses its force when utilitarianism leads to the diversion of goods and activities to the powerless. Utilitarianism provides no basis for choosing between pleasures, in particular between pleasures associated with satisfying one's appetites and those which have been taken to be nobler ends such as concerning oneself with the welfare of others.

In an attempt to overcome this problem, John Stuart Mill rejected the notion that happiness could be reduced to pleasure and introduced qualitative distinctions between types of happiness, allowing that some types are higher than others. But this separated utilitarian principles from Bentham's hedonistic psychology, leaving Mill without any basis for demonstrating the superiority of one type of happiness over another. This difficulty in utilitarianism became increasingly evident towards the end of the nineteenth century and eventually Sidgewick concluded that it was only intuition which enjoins us to acknowledge the superiority of following the moral injunctions of utilitarianism rather than precepts enjoining us to the pursuit of our own happiness. As MacIntyre has pointed out, it was from this starting point that G.E. Moore developed his intuitionism.[72] According to this doctrine 'good' is a simple, non-natural quality which can be intuited in the same way as a basic experience such as 'yellow' can be experienced without being defined in terms of anything else. As it soon became evident that different people's intuitions are different, this paved the way for emotivism and prescriptivism in which moral injunctions were taken to be nothing more than expressions of feelings and attitudes, or the efforts to change the feelings and attitudes of others. Thus the attempts to develop utilitarianism beyond its original limited form led straight to nihilism.

The situation consequent upon the failure of both rights theory and utilitarianism as ethical doctrines has been well described by MacIntyre:

> The most striking feature of contemporary moral utterance is that so much of it is used to express disagreements; and the most striking feature of the debates in which these disagreements are expressed is their interminable character... There seems no rational way of securing moral agreement in our culture... [T]he culture of bureaucratic individualism results in their characteristic overt political debates being between an individualism which makes its claims in terms of

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71. Robert Nozick, *Anarchy, State and Society*, Oxford: Blackwell, 1974, p.151 & 153.

72. MacIntyre, *After Virtue*, p.63.

> *rights* and forms of bureaucratic organisation which make their claims in terms of *utility*. But if the concept of rights and that of utility are a matching pair of incommensurable fictions, it will be the case that the moral idiom employed can at best provide a semblance of rationality for the modern political process, but not its reality. The mock rationality of the debate conceals the arbitrariness of the will and power at work in its resolution... [P]rotest is now almost entirely that negative phenomenon which characteristically occurs as a reaction to the alleged invasion of someone's rights in the name of someone else's utility. The self-assertive shrillness of protest arises because the facts of incommensurability ensure that protesters can never win an argument; the indignant self-righteousness of protests arises because the facts of incommensurability ensure equally that the protesters can never lose an argument either. Hence the *utterance* of protest is characteristically addressed to those who already *share* the protesters' premises.[73]

The debates on environmental ethics formulated in terms of rights theory are a graphic illustration of the debased state and irrelevance of prevailing ethical thought. The underlying egoism of the participants is evident from the way the issue of the rights of members of Third World nations to an equal share of the mineral reserves being consumed is never raised. Apart from this, it is clear from a reading of the arguments surrounding the questions of the rights of future generations, animals and wilderness areas that the proponents of different positions simply start from different definitions of rights and talk past each other. The degenerate nature of the ethical ideas is also made evident by the trivial nature of the arguments. The failures in the ethical doctrines drawn upon are ignored, and rather than addressing the major issues and deriving their conclusions from clearly established and defended positions, environmental philosophers argue by invoking those particular reformulations of the notion of rights which just happen to support their commitments, or by analogy with what extensions to rights theory have been made in the past. But the notion of 'rights' is extended in this way so far beyond the context of the original formulation of rights theory that it loses virtually all meaning. And in the case of animals the extension is achieved at the expense of reducing them to the status of severely defective humans. Generally the discussions are characterized by philosophers addressing themselves almost entirely to one another. There is little concern to work out what ideas would be convincing to anti-environmentalists.

Where utilitarianism has been invoked to oppose cruelty to sentient organisms the situation is somewhat different. It is after all in the calls to relieve suffering that utilitarianism has been most effective as a doctrine. However animals are in no position to rebel against their lot, and without the threat of this, the motivation for implementing the conclusions of the doctrine is lacking - except for those people who have been discomfited by awareness of animal suffering. This reaction has been minimised, however, by keeping such suffering out of sight, which is entirely in accordance with utilitarian principles of eliminating anything which could interfere with people's enjoyment of life. In fact, on utilitarian principles Singer's work can be condemned for upsetting people. But to invoke Benthamite utilitarianism is to commit oneself to all its implications. This leaves no grounds to justify concern with unique species of life or ecosystems. Since at most all that matters is that the animals do not suffer this would justify the replacement of wilderness areas with

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73. Ibid. p's.6, 68, & 69.

domesticated animals providing these were killed humanely. Such well looked after animals would suffer less than wild animals. While Singer condemns the treatment of animals as machines for converting low priced fodder into high priced meat, there is no basis in utilitarianism for opposing this. If we are to concern ourselves with animal suffering, then all that matters is that they do not suffer. This problem could be overcome by giving animals pain-killers and valium, or by putting electrodes into their brains to stimulate their 'happy' centres. In this way animals could be made to feel ecstatically happy even as they were being slaughtered. Or better still they could be genetically engineered to be ecstatic while being killed, while people could be genetically engineered to be ecstatic while killing them.

Where rights theory and utilitarianism have been promoted as a basis for political action the implications are more significant. There are several reasons for this. Firstly, the notions of rights theory and utilitarianism on which political proposals are based are not generally extensions of these doctrines but accord with the original reasons for their formulation. Secondly, these proposals fit in with the existing trends in late capitalist societies of placing of decision making in the hands of 'experts'. And thirdly, the idea of furthering such control by experts accords with the mechanistic way of thinking about the world. The development of these doctrines to deal with environmental problems began in USA with the progressive conservation movement during the presidency of Theodore Roosevelt under the leadership of Gifford Pinchot, the Chief of the Bureau of Forestry.[74] The members of this movement were concerned with efficient use of resources, and believed that this could only be achieved in a society organized and controlled by experts applying scientific knowledge. They had an unbounded faith in science and the virtues of large scale organization. They believed that efficient business is big business, and wanted the nation to be managed by its elite. Roosevelt lamented to a friend that 'all modern legislative bodies tend to show their incapacity to meet the new and complex needs of the times' and Joseph N. Teal, chairman of the Oregon Conservation Commission asserted that 'The great difficulty in this country, and I presume in all democracies, lies in the fact that ... the views of experts are of little value ...'[75] Under the direction of Pinchot (who was also a prominent member of the eugenics society) this movement attempted to over-ride sectional interests and democratic procedures, and run the nation as an efficient business organization on the principle of the greatest good for the greatest number for the greatest length of time. Their utilitarianism eventually led to a clash with the preservationists led by John Muir, the founder of the Sierre Club, whose concern with saving wilderness was not just a matter of obtaining a sustained yield of timber. Garrett Hardin's and William Ophuls' accounts of environmental problems as being due to people acting in their own interests at the expense of the common interest extends the same tradition. Their proffered solution - 'mutual coercion, mutually agreed upon' for the interests of the society as a whole - also echoes the progressive conservationist's diagnosis of the problem and its anti-democratic solutions. Finally, the use of cost-benefit analysis as part of a scientific approach to environmental management is a refinement of their utilitarian criterion for administering society.

But this scientific politics is founded on misconceptions. The tragedy of the commons as a description of the problem in capitalist societies is undoubtedly correct. But its universalization as an analysis of the way resources are used by

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74. This movement has been described by Samuel P. Hays in *Conservation and The Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920*, N.Y.: Athenium, 1972.

75. Cited ibid. p.133.

people is mistaken. To take one example, conservation has been practiced successfully in the commons of the villages of Japan with coercion playing a minimum role.[76] This was possible because egoism was constrained rather than promoted by the culture of these villages. What Hardin's, and to a lesser extent Ophuls', proposed solutions amount to is the acceptance of a society which engenders egoism, while offsetting this by giving more power to a central government. This leaves the problem of ensuring that governments will use their increased power to preserve the environment. Where societies are based on the selfish pursuit of private interests and are characterised by very unequal distributions of power, however, this is a problem. In societies of this kind, governments tend to be dominated by short-term problems of keeping the economic system going and by the most powerful pressure groups - the business community. Up until the early 1970s governments continued to pursue a range of wider public and social objectives. However with the development of transnational financial, agricultural and industrial organizations, this capacity has been eroded, and governments in most countries are less able to consider long term issues - even if they were willing to do so - as they struggle with a succession of crises engendered by this globalization of the economy. As a result, the increased power of State institutions has been increasingly directed towards managing crises, suppressing dissent and extracting more work for less both at home and abroad.

The history of environmentalism in USA follows this kind of trajectory. The progressive conservation movement did have some achievements to its credit, although only where conservation was defined in utilitarian terms. Pinchot and his engineering colleagues were actually hostile to the aims of the preservationists. But this movement began the process of transforming a capitalist society based on competition in which the State was dominated by democratic institutions into a military-industrial complex governed by a managerial class of corporate executives, government bureaucrats, military officers and intelligence chiefs. This class has in fact continued its concern for the conservation of resources, especially where these resources are of military significance, but with the notable exception of New Dealers, and in particular Franklin Roosevelt's Secretary of the Interior, Harold Ickes, they have been as indifferent to more general environmental as to human degradation. Where wilderness areas and unique species have been preserved, this has been mostly due to the success of pressure groups over the military-industrial complex associated with the continued functioning of democratic processes. President Nixon even embraced environmental issues when the environmenalists were having most influence during the early 1970s, establishing the Environmental Protection Agency which significantly furthered the conservation cause. However, when President Reagan came to power, the environmentalists lost almost all the ground they had gained, and the Environmental Protection Agency was emasculated. As the power of the US government weakened in the face of the dynamics of the international economy, the environmental concerns of preservationists were sacrificed along with social welfare programs.

Where environmental problems have been taken seriously, in relation to the conservation of strategic resources, the greater part of the effort of the US military-industrial complex has been directed towards maintaining control of the resources of other nations. This, and the effects of it - the oppression of the Third World nations and the arms race - have been described in Chapter I. The ensuing political-military

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76. See Margaret A. McKean 'The Japanese Experience with Scarcity: Management of Traditional Common Lands' in Kendall E. Bailes ed. *Environmental History*, Lanham, N.Y., London, University Press of America, 1985, pp.334-373.

control of the world has meant that what success there has been in preserving forests and species within USA and other affluent nations has increased pressure on ecologically more important tropical forests in the Third World and on the populations which depend on them. While the USA and other affluent nations have maintained access to resources, this has been disastrous for the world as a whole, and particularly for those Third World countries unfortunate enough to possess strategically important resources.

Cost-benefit analysis is the instrument of the new managerial class of the military-industrial complex. It is vexed by all the traditional problems associated with utilitarianism.[77] To begin with, it is based on the subjective preferences of individuals. Since people generally have a very poor idea of what they want until they fail to get it, and even then are unlikely to appreciate precisely what it is they are missing, this provides a very weak foundation for decision-making. Cost-benefit analysis also ignores the problems of quantification such as the impossibility of comparing and weighing the desires and preferences of different individuals or comparing different types of ends.[78] For instance it is impossible to put a value in quantitative terms on an individuals' life, or to work out how much pleasure is equivalent to how much dignity or justice. Cost-benefit analysis is insensitive to distributions of happiness and generates problems by accepting a mechanistic view of the world which ignores the interdependence of things. It is an incremental approach, and it is the micro costs and benefits determined by aggregating the inputs and outputs of individuals (persons, firms or government corporations) rather than the dynamics of the global system which form the basis of decisions. The piecemeal nature of cost-benefit analysis takes the existing order of things as its starting point, and ignores the benefits of switching to different paths of development. The difficulties of switching paths, for example from centralised power production to decentralised power production or from private transport to efficient public transport, are counted as costs against making such switches. This always rules them out as unrealistic. By assuming an essentially inert world in which actions give rise to events and states of affairs rather than contributing to the creation and destruction of dynamic processes, cost-benefit analyses overlook the significance of such factors as keeping society's options open, the sustainability of benefits, and the significance of the difference between causing harm and foregoing benefits. Langdon Winner has described the implementation of cost/benefit analyses to evaluating risks to health in the following terms:

> Rather than eliminate from human consumption any substance shown to cause cancer or birth defects in laboratory animals, we are asked to substitute 'risk/benefit analysis.' In that rapidly developing, highly quantified moral science, people are (in effect) asked to acknowledge cancer and birth defects as among the exhilarating risks - often compared to flying or mountain climbing! - we run in order to live in such a materially abundant society. Like our factories that need a dose of 'reindustrialization' to bring them back to life, our nihilism is

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77. The difficulties in cost-benefit analyses are briefly summed up in Robert E. Goodin, 'Ethical Principles for Environmental Protection', Robert Elliot and Arran Gare (eds), *Environmental Philosophy: A Book of Readings*, St. Lucia: University of Queensland Press, 1983, pp.3-20.

78. This is the essence of Mark Sagoff's critique of environmental economics which assumes that all values can be made commensurable by examining what people are willing to pay. See Mark Sagoff, *The Economy of the Earth: Philosophy, Law and the Environment*, Cambridge and N.Y.: Cambridge University Press, 1988.

> now being completely retooled, becoming at long last a truly rigorous discipline.[79]

Finally, while environmental management based on cost-benefit analyses might ameliorate some of the worst environmental destruction, it does not face up to the fundamental problem that it is impossible for the planet to support exponential expansion in economic activity for very long. Those who have faith in the computations of cost-benefit analyses might ponder the words of the Chairperson of the Tennessee Valley Authority, David Freeman. After doing his sums he announced that 'on a discounted cash-flow basis, the earth is simply not worth saving.'[80] The cost-benefit approach with its utilitarianism and incrementalism is blind to the prospects of the world as a whole. and the arrogation of decision-making by 'policy experts' using this pseudo-scientific quantification procedure has served to blind the general population to what is happening.[81]

To sum up then, rights theory, utilitarianism and their modern reformulations have failed to provide decision-making procedures for attaining a consensus. Worsening environmental problems have highlighted this failure. But this is only the beginning of the story. Rights theory and utilitarianism have a significance beyond this local failure. They belong to the foundations on which modern Western societies rest, and their invocation reinforces these foundations. By framing arguments in terms of rights theory and utilitarianism, ethical philosophers are enhancing the credibility of the assumptions of these doctrines: that people are basically egoists, that beyond self-interest there are no reasons for considering others; that nature is devoid of intrinsic significance; that the only rationality is the rationality of efficient control; and finally that the human sciences incorporating these assumptions present a hard-headed view of what the world is really like. These are the very beliefs which underlie the institutions and social dynamics responsible for environmental problems but they are also now associated with a more sinister development in society. Capitalism is being transformed into a vast system of global corporations and governments are dedicating themselves increasingly to providing the necessary infrastructure of social control: policing, training and marshalling finance. The claims of conservative politicians to stand for small government means only small government where human welfare is concerned. Where big business, weapons and global military intervention are concerned, the conservatives stand for very big government, as record deficit budgets have revealed. This development is associated with the elimination of the public sphere based on open discussion to arrive at a consensus, and its replacement by central direction and a technocracy in which experts use cost-benefit analyses and implement decisions through social engineering. Another critic of cost-benefit analysis has noted:

> Persecutions, massacres, and wars have been coolly justified by calculations of the long range benefit to mankind; and political pragmatists, in the advanced countries, using cost/benefit analyses reared for them by gifted professors continue to burn and destroy. The utilitarian habit of mind has brought with it a new abstract cruelty in politics, a dull, destructive political righteousness: mechanical, quantitative thinking, leaden academic minds setting out their moral

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79. Langdon Winner 'Techne and Politeia: The Technical Constitution of Society' in Paul T. Durbin and Friedrich Rapp (eds), *Philosophy and Technology*, Dordrecht: Reidel, 1983, pp.97-111, p.104.

80. Cited by Geoffrey Lawrence, *Capitalism and the Countryside*, Sydney and London: Pluto Press, 1987, p.66.

81. On this see Francis Sandbach, *Environment, Ideology & Policy*, Oxford: Blackwell, 1980, esp. Ch.'s 2 & 3.

> calculations in leaden abstract prose, and more civilised and more superstitious people destroyed because of enlightened calculations that have proved wrong.[82]

The environmentalists who call for more coercion of the general population and government by cost-benefit analyses are significant because they are perversely contributing to this development. They are contributing to a social order which is blindly devoted to the expansion of the economy, of military power and of social control and which is blind to the more fundamental environmental problems and to the absolute limits of the world ecosystem.

The Christian Tradition

Yet another attempt to respond to the environmental problems of modern industrial societies involves appeal to tradition, and traditionalists are those who wish to fall back on traditional ideas and institutions, and in particular to Christian ethics, to resolve environmental problems. The most well known of these is John Passmore who set out his position in *Man's Responsibility for Nature*.[83] Robin Attfield as the foremost defender of the Christian tradition of thought in relation to environmental problems also belongs to this group.[84] However while Passmore is a conservative, Attfield is closer to the 'deep ecologists' - despite his criticism of their efforts to develop a new foundation for ethics. Here I will be more concerned with Passmore.

At first sight Passmore appears to be wholly concerned with environmental problems. In the preface to the second edition of his book he writes:

> Let me then try to be more explicit about my intentions. I set out, first of all, to discover whether there are any sound arguments for the following conclusions:
> (a) the present level of pollution ought to be reduced
> (b) resources ought to be conserved for the use of future generations
> (c) the rate of population growth ought to be reduced
> (d) not only animal species but areas of wilderness ought to be preserved.[85]

However the introductory 'Note to the Reader' reveals a different motivation for his interest in environmental problems. He writes:

> The scientific literature fully convinces me, so far as personal observation does not suffice, that men cannot go on living as they have been living, as predators on the biosphere. But I find no less alarming the suggestion in so much of that literature that the West can solve its problems only by forgetting what it has so

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82. S. Hampshire, 'Morality and Pessimism', in S. Hampshire (ed.), *Public and Private Morality*, Cambridge: C.U.P., 1978, pp.1-22, p.4.

83. John Passmore, *Man's Responsibility for Nature: Ecological Problems and Western Traditions*, 2nd ed. London: Duckworth, 1980.

84. Robin Attfield's views are developed in *The Ethics of Environmental Concern* 1st ed., Oxford: Blackwell, 1983; - 2nd ed., Athens, Georgia: University of Georgia Press, 1991; 'Christian Attitudes to Nature', *Journal of the History of Ideas* Vol.44, 1983, pp.369-386, and 'Western Traditions and Environmental Ethics' in Elliot and Gare (eds), *Environmental Ethics: A Book of Readings*, pp.201-230.

85. Passmore *Man's Responsibility for Nature p.viii.*

> gradually learnt, only by reverting to attitudes and modes of thought which it painfully shook off.[86]

In other words his concern is also to defend the Western tradition of thought: he defends the resources of Western thought in order to pre-empt the efforts of those who would use the environmental crisis to justify a radical revision in our way of thinking or radical political action.[87] Thus he begins the first chapter by describing and criticizing the calls by Aldo Leopold and Lynn White for a rejection of traditional Western ethics, and later attacks Herbert Marcuse's call for 'a radical transformation of the very institutions and enterprises which waste our resources and pollute the earth.'[88]

In his examination of the Western tradition of thought Passmore begins by supporting the claims of environmentalists that it has helped to produce a despotic attitude towards nature. He cites the biblical report of God's instructions to Noah to:

> Be fruitful, and multiply, and replenish the earth. And the fear of you and the dread of you shall be upon every beast of the earth, and upon every foul of the air, upon all that moveth on the earth and upon all the fishes of the sea: into your hands are they delivered. Every moving thing that liveth shall be meat for you...[89]

and traces the development of such attitudes through to the nineteenth century when the radical American economist, H. C. Carey told his readers that 'the earth is a great machine, given to man to be fashioned to his purpose'.[90] However Passmore identifies two minor traditions within Western thought, one that sees man as a 'steward', as God's deputy actively responsible for the care of the world, and one that sees him as co-operating with nature in order to perfect it.[91] He then argues that it is because of the presence of these 'seeds' in the Western tradition that reformers have some hope for the future. Most of the rest of the book is devoted to cultivating these seeds.

Attfield is more defensive of Christianity than is Passmore. In fact he is very critical of Passmore's interpretation of Western traditions and all who have been influenced by this interpretation.[92] He argues that neither the Old Testament nor the New Testament can be interpreted to justify a despotic attitude towards nature. The Bible generally is characterized by injunctions against cruelty to animals and does not support the view that everything has been made for humankind's use. Furthermore, subsequent Christian history has been characterized by far more varied attitudes to nature than Passmore allows. Attfield also argues that Christianity provides the basis for a more positive attitude towards nature than Passmore himself defends. In general, he argues for the idea that we are stewards of nature, but

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86. Ibid. p.xiii.

87. In considering this tradition, Passmore even refers to the ideas of Heraclitus which have been eclipsed since Parmenides (ibid. p.183). As I will argue towards the end of this work, there would be a radical revision of ethics if it were founded on the thought of Heraclitus. However Heraclitus is only mentioned near the end of Passmore's book, and Passmore's work is devoted to defending more traditionally acceptable ideas.

88. Ibid. p.61.

89. Cited Ibid. from 'Genesis', ch.9, verses 1-3.

90. Cited Ibid. p.21.

91. Ibid. p.39.

92. Attfield, 'Christian Attitudes to Nature' pp.369-386; and 'Western Traditions and Environmental Ethics' p.201ff.

interprets this in a less human centred way than does Passmore. On this basis he argues that views expressed by the 'deep ecologists' such as Routley and Naess can be supported within the tradition of Christian thought.[93] It is for this reason, Attfield holds, that exposure to new facts about the treatment of animals in factory farms and ecological findings about the interdependence between species have changed our attitudes.

However Attfield's argument goes further: not only is the Western tradition of thought capable of being developed adequately to deal with environmental problems: 'a new ethic is impossible; the most that is possible is a revised normative theory accommodating and enlarging upon accepted judgements.'[94] Even if we could devise a new ethic, he argues, it would be impossible to 'establish its credibility unless it were not a new departure but an extension, analogical or otherwise, of existing patterns of moral thought.'[95]

Deficiencies in the Arguments of the Traditionalists

One of the most admirable features of traditionalists such as Passmore and Attfield is that they do consider the issue of how ideas come to be effective. Passmore's approach to ethics is largely one of searching for what could motivate people to act in an environmentally responsible manner, and Attfield regards the development of a sound ethical theory as essential if education, the broadening of the imagination, pressure groups and political parties are to play their parts in confronting environmental problems. The reasons offered by Passmore and Attfield for developing the tradition of ethical thought rather than developing a new ethics are based on their concern for what ideas would be likely to influence people. However, they have probably failed to identify such ideas.

Ethical ideas are acceptable in the short run because of their familiarity. But in the long run their acceptability is determined by their coherence with what is taken to be the most defensible conception of the world. The Judeo-Christian tradition from which Passmore and Attfield derive their Stewardship Ethics was accepted in Ancient Rome largely because of the efforts of the Church Fathers to interpret and defend it in terms of the dominant metaphysics of the age: Neoplatonism. And the ethical ideas associated with this only became a significant influence on how people behaved after this system had been incorporated into the institutions of society to form the feudal order in the Middle Ages. The ideas dominating feudal society only retained their plausibility through the continued defence of the metaphysics on which they were based. At least part of the reason for the continued success of Christianity in the Middle Ages was the work of theologians such as Thomas Aquinas in assimilating to it the metaphysics of Aristotle, thus nullifying the challenge from the Averroists. It was the tradition of a whole world-view or world-design embodied in the institutions of society which gave the ethical thought of the Judeo-Christian tradition its force. It is this world-view rather than the tradition of ethical thought as such which is needed to provide the grounds for the acceptability of ethical proscriptions or prescriptions of Christianity. However the medieval world-view which justified Christianity has broken down and been replaced by the mechanistic world-view vouchsafed by the achievements of science, and this new

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93. Attfield, *The Ethics of Environmental Concern*, 1st ed. p.5.

94. Attfield, 'Christian Attitudes to Nature' p.225.

95. Attfield, *The Ethics of Environmental Concern*, 1st ed. p.4.

world-view has been incorporated into the institutions of capitalism which have replaced the feudal order.

Passmore and Attfield do not acknowledge this and have obfuscated the issue by their approach to ethics and the history of ideas. Searching for the source of attitudes dominating the present in past traditions of thought, as did Lynn White, is a valid and important enterprise in the effort to understand the present situation. But to assume that there could be any significance for ethics in showing that there were alternative ways of thinking contained within the Christian tradition of thought or that present attitudes to nature have their origins in misinterpretations of the Bible or Christian theologians, is to fail to face the fact that it is science which is now the ultimate arbiter in matters of belief, not religion. It is in terms of science that ethical doctrines must now establish themselves if they are to carry any force, and mechanistic science does not lend itself to the support of any ethics associated with Christianity. Attfield's arguments to the effect that there can be no new ethical ideas assumes the highly implausible view that ethical ideas stand without any outside support.

The pitfalls of separating ethics from their foundations in metaphysics, and thereby from the natural and social sciences are evident in Passmore's concrete analyses of problems. He sees science as providing knowledge which can be used by technology which in turn can be used by the economy. Only then does ethics enter in association with politics and administration. For instance, in relation to pollution, after science shows 'how a particular form of pollution arises and in what its danger consists, the next problem is technological: to discover a method of reducing its incidence.'[96] Since a number of technological solutions can be offered, it will then be necessary 'to make fuller use of rational Western-type methods, cost-benefit analyses or decision procedures. Then the economist enters the picture as a specialist in such methods.'[97] At this point the proposed solution is examined for its moral acceptability, political feasibility and administrative consequences. At all points Passmore places his faith in specialists, writing, 'Close communication between specialists is a more effective procedure than the attempt to rely on "generalists."'[98] This piecemeal pragmatic approach in which the important judgements are left to 'experts', problems are treated in isolation from each other and economic control is seen in terms of specific bureaucratic interventions, is simply an endorsement of the status quo.[99]

As with most modern ethical pronouncements formulated in terms of Christianity, Passmore's ideas amount to nothing more than a gloss over the existing reality. In the 1950s Alasdair MacIntyre responded to Marxists in Eastern Europe, particularly Leszek Kolakowski, who were attempting to invoke principles of liberalism to ameliorate the effects of Stalinist Marxism. He wrote: 'One cannot revive the moral content within Marxism by simply taking a Stalinist view of historical development and adding liberal morality to it.'[100] Similarly one cannot ameliorate the effects of a capitalist society embodying a mechanistic view of the world, rights theory and utilitarianism, and as I will argue later, Social Darwinism, by grafting on to it elements of Christian thought. The attempt to do so changes

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96. Passmore *Man's Responsibility for Nature*, p.48.

97. Ibid. p.50.

98. Ibid. p.48n.

99. The limitations of this approach have been pointed out by C.A. Hooker, 'On Deep Versus Shallow Theories of Environmental Pollution', in Elliot and Gare *Environmental Philosophy*, pp.58-84.

100. Alasdair MacIntyre, *New Reasoner* Vol.7, p.100; cited by himself in *After Virtue*, p.ixf.

nothing. This, moreover, appears to be consonant with the deeper aims of Passmore's stand.

The Deep Ecologists

This brings us to the most radical environmentalists, the proponents of a new way of thinking, the 'deep' ecologists. Predictably, those who propose new ways of thinking differ from each other more than do those arguing for developments of conventional positions. There is however, some important common ground. All deep ecologists agree that prevailing modes of thought are inadequate. They are also united by their rejection of an ethic centred on humanity. Nature is seen to be intrinsically valuable, and humanity is always seen as part of nature.

Their views have their origins in the Hermetic philosophers of the sixteenth and early seventeenth centuries and in the Romantics of the late eighteenth and early nineteenth centuries, particularly in Germany under the influence of Herder and Schelling. The ideas spread from Germany to Russia, and to Britain via Coleridge and Wordsworth, then to America where they were taken up by the transcendentalists: Emerson, Thoreau and finally John Muir.[101] However while such thinkers extolled the value of nature for other than utilitarian ends, they still conceived of it anthropocentrically as means to a higher form of experience. It was only in the twentieth century that Western thinkers have clearly argued that nature has a value in its own right completely independent of humanity. Albert Schweitzer argued for a reverence for life as such, and backed up his views by appealing to Eastern philosophy. Then an American, Olaus Murie, formulated a totally non-anthropomorphic ethics of nature. Beginning in the 1920s Murie argued for the value of pests which are of no conceivable benefit to mankind, simply because they are living beings.[102] Murie had little immediate influence, but won over a leading exponent of the Pinchot school, Aldo Leopold who presented the position with great eloquence, if less consistency, in his posthumously published *Sand County Almanac* printed in 1949.[103] The *Sand County Almanac* made a case for a 'land ethic'. It argued that all ethics are based upon the premise that the individual is a member of a community of interdependent parts. A land ethic would enlarge the boundaries of the ethical community to include 'soils, waters, plants, and animals, or collectively: the land.'[104] On this basis Leopold concluded: 'A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it does otherwise.'[105]

Leopold's sentiments were taken up in the early 1970s by a number of philosophers, largely in reaction to the homeocentric and elitist attitudes of environmentalists such as Ehrlich who were exclusively concerned with population growth, resource depletion, pollution and the affluent of the world. The basic position of these new environmentalists was summed up by Arne Naess in 1973 when he drew a distinction between 'the shallow' and 'the deep, long-range ecology

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101. The American tradition has been described by Roderick Nash in *Wilderness and the American Mind*, New Haven: Yale University Press, 1967.

102. See Donald Worster *Nature's Economy: The Roots of Ecology*, Garden City, N.Y.: Doubleday, 1979, p.282ff.

103. Aldo Leopold, 'The Land Ethic' in *A Sand County Almanac* [1949] Oxford: O.U.P., 1968 pp.201-26.

104. Ibid. p.204.

105. Ibid. p.224f.

movement.'[106] Naess defined the deep ecologists as being characterized by their rejection of the man-in-environment image in favour of the relational, total-field image in which all organisms are seen as knots in the biospheric field of intrinsic relations, and by biospherical egalitarianism in which all forms of life are accorded a deep respect. Deep ecology was opposed to elitism, either within or between nations, and supported complexity of ecosystems, economies and ways of life, the decentralization of power and local autonomy.

A number of thinkers have since elaborated and defended these themes, including John Rodman,[107] Holmes Rolston III,[108] Richard Sylvan and Val Plumwood (formerly Richard and Val Routley),[109] Charles Birch and John Cobb,[110] Bill Devall,[111] George Sessions, [112] Henryk Skolimowski,[113] Warwick Fox,[114] Michael Zimmerman[115] and Freya Mathews.[116] And there has been some parallel or derivative movements, differentiating themselves in some way from the deep ecologists.[117] Thus Murray Bookchin has attacked the anti-human bias of many deep ecologists and has formulated an alternative - 'social ecology', Richard Sylvan has redefined his position in opposition to 'deep ecology' as 'deep green',[118] and ecofemininists have differentiated themselves from deep ecologists, identifying the cause of human destructiveness in patriarchal society.[119]

In general, deep ecologists and related movements tend to concur with Hans Jonas' view that:

> Only an ethic which is grounded in the breadth of being, not merely in the singularity or oddness of man, can have significance in the scheme of things... an

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106. Arne Naess, 'The Shallow and the Deep, Long-Range Ecology Movement. A Summary' *Inquiry*, Vol.16, 1973, pp.95-100.

107. John Rodman, 'The Liberation of Nature' *Inquiry*, Vol.20, 1977, 83-145.

108. Holmes Rolston III, *Philosophy Gone Wild: Essays in Environmental Ethics*, Buffalo: Prometheus, 1986 and *Environmental Ethics: Duties to and Values in the Natural World*, Philadelphia: Temple University Press, 1988.

109. In particular Richard and Val Routley, 'Human Chauvinism and Environmental Ethics', in Don Mannison, Michael McRobbie and Richard Routley (eds) *Environmental Philosophy*, Canberra: Australian National University, 1980, pp.96-189. For Richard Routley's more recent work see R. Sylvan, *Three Essays Upon Deeper Environmental Ethics*, Democracy Books, Canberra: A.N.U. Press, 1987 (both Routleys have changed their names).

110. Charles Birch and John B. Cobb, Jr. *The Liberation of Life: From the Cell to the Community*, Cambridge: Cambridge University Press, 1981.

111. Bill Devall, 'The Deep Ecology Movement' *Natural Resources Journal*, Vol.20, 299-322 and with George Sessions, *Deep Ecology - Living As If Nature Mattered*, Salt Lake City: Peregrine Smith Books, 1985.

112. George Sessions, 'Spinoza and Jeffers on Man in Nature', *Inquiry*, Vol.20, 481-528.

113. Henryk Skolimowski;, *Eco-Philosophy: Designing New Tactics for Living*, Boston: Marion Boyars, 1981.

114. Warwick Fox, *Towards a Transpersonal Ecology*, Boston: Shambala, 1990.

115. Michael E. Zimmerman, *Contesting Earth's Future: Radical Ecology and Postmodernity*, Berkeley: University of California Press, 1994.

116. Freya Mathews, *The Ecological Self*, London: Routledge, 1991.

117. Some of the conflicts within this movement have been aired in *The Ecologist* Vol.18, Nos. 4/5, 1988.

118. This opposition is defined in a submission to UNESCO: *Australian Perspectives on Environmental Ethics*, 1989.

119. For early statements of ecofeminism see Ariel Kay Salleh, 'Deeper than Deeper Ecology: The Eco-Feminist Connection', *Environmental Ethics*, Vol.6, Winter 1984, pp.339-346; and Charlene Spretnak;, 'Ecofeminism: Our Roots and Flowering', *Ecospirit*, Vol.III, No.2, 1987, pp.2-9. For more recent work, giving some account of the diversity of feminist positions on environmentalism, and analysing the relationship between ecofeminism and deep ecology, see also Irene Diamond and Gloria Feman Orenstein, *Reweaving the World*, San Francisco: Sierre Club Books, 1990. The most rigorously formulated defence of eco-feminism is Val Plumwood, *Feminism and the Mastery of Nature*, London: Routledge, 1993. For a review of the major positions within radical environmentalism, see Michael E. Zimmerman, *Contesting Earth's Future*, Berkeley: University of California Press, 1994.

> ethics no longer founded on divine authority must be founded on a principle discoverable in the nature of things.[120]

Rather than attempting to derive an ethics from the relationships between people or from the experience of individuals, deep ecologists have been attempting to derive an ethics from the nature of the world and the place of humanity within it.

One of the most forceful early expressions of this effort is the paper by John Rodman, 'The Liberation of Nature', a paper free of the faults which other radical environmentalists, including ecofeminists, have found in deep ecology. Rodman criticised the tendency of environmentalists to treat animals as defective humans and began developing a new ethic by pointing out that it is not the utilitarian arguments in Peter Singer's *Animal Liberation* which provide the most convincing condemnation of how animals are treated, but the description of them being treated as though they are not animals but machines converting low cost fodder to high priced meat, or as breeding machines.[121] Rodman argued instead that the 'non-human world is full of what Mill called "inward forces", potentialities striving to actualize themselves' and suggested 'we can ally ourselves with these tendencies and resist the efforts of other human beings to obstruct them.'[122] Further, Rodman argued that the repression by humans of these potentialities in nature has the effect of repressing their own potentialities. Just as it is necessary for males to stop oppressing females in order to free the feminine sides of their own personalities, so it is necessary for people to liberate nature from their domination of it in order to fully liberate themselves.

Other deep ecologists have been attempting to elaborate a political philosophy to accord with the new ethics.[123] Societies, they argue, should be judged by the quality of life they facilitate, generally defined in terms of 'self-realization'. In most cases deep-ecologists have argued for 'bio-regionalism' - the identification by people with their local environment, for a decentralization of society and for the creation of self-sufficient communities.[124] The most influential proponents of such an organization of society are Murray Bookchin and Rudolph Bahro.[125]

To develop and defend such ideas environmental philosophers have had to go beyond ethics and social philosophy and engage in the fundamental issues of cosmology, metaphysics, epistemology and logic. The atomistic or mechanistic view of nature has been rejected in favour of a conception of the world which emphasizes inter-dependence. Ecological theory in particular has been pressed into service for this task, supplemented by the metaphysical ideas of such philosophers as Spinoza, Schopenhauer, Nietzsche, Whitehead and Heidegger and by Eastern religions and

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120. Hans Jonas, *The Phenomenon of Life: Toward a Philosophical Biology* N.Y.: Dell, 1966, p.284; referred to by Rodman, 'The Liberation of Nature', p.95.

121. Rodman, 'The Liberation of Nature', p.100.

122. Ibid. p.117.

123. For example Val and Richard Routley, 'Social Theories, Self Management and Environmental Problems', Mannison et. al. *Environmental Philosophy* pp.217-332.

124. For a study of environmental political philosophy see Robyn Eckersley, *Environmentalism and Political Theory*, London: University College London Press, 1992.

125. See Murray Bookchin, *Towards an Ecological Society*, Montreal: Black Rose Books, 1980 and *The Ecology of Freedom*, Palo Alto, Calif.: Cheshire Books, 1982; and R. Bahro, *From Red to Green*, London: Verso, 1984 and *Building the Green Movement*, tr. Mary Tyler, London: Heretic Books, 1986.

Amerindian cultures.[126] Efforts to justify both metaphysics and the rejection of the fact-value dichotomy have led to a questioning of prevailing epistemological doctrines and of the extensional logic on which many of these are based.[127]

Limitations of the Deep Ecologists

Given the inadequacy of prevailing modes of thought, it is of prime importance to develop new ways of thinking. The question is whether the new modes of thought which have been proposed so far are adequate. From one point of view it can be expected that they will not be. Educational institutions have been transformed from communities within which students could appropriate and develop their cultural heritage into organizations for the efficient production of marketable skills, and humanist oriented intellectual dissenters have been replaced by experts, specialists and generalist-integrators. It has become extremely difficult for those critical of society or of the modes of thought underlying it to gain academic positions or funding for research. Consequently there have been far too few people involved in the field to develop and inter-relate ideas. However beyond this some of the deep ecologists can be criticized for their inconsistencies and the direction of their work,[128] and it can be argued that the deep ecologists need to develop their ideas in ways that they have not hitherto considered. The deficiency of these ideas lies not just in their details but in their failure to fully transcend the disciplinary divisions which embody the prevailing metaphysical assumptions, and to provide an overall perspective which would justify and reveal the relevance of their ideas (although some recent works, notably Arne Naess's *Ecology, Community and Lifestyle*, have sought to redress this deficiency.)[129]

What is most disturbing about the deep ecologists is that it is hard to imagine their ideas having anything more than a marginal impact on society. The question which needs to answered is: Why? There are, I think, two basic problems. Most of the deep ecologists seem to be addressing themselves to environmentalists in order to justify their intuitions; but they are not even fully successful at this task because with only a few exceptions they do not attempt to refute the assumptions of opposing positions. Ideas are simply thrown into the arena to exist beside prevailing ethical ideas. They do not contest or transcend them. Secondly, deep ecologists have failed to relate their ideas to practice because they have failed to situate them in a perspective which relates them to the rest of culture and society. So while they may succeed in producing a changed attitude to nature, this by itself is unlikely to have any more effect on the rate of environmental destruction than the Chinese reverence for nature had on the destruction of their forests. In each case these failures can be traced back to the tacit acceptance of metaphysical assumptions manifest in the acceptance of existing disciplinary boundaries.

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126. See for example *Nature in Asian Traditions of Thought: Essays in Environmental Philosophy*, ed. J.Baird Callicot and Roger T. Ames, N.Y.: S.U.N.Y. Press, 1989 and Richard Sylvan and David Bennett, 'Tao and deep (Ecological) Theory: A Preliminary Investigation' in Peter Hay and Robyn Eckersley ed. *Ecopolitical Theory*, Hobart: University of Tasmania, 1992.

127. Val and Richard Routley, 'Social Theories...' pp.239-250

128. Major attacks on the deep ecologists exposing their inconsistencies have been made by Richard Sylvan (formerly Richard Routley) and Janna Thompson. See Richard Sylvan, 'A Critique of Deep Ecology' Part 1 and 2 in *Radical Philosophy*, Summer and Autumn, 1985, and Janna Thompson, 'A Refutation of Environmental Ethics,' *Environmental Ethics*, Vol.12, Summer, 1990. Another attack has been made from a more political standpoint by Tim Luke; in 'The Dreams of Deep Ecology', *Telos*, No.76, Summer, 1988.

129. Arne Naess, *Ecology, Community and Lifestyle*, tr. David Rothenberg, Cambridge: Cambridge University Press, 1989.

All this is illustrated in the work of John Rodman. His seminal paper stands as an inspiration, a new way of thinking about the world, breaking significantly with the prevailing world-orientation. But his position can easily be dismissed from the standpoint of prevailing assumptions. His central concept is that of potentialities and the value of their realization. This contradicts the prevailing assumption that value pertains only to subjective experience. While the relationship between subjective experience of value and the 'objective' world has been looked at by other environmentalists,[130] the more important issue is the status of potentialities. As this notion has come to be understood on the basis of the prevailing metaphysical assumptions, potentialities are what could be the case. They range from potentialities which will be realized in the future without any unique form of intervention (such as, for instance, adulthood being the potentiality of a young organism), to potentialities which require contrived circumstances for their realization. For instance most children have the potentiality to become psychopaths if they are placed in certain environments, and USA has the potentiality to obliterate all the cities in Russia if the order is given. But so conceived, what sense can be made of the notion that it is better to have any particular potentialities realized? How can one differentiate between potentialities on this basis? Rodman implies that potentialities which are not the product of contrived circumstances are superior, but this would mean that it is better to allow cancerous tumours to develop their full potentiality than to remove them surgically. Why not 'liberate' cancerous tumours? Why not liberate plagues? Without replacing the scheme of ideas which led to the present conception of potentialities, Rodman's ideas lack any real substance.

To put environmental ideas in the perspective necessary to achieve practical relevance would also involve rejecting the boundaries between ethical, political and economic theory. While deep ecologists are able to expose the radical deficiencies in economic theory, they generally fail to address economic issues in a way that is plausible,[131] and fail to show how their ethical views should or could be incorporated into economic thought or be built into the economic organization of society. The acceptance of these disciplinary boundaries is closely related to the failure of deep ecologists to transcend one of the most important features of the dominant metaphysics. Despite their concern to demonstrate that humans are part of nature, they have failed to overcome the dualism between thought and being in relation to ethics. This is manifest in the separation of ethical judgements and political ideals from interpretation of the present state of the world. The ethical thought of deep ecologists amounts to little more than injunctions to fight to preserve wilderness areas with little analysis of why such destruction is taking place. Similarly in relation to politics, the deep ecologists have generally proposed that power in society be decentralized. But little effort is made to explain why existing societies are badly organized or how to begin reorganizing them.[132] There are no comprehensive and plausible plans for changing the present destructive relationship of society to its environment.[133] By failing to situate their ideals within a critical

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130. Holmes Rolston III;, 'Are Values Subjective or Objective' *Environmental Philosophy*, Elliot and Gare eds, pp.135-165; and Richard Sylvan, 'On the Value Core of Deep-Green Theory.' Unpublished.

131. For a critique of Bahro and others in this regard, see Boris Frankel;, *The Post-Industrial Utopians*, Cambridge: Polity Press, 1987, esp. Ch's 1 & 2. I do not include the work of Herman Daly and John Cobb here. Their ideas, inspired by process philosophy, are part of the solution.

132. While Naess's *Ecology, Community and Lifestyle* must be recognized as a promising development in this regard, it could hardly form the basis for government by a green political party should such a party ever win political power.

133. As Frankel has argued, *The Post-Industrial Utopians*, Ch.5.

understanding of the dynamics of existing societies they offer food for fantasy rather than direction for action.

The accusation that deep ecologists have not properly confronted prevailing assumptions might appear paradoxical. It is the deep ecologists who have argued that we need a new metaphysics and have proposed alternative metaphysical theories. However they have generally failed to acknowledge the significance of metaphysical thought, and consequently what they have proposed tends to be little more than a useful intellectual vision which it would be nice for people to believe. This is illustrated by George Sessions' effort to co-opt the metaphysics of Spinoza - the favourite philosopher of the deep ecologists. Sessions writes:

> The West is clearly in need of a 'perennial philosophy' with which to pick up the pieces of the shattered dream, the wreckage of both Nature and our own psyches, and begin the process of healing and integration... It seems that, short of 'pure mysticism', if this perennial philosophy is to be expressible at all on a conceptual plane, it would need to be a version of what Russell once called 'neutral monism'... I think ... that there is such a system in the West which has been largely overlooked in the scramble, and which, when properly interpreted and understood, would serve our needs admirably: namely Spinozism.[134]

But this is an odd place for environmentalists to seek metaphysical support. For Spinoza humans are inescapably egoistic, and he declares that 'it is plain that the law against the slaughtering of animals is founded rather on vain superstition and womanish pity than on sound reason. The rational quest for what is useful to us further teaches us the necessity of associating ourselves with our fellow-men, but not with beasts, or things, whose nature is different from our own...'[135] More fundamentally, however, a metaphysical system is not something to be shopped around for to serve our needs.

A metaphysical system, that is, a theory of being serving as the foundation for a cosmology, must be a claim to be the true understanding, or at least to be the best alternative for understanding, the world. Whether it picks up the pieces of our shattered dream and the wreckage of our psyches is irrelevant to this claim except where it can be shown that our shattered dreams and wrecked psyches are a manifestation of a defective understanding of the world and our place within it. To argue for a metaphysical system as Sessions has done is to assume the framework of a consumer society in which commodities are promoted in terms of the subjective experience of satisfaction to be gained from them. A successful metaphysical system must also be more than an intellectual vision. To think in such terms involves a tacit acceptance of the prevailing dichotomy between ideas and reality. A metaphysical system should provide the basic concepts in terms of which the world and humanity can be understood such that if it were accepted, these concepts would come to be presupposed in practical and theoretical thinking. Mechanistic materialism provides such concepts at present in Western societies, and they are constitutive of social reality. Spinoza developed his system as a creative reformulation of the mechanistic conception of the world in such a way that it would overcome the difficulties in Descartes' philosophy and avoid the implications drawn by Hobbes, reappropriating the ethical orientation of Plato and the Stoics. His system certainly provided a starting point for important advances over mechanistic materialism, but the

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134. Sessions, 'Spinoza and Jeffers on Man in Nature' p.492.

135. Spinoza, *Ethics*, Prop. XXXVII, Note I.

implausibility of the idea that extension and thought are but two of an infinite number of attributes of being, and the difficulty in accounting for individuation, make it difficult to take his metaphysics as a serious contender to replace mechanistic materialism as the foundation of modern society.

Such failings are symptomatic of the unsystematic and undialectical approach adopted by most deep ecologists. They tend to appropriate ideas in an eclectic way to legitimate their preconceptions. To take a dialectical approach requires a metaphysical system which can reveal and interpret both the strengths and limitations of opposing systems, or at least provide a research programme which promises to be able to achieve this. Only in this way can reasons be provided which could persuade people to accept the validity of the new metaphysics. New ideas only refute prevailing ideas by replacing them. But a metaphysical theory must do more than elicit intellectual approval. It must also be able to provide an understanding of the tendencies and weaknesses within the prevailing social order which will enable people to transform it to accord with the new ideas. And it must inspire people to do so. Most deep ecologists are utopians (literally, at no place). What has been offered is a new commodity in the marketplace of ideas, neatly packaged in accordance with the categories of the prevailing system, enabling their works to be efficiently sold in the corners of bookstores reserved for eccentrics.

Without challenging prevailing ethics and without putting their ideas in a credible practical perspective, the deep ecologists feed into a romanticism which complements the prevailing order rather than challenges it.[136] The affluent are served in their efforts to preserve wilderness parks in their neighbourhoods, but they are also allowed to continue living as before. By concentrating on wilderness areas in abstraction from humanity the deep ecologists further support the notion that humans are separate and distinct from nature. The effect of successes achieved on this basis is to put more pressure on other, often more ecologically important, regions. It is environmentalism of this sort which discredits it in the eyes of the less privileged of the world.

Conclusion

The ideas and criticisms presented in this chapter provide some indication of the limitations of prevailing thought and the directions which need to be taken to come to terms with environmental problems. Lynn White's work should have convinced people that at least a major reason for the rise of Western civilization has been the assumptions its members have held 'about who they are, about their relation to other people and to the natural environment, and about their destiny.' But while White was justified in ascribing the source of these assumptions to Western Christianity, the issue is more complex. It is also necessary to consider why these values and beliefs were accepted in the first place, and what forms of social relations and further modes of thinking have been engendered by this Christianity. These social relations now maintain themselves in existence and reproduce the attitudes deriving from Christianity rather than vice-versa, and the intellectual status of these attitudes derives from there having been incorporated into the mechanistic view of the world which is legitimated by the achievements of science. This conception of the world is

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136. Karl Marx; noted in relation to the quest for an original fulness which the deep ecologists exemplify that 'The bourgeois viewpoint has never advanced beyond this antithesis between itself and this romantic viewpoint, and therefore the latter will accompany it as legitimate antithesis up to its blessed end.' (*Grundrisse*, tr. Martin Nicolaus, Harmondsworth: Penguin, 1973, p.162.)

now so pervasive that it vitiates the efforts of those who try to explain environmental problems, including those of Lynn White.

The pervasiveness of this conception of the world is evident in the work of almost all those who have addressed themselves to environmental problems. It is evident in concepts used by those who have attempted to explain environmental problems and in the division which most ethical and political philosophers accept between efforts to understand the world and ethical and political philosophy. While it can hardly be denied that population growth, economic growth and technology are implicated in environmental destruction, there is an incapacity to see these forces in perspective or to comprehend their significance. While ethical and political reflection has raised the issues of our relation to future generations and to other life forms, the problems in the work of philosophers reveal the extent to which their doctrines are based on the forms of thinking which engendered the environmental crisis. Ethical and political philosophers have not addressed themselves to the beliefs which are the real basis for people's decision-making.

What the limitations of all these thinkers suggest is the difficulty of getting into perspective environmental problems while living in a culture which is itself the source of these problems. But the crucial inadequacies of the arguments surveyed above suggest a far deeper problem: that these arguments and the forms of thinking to which they belong are integral parts of a self-reproducing cultural system. And by their very nature as parts of this system, their development can only serve to reinforce this culture. While it is easy to convey the impression that something is amiss, to fully reveal the nature of prevailing beliefs appears to be almost impossible because we are so completely encircled by them. They are presupposed in social practices, in organizations, in educational institutions and in the organization of academic disciplines. Truth has also come to be identified with efficiency and wealth creation so that philosophical ideas, ideas which question prevailing assumptions and propose radically new ways of conceiving the world, now appear as trivial and irrelevant to the real world. It has become difficult to believe that reality could be radically different. Even those who have thought of themselves as radicals have seldom been able to break out of the circle, to transcend their cultural heritage. Only a thorough analysis of the history and cultural dynamics of Western civilization can now provide any hope of freeing people from this culture.

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IDEOLOGY, METAPHYSICS AND SOCIETY: THE METAPHYSICAL ROOTS OF EUROPEAN CIVILIZATION

The poverty of environmentalist thought is not simply a failure to adequately orient people in relation to environmental problems; it is a failure to be anything more than a disguise for what really orients people for action. In practice, environmental concerns are always taken as peripheral to the really important issues of economic growth and defence. We have arrived at a peculiar situation where the impoverishment of hundreds of millions of people and environmental degradation are taken for granted as unavoidable aspects of progress, and the immediate steps which must be taken to avoid the eventual destruction of the conditions for humanity's continued existence have come to appear utopian. If the environmental movement is to become effective, it is necessary to come to grips with the ideas and forms of thinking which actually move people to action and which lead to such attitudes.

In the following chapters it will be argued that people's refusal to confront environmental problems is not simply a matter of 'human nature', but as Lynn White argued, is at least partly a reflection of the basic, non-verbalized assumptions most people hold about what they are and what is their place in the world. Through a history of the development of this civilization, the history of the basic assumptions of this culture in the philosophies, discourses and social practices which have developed and interacted throughout the evolution of Western society will be presented. This will reveal how the situation has arisen where people can no longer conceive of life having any other meaning than survival, the daily satisfaction of their appetites, entertaining distractions, social climbing, and exhilarating power games; where, as T.S. Elliot wrote in *The Waste Land*:

> You cannot say, or guess, for you know only
> A heap of broken images...

In other words, this work will provide a genealogy of nihilism.

What is most important in the dynamics of cultures is the concepts and images which are embodied in society's dominant institutions and in the way people live - their modes of being in the world. In Western civilization nihilism is incorporated in such a way that it has become extremely difficult to attain a clear insight into what it is and how destructive it is; or of there being viable alternatives to prevailing modes of being or prevailing forms of society. To expose this, the ideas of Nietzsche and Heidegger, the Frankfurt Institute philosophers (Adorno, Horkheimer and Marcuse), Foucault and Derrida, will be drawn upon. However while the cultural analyses offered by all these philosophers are illuminating, they lead to impasses (which in the case of the Frankfurt Institute philosophers, Habermas has only partially transcended through his theory of communicative action). The analyses offered here,

grounded in the philosophies of Heraclitus, Bergson and Whitehead, will point the way to a successful overcoming of these impasses. The questionability of the concepts on which nihilism is based will be exposed by examining them at their inception, before they became so embedded in social practices that their validity came to appear self-evident; and the possibility of transforming the social world by reconstituting it on the foundation of a radically different conception of the world will be revealed. At the same time, through this genealogy, a justification for a Heraclitean view of the world will be provided by showing how in terms of the perspective provided by it, the practices, concepts and forms of thinking which have dominated in the past, with all their achievements and limitations, can be presented in a coherent historical narrative. And by analysing the relationship between practices, culture and social dynamics, what is required to effect the sort of cultural revolution necessary to successfully overcome environmental problems will be revealed.

Culture and Traditional Societies

Anthropologists who have attempted to understand traditional societies have frequently been astounded by statements and actions which appear to be irrational. For instance Von den Steinen reported in 1894 the statement of the Bororo of Central Brazil that 'We are red macaws';[1] and Evans-Pritchard reported that the Nuer hold 'that a twin is a bird as though it were an obvious fact, for Nuer are not saying that a twin is like bird but that it is a bird.'[2] Further examination of such beliefs indicates that the criteria for evaluating their validity are different from those which prevail in Western culture. This is most clearly evident when particular beliefs are challenged. For instance Evans-Pritchard's examination of the Azande's beliefs in witchcraft seemed to catch them in flagrant contradiction. The Azande simultaneously believe that witchcraft is always inherited and that the post-mortem examination of a suspect's intestines will conclusively reveal whether or not 'witchcraft substance' is present. It should follow from this that a few post-mortem examinations will reveal for all time which families or clans are witches. But the Azande do not draw this conclusion and go on treating the question as an open one. Furthermore they simply brushed aside Evans-Pritchard's objections. This suggests that beliefs and criteria are part of a cultural system, and that it is impossible to evaluate any aspect of this system in isolation from the total culture.

Such anomalies have led to an appreciation of the radical difference between the cultures of people in traditional societies and of our own culture, and how these cultures constitute the cognizable world of the members of these societies. As Evans-Pritchard wrote of Azande culture:

> In this web of belief every strand depends upon every other strand, and a Zande cannot get out of its meshes because it is the only world he knows. The web is not an external structure in which he is enclosed. It is the texture of his thought and he cannot think that his thought is wrong.[3]

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1. See Dan Sperber;, 'Apparently Irrational Beliefs' in Martin Hollis and Steven Lukes, eds, *Rationality and Relativism*, Oxford: Blackwell, 1982, pp.149-80, p.152.

2. E.E. Evans-Pritchard, *Nuer Religion*, Oxford: Oxford University Press, 1956, p.131.

3. E.E. Evans-Pritchard *Witchcraft, Oracles and Magic among the Azande*, Oxford: Clarendon, 1936, p.194.

In other words, the Azande do not think of themselves holding beliefs about the world. They take their beliefs as reality; and this 'reality' is very different from what we take to be reality.

To fully understand the role of such modes of thought in society it is necessary to see how they are developed. In the past this has been ignored by anthropologists who have either considered the dynamics of societies independently of human agency, or have focused on the way in which society and culture form the individual. But recently the focus has shifted to how society and culture are produced and reproduced through human intention and praxis.[4] It is in terms of praxis that it is possible to transcend cultural relativism. In the efforts to understand societies it is necessary to develop a conception of humanity able to explain all its variety and manifestations. By focusing on praxis, the issue becomes what are people's ultimate ends in life. In accordance with both the metaphysics being defended and with the achievements of the human sciences, a conception of humans is proposed which implies that they are striving to orient themselves in the world, to gain recognition of their significance, and to gain power; strivings which are manifest to some degree in people's every action and interaction. In most societies people recognize power and recognition as their ultimate ends. For instance J.J. Maquet writes that when questioned on what the people of his group wish for above all else, a Matutsi of Ruanda will answer immediately 'children and cattle'. But a further question, Why?, 'discloses that these are not ultimate values sought for themselves, but intermediate ones, means to reach more abstract ends. The latter are power (amaboko) and reputation (ugukomera).'[5] However whether they acknowledge it or not, there is evidence from the way people behave that they are deeply concerned to be able to orient themselves in the world, in relation to each other, to society and to nature. These struggles generate semi-autonomous processes characterized by cognitive structures, structures of legitimation and structures of power which constrain people to reproduce these structures. What is culturally relative is how people strive for these ends. To understand the role of culture it is necessary to see it in relation to socially situated praxis directed towards these ends.

Piaget has demonstrated how in individuals the capacity to reason which enables them to interact intelligently with their world develops through their practical engagement in their environments. Individuals assimilate the environment to interpretive schemes while at the same time accommodating these schemes to the environment. In other words, cognitive schemes which facilitate intelligent interaction with the environment are developed through their analogical use from one situation to another. In this way children constitute their environments as an intelligible world. Pierre Bourdieu's work has revealed how within societies there is a similar analogical use of interpretive schemes which then constitute the world for their members, although in the case of such social schemes of interpretation the schemes define appropriate behaviour and partially constitute social relations.[6] Such schemes involve the generalization of forms of relationships between people to facilitate 'the interchangeability of reactions and enable the agent to master by a sort

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4. See Marshall Sahlins, *Historical Metaphors and Mythical Realities*, Ann Arbor: University of Michigan Press, 1981 and Sherry B. Ortner, 'Theories in Anthropology since the Sixties' in *Society for Comparative Study of Society and History*, 1984, pp.126-165, esp. p.158.

5. J.J. Maquet, 'The Kingdom of Ruanda', *African Worlds: Studies in the Cosmological Ideas and Social Values of African Peoples*, Plymouth: Oxford University Press, 1954, pp.164-189, p.176.

6. Pierre Bourdieu, *Outline of a Theory of Practice* [1972] tr. Richard Nice, Cambridge: Cambridge University Press, 1977.

of practical generalization all similar problems likely to arise in new situations...'[7] People act in situations according to how these are assimilated to such schemes.

These schemes are first and foremost schemes associated with practices and are not necessarily understood at the symbolic level by the actors:

> Lacking symbolic mastery of the schemes and their products - schemes which they are, products which they do - the only way in which agents can adequately master the productive apparatus which enables them to generate correctly formed ritual practices is by making it operate. This is what the observer is likely to forget, because he cannot recapture the logic immanent in the recorded products of the apparatus except by constructing a model which is precisely the substitute required when one does not have (or no longer has) immediate mastery of the apparatus.[8]

Schemes are embodied as a *habitus*, which Bourdieu defined as 'a system of lasting, transposable dispositions which, integrating past experiences, functions at every moment as a *matrix of perceptions, apperceptions, and actions* and makes possible the achievement of infinitely diversified tasks, thanks to analogical transfers of schemes permitting the solution of similarly shaped problems, and thanks to the unceasing corrections of the results obtained...'[9]

Through generalization of schemes from one situation to another, and by forming the interpretive basis for transformations of nature, they also come to be embodied in the humanized environment, so that all kinds of human action and products of human action in traditional societies come to reflect each other, from the manner of economic production and the cooking of meals to ritual ceremonies, the manner of dressing and the layout of buildings and villages.[10] Such reflection is evident among the Maolan Islanders of Eastern Fiji studied by Marshall Sahlins. This society is divided into two groups: the Land people or Animal people who were the original settlers, and the Chiefs who arrived later by sea and conquered the Land people. This division reflects the division of labour in society where the Land people concentrate on growing food while the Chiefs concentrate on fishing. Sahlins described the way this division has become integrated and embodied within Maolan society:

> A difference of social groups corresponds to the distinction of land and sea on the geographical plane, itself an instance of a general spatial differentiation of interior and peripheral, correlated with oppositions of indigenous and foreign, earlier and later, even animal and cultural; the same groups again are inferior and superior politically, ritual and secular functionally.[11]

In their efforts to orient themselves, members of traditional societies develop interpretive schemes beyond the scope required for the mastery of immediate situations. Such interpretive schemes provide global orientations, relating individuals with all their individual and social practices to each other, to their

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7. Ibid. p.119.

8. Ibid. p.123.

9. Ibid. p.82f.

10. This reflection based on analogy or 'paradigmatic transformation' has been described by Edmund Leach in *Culture and Communication*, Cambridge: Cambridge University Press, 1976.

11. Marshall Sahlins, *Culture and Practical Reason*, Chicago: University of Chicago Press, 1976, p.24.

community and to the world generally. These schemes are usually developed by using nature as an analogy for understanding society and society as an analogy for understanding nature. As the French Marxist anthropologist, Maurice Godelier, described thought in society:

> Spontaneously, by systematically covering all the possible analogous parallels between Nature and Culture, thought constructs a gigantic mirror effect, where the reciprocal image of man and the world is reflected *ad infinitum*, perpetually decomposing and recomposing in the prism of Nature-Culture relations... By analogy the whole world makes sense, everything is significant, everything can be explained within the symbolic order, where all the positive known facts...may take their place with all their rich abundance of detail.[12]

This usually results in all aspects of the world being related in terms of one dominant thematic motif which defines the basic nature of the world. This was revealed by Roy Willis in his comparative study of the Nuer, the Lele and the Fipa. Willis found that the Nuer sense of distance from and equality with surrounding nature contrasted markedly with the Lele sense of the village's moral inferiority to and dependence on the forest and the Fipa sense of the village's properly dominant relation to the surrounding bush. These cultural differences in the perceived structure of the universe were found to correlate with different ideas of time, of historical consciousness or lack of it, and in ideas of the self; and these differences in turn were found to be grounded in the meaning given to the man-animal relation which in each case was conceived in terms of a hierarchical pyramid with one animal at the apex: the ox in the case of the Nuer, the pangolin for the Lele and the python for the Fipa. Willis argued:

> [T]hese three beasts symbolize, for these three societies, the ultimate value - what we might call the 'meaning of life'... [W]hat these animals symbolize is, respectively: transcendence of individual personality in pure, inner selfhood; transcendence of individual differentiation in pure communalism; and pure becoming, or developmental change, both social and personal.[13]

He concluded from his study that 'The cohesion and vitality of human cultures appears to rest on a kind of cognitive and affective reductionism by which a wide range of disparate concerns are subsumed under a single thematic motif.'[14]

Yet the achievement of such a subsumption does not require symbolic mastery of the way the world is conceived by the members of society. While some traditional societies such as the Dogon do develop such mastery, others such as the Shilluk appear to have attained a unity in their orientation to the world without any capacity to represent their conception of the world to themselves.[15] Thus the world-orientation of a culture cannot be conceived as a set of beliefs, and in fact the very notion of belief in such contexts has been questioned by Rodney Needham.[16] Making a similar point, Mary Douglas wrote: 'It is a mistake to think of people as

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12. Maurice Godelier, *Perspectives in Marxist Anthropology* [1973] tr. Robert Brain, Cambridge: C.U.P., 1977, p.213.

13. Roy Willis, *Man and Beast*, Frogmore: Paladin, 1974, p.8f.

14. Ibid. p.86.

15. See Marcel Griaule and Germaine Dieterlen, 'The Dogon' and G. Lienhardt, 'The Shilluk of the Upper Nile' in Daryll Forde ed., *African Worlds*, Plymouth, Oxford University Press, 1954, pp. 83-110 and pp.138-63, esp. p.162.

16. R. Needham, *Belief, Language and Experience*, Oxford: Blackwell, 1972, esp. p.151.

being set somewhere below and apart from their cosmological ideas. People are living in the middle of their cosmology down in amongst it...'[17] The coherence of a world-orientation is experienced by people as a coherence in the world and in their lives.

It is in terms of this socially defined world that individuals transcend their biological centredness and define themselves from a social perspective as a self among other selves. The concepts of self which are developed depend upon the cultures of the particular societies involved, and vary immensely. For instance the Dinka have no concept of the mind as storing up experiences. What Westerners encapsulate within themselves as a 'memory' related to past experience and taken to be an interior psychic phenomenon, Dinka regard as a feature of a timeless external world with the power to act upon them.[18] Through such concepts of the self, individuals define their relation to the world, and consequently define their needs and goals. As Irving Hallowell concluded on the basis of his studies of the Ojibwa Indians: 'In so far as the needs and goals of the individual are at the level of self-awareness, they are structured with reference to the kind of self-image that is consonant with other basic orientations that prepare the self for action in a culturally constituted world.'[19] People's behaviour is constrained by the status accorded to different actions, goals and achievements in their society.

But such constraints are not sets of principles which define correct action. The culture of a society is part of the self, and the ethos of a society through which people gain respect is a mode of bodily engagement in the world. As Bourdieu argued:

> However close it may come to the logic of practices, the abstract diagram which has to be constructed in order to account for that logic is liable to obscure the fact that the driving force of the whole mechanism is not some principle ... still less the set of rules which can be derived from it, but the *sense of honour*, a disposition inculcated in the earliest years of life and constantly reinforced by calls to order from the group, that is to say, from the aggregate of the individuals endowed with the same dispositions, to whom each is linked by his dispositions and interests... [T]he point of honour is a permanent disposition, embedded in the agents' very bodies in the form of mental dispositions, schemes of perception and thought, extremely general in their application, such as those which divide up the world in accordance with the oppositions between male and female, east and west, future and past, top and bottom, right and left, etc., and also, at a deeper level, in the form of bodily postures and stances, ways of standing, sitting, looking, or walking. What is called the sense of honour is nothing other than the cultivated disposition, inscribed in the body schema and in the schemes of thought, which enables each agent to engender all the practices consistent with the logic of challenge and riposte, and only such practices...[20]

Despite the way cultures are embodied, they still have an historical dimension as their members struggle to overcome contingencies within the world and generated within societies themselves. It is through this history that the nature of cultural coherence is manifested. Confronting new contingencies involves the

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17. Mary Douglas, *Implicit Meanings: Essays in Anthropology*, London: Routledge & Kegan Paul, 1975, p.60.

18. From G. Lienhardt, described in Willis, *Man and Beast* p.81.

19. A. Irving Hallowell, *Culture and Experience*, Philadelphia: University of Pennsylvania Press, 1955, p.76.

20. Bourdieu, Outline of a Theory of Practice, p.14f.

accommodation of old structures of power, legitimation and cognition to new situations, and this produces a coherence in societies over time. But even in traditional societies this coherence is limited. To begin with inadequate interpretive schemes often result in people's actions producing effects unintended by them, which once established, often take on a life of their own and subsequently change the structures of society. Such societies are also characterized by residues of earlier formations of the society. These are maintained as societies gradually change through the process of confronting contingencies, though they play no significant role in the later formation and can be eliminated without much effect on the society. In other instances development of new practices through accommodation can generate tensions between the developed practices and the old practices, and the power relationships between people can be upset. For example in the late nineteenth century the Maolan Sea People established the village of Nuku. To maintain their dualistic way of conceiving the world, they divided themselves so that some groups of people came to be seen as Land People, with all the ritual forms of behaviour and degradation this involved. The blatant contradiction between the recognition that Nuku had been established entirely by Sea People or Chiefs and that it was now organized into Sea and Land people was explained by saying that the Land People had arrived earlier. Sahlins wrote of this:

> [T]here is no escaping the contradiction of a village at once composed of Land People and Sea People, and yet of Sea People alone... [T]he opposition of structure and event is overcome, but at the cost of a social complication which denies the structure even as it is confirmed. One dualism negates the other, is placed across the other, and it seems reasonable to suppose that any system will discover limits to its ability to thus accumulate historical contradictions, or at least that it will become vulnerable to some transformation.[21]

Such historical studies of cultures reveals their unity to be more like that of an ecosystem than that of an organism, with individuals and groups struggling to find niches within which they can gain control over their destinies, gain respect, and orient themselves in the world. Cultures provide a reserve of schemes of interpretation which can be analogized to comprehend new situations. These are selected and preserved if they work in practice and can be legitimated in the general community. Such legitimacy will to some extent be an expression of the power (political and economic) and status of the individuals involved, which in turn will be largely determined by the dynamics of semi-autonomous processes within the society. But legitimacy will also depend on whether such definitions and actions are felt to accord with the nature of things as they have been socially defined in the past. The various practices then tend to support each other when they share the same basic ways of conceiving things. A coherent society will be one in which the various practices resonate with each other so that people moving from one social situation to another find their conception of the world continually reinforced. Practices necessary for the survival of the society are likely to carry the most weight in determining which ways of conceiving things will be felt to be legitimate in other social practices. However the dominant thematic motif or analogy of a society which defines the basic nature of being will also be highly significant in this regard, especially in societies which have articulated explicitly the forms of thinking

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21. Sahlins, Culture and Practical Reason, p.42.

associated with this motif. With the Maolans the dualistic conception of the world is preserved even though this involves falsifying history.

Cultures of different traditional societies vary in their potential to be developed by their members. The ultimate stress for most of these societies has been contact with Western civilization. The highly flexible world-orientation of the Fipa studied by Willis enabled them to critically assimilate Western culture without their own culture losing its integrity. Other cultures have fared less well. Marshall Sahlins has described the transformation of the culture of the Sandwich Islands Kingdom in response to Europeans.[22] To begin with, islanders interpreted Europeans according to their cultural categories, seeing the Europeans as gods and acting accordingly. This led to the ritual slaughter of Captain Cook. But further contact eventually extended this culture to breaking point, destroying its coherence and in so doing, undermining the traditional social order. It led the different strata within society to act in ways which gave new conceptual meanings to signs by placing them in novel relationships with objects in the referential process, and by placing them in novel relationships to other signs in the instrumental process. For instance for good traditional reasons the Hawaiian chiefs consistently used the power of tabu in an unprecedented manner to accumulate property in trade, displacing the received relationships of the concept away from the supernatural and ritual towards the material and the political. Such actions destroyed the meaning of these signs, leading to the development of a new structural state, resulting in the Christianization of the population.

Other cultures completely failed in such contacts, eventually leading to the total destruction of these societies. One particular instance of such failure was the response of the Australian Aboriginals in their confrontation with Western civilization.[23] Joseph Banks, the botanist who accompanied Captain Cook on his voyage to Australia recorded in his journal in 1770 the first contact with these people:

> Under the South head of it were four small canoes; in each of these was one man ... These people seemed to be totally engag'd in what they were about: the ship passd within a quarter of a mile of them and yet they scarce lifted their eyes from their employment...At 1 we came to an anchor abreast a small village consisting of about 6 or 8 houses. Soon after this an old woman followd by three children came out of the wood...She often looked at the ship but expressed neither surprise nor concern. Soon after this she lighted a fire and the four Canoes came in from fishing; the people landed, hauld up their boats and began to dress their dinner to all appearance totally unmovd at us, tho we were within a little more than 1/2 a mile of them.[24]

It appears that a sailing ship was so different from anything that people in this society had ever seen or dreamt about before that it could not be assimilated to their culturally constituted world, and consequently for practical purposes they were virtually blind to it.

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22. Sahlins, Historical Metaphors and Mythical Realities.

23. For the history of the struggle of aboriginals against white invaders in Australia see Henry Reynolds, *The Other Side of the Frontier*, Harmondsworth: Penguin, 1982.

24. J.C. Beaglehole, ed., *The Endeavour Journal of Joseph Banks, 1768-1771*, 2 volumes, Volume II, Sydney: Angus and Robertson, 2nd ed. 1963, p.53f.

Some societies were destroyed because they refused to adapt to Western civilization because it was unacceptable in terms of their own understanding of the world. For instance a conflict arose between the Columbia Basin Indian tribes and American whites when the United States government tried to force the Indians to become farmers. The Indians resisted on grounds which clearly reveal the role of analogical thinking in defining their place in the world. The reasons for the resistance were given by their leader, Smohalla:

> You ask me to plough the ground; shall I take a knife and tear my mother's bosom? Then when I die she will not take me to her bosom to rest. You ask me to dig for stones; shall I dig under her skin for her bones? Then when I die I cannot enter her body to be born again. You ask me to cut grass and make hay and sell it and be rich like white men; but how dare I cut off my mother's hair?[25]

Acting on this view of nature, the Nez Perce Indians revolted, and were crushed by United States' troops who killed Indians of both sexes, both adults and children.

Culture and Civilization

While the relationship between modes of thought, action and society is essentially the same in civilizations as in traditional societies, there are a number of complicating factors. With civilization comes literacy, which, as Walter Ong has convincingly argued, itself radically transforms people's thinking.[26] The complexity of civilizations facilitates the development of dynamic processes more autonomous from people's intentions, ranging from those associated with a few individuals to socio-economic systems which characterize whole eras; and civilizations are characterized by at least one major division between its members: between those who live in cities and those who live in the country. Since people are involved in radically different activities, this makes for a greater complexity in the relationship between the modes of cognition of different people. At least some people in civilizations are likely to be aware that other people understand or have understood the world in radically different ways than they themselves do. This can come about through sustained contact with people from different regions or classes within a civilization, through the development of literacy and acquaintance with the writings of earlier members of their own civilization, or through contact with members of other societies.[27] Finally, the differentiation of society within civilizations tends to lead to the defence of forms of thinking as part of the power struggle between different groups. Awareness that ways of thinking are only opinion, *doxa*, generally leads to efforts to impose one opinion as *orthodox*.

The awareness of alternative beliefs and the resulting conflicts between their proponents also have tended to generate far greater efforts to represent beliefs and to elaborate them. Consequently civilizations are more likely to be characterized by traditions of critical thought and by deliberate efforts to assimilate ideas from other cultures than are traditional societies. However with greater differences in the power and status of groups and individuals, augmented by more powerful semi-autonomous social processes, civilizations are also more likely to be characterized

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25. Quoted by Brian Easlea in *Witchcraft, Magic & the New Philosophy*, Sussex: Harvester Press, 1980, p.140.

26. Walter Ong, *Orality and Literacy*, London: Methuen, 1983.

27. R. Horton, 'African Traditional Thought and Western Science', *Africa*, Vol.37, No's 1-2, 1967, pp.50-71 and 155-87. See also Robin Horton;, 'Tradition and Modernity Revisited', in Hollis and Lukes *Rationality and Relativism*, pp.201-60.

by the systematic reproduction of manifestly defective conceptions of the world, especially where such conceptions favour the interests of particular groups or classes within society, by the deliberate imposition of these on the general population and the persecution of anyone who questions them. Such developments are likely to be associated with the rise of systematic education and elaboration of ideas, associated with a professional class of intelligentsia to some degree insulated from other aspects of life. Consequently there will be no simple relationships between the ideas espoused by thinkers and the concepts in terms of which people in everyday life define themselves and their place in the world.

Yet despite this complexity, the nature of people's thinking and the principles leading to cultural unity remain the same. Most people are not engaged in the explicit elaboration of ideas, and their thought is primarily practical thinking in specific contexts. The immediate unity of a culture derives from the generalization by analogy of modes of engaging in the world from one situation to another, thus favouring those practices which resonate with the prevailing modes of engagement. Theoretical thinking has its roots in the practical thinking through which people have to live, and involves the development of world-orientations, frequently through using social relations as an analogy for understanding nature, and nature as an analogy for understanding society.[28] This theoretical thinking then provides the basis for coordinating practical thinking in other areas of society. The difference between traditional societies and civilizations is basically one of complexity and the amount of time required for the unifying tendencies of a culture to take effect, and in particular, the time taken for theoretical ideas to be appropriated by society and to dominate the way most people think and act.

To illustrate this and to pave the way for an analysis of the way mechanistic materialism has come to dominate the world, the emergence of the basic ways of thinking which have come to characterize European civilization will be described first, contrasting these with the modes of thought which came to dominate Chinese civilization. How European society institutionalized these modes of thought in the Middle Ages will then be described. The nature of the revolution of culture in Western civilization in the seventeenth century and the nature of the development of culture and society since then will be analysed in the following chapter.

Characterizing European culture throughout its history in the short space of four chapters presents obvious problems. My assumption that it is even possible rests on the view of cultures being defended, namely that cultures are dominated by particular conceptions of the nature of being. If this is the case it is possible to identify and describe such conceptions of being and their developments. However in civilizations, cultures lack the coherence of those of traditional societies and it is therefore necessary to emphasise the limited nature of this dominance. Various versions and transformations of the dominant conception of being are likely to co-exist, there is only a loose coherence between the ideas and practices legitimated in terms of it, and there are always adherents to opposing ways of conceiving the world. It is only by considering very long periods of time and by contrasting different civilizations that such a coherence will be revealed. In accordance with the historians of the Annales school, I am presupposing the existence of a long-term history distinct from and irreducible to the short term history which most historians

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28. This is clearly evident in the study of the world-views of the civilizations of Egypt and Babylon by Henri Frankfurt et.al. in *Before Philosophy* [1946] Harmondsworth: Penguin, 1964.

focus upon.[29] And as Braudel wrote: 'Culture is the oldest character in human history: economies succeed each other, political institutions crumble, societies replace each other, but civilizations continue along their way.'[30]

The subject to be investigated is in fact analogous to the archeological sites in Europe which were only discovered after the invention of the helicopter. Archeologists on the ground could not identify these sites because the order which was perfectly clear from the altitude of the helicopter simply did not exist within the range of their vision. Those scholastics who, in the name of professionalism, deny the possibility of characterizing broad historical sweeps are simply rejecting the possibility of there being order of long durations because it does not exist in the trivia amongst which they compulsively immerse themselves.

The Origins of Western Culture

Western civilization is founded on a fusion of Greek and Hebraic culture. Greek culture is the more important of these since Hebraic culture, as with all other aspects of European culture, only attained or retained its plausibility by being interpreted in terms of Greek thought. So it is primarily Greek culture with which I will be concerned.

The main stimuli for the development of Greek culture were sustained contact with other culturally vigorous societies, particularly Egypt, the social transformations which occurred with the invasion and destruction of the relatively peaceful palace based civilization of Mycenae, the instability of these transformations and the rivalry between the members of different classes, which then included a slave class, and of the proponents of different tendencies within this unstable social order. This instability manifested itself in the variety of political forms of the different city states in Ancient Greece. Associated with the more militaristic organization of the invaders, there was first a replacement of monarchical rule by the military aristocracy, then in some cases, associated with the rise to pre-eminence of disciplined hoplite troops over the aristocracy's chariots, of rule by a form of limited democracy (usually associated with a lower proportion of slaves in society). Along with these changes there developed a form of decision-making in which the settlement of disputes by gladiatorial combat was replaced by open debate, discussion and argument in the public square, the agora.

The development of democratic rule opened the entire spiritual world to the community (*demos*), so that knowledge, values and techniques were brought into public view to be submitted to criticism and controversy. Under these conditions literacy became virtually universal among its citizens, and laws were written down so they could be applied equally to all. Justice (*dike*) which had been a divinity remote from common people, was brought down to earth where it could be incarnated on a human level without ceasing to be regarded as an ideal value. It became common to all while remaining superior to all, a standard subject to discussion and modification while remaining sacred. Associated with this the priesthood which had claimed a special intimacy with the divinity was dissolved. All religious symbols were removed to the public temple so that the protection of the deity would extend to the entire community. All the members of the polis, whatever

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29. The nature of the long term is described by F. Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, Vol.1, tr. S. Reynolds, London: Collins, 1972, p.16ff.

30. Fernand Braudel, Civilization and Capitalism 15th-18th Century, Vol.III, The Perspective of the World, [1979] tr. Sian Reynolds, London: Fontana, 1984, p.65.

their origin and rank, conceived themselves to be fundamentally alike, as interchangeable units within a system whose law was the balance of power and whose norm was equality. Correspondingly the highest virtue came to be temperance, or self-control and good sense (*sophrosyne*). The polis was seen to form an organized whole whose harmony was dependent upon its constituent members maintaining their places while receiving the share of power due to them by virtue of their own qualities. It was organized so that sovereignty (*arche*) was no longer concentrated at an apex but passed on from one group to another, from one individual to another, in a regular cycle so that command and obedience became two aspects of a reversible relationship. The social realm thus had the form of a centred and circular cosmos in which each citizen had to cover the entire circuit, successively occupying and surrendering each of the symmetrical positions that made up civic space.

To begin with, despite the restriction of power of the new monarchy, the mythology of the Greeks continued to be formulated in accordance with the tradition deriving from Babylon. The universe was seen as a structural analogue of monarchical order with a hierarchy of powers reflecting differences in function, value and rank. In this scheme of things order did not emerge from the play of elements but was established through the dramatic efforts of an agent, in the case of Greek mythology, Zeus, who then maintained this order through his exceptional powers. This was associated with a dual notion of becoming. The early Greeks had no sense of time independent of occurrences; time was the occurrences themselves. But there were two types of occurrences: the sacred and the profane. Sacred time, the time of the gods, was seen to fold back on itself to be relived as the eternal present, as eternal recurrence. In relation to this time Kurt Hübner wrote: 'the past was still *there*, still *existed*, for him like something eternal, something which could be directly and immediately seen in nature, in the heavens, in his own action, and especially in his cultural festivals.'[31] Thus it was *the* spring whose return was joyously celebrated, not a new spring. Profane time on the other hand was the time in which nothing recurs and everything passes away. But sacred time was constantly woven into profane time, not only through festivals, but through the constant intervention of the gods in people's lives. Emotions, sudden changes in fortune, spurts of energy and so on were generally attributed to the intervention of the immortal gods, and this raised them to a different plane of significance as sacred events outside profane time.

The first ethico-political conflict was expressed in mythopoeic form with co-operative ideals embodied in the original feminine nature Gods: Helias the sun, Selene the moon, Gaia the earth, and Demeter the god of fertility, vying with combative ideals associated with militarism expressed by Homer and embodied in the predominantly male sky gods brought to Greece by its invaders.[32] However with further transformation of society this realm of mythical thought ceased to convey social realities or correspond to ritual practices, giving the Greeks a critical detachment from such culture and the values expressed by it. In the ensuing ideological battles, a number of Greek thinkers: Hekataios, Pherekydes, Hellanikos, Xenophanes and Ephoros among others effectively destroyed sacred time by

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31. Kurt Hübner, *A Critique of Scientific Reason*, tr. Paul R. Dixon Jr., and Hollis M. Dixon, Chicago: University of Chicago Press, 1985, p.242f.

32. M.I. Finley;, *The World of Odysseus* [1954], Harmondsworth: Penguin, 1983, p.136f. Feminists have made much of the different orientation to nature and to females of pre-Homeric Greeks. On this, see Charlene Spretnak, *Lost Goddesses of Early Greece*, Berkeley: Moon Books, 1978.

translating Greek myths into profane time, transforming mythical figures by presenting them in genealogies and then developing a system of dating the different mythical events. This virtually reduced the mythical realm to fairytales, and destroyed the force of the ethical imperatives it embodied. Expressing this critical detachment from mythical thought, Xenophanes argued:

> The Ethiopians say that their gods are snub-nosed and black, the Thracians that theirs have light blue eyes and red hair. But if cattle and horses or lions had hands, or were able to draw with their hands and do the works that men can do, horses would draw the forms of gods like horses, and cattle like cattle, and they would make their bodies such as they each had themselves.[33]

The polis itself became the sole locus of the sacred. Distinguished from the realm of economic necessity and the household, it became the realm in which people strove to achieve eternal glory through their words and deeds.[34]

The ideas advanced by the first philosophers can be understood as the development of a new orientation to the world by using the new democratic social relations as an analogy for interpreting the world as a whole. As Jean-Pierre Vernant argued in *The Origins of Greek Thought*:

> In constructing their cosmologies, they made use of ideas elaborated by moral and political thought, projecting onto the world of nature that conception of order and law whose success in the city had made the world a cosmos.[35]

This is most clearly evident with Anaximander. Anaximander rejected the idea that the order in the world was imposed and maintained by an agent and argued that the principles which govern the cosmos are immanent in the world, corresponding to the self-ordering of the polis. Similarly he argued that the earth could stay at rest without external support or roots because it is equidistant from all points on the celestial circumference and so has no more reason to sink than to rise, or to move to one side rather than another. No longer was any portion of the world to be privileged at the expense of the rest, or a physical power to be in a dominant position. An equilibrium is maintained through a regular cycle in which each force alternately prevailing and then falling back in accordance with justice, linking together expansion and contraction, strength and weakness, birth and death. It was this equality and symmetry of powers that made up the cosmos that characterized the new conception of natural order, and supremacy belonged exclusively to the law of equilibrium and continuous reciprocity. As Vernant put it: '*Monarchia* was replaced, in nature as in the city, by the rule of *isonomia*.'[36] Heraclitus can be seen as continuing this tradition of thought.[37]

However social developments and problems in achieving agreement through debate led to a failure in the ethics on which Greek society was based, a failure dramatically manifest in the failures of Athens, and leading democratic polis, during the Peloponnesian War. While in the early stages of the development of the

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33. G.S. Kirk, J.E. Raven and M. Schofield, *The Presocratic Philosophers*, 2nd ed. Cambridge: C.U.P., 1983, p.169.

34. This is described by Hannah Arendt in *The Human Condition*, Chicago: University of Chicago Press, 1958, p.28ff.

35. Jean-Pierre Vernant, *The Origins of Greek Thought*, [1962], Ithaca, N.Y.: Cornell University Press, 1982, p.108.

36. Ibid. p.122.

37. This is evident from Charles H. Kahn's study of Heraclitus in *The Art and Thought of Heraclitus*, Cambridge, C.U.P., 1981, pp.9-23.

democratic polis the sacred status of the polis and the principles of justice on which it was based replaced and compensated for the desacralization of the mythical realm, the desacralization of the polis associated with the development of commerce resulted in a loss of any point of reference outside the flux of profane time by which people could orient themselves. The connection between virtues and rewards had been sundered, leading to the promotion of a new vocabulary of evaluation by the Sophists extolling the qualities and goods of effectiveness at the expense of the qualities and goods of excellence.[38] It was the corrosive effect of such thinking which led to a a reaction against the democratic temper of the early philosophers, particularly by the members of the old aristocratic families. Proponents of aristocratic forms of life struggled to resacralize life and to find an immutable foundation to orient themselves and to re-establish their ideals of excellence. Such philosophers turned against democracy and attempted to establish an elitehood, either forming themselves into esoteric groups and cutting themselves off from the rest of society, or struggling to attain political power. Pythagoras, Parmenides, Plato and to a lesser extent, Aristotle, are the main representatives of this elitist tradition.

In the ensuing intellectual struggle, the problem of knowledge emerged as a major issue. The paradigmatic form of knowledge for the Greeks was what one was actually perceiving. Greek philosophers failed or refused to develop the notion of propositions which were valid independently of when they were uttered. They could say: 'It is raining.' or 'It was raining yesterday.' but not 'It rained on such and such a date at such and such a place.' Thus an eternally true statement could only be one said about something which was unchanging and with which one could always be acquainted.[39] Therefore to reorient themselves the Greeks searched for something omni-temporal outside the flux of becoming by which they could get their bearings.

Pythagoras offered a solution to this problem. He was opposed to the values being generated by the commercial life of Greek society, and classified men and evaluated them in terms of whether they were lovers of gain, lovers of honour or lovers of wisdom.[40] But in opposing commercial values he developed a philosophy based on modes of thought developed in commercial society. Arithmetic, which had been developed with commerce as exchange value and had come to be measured quantitatively in terms of coinage, was developed by Pythagoras beyond the needs of commerce.[41] His success in describing geometrical figures in numerical terms and in finding simple numerical ratios between the intervals of a string producing consonant harmonies led him to conceive all things as number. These arithmetical units were thought to maintain their separateness through the inhalation of the 'boundless breath' of the 'unlimited'. These numbers, being omni-temporal or eternal, and identified with the harmony of music, performed the same structural role in culture as the sacred realm of previous times.

Developing this idea led Pythagoras to some fundamental innovations. He rejected the belief in the mortality of humans. Since we appear to have knowledge of numerical relations independent of sensory experience, he concluded that such

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38. This has been acutely analysed by Alasdair MacIntyre in *Whose Justice? Which Rationality*? Notre Dame: Notre Dame University Press, 1989, Ch.'s II-V.

39. The relationship between temporality and knowledge in Greek thought has been brilliantly explicated by Jaako Hintikka in *Knowledge and the Known: Historical Perspectives in Epistemology*, Dordrecht: Reidel, Ch.3.

40. The writings of the Pythagoreans have been collected and translated by Kenneth Sylvan Guthrie, *The Pythagorean Sourcebook*, Grand Rapids: Phanes Press, 1987.

41. The invention of number was attributed by the Greeks to Palamedes who organized the army at Troy (see Plato, *The Republic*, 522d), but it was through commerce that the general population became acquainted with numbers. On this, see John Burnet, *Early Greek Philosophy*, 4th ed. [1930] London: Adam & Charles Black, 1975, p.99.

knowledge must have been gained in a former life, and that souls transmigrate.[42] Pythagoras did not simply attempt to get his bearings in this changing world by reference to the numerical realm; he exalted it at the expense of the changing world. While number and soul were seen to be the forms of the world, they were also seen as beyond it, and Pythagoras was concerned with purification from contamination by the profane world. The Pythagoreans used medicine to purge the body and music and scientific and mathematical study to purge the soul. The numerical realm was seen as the realm of true value, just as in a commercial society money is taken to be the ultimate, quantifiable value transcending and providing a measure for the value of things in the world.

This tendency to reject the sensible world for an eternal realm grasped in purely intellectual terms was consolidated and developed to its most extreme form by Parmenides. Parmenides argued that only that which is, is knowable. Since the notion of motion implies that what is not has come to be what is, motion is unknowable. Parmenides therefore distinguished the realm of the uncreated, indestructible, unchangeable One, a plenum which he characterized as the true world, from the world in which things come into being and perish which he held to be an illusory world, the way of mere belief.[43] Pythagoras and Parmenides were major sources of inspiration for Plato.

Plato

Plato (427-348 B.C.) is the most important thinker in Western civilization. Yet his influence rests on his dialogues which Plato disaffirmed as expressions of his own views.[44] The dialogues were exercises, they were exploratory and frequently inconsistent with each other. Plato thought that only through conversation could true knowledge be achieved. Consequently in referring to Plato, it is rather Plato as he has been understood by Neoplatonists and thereby as he has provided the foundations of Western civilization that will be of concern.[45]

To overcome the problem posed by the follower of Heraclitus, Cratylus, of how there could be knowledge in a changing world, Plato accepted Parmenides' point that the object of significant knowledge must be unchanging. However he followed the Pythagoreans rather than Parmenides, conceiving the real world as the eternal forms.[46] He was also influenced by Socrates who had been primarily concerned with ethics and had focussed his attention on the definitions of ethical concepts. So the ethical forms were not only included along with mathematical entities as part of the real world, Plato gave greater status to ethical forms than to mathematical entities. However he conceived these ethical forms in mathematical terms.

According to Plato, we can only know the forms. To justify the existence of a diversity of forms, Plato rejected Parmenides' contention that if all that is knowable is what is, therefore the object of knowledge must be a plenum. His argument against this was that 'not being' could be made sense of as not referring to something

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42. See John Burnet, *Greek Philosophy: Thales to Plato*, [1914] London: MacMillan, 1981, p.33f.

43. See Burnet, *Early Greek Philosophy*, p.169ff.

44. See Plato, *Letters: II*, 314c.

45. That Plato can be understood differently has been well argued by a number of interpreters. For a recent anti-Neoplatonist interpretation of Plato's concept of the forms and of the Good, see Gail Fine, 'Separation', *Oxford Studies in Ancient Philosophy*, Vol.II, Oxford: Clarendon Press, 1984, pp.31-87, and 'Knowledge and belief in *Republic V-VII*,' *Epistemology* ed. Stephen Everson, Cambridge: C.U.P., 1990.

46. See Aristotle, *Metaphysics*, 987a29-987b20.

contrary to what exists, but as something which is different.[47] In other words, to say that something 'is not' is to say that it is not one kind of thing but one of those indefinitely numerous other kinds of things. Plato used this idea to argue for a relational theory of knowledge in which to determine what a thing is, also entails determining what it is not. This allows us to conceive of differentiation within being, and the task of the dialectician is to divide things according to kinds, and to distinguish 'Kind by Kind, in what ways the several Kinds are or are not able to combine.'[48] Knowledge is then achieved by the method of synthesis and division. A synthesis 'is that in which we bring a dispersed plurality under a single form, seeing it all together' while division is 'the reverse of the other, whereby we are enabled to divide into forms.'[49] In this way, the world of discourse and the world itself were seen to be correlated as differentiated unities, wholes with internal relational structures.

The sensible world was seen to be knowable omni-temporally only insofar as it is participating in the forms. Philosophers were defined by Plato as those with 'a constant passion for any knowledge that will reveal to them something of that reality which endures for ever and is not always passing into and out of existence.'[50] And he railed against those mathematicians 'who constantly talk of "operations" like "squaring," "applying," "adding," and so on, as if the object were to do something, whereas the true purpose of the whole subject is knowledge - knowledge, moreover, of what eternally exists, not of anything which comes to be this or that at some time and ceases to be.'[51] Along with the Pythagoreans, Plato regarded that which is eternal as of greater value than that which is mutable.

This laid the foundations for the later development of substantialism in Western culture, the notion that the world consists of enduring things the essential properties of which are atemporal; and correspondingly, as Heidegger has argued, the exclusion from awareness or concealment of the actual presencing of what is present in the world.[52] As such, it reflected the influence of the commercial world disdained by Plato. Forms define the potential to be used on the basis of which entities have exchange value, a value which endures while, and only as long as, this potential endures. By privileging forms over becoming, Plato was devaluing the creative activity of nature and of humans involved in forming the world into useful things and in maintaining these forms, taking the perspective of a member of a privileged class who could buy what they wanted, and who were only interested in the world insofar as it could be bought and was worth buying.

Plato saw everything in the world, including people, as striving to participate in the forms. He developed his conception of the relationship between forms in the world by assuming that forms are the goals of action, and interpreting the relationships metaphorically as mathematical relationships. In this way he came to postulate the 'Good' as central to both ethics and being. In action people do not have goals in isolation but have a hierarchy of goals, higher goals being more fundamental than the particular goals. Thus in making the leg of a table the carpenter must have an apprehension of both the form of the leg while at the same

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47. Plato, *Sophist*, 256d-257b.

48. Ibid., 253d.

49. Plato, *Phaedrus*, 266d-e.

50. Plato, *Republic*, Bk VI, 485b.

51. Plato, *Republic*, Bk VII, 527a.

52. Martin Heidegger;, *Early Greek Thinking: The Dawn of Western Philosophy*, tr. David Farrell Krell and Frank A. Capuzzi, San Francisco: Harper & Row, 1984, esp. p.8.

time the form of the whole table. But beyond the goal of making a table the carpenter is also concerned to make a good table, a good piece of furniture, a good house, and so on. Anyone doing anything is always striving for the good; and each particular good is only comprehensible as part of some higher good. So the ultimate form, more fundamental than all particular forms, is the form of the Good. Plato conceived the relationship between the Good and other forms simultaneously on the analogy of an organism in which each part is only comprehensible in relation to the whole organism, and on the relationship between basic definitions in mathematics and all other mathematical forms. A few such definitions together with some construction postulates imply the existence of a vast number of mathematical figures and relationships.[53] The Good is then seen as both the ultimate goal of everything, the intelligible structure of the cosmos, and the source and basis of all particular structures in the cosmos, the basis of both the unity of the world and its diversity.[54] In the *Timaeus* Plato also postulated the existence of a creator which, being good and therefore desiring that all things should be as like himself as they could be, fashioned a cosmos from the chaos.[55] This he endowed with soul and intelligence capable of apprehending the forms and maintaining order in the world, its body, in accordance with reason. This accounts for the continued orderly nature of movement, particularly in the heavens where movements are the moving image of the eternal form, the circle.

Plato developed his ethical and political doctrines on the basis of this framework. He saw people as having two types of knowledge: one of how to do something without having any intellectual apprehension of what is to be achieved, as with the poets, and a higher form typified by artisans who have an image of what they are trying to make, that is, an intellectual apprehension of the form to be achieved.[56] He presupposed a world in which things are in the process of becoming and he believed that to have attained such an intellectual apprehension of a form is to have begun the process of actualizing or participating in this form. Therefore the most important task confronting the philosopher is to define the true form of humanity, or justice.

Plato's ethics, while influenced by Socrates, were essentially a development of Pythagorean ethics. He assumed that all forms, as with mathematical concepts, can be defined unambiguously, and consequently no form can have contradictory characteristics. Each thing in the world therefore exists with its own features clearly defined from all other things. It is only because he held this assumption that Plato could believe that he had demonstrated that justice cannot be 'what is to the interest of the stronger party' as Thrasymachus had argued by showing that this definition leads to the contradictory conclusion that 'it will be right to do what is not to the interest of the stronger party, as well as what is so.'[57] In place of this Plato argued that justice is attending to all that is, in the fullest sense, a person's proper concern. After arguing this for the polis as a whole, he went on to argue that the justice should also prevail within the individual. He presented the human Soul as consisting of three parts: reason, spirit and appetites, on the grounds that only if this were the case could the conflicts within each individual be explained.[58] The appetites were

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53. Plato, *Republic*, Bk VI, 510b-511e; Bk VII, 517.

54. For a thorough analysis of Plato's concept of the Good, see Hans-Georg Gadamer;, *The Idea of the Good in Platonic-Aristotelian Philosophy*, tr. P. Christopher Smith, New Haven: Yale University Press, 1986.

55. Plato, *Timaeus*, 29e ff.

56. See Plato, *Apologia*, 22c and *Geogias*, 503d-e.

57. Plato, *Republic*, Bk I, 339c.

58. Plato, *Republic*, Bk VI, 439b.

denigrated, with sexual appetite being compared to a 'savage beast of a master' of which a person is best free.[59] For Plato the earthly body with its characteristics of sex and death are unworthy of the true nature of the human Soul. Justice in the individual is achieved when the higher rules the lower, where reason, the immortal part of the Soul through which the eternal forms are apprehended, rules the spirit, which is concerned with honour, and spirit rules the appetites. As Plato put it: 'The just man does not allow the several elements in his soul to usurp one another's functions; he is indeed one who sets his house in order, by self-mastery and discipline coming to be at peace with himself, and bringing into tune those three parts, like the terms in the proportion of a musical scale, the highest and the lowest notes and the mean between them...'[60]

Plato constructed his idea of the just society, *The Republic*, that is, the form which he believed all societies should strive to participate in as fully as possible and which must be apprehended by rulers as the condition of rational statesmanship, in accordance with this idea of justice. This ideal was based partly on the militaristic, slave based society of Sparta - a society in which the size of the population of the enslaved compared to the rulers had engendered an extraordinarily high level of discipline, and in which slaves did all the work. Individuals were conceived of in abstraction from the community then evaluated in terms of their function in society.[61] This involved both an affirmation of individualism and of severe political powers to control individuals. It involved an affirmation of the division of labour with a vengeance, with society divided between those people whose reason is dominant, those people whose spirit is dominant and those people whose appetites are dominant. A just society was held to be one based on the principle 'that everyone ought to perform the one function in the community for which his nature best suited him',[62] one in which the wise rule over those dominated by spirit, and in which those dominated by their appetites are subordinated and do all the physical work. Plato's *Republic* rejected the family, argued for the sharing of wives, and opposed art. The rulers were justified in systematically deceiving the ruled, specifically to deny the reality of people's kinship relations, so as to be able to more effectively maintain order. The major part of education was to be in mathematics, and the ultimate level to be achieved involved a turning away from the changing sensible world to the contemplation of the 'first principle', the Good. Intellectual contemplation was exalted, and manual labour held in contempt. Art and particularly drama, both tragic and comic, were to be rejected or heavily censored for fostering the emotions of pity and sympathy, or laughter and buffoonery.[63] In effect Plato wanted to eliminate those forms of communication which focus on the ambiguity of life rather than seeing the world in terms of clear, arithmomorphic concepts.[64] Denying such ambiguity, Plato argued for the immortality of the soul and argued that the soul must reap the consequences of being just or unjust in the afterlife.[65]

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59. Plato, *Republic*, Bk I, 329c.

60. Plato, *Republic*, Bk IV, 443d-e.

61. MacIntyre (*Whose Justice? Which Rationality?* p.98) argues that in fact Plato presupposes the philosophical community as the condition of acquiring knowledge and becoming virtuous. However this has generally been ignored by interpreters of Plato.

62. Plato, *Republic*, Bk IV, 433a.

63. Plato, *Republic*, Bk X, 605b-608c.

64. The difference between Plato's thought and that of traditional societies in this respect is elucidated by Stanley Diamond, 'Plato and the Definition of the Primitive' in *In Search of the Primitive: A Critique of Civilization*, New Brunswick: Transaction Books, 1974, pp.178-202, esp. p.187ff.

65. Plato, *Republic*, Bk X, 608c - end.

Basically Plato's philosophy, especially as it has since come to be understood, represents an effort to attain absolutes: an absolute orientation to the world, an absolute sense of one's own significance, and absolute power. Platonists turned their back on the changing, sensible world to focus on the eternal world in which all meaning and value are unambiguous, in terms of which they could define themselves as significant independently of other people, and in which since there is perfect rationality and no death, they could have complete power over their destiny. Plato's ethical and political philosophy proposed a struggle to make the lived world conform to this ideal world.

The Origins of Chinese Culture

All this contrasts sharply with the basic modes of thought which came to dominate in China. China was never a slave based society, and the Confucian and Taoist philosophies which have dominated its thinking reflect this. Confucionism involves an affirmation, generalization and development of kinship forms of relationship, while Taoism involves an affirmation of the value of nature, of the need to harmonize with it, and of the limitations of conceptual thought and human inventions. Both are an affirmation of different aspects of the sensible world and of the forms of life existing before civilization.

Confucius (551-479 B.C.) lived when China was still divided into numerous city-states. Its unification was achieved three centuries later.[66] The central feature of his thought was the emphasis on the family. He emphasised the importance of filial piety and reverence for the aged. This was associated with Confucius' belief in the importance of culture or tradition in the formation of people, which also underlay his stress on the importance of education and the development of personality. Personality development involved the harmonious combination of such qualities as morality, education and refinement with a judicious balance of inner virtues and external polish. Such a personality should possess *chih* (inner integrity), *i* (righteousness), *chung* (conscientiousness towards others, loyalty), *shu* (altruism or reciprocity which is summed up in the *Analects* as 'not doing to others what you do not like yourself'), and above all, *jen* (humanity). However he should also possess *wen* (culture) and *li* (ritual or etiquette). Reischauer and Fairbank contrast such ethical thought with Western ethical thought:

> Great philosophical and religious leaders in ... the West have commonly dealt in absolutes; or perhaps one might say that they have thought in logico-mathematical terms. Confucius was a relativist, thinking in socio-human terms.[67]

Confucius' views on the state were based on his conception of it as a large family. While this led to stress on the virtues of obedience, he also emphasised that the ruler should set an exemplary moral example to his subjects, and did not rule out opposition to an unjust ruler, provided such opposition was open. Thus in replying to the question of how to serve the sovereign, Confucius said, 'Never oppose him by subterfuge, but do so openly if need be.'[68] The principles binding a state were family respect and the development and cultivation of humanity rather than rule by law. As

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66. See Vitaly A. Rubin, *Individual and State in Ancient China: Essays on Four Chinese Philosophers*, [1970] tr. Steven I. Levine, New York: Columbia University Press, 1976, Ch.1.

67. Edwin O. Reischauer and John K. Fairbank, *East Asia: The Great Tradition*, Boston: Houghton Mifflin, 1960, p.71f.

68. Confucius, *Analects*, XIV:23; trans. Rubin ibid. p.20.

Vitaly Rubin wrote of Confucius, 'He believed that the law had no importance whatsoever for the improvement of society. It was important only that the state possess a good ruler who would instruct the people by his own example, and influence them with the help of virtue and the rules of decorum - *li*.'[69]

After Confucius' death, the states began an almighty struggle for power which culminated in the unification of China under the Ch'in. This struggle led to the development of anti-Confucian ideas, first of Mo Tzu who argued for an austere utilitarianism and for the development of a more mechanically ordered state, and then of Shang Yang who provided the ideology of Legalism under which the Ch'in functioned.[70] Shang Yang was concerned with how to obtain absolute power and argued that people should be kept ignorant, treated as simply means for the purposes of the ruler, and should be controlled by rigidly enforced laws, with severe punishments for transgressions. While Legalism was vigorously opposed by Confucian thinkers such as Meng Tzu and Hsun Tzu and was eventually replaced by Confucianism as the state ideology, later Confucianism incorporated many of the ideas of the Legalists. However the rise of Legalism and an oppressive state gave rise to another opposing philosophy, that of Taoism.

The main work of Taoism, the *Tao Te Ching* was supposed to have been written by Lao Tzu, an older contemporary of Confucius. However it is now thought to have been compiled around 300 B.C.[71] This philosophy was also developed by Chuang Tzu (369-286 B.C.). Essentially it involves a rejection of society and an exaltation of nature, seen as dynamic and active, consisting of a multiplicity of fields of force, contained in and subsidiary to the main field of force of the Tao.[72] The ideal life is to follow the road or the way, the Tao; that is, to flow with nature. Thus:

> The best of men is like water;
> Water benefits all things
> And does not compete with them.
> It dwells in (the lowly) places that all disdain, -
> Wherein it comes near to the Tao...
>
> It is because he does not contend
> That he is without reproach.[73]

The Taoists were concerned to point out that success could only be achieved by harmonizing with the world, while people who compete must eventually be defeated. A later chapter concludes:

> The sage does not enter into competition
> And therefore no one competes with him.[74]

The Taoists opposed any departures from simplicity and plainness, and were sceptical of scholastic learning. Their doctrine was frequently a rallying point for

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69. Rubin, Individual and State in Ancient China, p.18. see also the Analects, II:3.

70. See ibid. Ch.2 and 3.

71. See D.C. Lau, 'Introduction' to Lao Tzu, *Tao Te Ching*, tr. D.C. Lau, Harmondsworth: Penguin, 1963, pp.7-52, p.11f.

72. See Joseph Needham, *Science and Civilisation in China*, Cambridge: C.U.P., 1956, Vol.2, p.322.

73. Lao Tzu, *Tao Te Ching*, Book I, VIII; tr. Lin Yutang in *The Wisdom of China*, ed. Lin Yutang, 1963, p.34f.

74. Lao Tzu, *Tao Te Ching*, Book I, XXII; tr. Waley.

peasant revolutionaries opposing oppression, and it inspired much of Chinese science and art.[75]

While Taoism and Confucianism were obviously at odds to some extent, Confucian political philosophy and the Taoist conception of nature also reinforced each other. This accord is brought out in the Taoist Wang Pi's third century A.D. commentary on the *I Ching*:

> The general meaning of the Tao of 'Kuan' is that one should not govern by means of punishments and legal pressure, but by looking forth one should exert one's influence [by example] so as to change all things. Spiritual rule is without form and invisible. We do not see Heaven command the four seasons, and yet they never swerve from their course.[76]

In essence, universal harmony comes about through spontaneous co-operation.

The Christian Synthesis

There were a number of intellectual movements which developed after Plato, including Aristotelianism, Stoicism, Epicureanism, Scepticism and Gnosticism, though each of these had some relationship to Platonic thought. Aristotle rejected the transcendental tendencies within the thought of Plato and his followers, but supported the division of labour in the form of the prevailing slave based economy, and exalted the ideal of a contemplative life oriented towards eternal truths. Even more than Plato, Aristotle exalted the unchanging at the expense of the changing, holding the heavens to be the realm of perfection while the earth, characterized by mutability, to be the repository of the grossest dregs of the universe.[77] Stoicism, which was in effect a form of field theory,[78] came to be a major force in Roman society, although it was strongly attacked by the Sceptics and was eventually eclipsed by Neoplatonism. Neoplatonism was the product of an attempt to develop Plato's ideas more systematically, and it incorporated much of the thought of Aristotle and of the Stoics. It was this movement which was to be the most important for the future of Western civilization.

The most significant of these Neoplatonists was Plotinus (204-70 A.D.).[79] In his system reality was seen to consist of a hierarchy of hypostases of so many stages of degradation. The source of all reality is the self-identical and eternal One, corresponding to the One of Plato's *Parmenides* and the Good of his *Republic*. In conceiving the One as the single, transcendent divine source of all there is, Plotinus broke with Plato (and Aristotle) for whom all existence required three distinct sources: the forms, the receptacle and the demiurge. According to Plotinus this One emanates the other hypostases as an essential consequence of its infinite power which necessitates an outflow of reality which cannot be terminated until all that could possibly come into existence has actually done so. Each hypostasis is characterized by a descent from unity to multiplicity, from immobility to motion,

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75. Rubin, *Individual and State in Ancient China*, p.112ff and Joseph Needham with the assistance of Wang Ling, *Science and Civilisation in China*, Vol.2, Ch.10.

76. Quoted by Needham, *Science and Civilisation in China*, Vol.2, p.555f.

77. Aristotle, *On the Universe*, 400a3-39.

78. This is argued by S. Sambursky; in *The Physical World of the Greeks*, London: Routledge & Kegan Paul, 2nd ed. 1960.

79. Plotinus, *Enneads*, tr. S. McKenna, London: Faber, 1962.

from eternity to time. The second hypostasis, the Intellect, is both thought and object of thought, involving self reflection and hence a kind of duality between that which apprehends and that which is apprehended. The object of thought is the realm of forms or Ideas, the multiplicity through which the intellect grasps its unity. While the intellect grasps the world in a single timeless vision, the next hypostasis, the Soul, is forced to contemplate objects successively and is confined to images or verbal formulae reflecting the forms rather than the forms themselves. But the Soul is still non-spatial, being everywhere and nowhere. Differentiation into separate bodies, including human souls which emanate from the World Soul, occurs in the sensible world in which the forms are reflected as in a mirror in matter, the point at which the outflow of Reality from the One fades away into utter darkness. The imperfect diverse, changing and impermanent world in which we live is therefore to be understood as the least substantial reality. However each lower level of being retains its links with its source, and every being is seen as trying to return to its source. The levels of being are not spatially separated but are intimately present in each part of the universe and in each one of us. Thus each human soul is an intelligible cosmos reflecting in itself the whole universe, and its return to its source is achieved by casting off ties first with the sensible world, then with the world of forms to attain a mystical union with the One.

Although there were differences between Eastern and Western Christianity, Christian philosophy was essentially an interpretation and justification of Hebraic thought in terms of Neoplatonist thought. According to the Hebraic vision as expressed in the Bible man is in a fallen state after having been expelled from Paradise, in which God had originally intended him to live, because he had sinned. However God promised to restore man to Paradise and sent his Son to earth to make this restoration possible. The One of Neoplatonism was identified with the personal, creative God of the Hebraic vision, the sensible world with the fallen world, and the realm of forms with the restored world. Thus man's soul was seen to have originated in heaven as a creation of God, descended to earth where it must live in a perishable world of deteriorated, half destroyed value, and if salvation is to be attained by the grace of God, to be destined to return to the realm of eternal forms.

However this fusion of Hebraic thought with Greek metaphysics within the Roman Empire involved a radical transformation of Greek thought, infusing it with the engineering mentality of the Romans. This change occurred with the translation of Greek words into Latin whereby, as Martin Heidegger put it: '*Roman thought takes over the Greek words without a corresponding, equally authentic experience of what they say, without the Greek word*. The rootlessness of Western thought begins with this translation.'[80] For example, as the early Greeks understood it, *physis* is the event of self-emergence, as when a bud bursts forth into a flower, and the appearing, shining forth or presencing of an entity. The Romans translated *physis* as *natura* which, although it has its etymological roots in the notion of birth, was understood in terms of what is produced, caused or created. While the Greeks began the process of conceiving of Being as an underlying and constantly present 'ground' of the presencing of things, it was the Romans who conceived this ground as that which produces things. Thus 'Being' itself was reduced to the status of a superior kind of entity which produces the world, and the world came to be seen as the totality of all created beings.

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80. Martin Heidegger, 'The Origin of the Work of Art,' in *Poetry, Language Thought*, tr. Albert Hofstadter, New York: Harper and Row, 1971, p.23.

To begin with Christianity was essentially a religious movement of the Eastern Roman Empire, and here the mystical and contemplative tendencies of the religion were developed. Eastern Christians were little interested in questions of morality. Within Rome itself, Christianity was originally only adopted because it had won political power in the East, and then it was adapted to the prevailing mentality in an effort to shore up a disintegrating society. However there were two places where Christianity was appropriated and developed with great vigour: Roman Africa, or what is now Tunisia and Eastern Algeria, and northern Europe in Britain and Ireland. Such appropriation took place because Christianity was seen by members of these societies as providing the means to support their initial orientation to the world. This meant that Christianity was assimilated to already existing cultures, and was developed in accordance with these cultures. Roman Africa (Carthage) was an essentially militaristic society, an older civilization than Rome itself, and Christians here formulated the doctrine to accord with their militaristic orientation. Britain and Ireland, on the other hand, appropriated Christianity because it accorded with a pre-existing individualism, and Christianity was interpreted according to this individualism. North African and Celtic Christianity together formed the basis of the Western Christianity which has formed the foundation of Western Civilization.

The first notable Christian in North Africa was Tertullian, son of a military proconsul and later a wealthy lawyer in Carthage. Tertullian was concerned to formulate a binding rule of faith and to enforce rigourous discipline in the church accordingly. His concern with enforcing such discipline to ensure the cleanliness of the church led him to conclude that people are predestined to be damned or saved, and that most of those within the church, including all conventional members of the church, are damned by nature. He then revived the Pauline doctrine of original sin. Since the Catholic church aspired to create a church for everyone it rejected Tertullian's ideal of excluding all but the spiritual elite. But the Africans could not accept the moral laxity of the Eastern church as did most of the Western church until the tenth century. Refusing to ignore questions of discipline, they were compelled to accept that there were sinners in the Church. Tertullian's notion of original sin provided the concept to reconcile this contradiction.

With this development, another North African, St Augustine (354-430 A.D.), who had been a Manichean holding to the doctrine that there is in every soul an inborn struggle between good and evil, found a church congenial to his psychological orientation. He developed this disciplinarian form of Christianity into a coherent system, formulated in the Latin language. In doing so he became the greatest exponent not only of African Christianity, but of Western Christianity as such. According to Augustine, the division within humans between the corporeal and the spiritual natures is equivalent to the division between privation and what truly is, between the bestial and the rational and between evil and good. Only that which is without change was regarded by him as that which truly is, and it is the immutable which defines what kind or sort of thing each thing is.[81] This meant that the category of quality, defining the kind of being an individual is, was privileged and the other categories reduced to an ancillary status, often to mere accidents.[82] Individuals came to be seen as composites of form and matter bearing various traits, and since each thing was seen as complete in its being, the other categories, including quantity and relation, were seen to inhere in the thing. That is, 'quantity'

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81. See St. Augustine, *Confessions*, Bk. 7, Ch. 11.

82. On this see Ivor Leclerc;, *The Philosophy of Nature*, Washington: CUA Press, 1986, p.145. Leclerc's analysis generally accords with Heidegger's.

and 'relation' which in Aristotle were categories of the same status as 'quality' and were understood as referring beyond each individual, were redefined and almost reduced to quasi-qualities of individuals. Following Augustine it then became common to speak of substances and their attributes, which included quantities. The sensible world of changing accidents was to be disdained and to be treated purely as a means to gain salvation. As Augustine put it:

> ...among all these things only those are to be enjoyed which we have described as being eternal and immutable; others are to be used so that we may be able to enjoy these.[83]

The things of the sensible world were to be treated as 'ready at hand' to be used.

Similarly, other people were not to be loved for their own sake, but were only to be used for the love of God. Augustine believed that in the existing situation in which people had to live in a corrupt world there were nevertheless many Christians living for what is eternal and immutable. This is the City of God as opposed to the earthly City, the City of Man. The earthly world is condemned to eternal decay. Since the City of God is in heaven, its members on earth are strangers or pilgrims. But while Augustine spoke of the City of God, this did not involve a real community. While there are some gestures towards the unity of humanity bound together by family affection, Christian salvation was essentially a matter of the relationship between the individual and God. The individual is absolutely dependent upon God, Who alone can satisfy all his desires. All love should be directed towards God. To emphasise this point, Augustine quoted the Old Testament prophet Jeremiah: 'cursed be the man that trusteth in man.'[84] As a soul the individual rules a body which should be treated as an instrument for salvation. Accordingly, Augustine revived the Pauline doctrine that sexual relations were to be tolerated within marriage solely for procreation.

While we might live for what is eternal and immutable, this is only to be achieved in the future, and in the present we must actively engage in the corrupt world. In this respect Augustine made a radical break with Eastern Christianity. This is evident in Augustine's interpretation of the Mary-Martha episode described in the Bible, Luke 10.38 - 42 where Jesus upbraids Martha for her efforts to wait on him rather than sitting down with him. In the East this was generally taken to mean that the active life symbolized by Martha is inferior to the contemplative life symbolized by Mary. However in opposition to the literal meaning of the text Augustine argued that Martha and Mary represent two stages in the perfect life: Martha the soul in time and space; Mary, in eternity. But since we dwell in time and not in eternity, we must live as Marthas and not as Marys.[85]

Augustine interpreted the struggle between the corporeal and the spiritual, between the temporal and the eternal, in historical terms in accordance with the Judaic element of Christianity. He saw the whole of humanity advancing in a linear progression from the corporeal to the spiritual. This advance was seen as being due to the creativity of humanity, but its end was seen to be away from the sensible world. As he wrote in *The City of God*:

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83. Saint Augustine, *On Christian Doctrine*, Bk I, XXII, 20; tr. D.W. Robertson, Indianapolis: Bobbs-Merrill, 1958, p.18.

84. Loc.cit. from Jer. 17. 5.

85. Saint Augustine, *Sermo*, 104.4. See Lynn White, Jr., *Medieval Religion and Technology: Collected Essays*, Berkeley: University of California Press, 1978, p.240 for an analysis of the significance of this.

> The education of the human race, represented by the people of God, has advanced, like that of an individual, through certain epochs, or, as it were, ages, so that it might gradually rise from earthly to heavenly things, and from the visible to the invisible.[86]

Everything that happens in history, including the fall of Rome which was sacked in 410 A.D. by Alaric, was seen to have a meaning as part of this education of humanity away from the temporal realm to the eternal realm.

The most serious challenge to Augustine's domination of the thought of Western Christianity came from Pelagius, a Celt from Ireland or Britain. Pelagius was not giving expression to a merely personal view, but was expressing the form in which Christianity had been appropriated in these Northern regions. Borkenau has shown how in Northern Europe, particularly among the Irish Celts and the Norse Vikings, there developed an individualism which found expression in the prominence given to the first person pronoun, 'I', in Celtic and old Norse.[87] By tracing the origin of this emphasis in old Norse in the fifth century and showing how this spread, Borkenau was able to conclude that this manifested the individualism engendered by sea-faring practices. He argued that such a development of language, and therefore of individualism, had taken place among the Celts at an earlier period. The embracing of Christianity by these Celts in an era before there was pressure to do so can be explained by the attractiveness to such individualists of the Neoplatonic Christian doctrine of the soul as a permanent substratum of inner experience. This enabled them to situate their individualism within a cosmic perspective. In adopting Christianity, it was this individualism which was therefore emphasised.

The distinctive emphasis on individualism is evident in Pelagius' only extant work, a letter of religious guidance written to a young woman named Demetrius. The second chapter of the letter begins:

> Whenever I have to speak about the foundations of morality, and about the maintenance of holiness in life, I start by making people see the strength of the aptitudes of human nature, and how much it can achieve; so that by this very start I incite my pupils to every virtue.... The more perfect ... the sort of life we choose as our goal, the more fully must we understand that [human] nature is good. Otherwise the soul will lack determination and be slow in her efforts...[88]

In contrast to Augustine, Pelagius affirmed free-will and espoused a doctrine totally inconsistent with the notion of original sin. This involves an asceticism, but not a rejection of the world. As Borkenau wrote: 'His asceticism is a rule of permanent struggle *in* the world, a struggle to conquer the world. It ... [points] towards unceasing missionary work, and unceasing struggle towards a conquest of the world for the principles of a higher morality.'[89] It is in this Northern Christianity that the active orientation of Western Christianity noted by Lynn White has its deepest roots.

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86. Saint Augustine *The City of God*, tr. Marcus Dodds, New York: Random House: 1950, Bk 10, Ch.14.

87. Franz Borkenau;, *End and Beginning*, ed. Richard Lowenthal, N.Y.: Columbia University Press, 1981, Part II, Ch.1, 'The Rise of the I-Form of Speech'.

88. Quoted by Borkenau, *End and Beginning*, p.290.

89. Ibid. p.308f.

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CHRISTIAN NEO-PLATONISM AND THE EMERGENCE OF FEUDAL SOCIETY

With the growth of the Roman Empire, belief in the gods on which Rome's civil religion was based collapsed. When the cosmopolitan philosophy of Stoicism failed to provide an alternative foundation for Roman civilization, the Emperor Constantine made Christianity into a State religion in an effort to fill the subsequent vacuum, to legitimate the rule of Rome's emperors over Rome's diverse population. However in such a role Christianity was a decoration rather than the foundation of Roman society. Despite the vigour with which Theodosius had prosecuted all the opponents of the religion, the Church had to adjust itself to traditional institutions and their associated politics. It was only when European society had been thoroughly disrupted during the Dark Ages and had been reformed that it can be said that the Christian vision played a constitutive role in the formation of society. Feudal society emerged from the chaos of the Dark Ages as the social formation able to support a military class of heavily armed cavalry capable of defending Europe, firstly from the Saracens, then from the Vikings and Magyars.[1] This order was only made possible by the ideological mobilization of the population through its Christianization, and with the emergence of feudal society, the people of Europe came to define themselves, their relationships to each other and to nature, and to legitimate their behaviour, in terms of Neoplatonic Christianity.

The Merovingian age preceding the Carolingian renaissance which lifted Europe out of the Dark Ages had been characterized by widespread ethical chaos, at least among the ruling classes. In the 'penitential books', among the lists of church penances for typical crimes applicable to society, incest and murder within the family were invested with an inordinate prominence, reflecting their common occurrence.[2] The poetry of the era, the Gothic songs preserved in the Edda, and in particular the Frankish Nibelungen saga, also reflected this state of affairs and suggest the existence of high levels of anxiety, guilt and disorientation among the population, a state to which the most common response was paranoia: the projection by people of their own aggressive impulses on to others. These people saw the outside world as persecutory, full of implacable enemies deserving to be destroyed, while seeing themselves as persecuted paragons of all the virtues. Throughout Europe most of the population were pagan, conforming externally to the Christian faith while preserving their popular religion virtually intact. At best Christianity was

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1. See Marc Bloch;, *Feudal Society*, 2 Vols, Vol.1, tr. L.A. Manyon and M.M. Postan, 2nd ed., Routledge & Kegan Paul, 1965, Part I.

2. See Franz Borkenau, *End and Beginning*, ed. Richard Lowenthal, N.Y.: Columbia University Press, 1981, Part II, Ch.10, 'Primal Crime and "Social Paranoia" in the Dark Ages' for an analysis of this era.

a set of rules of protective magic by which a paranoid population attempted to ensure themselves from the persecution and vengeance of those around them.

Efforts by various Christian reformers to change this state of affairs failed until the eighth century. It was then that St Boniface organized or reformed the bishoprics and monasteries of Germany, a success which was then transferred to France. The basis for this success was in providing a form of Christianity which could be assimilated to the heroic attitude of the pagan or recently converted Germans. This was a form with a strong Pelagian element. The Irish Pelagians had set up monasteries in Northumbria, from which they had later been expelled. However the monasteries had retained their Pelagian orientation, and with the incorporation of these monasteries into the main body of the Latin church, this orientation had also been reincorporated. And it was the influence of these Pelagian monasteries which inspired St Boniface to set out to reorganize the Christian church within Germany. The result was an amalgam of Augustinian and Pelagian Christianity with a strong emphasis on the moral transformation of both the clergy and the laity. It provided the heroic goal of moral perfection.

With this development of Christianity life was seen as a struggle to establish the presence of the eternal world within the world of change. The monasteries played a major part in this, being 'the symbol of stability and immutability in a world of flux; they were the gate to heaven; they were replicas of heaven on earth.'[3] A title-deed to a new monastery proclaimed:

> Amid the fleeting and transitory world, all visible things hasten to their end more quickly than the wind, but the things which are not seen remain fixed and immutable forever. Seeking therefore to use our transitory and temporal riches to procure eternal rewards and lasting joy ... I give to the bishop and monastery of Worcester this piece of land to remain free from all human service till the end of time.[4]

Monasteries symbolized a divide through all life between immutability and the world of flux, a division which was reinforced by other symbols, from buildings to ceremonies, the liturgy and holy relics. These were all designed to emphasize the smallness of humans in contrast to the impersonal majesty of the spiritual world, only attainable in this life in symbolic ritual, and in the peace of spirit which could be found in rigid discipline. Associated with the notion of the creation, the temptation and fall of humans, the incarnation of God in Christ and the possibility of redemption in the afterlife, this divide engendered an over-riding concern with sin and salvation.

The Carolingians were aware of the importance of developing such an ethical order within society. Government was especially subject to the curse of meaningless flux, and it was therefore felt to be necessary to seek a supernatural sanction to give them a right to rule as the Vicars of Christ. While Pippin the Short encouraged St Boniface and persuaded him to transfer his efforts from Germany to France, Charlemagne inspired a renaissance in learning to revivify the inheritance of classical antiquity.[5] This renaissance found its foremost representative in John Scotus Eriugena, a philosopher promoted by Charles the Bald, who not only

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3. R.W. Southern, *Western Society and the Church in the Middle Ages*, Harmondsworth, Penguin, 1970, p.28.

4. Cited ibid., p.29.

5. On this renaissance see John Marenbon, *Early Medieval Philosophy (480-1150)*, 2nd ed., London: Routledge & Kegan Paul, 1988.

translated the work of the Pseudo-Dionysius but also wrote an original work *The Division of Nature*. This renaissance at first had only superficial effects, and the Carolingian era seemed to be falling back into a second dark age, and it was the growing strength of the Benedictine monasteries rather than this renaissance of ideas which was important for averting a new era of chaos. However this renaissance began an intellectual development which provided a general conception of the cosmos as a divinely ordained order linking the lower levels of creation with the heavenly realms.[6] There were three dimensions to this order: it was seen as a great chain of being, as a series of corresponding planes and as a cosmic dance. Deriving from Plato's *Timaeus*, the notion of the great chain of being involved seeing the world as an immense number of links, ranging in hierarchical order from the meagrest kind of existents through every possible grade up to the most perfect or highest possible kind of creature at the foot of God's throne. The idea that the world is a hierarchy of corresponding planes was a development of the Neoplatonic notion that every part of the universe reflects every other part. The main planes recognized were the divine and angelic, the universe or macrocosmos, the commonwealth or body politic, man or the microcosmos, and the lower creation. Each of these was understood to have the same basic characteristics, with each plane being a hierarchical order analogous to the body with a head, soul, heart, arms and legs. Consequently it was built into the medieval world-orientation that the order of nature must be seen as a metaphor for the order of humanity and vice-versa. The idea that the universe is a cosmic dance, which derived ultimately from the Pythagoreans, involved the notion that the planets' orbits produce music, the harmony of the spheres. The whole universe was thought to be kept in order by this celestial music, and people were exhorted to keep their souls in harmony with it. Anything not keeping its place in this vast order of being was thought to be a threat to the whole of creation. It was this general conception of the world which provided the world-orientation for the high Middle Ages and which continued to provide the ideological foundation for European society until the Reformation.

Christianity was first appropriated by the aristocracy, but it soon permeated through society with the establishment of parish churches, which spread first to the cities and towns, and then into the countryside.[7] This radically changed people's lives. To begin with, peasants attending church knelt to talk to the saints, but this changed with the spread of the Irish innovation of individual confession to priests. In this way the illiterate parishioners came to be trained in moral self-examination and spiritual introspection, opening to the common people the experience of a new kind of highly personal, interiorized, religion. Although the confession did not become compulsory until 1215, it had become almost a universal feature of life long before then. Through the confession individuals received moral instruction, and efforts to provide this led to the development of the Christian Court of Conscience. Determining correct action in particular concrete situations came to be known as casuistry. This was not simply a matter of applying general principles to particular situations, but involved reference to the Christian world-orientation. As Bentley put it:

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6. For a description of this conception order and the way it endured until the renaissance see E.M.W. Tillyard *The Elizabethan World Picture* [1943], Harmondsworth: Penguin Books, 1972, pp.12-16.

7. For a description of this see Lynn White Jr, *Medieval Religion and Technology*, Berkeley: University of California Press, 1978, p.145ff.

> Casuistry cannot attain its end, thus conceived, simply by taking over 'conclusions' - moral generalizations and axioms - from general moral theology and relating them to circumstances. Often the right resolution of a case requires direct reference to the fundamental mysteries of the Christian faith or fresh consideration of the God-given natures and ends of created beings.[8]

All aspects of life were considered by the casuists:

> Solutions for the conduct and regulation of man's life and all his relations in the market place, in the battlefield, the court, the home and elsewhere, were ... developed in innumerable treatises on the cases of conscience. All the urgencies of life and the aims of men as they moved about in their daily lives were indeed grist for the mills of the casuists.[9]

In this way, the medieval world-view was articulated into daily life.

This does not mean that Christianity was a monolithic structure of ideas which everyone accepted. It was unlikely to have completely permeated the thought of all classes in all regions, and to the extent that it did, it was a vision which could be developed in different directions by emphasising different aspects.[10] A study of the aristocratic chronicles and the records of the clerisy by William Brandt revealed that different groups maintained different conceptions of the world and their place within it for several centuries.[11] Differences in outlook were also developed by different heretical groups. The Heretics of the Free Spirit, influenced by John Scotus Eriugena, emphasised the immanence of God in the world and argued that redemption would be attained by establishing a new order on earth,[12] while the Albigenses emphasised the Gnostic or Manichaean elements of Neoplatonism, seeing the sensible world as the creation of an evil demon and abjuring it to the extent of starving their children to death.[13] Yet these opposing positions were all recognizably variations of the same basic Christian Neoplatonist world-orientation.

A more fundamental opposition to Neoplatonic Christianity came from the peasants. The content of medieval ideology: asceticism, providentialism, sin, atonement and suffering associated with fear, religious awe and humility, all in the service of an oppressive and intimidating ruling class, was challenged by the tradition of laughter: the carnival, the parody, the buffoonery and the celebration of the grotesque, by which the peasants attacked the icy, petrified seriousness of their masters. Depicting very old women as pregnant, they glorified the association between decay and generation, extolling becoming over being and feminine fertility over masculine domination. As Bakhtin pointed out, through parody the people 'were freed from the oppression of such gloomy categories as "eternal," "immovable," "absolute," "unchangeable" and instead were exposed to the gay and free laughing aspect of the world, with its unfinished and open character, with the joy of change and renewal.'[14] While such parodies of the Church as the feast of fools and the feast

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8. G.B. Bentley 'Casuistry', *Encyclopaedia Britannica*, 1961, Vol.5, p.13.

9. Benjamin Nelson 'Conscience and the Making of Early Modern Cultures' in *Social Research*, 1969, Vol.36, p.13.

10. Some idea of the complexity and diversity of medieval culture can be gained from Jacques Le Goff's study, *The Medieval Imagination*, tr. Arthur Goldhammer, Chicago: Uni. of Chicago Press, 1985.

11. William Brandt, *The Shape of Medieval History: Studies in Modes of Perception*, New Haven: Yale University Press, 1966.

12. See Norman Cohn, *The Pursuit of the Millenium* [1957], London: Paladin, 1970, Chs 8 & 9.

13. See Emmanuel Le Roy Ladurie, *Montaillou*, [1978], Harmondsworth: Penguin, 1980.

14. Michael Bakhtin. *Rabelais and His World* [1965] tr. Helen Iswolsky, Bloomington: Indiana University Press, 1984, p.83.

of the ass were condemned from the early seventh century onwards, judicial prohibitions had little effect. It was not until the Reformation that the liberating potential of laughter was extinguished. But even this tradition of laughter which had its roots in pagan culture can be seen as constrained by the dominant ideology. It was the negation of Christianity, exalting the corporeal at the expense of the spiritual, the bestial at the expense of the rational, the changing sensible world at the expense of the eternal. But as a negation it came to be dependent upon what it negated, and consequently could only soften the effects of the reigning ideology.

In what follows, how the Neoplatonist Christian world-orientation came to constitute relationships, first between the rulers of society, and then between the general population, will be described. It will be shown how this led to a more and more pervasive individualism which eventually led to an almost complete dissolution of the holistic terrestrial community and how this was associated with the development of a domineering orientation towards both people and nature. The concern will be to describe how a culture emerged in which all practices, beliefs and transformations of the physical world came to resonate with each other, and thereby sustain a general orientation to the world. This orientation was characterized by a growing anxiety, and by alienation from and hostility to the world which culminated in frenetic efforts to subjugate people, nature and other societies.

The Church and the Aristocracy

As the Neoplatonic Christian vision of the world was assumed by the aristocracy, salvation came to be seen as the goal of life, and aristocrats came to see their lives and the world around them as means to attaining this salvation. In accordance with traditional Neoplatonic Christianity, meditation was thought to be one way of achieving this. The concern with salvation through meditation was manifest in the lives of the individuals described by David Douglas in his book *The Norman Achievement 1050-1100*:

> Duke Robert I ... father of William the Conqueror was a young, lustful and ruthless prince who was successfully reducing his turbulent duchy to order when he suddenly determined to mend his soul by departing to Palestine on a pilgrimage from which in fact he was never to return. Again, Simon de Crepi, count of Vexin, consolidated his power by winning in profitable marriage Judith the daughter of the count of Auvergne. But he chose the occasion of his wedding night in 1078 to vow himself and his wife to perpetual continence and departed forthwith to become a monk in the abbey of Saint Claude in the Juar. To men such as these a pilgrimage might be as important as a war, or a monastic vow as compelling as the establishment of order, and it may be recalled how many of the warrior lords of this age retired after their strenuous lives to spend the evening of their days in monasteries.[15]

However it was action which came to be most stressed by Western Christianity as the primary means to salvation, with appropriate action being defined from the Christian perspective.

With the development of Neoplatonist Christianity, all power in the world was seen to flow downwards. Correspondingly, the source of royal power which had

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15. David Douglas, *The Norman Achievement 1050-1100*, London: Collins, 1972, p.19.

previously been invested in the electing body, no matter how limited the franchise, came to be taken as God, thus freeing the king from responsibility to the people. As Ullmann described this new relationship:

> The king by the grace of God had effectively emancipated himself from the populus itself and on the other hand freely acknowledged God as the source of his royal power. The ascending conception of kingship had faded out: in the Middle Ages its place was taken by the descending or theocratic thesis.[16]

This conception of hierarchical order was reinforced by the notion of the universe as a hierarchy of corresponding planes, each with the same basic structure. The hierarchical order of the kingdom of God was seen to correspond to the order of the kingdom of man, to the kingdom of the beasts, to the kingdom of the fishes, and so on. The central analogy of this hierarchy was the body and the relationship between its parts, and it was this which became the dominant thematic motif unifying medieval culture. Society came to be conceived of as a body with individuals related to each other as parts of a body to one another. John of Salisbury gave expression to this view in the twelfth century:

> The place of the head in the body of the commonwealth is filled by the prince, who is subject only to God and to those who exercise His office and represent Him on earth, even as in the human body the head is quickened and governed by the soul. The place of the heart is filled by the senate, from which proceeds the initiation of good works and ill. The duties of the eyes, ears, and tongue are claimed by the judges and governors of provinces. Officials and soldiers correspond to the hands. Those who always attend upon princes are likened to the sides. Financial officers and keepers ... may be compared to the stomach and intestines... The husbandmen correspond to the feet...[17]

This then replaced Plato's idea of *The Republic* as the ideal form of society, and individuals were required to play their appointed parts to fully actualize this form.

This organic analogy did not in any way affirm human community. A body was not seen in the way that anti-reductionist biologists see organisms today. To the extent that there were communities in the Middle Ages, this was despite the ruling culture, not because of it. People in feudal societies, at least at the higher levels, related to each other according to their positions, and loyalties and obligations were to positions rather than to people. The unity was ideal rather than real. The Mafia represents a survival of this medieval form of social relationship. Furthermore a central feature of feudal relations was that vassalage had to take precedence over kinship, and all action had to be seen as ultimately for the glory of God. So while John of Salisbury was concerned to ameliorate the lot of the lower orders of society by pointing out how essential they were to the body politic, he framed his argument in terms which reinforced their oppression. The analogy of the body was far more effective as a basis for arguing that society should be composed of members unlike in goodness, dignity and wealth, just as a body should be composed of unlike members, and this argument was widely used up until the Renaissance.[18]

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16. Walter Ullmann, *Principles of Government and Politics in the Middle Ages*, London: Methuan 1961, p.117.

17. John of Salisbury, 'Policraticus' in *The Portable Medieval Reader*, Harmondsworth: Penguin, 1977, p.47

18. See E.M.W. Tillyard, *The Elizabethan World Picture*, [1943] Harmondsworth: Penguin, 1978, esp. p.19.

In the early Middle Ages, rulers saw their power as deriving directly from God, claiming supernatural attributes to sanctify their decrees. They wore ecclesiastical vestments on ceremonial occasions, they were anointed with holy oil used in the consecration of bishops, and the sword, sceptre, ring and crown they received were blessed in formulae appropriate to ecclesiastical ordination. But the Papacy was not satisfied with being ruled by Christian Kings, no matter how devout. The combined effect of Augustinian and Pelagian aspects of Christianity, the disciplinarian and the activist, formulated within the framework of the hierarchical Neoplatonist conception of the world in which all power was seen as flowing downward, finally inspired the Church to struggle for temporal power superordinate to that of emperors and Kings. Pope Leo IV drove the Saracens out of Italy and established the Leonine City, and his second successor, Nicolaus I (858-67) asserted Papal political supremacy over the Frankish court and exerted in a new way Papal supremacy over the French bishops. In the struggle which followed, the hierarchical conception of the world with power deriving ultimately from God played a major role in giving ultimate victory to the popes over the emperors and in establishing a hierarchical social order throughout Europe. This culminated in 1075 with the *Dictatus Papae* which declared the previous political and legal order abolished. Henceforth, kings were held to derive their legitimacy solely from the Church.

Beginning in 1095, following the ascendency of the Papacy over the aristocracy, a series of crusades were launched against the Holy Lands. The aristocracy were then called upon to undertake these crusades, but at the same time were required to act as Christians. To this end the Court of Conscience developed a code of conduct for the aristocracy to accord with their social position and the role they were called upon to fulfil. The code of chivalry was the outcome of this Christianization of military behaviour.

The ethics which subsequently came to be embodied in the institutions of chivalry were thoroughly grounded in Neoplatonic philosophy. Right and wrong conduct were understood in terms of participation in forms, and individuals were only seen to be significant in so far as they transcended their bestial natures by participating in the forms of virtue affirmed by chivalry. People were always defined in the aristocratic chronicles by six or eight adjectives and their contraries, and no other possibilities were allowed for. Men were valiant, courteous, prudent, and so on, or they were cowardly, discourteous and reckless. Women were beautiful, charming and discreet, or their opposites. The feudal code was directed towards fostering the achievement of honour which, in the case of males, was to be pursued positively and aggressively through military action performed in the prescribed manner. William Brandt who made a detailed study of the chronicles of the feudal aristocracy wrote of their ethical assumptions:

> The aristocrat found his *summum bonum* in a kind of public posture taken with regard to his own class; he was an actor inventing a script which he hoped would turn out to be heroic... To understand the Middle Ages, we much realize that a great many activities - the most important - were pursued for their own sake, with no other end in view beyond the public posture they permitted.[19]

The pursuit of honour through warfare became the over-riding concern, whether the war was directed at infidels or other Christian kingdoms. According to these new values there could be no such thing as a good, peace loving aristocrat. As the

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19. Brandt, *The Shape of Medieval History: Studies in Modes of Perception*, p.114.

medieval French writer, Philippe of Navarre asserted '...he who passes his youth without exploit may have cause for great shame and grief.'[20] In fact it was only in so far as people participated in the ideal forms defining aristocratic honour that they could be considered to be fully 'real'. People who stood outside the circle of values defining human significance had only a shadowy existence in the eyes of the aristocracy, and they were treated accordingly. This was illustrated by the way non-combatants in battles were generally slaughtered, not out of any real malice, but because they were considered so insignificant. At the famous battle of Limoges, three French knights who had especially distinguished themselves in individual action were seen by the Black Prince who 'looked on them with pleasure, and he repressed and softened his ill-will.'[21] These knights were allowed to surrender and were presumably spared, while 3,000 men, women and children were slaughtered. As William Brandt wrote of this incident: 'In the midst of incredible carnage to which the Black Prince was apparently totally indifferent, three knights by their honourable stance touched the Prince where mere suffering never could.'[22] Such behaviour on the part of aristocrats was not exceptional.

Warfare not only remained the central focus of the aristocracy of Europe, but was given such ideological support by Neoplatonic Christianity that the world came to be seen and valued entirely in terms of military performance. As such the rulers of medieval Europe contrasted radically with the rulers of the Sung Dynasty in China which existed at roughly the same time (960-1279). The ruling class of this society were the scholar gentry whose main road to power was through competitive examination in the civil service. The military classes and the merchants were kept in a firmly subordinate position below that of peasants.[23] The founder of the Sung Dynasty, T'ai Tsu was described by Reischauer and Fairbank as characterized by:

> ...his policy of leniency and benevolence toward his former rivals and recalcitrant subordinates. He set a standard of generosity toward his officers, deference towards his ministers, and modesty in his own scale of living that approximated the Confucian ideal and influenced his less able but often equally conscientious successors on the throne.[24]

While there was a frequent administrative bias in favour of the wealthy landowning class from whom the scholar gentry were mainly drawn, this was not always the case. The Chief Councillor Wang An-shih appointed in 1069 instituted cheap loans to the peasants, redistributed land to eliminate old inequalities, established a graduated scale of land taxes according to the productive capacity of the soil, commuted the remaining corvee services, which fell most heavily on the poor peasants, to taxes which fell most heavily on the rich, and attempted to regulate prices, assess all personal wealth and carry out much needed water-control.[25] There was no parallel to Wang An-shih in Europe. The virtues of T'ai Tsu and Wang An-shih, being unrelated to the pursuit of military honour would not have been comprehended by the European aristocracy.

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20. Cited ibid. p.111.

21. Froissart's *Life of the Black Prince*; cited ibid. p.137.

22. Loc.cit.

23. Joseph Needham, *The Grand Titration: Science and Society in East and West*, London: George Allen & Unwin, 1969, p.197f.

24. Edwin O. Reischauer and John K. Fairbank, *East Asia: The Great Tradition*, Boston: Houghton Mifflin, 1960, p.197f.

25. Ibid. p.206.

The Efforts to Control Nature

Corresponding to the insignificance accorded by aristocrats to people lower in the hierarchy of being except as beings to be used or subjugated, non-aristocrats viewed nature as nothing but material for the fashioning of the human realm. Advances in the history of the Middle Ages, particularly by Lynn White and Jean Gimpel, have revealed it to have been characterized by rapid advances in technology. These advances transformed Europe from a society under siege by Norsemen, Magyars and Saracens into the most dynamic society in the world by the last decade of the 15th century when it 'burst its oceanic limits and swept the earth - exploring, trading, looting, conquering, and colonizing.'[26]

The preoccupation with technology in Europe can be partly explained by the turmoil of the Dark Ages. The Dark Ages destroyed the institutions which had inhibited the development of technology. Roman society had been strongly opposed to technological innovation.[27] There was a story in Rome that when an inventor of unbreakable glass demonstrated it to the Emperor Tiberius expecting to be rewarded, he was beheaded. Whether this story was true or not, it typified the general attitude of Romans to technical invention. A farmer who invented an ox-powered mechanical reaper was ignored, and the water wheel was not exploited. These attitudes were institutionalized within the Roman Empire. Along with the destruction of these conservative institutions, the depopulation of Europe also opened the possibility of new forms of organization. It was in this way that the heavy plough which required long strips of land was established in Northern Europe.[28] Being ravaged on all sides also provided a strong incentive to develop new forms of armaments, and early appropriations or innovations in technology such as the stirrup were largely for military purposes. A picture dating from the early ninth century used by White to illustrate Western Europe's high regard for technology shows the iniquitous sharpening their swords with an old fashioned whetstone while the virtuous were sharpening their swords with a rotary grindstone.[29]

However only the domination of society by a culture which could orient people to such technological domination of nature and which could legitimate such developments could account for the speed with which technological innovations were embraced in Western Europe as compared with Byzantium or the Islamic world.[30] The individualistic activism of Augustinian/Pelagian Christianity was supported by the general vision of the place of humanity in the world. Western Christianity saw God in more personalized terms than Eastern Christianity, and partly because of the influence of Plato's most well known work in the early Middle Ages, the *Timaeus*, this personalized God was seen, despite St Augustine's objections,[31] as an artificer who had created the world as a planned abode for humanity. This image of God as an artificer dignified the creative efforts of humans,

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26. White, *Medieval Religion and Technology*, p.xxiv.

27. See M.I. Finley, *Economy and Society in Ancient Greece*, B.D. Shaw and R.P. Saller, eds, London: Chatto and Windus, 1981, Ch.11.

28. White, *Medieval Religion and Technology*, p.138.

29. Ibid. p.186 & 194.

30. This is not to say that the development of technology was nothing but a manifestation of ways of thinking. There were a multiplicity of reasons why Western Europeans developed their technology more rapidly than elsewhere, most importantly geographical conditions, the decentralization of power partly as a consequence of these conditions, and the social forms which developed in these circumstances. See E.L. Jones *The European Miracle*, Cambridge: Cambridge University Press, 1981 for an attempt to look at all the significant conditions which distinguished Western Europe from other societies.

31. City of God, XII, 24, p.504.

and as Clarence Glacken argued, if a dominant idea existed in the Middle Ages, 'it was that man, blessed with the faculty of work, assisted God and himself in the improvement of an earthly home even if the earth were, in Christian theology, only a sojourners' way station.'[32] Monks such as Bernard of Clairvaux (1091-1153) who had retired from the world celebrated the imposition of a human order on nature and their dominion over nature as helping God finish the creation. They fancied that by their work they were re-creating the earthly paradise, reasserting the complete dominion over all other life that existed before the Fall. The transforming of nature from wastelands suitable only for beasts into pleasant abodes for humans produced sentiments of exaltation and was frequently likened to the work of the creation itself.[33]

In the early Middle Ages the work of such monks was far more significant than that of the laity in transforming nature. However the monasteries themselves tended to lose their original motivating ideology and to take on a melancholy character of greed, worldliness, and corruption. But their achievements revealed what could be done and inspired others to emulate them. And while such people were more motivated by practical concerns, either to secure a food supply with minimum effort or to provide a basis for expanding social, political or military power, the basic conception of nature and of humanity's role in creation promoted by the Church provided background support to such work.

Among the laity Western Christianity was important to begin with for enabling them to overcome inhibitions about interfering with the course of nature. As Christianity began to permeate the society of commoners the localized spirits and *daemons* were ousted from nature by the cult of saints conceived to be abstracted from time and place. This abstraction of spirit from matter was reinforced by the interiorized, personal nature of religion cultivated by the Confession. In this way people came to see themselves as transcending nature, and it was this which enabled them to see nature in instrumental terms. At the same time Christianity guaranteed the continuing order and permanence of nature as part of the Lord's covenant (Gen. 8:21; esp.9:8-11), freeing people from concern about the destructive effects of their activity.

This orientation was supported by the absence of anything in the mode of thinking developed in the Middle Ages to stand in the way of its being seen in purely instrumental terms. Nature was seen as a multiplicity of separate, unrelated entities. Following the Christian Neoplatonist tradition the sensible world was seen as composed of formed individuals. While the forms were related ideally or logically, each sensible individual was seen in isolation from any context. William Brandt, who revealed the constancy in the medieval view of nature from the most popular encyclopaediast of the early Middle Ages, Isidore of Seville (c.560-636) to Albertus Magnus (d.1280), wrote of Isidore's views:

> Isidore's world was astonishingly static... Some movement there was, but it did nothing to blur the splendid isolation of its self-subsistent entities because it was never really a relationship between objects; it was habitually located within a particular object.[34]

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32. Clarence Glacken, *Traces on the Rhodian Shore*, Berkeley, LA: University of California Press, 1967, p.175.

33. Ibid. p.312f.

34. Brandt, *The Shape of Medieval History*, p.7.

In essence, Western thought was substantialist, with things and actions being conceived of in isolation, having various properties. This substantialism was adopted by the general population, and corresponded to the individualism within society. Without any conception of the inter-relationship between forms of life, there was no reason why nature should not be transformed indefinitely.

The significance of this substantialism stands out when contrasted with the relationist conception of nature of the Chinese. For contemporaneous Chinese not only was everything in nature interdependent, but it was always in the process of becoming or decaying. This relationist conception of nature was most fully developed by the Sung Neo-Confucian philosophers for whom it was impossible to conceive of anything in total abstraction from its context.[35] While the Chinese maintained their technological superiority over Europeans at least until the fourteenth century, and according to Needham, up until the sixteenth century, they were always wary of the possible side-effects of technology.[36] This concern was expressed in the famous story of Chuang Tzu in which Tzu Kung tries to tell a farmer, who is drawing water from a well with a bucket, about the simple labour saving device, the counter-weighted swape. The farmer laughs and replies:

> I have heard from my master that those who have cunning devices use cunning in their affairs, and that those who use cunning in their affairs have cunning hearts. Such cunning means the loss of pure simplicity. Such a loss leads to restlessness of the spirit, and with such men the Tao will not dwell. I knew all about the swape, but I would be ashamed to use it.[37]

There was also strong opposition to attempts to force nature. The famous parable deriding the man who, discontented with the rate of growth of his plants, started to pull at them to help them come up, reveals a widespread concern to act in accordance with the immanent dynamics of the world (even if this concern had only a limited effect).[38]

As the development of Western European technology gathered pace during the economic expansion in the twelfth and thirteenth centuries, the medieval ethics of virtues provided support for its continued legitimation. Temperance rose from being considered the least important of the seven Christian virtues at the beginning of the era to the most noble virtue in the fifteenth century.[39] With this rise in its status, its character also changed. Temperance meant basically the duty to know and rule oneself. In the eleventh century Temperance was represented in icons as a woman pouring water into a cup of wine to reduce its potency. By 1359 however, Temperance had come to be represented in Florentine art as a woman holding a pair of compasses. From a measurer of space, Temperance was rapidly transformed into a measurer of time, and was soon shown holding a sand-glass. Temperance had become a virtue primarily associated with work and the effective use of one's time.

With the lack of concern with the dynamics of nature, the high value placed upon effective work, and an orientation towards the future led to a glorification of all technological advances, the way was paved for a technological explosion. The most significant outcome of this was the 'invention of invention' and an enthusiastic

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35. See Joseph Needham, *Science and Civilization in China*, Cambridge: C.U.P., 1956, Vol.2, pp.455-505, esp. p.478.

36. Needham, *The Grand Titration*, p.213.

37. Quoted by Needham, *Science & Civilisation in China*, Vol.2, p.124.

38. Needham, *The Grand Titration*, p.202.

39. White, *Medieval Religion and Technology*, pp.187-204.

search for new solutions to solve problems. For instance technicians laboured from the 1260s to the 1330s to develop the first truly mechanical clock. The anticipation of invention was epitomized in Roger Bacon's confident prophesy of an age of cars, submarines and aeroplanes. This technological progress was seen in terms of the Christian vision of the world as a continual progression towards a higher plane of existence.[40]

The Medieval World-View and the Universities

One of the most extraordinary features of the middle-ages was the development of the universities and the associated development of scholasticism. These further developed the Western European abstract form of thinking and detachment from the world.

To understand this development it is important to clear up a general misconception about this. Contrary to popular belief, these developments did not replace Platonism by Aristotelianism. Aristotle supplied the technicalities of logic and physics but not the direction of Christian thought, and the assimilation of Aristotelian thought consolidated the prevailing assumptions rather than replaced them. When Aristotelian ideas did begin to challenge the medieval world-view, they were suppressed, this suppression culminating in 1277 with a blanket condemnation of 217 propositions, holding any one of which was punishable by excommunication.[41] After this, any speculation which might have brought the prevailing world-orientation into question was neutralized by denying the reality of the postulates of theory, and conceiving the purpose of theory as nothing but 'saving the appearances.' So people continued to see the world in terms of forms, as a great chain of being, as a hierarchy of corresponding planes and as a cosmic dance - virtually up until the Renaissance.[42] Aristotle's political ideas did have revolutionary implications, but these did not form part of the medieval world-orientation at all. They were important for beginning to undermine it.

The nature of the universities reflected their function.[43] They were designed to teach people what was thought to be a body of essentially complete knowledge. The largest faculties were the Arts faculties which prepared people for further education in law, medicine or theology. Only a few universities were permitted to have theology faculties, and while these were nominally the most prestigious centres of learning, they were relatively small. The centre of theology, Paris, had in 1362 25 professors of theology and 449 professors of arts.[44] Furthermore, in most cases the Arts faculties tried to avoid theological questions and channelled their interests away from the concerns of the theological faculties. The largest faculties apart from the Arts faculties were the faculties of law, since the legal profession was the most lucrative, and the Arts faculties were more than anything concerned to prepare people for entrance into the faculties of law. Consequently they focused on dialectic,

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40. See Robert A. Nisbet, *Social Change and History: Aspects of the Western Theory of Development*, London: Oxford University Press, 1969, esp. p.98f.

41. On this suppression and its effects see Edward Grant, *Physical Science in the Middle Ages*, Cambridge: Cambridge University Press, 1977, Ch.III and onwards.

42. See E.M.W. Tillyard, *The Elizabethan World Picture*, [1943], Harmondsworth: Penguin, 1978.

43. See Gordon Leff, *Paris and Oxford Universities in the Thirteenth and Fourteenth Centuries: An Institutional and Intellectual History*, N.Y.: Wiley, 1968 for a study of the formation and characteristics of the universities.

44. Walter J. Ong;, *Ramus, Method, and the Decay of Dialogue*, Cambridge, Mass.: Harvard University Press, [1958], 1983, p.133.

logic and an adumbrated rhetoric - with some physics. Metaphysics and ethics were generally of little significance as they were too close to theology. The works of Aristotle which had the widest influence were therefore those associated with dialectics, logic and rhetoric, though the medical faculties were also interested in Aristotle's physics and biology.

It was in the theological faculty that the metaphysics of Aristotle, as distinct from his logic and physics, was assimilated, and this assimilation was designed to bolster the basic Neoplatonic world-orientation. Conversely there was no really successful effort by Aristotelians to free themselves from the Neoplatonist perspective before Pomponazzi (1462-1525).[45] The assimilation of Aristotle to Neoplatonism was facilitated by a number of factors. To begin with, Neoplatonism and Aristotelianism were not completely antithetical doctrines. Aristotle's philosophy was a development of the formist philosophy of Plato. The difference between these philosophies tends to be overestimated because Plato tends to be caricatured as a defender of a heavenly realm of forms, whereas, as I have argued, his real importance was to uphold the primacy of the omni-temporal. In this, though he was more concerned with the nature of becoming, Aristotle was ultimately at one with Plato. Furthermore Neoplatonists from Plotinus to Thierry of Chartres in the twelfth century had already assimilated much of Aristotle's thought to Neoplatonism.[46] The increasing status of Aristotelian ideas began with the translation of Avicenna's ideas into Latin in the twelfth century. But Avicenna's Aristotelianism was profoundly Neoplatonist, and most subsequent Aristotelian philosophy was coloured by this. As James Wesheipl wrote: 'The history of medieval thought is full of commentators on Aristotle whose inspiration came from Avicenna and his neo-Platonism...'[47] The most significant Aristotelian of the thirteenth century, Thomas Aquinas (1225-1274) was concerned primarily with refuting those thinkers who were developing Aristotelian ideas in ways which undermined the important tenets of Christianity as it had been understood up until then, and he was supported by the Church precisely for this reason.[48] For instance one of the major notions he opposed was the Averroist doctrine that the intellect is one and the same when manifested in different persons, because this contradicted the individualistic emphasis of Augustinian Christianity. The development of the logic of Aristotle consolidated medieval Europe's substantialist modes of thought, while Aristotle's view of the world as the repository of the grossest dregs of the universe reinforced the low status given to the changing world. Aquinas took up Aristotelian ideas in ethics and political philosophy in a way which gave a far more exalted status to earthly life than Augustine had allowed, but his work in this area was of little political or social significance until his ideas were taken up during the counter-reformation in the sixteenth and seventeenth centuries.

Most revisions made to the Neoplatonist framework tended to consolidate the emphasis on eternal forms, and Aristotle's work on becoming was obscured by the less significant issue of the ontological status of universals. In a very un-Aristotelian way Avicenna conceived of forms as efficient causes of all movement in the world,

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45. This has been argued by John Randall Jr. in 'Pomponazzi: Introduction' in *The Renaissance Philosophy of Man*, Ernst Cassirer, Paul Oskar Kristeller and John Herman Randall Jr., Chicago: University of Chicago Press, 1948, pp.257-59. The case for the continued popularity of Plato in the Middle Ages has been made out by Raymond Klibansky, *The Continuity of the Platonic Tradition during the Middle Ages*, 2nd ed. London, 1950.

46. See Stephen Gersh, 'Platonism-Neoplatonism-Aristotelianism', in Robert L. Benson and Giles Constable eds., *Renaissance and Renewal in the Twelfth Century*, Cambridge: Harvard University Press, 1982, pp.512-34.

47. James A. Weisheipl, 'Aristotle's Conception of Nature: Avicenna and Aquinas', in Lawrence D. Roberts ed. *Approaches to Nature in the Middle Ages*, Birmingham: State University of New York, 1982, pp.136-160, p.154.

48. See Arthur Little, *The Platonic Heritage of Thomism*, Dublin: Standard House, 1949, Ch.1.

thus introducing a pre-Cartesian dualism into philosophy. Aquinas understood motion as the product of the unity of forms and matter, but saw individuals as actualized forms rather than as forming activity.[49] As Heidegger has pointed out, this involves conceiving Being as something made, or as an act of production rather than as disclosed or revealed, although it is God rather than humans which is conceived to be the producer.[50] Motion was understood by Aquinas as imperfect actuality - the actuality of a being whose potentiality is actualized while still remaining in potency to further actualization. This paved the way for William of Ockham (1295-1349) to claim that motion is nothing more than the succession of forms acquired by a subject.[51] Though this provided the basis for the study of kinematics which led fourteenth century thinkers to develop ideas which anticipated much of, and paved the way for the scientific revolution in the seventeenth century, these ideas continued to be formulated in terms of forms. Change in velocity was described in terms of the intensification and remission of forms, or how forms became more or less intense.[52]

Universities influenced thought not only through the ideas purveyed, but also by the way learning was organized. As has been pointed out, the most important faculties in universities were the Arts faculties, and the most important studies in these faculties were of philosophy, particularly logic and dialectics. But the way these studies developed was largely a manifestation of the nature of the institutions. For the Greeks philosophy was 'love of wisdom', and dialectics was dialogue through which people attained wisdom. Socrates argued with his disciples and opponents and wrote nothing. Plato committed such dialogues to writing, but as we have seen, disclaimed these as his own views or as the source of wisdom. They were meant only as preparatory exercises. For Plato as for Socrates, only through personal relationships could such wisdom be achieved. Aristotle adopted a more abstract approach but still acknowledged a major role for and evinced respect for dialogue, as manifest in the role given to predication in his logic. Medieval universities fundamentally altered this conception of philosophy.[53]

In accordance with the hierarchical nature of society and the Christian notion of revelation wherein God teaches man, and where his teaching is passed on from generation to generation through the Church, the relationship between professors and students was seen as one in which the professor imparted the knowledge of his subject, a 'teaching' (*doctrina*) or conversely a 'learning' (*disciplina*), to his students. In the Arts faculties, young students were instructed by professors little older than themselves. These students were in competition with each other to obtain degrees for access into relatively lucrative professions. The way knowledge was conceived and the modes of thinking developed in these institutions were largely reflections of this pedagogical situation. In the context of medieval teaching dialogue was replaced by a classroom monologue which the professor produced on a schedule at fixed places and hours. Philosophy came to be seen as something which was taught and learnt.

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49. For the difference between Aristotle and medieval Aristotelians in this respect see Emerson Buchanan, *Aristotle's Theory of Being*, University, Mississippi; Cambridge, Mass, 1962, esp. p.7n.

50. M. Heidegger, *Basic Problems of Phenomenology*, tr. A. Hofstadter, Indiana U.P., 1982, p.100. Heidegger sees the influence of Roman culture here. For an illuminating commentary on Heidegger's relation to Aquinas, see J. Caputo, *Heidegger and Aquinas*, N.Y.: Fordham U.P., 1982, esp. pp.72-4 and p.88.

51. See W.A. Wallace, *Prelude to Galileo*, Boston and Dordrecht: Reidel, 1981, p.13.

52. On this see Edward Grant, *Physical Sciences in the Middle Ages*, p.55f. and Gordon Leff, *The Dissolution of the Medieval Outlook: An Essay on the Intellectual and Spiritual Change in the Fourteenth Century*, N.Y.: Harper and Row, p.107f.

53. See Ong, *Ramus, Method, and the Decay of Dialogue*, on this.

Knowledge had to be taught so that the student could remember it in a way which could be examined and measured. Consequently clarity rather than profundity became the central concern of the medieval professors, and knowledge was developed into a form in which it could be easily reproduced. This led to the hypostatization of knowledge. This culminated in the fifteenth century in Germany with the new University of Tübingen being conceived not as a collection of masters and students, but as a collection of universal knowledge.[54] In place of the idea of knowledge as wisdom transmissible only in the context of personal relationships it had come to be seen as a commodity.

The developments in medieval logic can be understood as a result of this pedagogical situation. The point of departure from Aristotle's logic was the logic of Peter of Spain, expounded in *Summulae logicales*, probably written before 1246. This work began with a definition which was the most repeated in all scholastic philosophy: 'Dialectic is the art of the arts and the science of the sciences, possessing the way to the principles of all curriculum subjects.'[55] No distinction was drawn between dialectics and logic, and dialectics was reduced to logic. At the same time it was presented as the foundation of pedagogy. Peter departed from Aristotle in virtually excluding from consideration those aspects of logic: assertion, or the act of predication, proposition as such and semantics, which could not be represented visually, that is, those aspects of logic associated with dialogue. His focus was on structure and terms treated in a quantified fashion - Peter originated what came to be known as terminism. The central feature of this logic was the theory of supposition according to which terms were taken to be 'supposing' or 'standing in' for physical existents. This led to the view of logic as a study of the reflection of the material world in the structure of the mind. In his concern with clarity which led him to conceive things in spatial terms, Peter, as with almost all other logicians who have followed him, tended to treat his terms as substances. As a consequence he tended to a corpuscularian psychology and outlook in which the real and the mental realms were seen as agglomerations of discrete items.

By transforming the meaning of education the medieval universities further dissolved human sociality, and by concentrating on what could be visualized, the conception of knowledge promoted accorded with the Platonic view that the object of knowledge must be quasi-timeless. In this way the distinction between the real, eternal world and the changing, sensible world was further consolidated. And by substantializing terms and seeing the world in terms of these, the developments in logic further promoted a view of nature as consisting of isolated, enduring substances. Since every subsequent medieval university student had to spend a year studying Peter's logic, this had a major influence on medieval thinking.

The Embodiment of Medieval Culture

The culture of medieval society cannot be understood as simply a translation of the Western Christian world-view into action. This world-orientation came to be embodied in the medieval world. Firstly it came to be embodied in social practices, including speaking, so that all forms of life within which people participated came to resonate with and reinforce each other as people generalized schemes of action and interpretation from situation to situation. At the most general level, the conception of

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54. Ibid. p.164.

55. Ibid. p.56.

nature as a hierarchical order reflected the organization of society. Then at a more basic level this world-orientation was embodied in the transformations of nature. The main features of culture which came to be embodied into the medieval world in this way were individualism, emphasis on action and detachment from the sensible world, usually associated with an orientation towards the future.

While the uniqueness of the emphasis on action of medieval European civilization is immediately evident from the rapidity of its technological advances and by its military aggressiveness, its other distinctive features are less commonly recognized. Because it has been so all pervasive up to the present, its individualism only becomes apparent when people have sustained contact with other cultures.[56] In most societies people do not perceive themselves as entirely separate individuals but as one of a group, the point of emergence from a collective reality. In some societies such as those of the Australian Aboriginals, there is also a sense of belonging to and sociality with the land. Similarly the distinctive nature of the detachment from the world is difficult to describe to people who have been socialized to take this completely for granted. Nevertheless I will try to give some idea of the nature of the embodiment and evolution of these features.

To begin with, an individualistic, detached, activism came to be reflected in, embodied in, and thereby reinforced by language.[57] It has already been suggested that the individualism engendered by the sea-faring of Northern Europeans was reflected in the emphasis placed on the personal pronoun. The individualism of medieval Europe expressed itself in the spreading of this mode of speech to the rest of Western Europe and in concomitant developments such as the formal mode of address and the composite future tense. However the nature of Western European speech can be seen more clearly against the background of classical language and when contrasted with the way speech evolved in Eastern Europe.

In ancient Greek and Latin the first person pronoun was not used with the verb except when it was necessary to emphasise some contrast. When the Roman said '*facio*' the verbal ending made it clear that it meant 'I do' and not 'he does'. When he said '*feci*' he conveyed in one word the idea of doing, that it was done in the past, and that it was 'I' who did it; what we must translate in our analytical language as 'I have done'. Greek and Latin did not separate the individual from his acts and gave unreserved expression to the outward act in its purity. Every event was reduced to a momentary pure action with no temporal duration and no relation to anything else. (It was this view of a constantly changing world which gave birth to Plato's epistemological problem of how enduring knowledge is possible, the problem he overcame with the postulation of the eternal forms.) This language made it difficult for Greeks to describe an enduring action with a definite conclusion such as 'I have finished sleeping'. They originally said something like 'slept-slept', later slurred into 'sle-slept'.

From the first century on, Greek and Latin began to lose their synthetic character. In the East, Greek and the Latin Roumanian language came under the influence of Semitic languages dominated by the Aorist tense which is used for expressing indifferently past, present and future. This reflected a conception of the world in which time and action played a very small part. The Greek language however did not follow the Semitic use of the pronoun. These developments of Greek and the other

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56. See Louis Dumont;, 'The Modern Conception of the Individual: Notes on its Genesis and that of Concomitant Institutions' *Contributions to Indian Sociology*, Vol.8, 1965: 13-61.

57. This relation has been most thoroughly analysed by Borkenau, *End and Beginning*, Part II, Ch.1. from which much of the following is drawn.

languages of Byzantium: Roumanian, Bulgarian and Southern Albanian reflected a growing inwardness and a rejection of the worldly self-assertion of the Greek individual in the face of the eternal. Correspondingly the Slavic languages developed turns of phrase without a subject to a far greater extent than Western languages. Tenses, relating to time were weakly developed, while 'aspects' which relate actions to permanence (whether it is permanent, passing or repeated etc.) were strongly developed. Old Russian had no future tense, and the future had to be expressed by derivative forms of expression.[58] It was not until the sixteenth century that we find unambiguous use of the imperfective future, and it is clear that this construction came from the West. Slavic languages still do not require the use of pronouns before the verb and tend to avoid representing the individual at the centre of things

By contrast, in the West the dominant feature of language was the spread of the 'I saying' habit, the earliest known case occurring in a runic inscription found on a golden horn made just after 400 A.D. which runs: 'I, Hlegstr from Holt made this Horn.' It involves the use of the first person pronoun immediately before the verb. The history of Western languages pivoted on this form of speech. To begin with, Latin, like Greek, lost its synthetic character. In particular it lost its simple future tense and the case endings of the noun. However, in striking contrast to the East there was a recreation in the early Middle Ages in Latin languages of the synthesis of root and endings for the future tense, a clear indication of the striving of Italians, Frenchmen and Spaniards towards a new synthetic expression of future action associated with a more activist orientation to the world. At the same time, to varying degrees the Latin languages amalgamated various speech habits of Northern Europeans. This took place most fully in certain Northern French dialects, in Rhaetian and in certain dialects of the Po valley where the characteristics of synthetic speech were shed and the new Northern European use of the pronoun adopted with the Northern form of composite tenses. Towards the end of the Middle Ages the composite tenses displaced the simple future tense in all Latin languages. To understand the significance of this it is necessary to examine in more detail the Northern European languages.

In Northern Europe the use of the first person pronoun became more pronounced with the evolution of medieval society. While in old Norse, Anglo-Saxon, old German, old Irish and old French the use of the pronoun had become widespread, it was nowhere obligatory before the eleventh century. It became obligatory in English from the beginning of the eleventh century, in German soon after the emergence of Middle German during the eleventh century, but did not become obligatory in French until the seventeenth century. In English and Scandinavian this use was associated with the composite future tense, with the verbs expressing obligation and decision, 'shall' and 'will', serving as auxiliaries. These verbs are associated with inner experience rather than outward action, and in particular with firm determination. They are related to forethought and are inseparable from the sphere of the 'I', the person who shall and who wills. And they are oriented towards the sphere of concentrated planning of a subject aiming to control outward life. These make the 'I' more than simply a series of events; it is the primordial source of action. This development was associated with the decay of the simple passive verbs, forcing people to use clumsy word combinations to say that something was being done to them. In English in particular these verbs make life appear as an incessant flow of directed activities. The 'I' which Western speech emphasises is first and foremost a

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58. See Robert Auty, 'The Russian Language' in Robert Auty and Dimitri Oblonsky, *An Introduction to Russian Language and Literature*, Cambridge: Cambridge University Press, 1980, pp.1-38, p.27.

centre of action. French and Italian did not go to the same extreme, using 'to go' as auxiliaries. To say 'I am going to do' reduces the emphasis on intention and decision and is closer to the Latin expression of pure action. Nevertheless it can be said of all Western Europeans that as distinct from Eastern Europeans their language inclines them to live in the outward world almost to the same extent as the classical age, but this world is not spoken of as a world of momentary objective events of which people are part, but as a world of objects which is the substratum of will and duty, of planning and doing and fitting actions into a coherent whole.

To the self-assertion manifest in the use of the first person pronoun a reaction took place, first in the literature of the troubadours in the extreme south of Western Europe, Provence, and from there to the whole of Western Europe. This self-assertion was mitigated by exaggerated expressions of veneration for others, which at once turned into forms to express distance and reserve and to exclude the idea of intimacy. This involved the use of the second person plural to address other individuals in polite speech. This form of speech was fully developed in the 'Chanson de Roland' which was composed in Northern France in the eleventh century, but a German translation in the twelfth century still uses the familiar '*Du*' to translate '*vous*'. It was not until the thirteenth century that the 'you' came to be used with any frequency. In general the formal form of speech was adopted more readily in more western parts of Europe, and with the exception of a few pockets in Northern England, the 'you' form of address completely replaced the 'thou' form. The English, where 'I' is spelt with a capital letter and in which inner decision and the orientation to action are expressed most forcefully, have gone much further than any other group of people in developing a sense of distance and reserve. By contrast it was not until Peter the Great's revolution at the end of the seventeenth century that the familiar '*ty*' began to be replaced by the formal and officially endorsed '*vy*', and this impersonal form is still used only in official situations.[59]

Such linguistic transformations took place in the context of a developing socio-economic formation in which the orientation embodied and expressed in language was at the same time being embodied in a multiplicity of other ways. At the most basic level, the transcending activism of Western culture became embodied in the way people acted on their physical environment. When European peasants used the scratch plough, land was distributed in squarish fields designed for the support of one family. But with the introduction of the deep plough, teams of people were required to work them, and the strips ploughed were distributed in proportion to the contributions of the peasant to the team. Rather than distribution being of the amount of land required to supply people's needs, distribution came to be based on the power to till the soil. As White wrote of this: 'No more fundamental modification in a man's relation to his environment can be imagined: he ceased to be nature's child and became her exploiter.'[60]

Later the advances in human control of nature came to reflect the image of humanity as participating with God in the process of creation, with economic progress coming to be seen as paralleling the progress towards salvation. The capacity of humanity to transcend and dominate nature then came to be symbolized by human productions and the technology associated with production. By the eleventh century every peasant in Europe was living in the presence of at least one fairly complex, semi-automatic power machine: the mill. These revealed the

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59. See James A. Billington, *The Icon and the Axe: An Interpretive History of Russian Culture*, N.Y.: Vintage, 1970, p.184.

60. White, *Medieval Religion and Technology*, p.145.

potentiality of nature to be subjugated, and it is hardly surprising that these quickly came to be used for industrial processes other than milling.

The struggle by individuals to transcend the material world was expressed in Western art, which began to diverge from Eastern art from the beginning of the eighth century.[61] In contrast to Byzantine art which represented only passive emotions, solemn immutability beyond joy and grief in which any sign of feeling was tamed by the harmonious movement in which it expressed itself, Western art tried to represent the struggle of the will against temptation, moral conflict and the loneliness of the tortured soul amidst the indifference of the world. With the representation of the Crucifixion itself, Western works of art strove to represent action, energy and passion as something belonging not to the realm of the devil, but to the world of the divine. In place of Oriental impassivity and readiness for martyrdom, depth of inner feeling became the paradigmatic attitude, and the dynamic human personality was sanctified as a central religious factor. Correspondingly, while in Byzantine sculpture characters were only represented in relief works, Western sculpture produced complete statues, accentuating the separation of individuals from each other and their independence from their material context.

This orientation was also expressed in Western European architecture. As the feudal era advanced, Europe was covered in stone churches, castles and towers. Churches were placed in the centres of villages, towns and cities, and from the end of the tenth century their height was steadily increased. This took a quantum leap with the development of pointed arches and vaults at Saint-Denis between 1135 and 1144, the first true Gothic church.[62] The soaring spires, flying buttresses and elongated vaulted arches of Gothic architecture symbolized the movement upward to incarnate ultimate values, to rise above and dominate the surrounding world. While this development marked a radical divergence with the architecture of the Orthodox Church, its distinctive nature was even clearer by contrast with Chinese architecture. Dominated by the principle of *feng-shui*, Chinese buildings were designed to fit into the landscape.[63]

The tendency for Western Europeans to orient themselves to a transcendent order manifested itself in social life with the development of law. The hierarchical organization of society with power conceived of as flowing downwards had first led to the diminution of the significance of folk law based on populist consent in relation to law promulgated by the pope or king. This was consolidated by the recovery of Roman law in the late eleventh century. But Roman law had never been integrated into a system. When Cicero had proposed to the Romans that law be systematically organized, the jurists were not interested. As Harold Berman argued: 'They had no reason to transform the Roman genius for consistent adjudication into a philosophical system.'[64] But in the medieval universities of Europe the application of the twelfth century scholastic technique of reconciling contradictions and deriving general concepts by analysis and synthesis led to precisely such a development. A

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61. See Borkenau, *End and Beginning*, Part II, Ch.9 'Rome's Break with Byzantium as Shown in Christian Painting', pp.365-380.

62. White, *Medieval Religion and Technology*, p.233.

63. Yi-Fu Tuan;, 'Discrepancies Between Environmental Attitude and Behavior: Examples from Europe and China', reprinted in *Man, Space, and Environment*, ed. Paul Ward English and Robert C. Mayfield, New York: Oxford University Press, pp.68-81, p.74.

64. Harold J. Berman, *Law and Revolution: The Formation of the Western Legal Tradition*, Cambridge: Harvard University Press, 1983, p.139.

science of law was developed by Western jurists in this way at precisely the same time as Western theologians were creating what they conceived to be a science of theology. Beginning about 1140 with the great treatise *A Concordance of Discordant Canons* of the Bolognese monk, Gratian, law was coordinated and integrated into a body or system of law for the first time in history.[65] Law came to be conceived of as 'an organically developing system, an ongoing, growing body of principles and procedures, constructed - like the cathedrals - over generations and centuries'[66] developing towards the incarnation of ultimate values, that is, natural law and eternal law - the 'ideal of divine wisdom considered as directing all actions and movements.'[67] As such, its development became the prototype for Western science. This transcendent system of law was first developed in the Church as canon law, but this became the model for the secular, temporal society, which developed systems of royal law, manorial law, feudal law, urban law and mercantile law. Such law eventually became the basis for defining all relations between all orders of people so that these relations came to be seen as rights and obligations between legal subjects, defined in terms of an abstract set of principles existing independently of people.

The development of this transcendent order of law facilitated the development of the monetary economy. While money was not unique to Western Europe, the individualism associated with the tendency to define the world from the perspective of a transcendent order, which as we have seen was originally formulated on the analogy of money's relationship to people, was uniquely propitious for the development of a monetary economy. To begin with, there was much resistance to the use of money. From the late eighth century the Carolingians had enacted laws to enforce the acceptance of coin as tender, prescribing fines or flogging for persons refusing payment in the government's pennies.[68] The repetition and amendment of these laws suggests that they were not entirely effective. It was not until 1100 that money was fully established in the centres of Europe and had begun the long process of penetrating all parts of economic life. But once established, the expansion of the monetary economy met with less resistance than in other civilizations, even taking into account Church objections to simony and usury. Law in particular provided the conditions for this expansion, as it provided a universalist, temporally transcendent framework to define relationships between people. This enabled the status of property and the rights and obligations of people involved in commercial transactions to be clearly and unambiguously defined and enforced.[69] This monetary economy then reinforced this universalist, temporally transcendent framework as the reference point for defining social relationships, further reinforcing the individualism, the fragmentation of relations between people and the domineering attitude towards nature.

This is evident even among those who were least involved in the monetary economy, the peasants. The individualism of Western Christianity nurtured by the growth of the monetary economy gradually undermined their bonds of kinship which were being assiduously preserved in most other parts of the world. Marc Bloch pointed out that in early feudal society the legality of individual possession was severely constrained by the solidarity of kinship relations which extended to a

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65. This is argued by Berman, ibid. p.9.

66. Ibid. p.119.

67. Thomas Aquinas, *Summa Theologica*, Question 93, Art. 1, concl.

68. Alexander Murray, *Reason and Society in the Middle Ages*, Oxford: Clarendon Press, 1978, Ch.2, 'Money', p.37.

69. See Berman op.cit. Ch.11, 'Mercantile Law', pp.333-356.

community of goods.[70] These communal households provided security for their individual members, and were held collectively responsible for the payment of dues or the behaviour of their individual members. Because of the constraints of kinship, landed property was very seldom sold prior to the twelfth century, and after this was only sold after being first offered to kinsmen, or by giving kinsmen the right to take the place of any buyer. But by the fifteenth century, for a large proportion of the peasant population, commerce was replacing kinship as the defining basis of human relationships, and many individuals found themselves struggling for a livelihood against the forces of the market. And land was beginning to become just a commodity to be evaluated according to its profitability.

In the later part of the Middle Ages, the Western orientation to the world attained a most significant expression in the development of the mechanical clock. The measurement of time had originally become important for the regulation of monastic life. The culmination of the efforts to measure time with the development of the mechanical clock enabled people to measure time independently of the natural rhythms of nature. When mechanical clocks were first developed this relationship to natural rhythms was not completely severed, and clocks were shown being adjusted to conform to the different lengths of hours in the day in different seasons. But in the late fourteenth and early fifteenth centuries Europe abandoned experiential time for abstract time, the cycle of night and day conceived as twenty-four hours of equal length, and organized their lives accordingly.[71] This manifested to the highest degree the European orientation away from the sensible world to an abstract, transcendent world, and then the organization of the sensible world to accord with this transcendent order.

This orientation to a transcendent order established the trajectory of European technological development which has continued to the present. The permeation and domination of life by abstract time has become so complete that it is difficult to realize just how extraordinary this is.[72] Its uniqueness stands out when contrasted with the Nuer described by Evans-Pritchard:

> ...the Nuer have no expression equivalent to 'time' in our language, and they cannot, therefore, as we can, speak of time as though it were something actual, which passes, can be wasted, can be saved, and so forth. I do not think that they ever experience the same feeling of fighting against time or of having to co-ordinate activities with an abstract passage of time because their points of reference are mainly the activities themselves, which are generally of a leisurely character. Events follow a logical order, but they are not controlled by an abstract system, there being no autonomous points of reference to which activities have to conform with precision.[73]

The clock subsequently became the primary symbol and metaphor for the Western orientation to the world. Its use for this purpose first occurred with the representation of the virtue of Temperance. When she was first conceived as a measurer of time, she was shown holding a sand-glass. But in 1400 she was shown holding a clock. In the same year Christine de Pisan wrote a treatise explaining this: 'Temperance should be called a goddess likewise. And because our human body is

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70. Bloch, *Feudal Society*, Vol.1, p.130ff.

71. Ibid. p.197f.

72. For this development see E.P. Thompson, *Past and Present*, Vol.38, 1967, pp.56-96.

73. E.E. Evans-Pritchard, *The Nuer*, Oxford: Clarendon Press, 1940, p.103.

made up of many parts and should be regulated by reason, it may be represented as a clock in which there are several wheels and measures. And just as the clock is worth nothing unless it is regulated, so our human body does not work unless Temperance orders it.'[74] In 1450 Temperance was represented wearing a clock as a hat, a bit and bridle in her mouth, eyeglasses in her hand, rowel spurs on her heels, and standing on a windmill. White wrote of this, 'The clock indicates regularity, promptitude and reliability; the spurs, maturity; the windmill, steady industriousness.'[75]

The development of the abstract conception of time was followed by the development of an abstract conception of space through the development of maps for navigation.[76] The characteristics of European thinking in this regard are again revealed most clearly when contrasted with other societies; in this instance with the Polynesians whose ability at navigation at least equalled that of the Europeans. The Polynesians navigated by understanding the dynamic relations within nature. They judged both their direction and the presence of land masses by the wave patterns of the ocean. They could detect distant islands by their effects on clouds and light. They knew how far birds travelled from land and when they were heading away from or towards it, and used this knowledge accordingly. Where stars were used for navigation, the Polynesians oriented themselves by knowledge of star paths over the horizon, with changes of direction timed to moving locations. With this mode of reading stars, all constants were dynamic and temporally changing. In effect the Polynesians navigated by orienting themselves to the world they were engaged in.

By contrast, when Christopher Columbus set out in 1492 he took with him instruments such as the magnetic compass, the clock, the compass, the astrolabe for calculating angles to the sun and other heavenly bodies, maps and various measuring devices. He conceived the world to be round, with the surface as a network of intersecting lines upon whose surface one moved and in terms of which ones' position could be plotted by means of navigating instruments. He oriented himself to an abstract order of space, and his relation to the world around him was mediated through this abstract conception of the world and the instruments which served this mediation.

Emergent Dynamics of Medieval Society

The embodiment of the medieval world-orientation already gave this an inertia and dynamics not entirely intended by the actors who lived according to it. However there were other side effects totally unintended, and processes generated which once established, forced people to conform to, and so reproduce, these dynamics. It is these unintended aspects of medieval culture which transmuted the individualism, the detachment from the surrounding world and the activism of Western European culture into a grotesque struggle for domination of people and nature.

The most significant side effect of this culture was to produce a high level of anxiety which increasingly expressed itself in aggression. In the Dark Ages ninety per cent of the population were directly involved in agriculture. With the advances in agriculture in the tenth and eleventh century increasing proportions of the population

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74. Cited by White, *Medieval Religion and Technology*, p.193f.

75. Ibid. p.199.

76. See Don Ihde, 'The Historical-Ontological Priority of Technology over Science', *Philosophy and Technology*, eds Paul T. Durban and Freidrich Rapp, Dordrecht: Reidel, pp.235-52, p.248f. For the development of maps see Bailey W. Diffie and George D. Winius, *Foundations of the Portuguese Empire: 1415-1580*, Minneapolis, University of Minnesota Press, 1977, p.129ff.

left the soil to live in the strange environment of the expanding towns and cities. Unlike China where people on reaching maturity were granted land, where efforts were made to keep people on the land, and where towns and cities developed in a culture in which the importance of acknowledging people's significance (expressed in such practices as always allowing people to 'save face'), the towns and cities of Europe simply accumulated all surplus population, and in a culture stressing individualism, did little to replace the social relations of the rural community.[77] This urbanization broke the community bonds of peasant society, and this appears to have profoundly affected people. As Lynn White wrote, 'We are beginning to see that the eleventh century in the West was an age of dreadful anxiety, and consequently of aggression.'[78] This anxiety manifested itself towards the middle of the century in the sudden invention of Purgatory and indulgences, the evolution of the image of Satan from a fallen angel into a hideous monster, the realistic depiction of the tortures of Hell for the first time, and the killing of Jews and heretics. The distinctive general orientation towards the world produced by such anxiety was an aggressiveness which infected the orientation towards domination and had ramifications for the whole of European history.

The most important expression of this aggressiveness was to intensify concern with warfare. In the middle of the eleventh century, participation in slaughter, 'washing the sinner in the blood of unbelievers rather than of Christ,' came to be seen as a means of salvation.[79] This mutation of Christian values was a precondition for the crusades. The Crusaders' apocalyptic frenzy and the plethora of psychotic incidents: the episodes of Peter the Hermit, the Children's Crusade and the Crusade of the Shepherds among others attest the intensity of the efforts to regain the lost sense of community at this time. The crusades in turn reinforced the militarism of the aristocracy. While such military activity was justified by Christianity as the pursuit of honour for the greater glory of God, more than the greater glory of God was involved. War became a passion, and the brutality which had, according to Christianity, been justly directed against the Saracens in the Holy Land and against the Baltic nations whom the Teutonic knights set out to 'Convert or Kill' (they killed almost all the original inhabitants of Prussia), was turned inwards and directed at other Europeans.

Warfare associated both with the crusades and between kingdoms forced the further feudalization of social relationships. Feudalism had originally involved expropriating land from monasteries and granting it to individuals on condition that they equip themselves to serve as heavy cavalry in the army to defend Europe. Towards the end of the eleventh century this form of relationship between people, the relationship of lord to vassal, spread. Monarchs began to regard their kingdoms as their property, and all people who worked it, as their tenants. In this way they were able to raise more knights, more fiefs and more castles. Following William the Conqueror, regents systematized their taxation to exploit their subjects as efficiently as possible. There was also an increase in the number of levels of aristocracy, with power of jurisdiction, to try and to tax the subject population devolving downwards not only to counts, but to castellans and even to lords of one or two villages. At the lower levels of feudal society large scale technology was developed as a means of

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77. For a description of life in European cities see J.K. Hyde, *Society and Politics in Medieval Italy: The Evolution of the Civil Life, 1000-1350*, London: Macmillan, 1973; and John Hine Mundy, 'Urban Society and Culture: Toulouse and Its Regions' in Robert L. Benson and Giles Constable eds, *Renaissance and Renewal in the Twelfth Century* pp.229-47.

78. White, *Medieval Religion and Technology*, p.295.

79. Ibid. p.294.

expropriating surpluses from the peasants. For instance the lords built wind and water mills and forced the peasants to use these by making handmills illegal.[80] Increasingly expropriation from peasants in the form of labour services were replaced by expropriation of money by a variety of different methods. Because these new forms of relationships increased the military power of the ruling class, regents who opposed these developments were eventually forced to go along with the trend in order to survive. Once inaugurated, the development of feudalism was inexorable.[81]

The dynamic which generated and perpetuated feudal relations was the struggle to find the means to wage warfare in a war prone society. The resulting hierarchical order of society was generally legitimated by the Neoplatonic Christian ideology, and the hierarchy having been formed the heavily armed ruling élite were in a position to maintain their privileges. However there was no inner dynamic generated by the feudal socio-economic system maintaining and developing it equivalent to that of capitalism. The aristocracy attempted to increase their power by expropriating as much as they could from the peasantry or by conquest, but they invested almost nothing in the improvement of the land. As the opportunities for conquest diminished, the life of the military aristocracy evolved into mere pageantry, a process graphically described by Huizinga in *The Waning of the Middle Ages*. The long term significance of feudalism was to force the pace of commercialisation of human relationships. Land came to be seen in terms of how much revenue could be produced from it, and peasants were forced to think in terms of how to raise the money to pay the various impositions of the ruling class. Monarchs also supported the development of commerce as a source of taxes, and universities as a source of trained manpower. This provided the conditions under which commercial and university towns and cities could develop and achieve considerable autonomy from the rest of feudal society, and absorbing the growing number of peasants escaping from their feudal overlords, could sustain a growing commercial economy.

With an association between piracy and commerce in early medieval Europe and with the general aggressiveness of European society, townspeople displayed a remarkable belligerence and propensity for waging war. It was in the towns and cities that people could rise in the world. However the situation of such people was extremely precarious. Those involved in trade frequently lost everything, while there was always an excess of university graduates over employment opportunities. The enormous gulf between the highest and the lowest levels of society meant that there was widespread insecurity. One manifestation of this was the popularity of the Wheel of Fortune in medieval illustrations.[82] This insecurity generated competition between those who were attempting to rise on the social scale. The vicious debates within universities was one sign of the ferocity of this competition.[83] Correspondingly, there took root and flourished a remarkable merger of market and military behaviour in the most active economic centres. William McNeill wrote of this: 'Commercialization of organized violence came vigorously to the fore in the fourteenth century when mercenary armies became standard in Italy. Thereafter, market forces and attitudes began to affect military action as seldom before. The art of war began to evolve among Europeans with a rapidity that soon raised it to

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80. Merchant, *The Death of Nature*, p.46.

81. See R.H.C. Davis, *A History of Medieval Europe: From Constantine to Saint Louis*, Harlow: Longman, 2nd ed. 1970, p.295f.

82. Alexander Murray, *Reason and Society in the Middle Ages*, Oxford: Clarendon, 1978, p.98ff.

83. See ibid., Ch.10, 'The Intellectual Elite.'

unexampled heights.'[84] It was in the context that a systematic preoccupation with predicting and controlling the world emerged.

This preoccupation was not just a concern to relieve the burden of work, or even to dominate militarily. It became a passion to subjugate the world as an end in itself. The power of the Church came to rest more and more on its supposed power to mediate in people's fate in the afterlife. A very high proportion of the efforts to develop technology were directed towards the production of armaments. However those involved in the development of armaments to subjugate people also tended to be involved in efforts to develop astrology and magic in order to subjugate nature. Typically Konrad Kyeser who produced a major text in military engineering - in which among other things he recorded an instrument for slow castration - was also an astrologer and practising magician, employing for one incantation candles made of fat from a hanged man.[85] The orientation towards domination is most clearly evident in this art of magic. Books of magic became increasingly popular in the thirteenth century. These books claimed to give total power to their readers. As one claimed, when the principles expounded were comprehended, 'all the intelligences and all the compositions of the things of this world, all things will serve him and he will serve none of them.' And another widely copied book ended: 'so ends the book of the rational soul ... the book by which every creature can be subjected except the nine orders of angels.'[86]

The Final Stage of Feudalism

What I have tried to demonstrate here is how the orientation towards individualism, detachment and domination engendered by medieval society amounted to a particular type of embodiment of the philosophy of Neoplatonic Christianity. It had become a mode of becoming in the world, characterized by an emotional detachment from the sensible and personal world of the present as people defined themselves in relation to a perfect, eternal order, and with the reduction of the surrounding world to a means to attain the perfection of this eternal order in some distant future. Both the conceptions of and the attitudes towards nature and society reflected and thereby reinforced each other. All the institutions of medieval society, including language, resonated with this basic orientation and with the general conception of the world of Neoplatonic Christianity which stood as the ultimate foundation for the legitimation of beliefs and practices and for the resolution of conflicts. However the side-effects of this institutionalisation, the anxiety produced by the disengagement from the surrounding world and from other people infected this mode of becoming with aggression.

This anxiety and aggression manifested itself in hostility both to the natural world and other people, especially insofar as such people could be identified with the natural world. The rejection of nature found expression in the efforts of people to distinguish themselves from animals and to transcend their affinities with them.[87] In the vituperative writings of intellectuals, ignorance was equated with brutishness and

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84. William H. McNeill, *The Pursuit of Power*, Chicago: University of Chicago Press, 1984, p.69f. McNeill also wrote of how such a development had been prevented by the Confucian literati. See p.'s 40 & 50.

85. White, *Medieval Religion and Technology*, p.306ff.

86. Murray, *Reason and Society in the Middle Ages*, p.113f.

87. The extension of this into the sixteenth and seventeenth centuries is described by Keith Thomas in *Man and the Natural World*, Harmondsworth: Allen Lane, Ch.1.

knowledge was seen to raise one above bestiality. Proponents of courtly love, and particularly homosexual love also defined themselves in opposition to animals. A devotee of homosexual love wrote that 'only rustici ... who can be called beasts, should properly ... filthy themselves with women.'[88]

This individualist detached orientation facilitated the emergence of commercial capitalism which, despite the proscriptions against usury, was to eventually displace the feudal organization of society. This was characterized by a passion for the accumulation of wealth, particularly in the immutable form of gold. Associated with its development, nationalism began to emerge in some regions as a dynamic force, particularly towards the end of the fifteenth century when central governments subordinated the cities. This was fostered as a means for mobilizing people more effectively for warfare. Such nationalism replaced the frenzy of the crusades as a substitute means of attaining a sense of being a significant member of a community. Commercial capitalism and nationalism in turn became the foundations of the rise of Europe's intercontinental imperialism (although to begin with, such imperialism was formulated more in terms of religion).

It was this development in which modes of cognition and behaviour were applied in new situations involving people from other civilizations that most clearly revealed the distinctive nature of the European culture. In 1405 a Chinese fleet of 63 ocean going junks with almost 28,000 men aboard had set sail and had visited many parts of the south seas, including Ceylon.[89] Over the next twenty seven years, seven such expeditions set forth, reaching and bringing back animals from as far away as Africa. But the Chinese ruling elites were not interested in conquest. Typifying the attitude, a minister, Fan Chi, wrote to the emperor in 1426:

> Arms are the instruments of evil which the sage does not use unless he must. The noble rulers and wise ministers of old did not dissipate the strength of the people by deeds of arms. This was a far-sighted policy.... Your minister hopes that your majesty ... would not indulge in military pursuits nor glorify the sending of expeditions to distant countries. Abandon the barren lands abroad and give the people of China a respite so that they could devote themselves to husbandry and the schools.[90]

In 1436 a decree was issued forbidding the construction of new seagoing ships. The Pope on the other hand divided the non-European world between the Portuguese and the Spanish. The Portuguese set out to conquer the trade of the Indian Ocean and the Spanish to conquer the civilizations of America, beginning the era in which succeeding European colonialists set about conquering, subjugating and largely destroying the rest of humanity, and paving the way for the present world-order.

When the Portuguese found a way into the Indian Ocean via the Cape of Good Hope, there was a well organized and relatively peaceful system of trade dominated by the Muslims. These Muslims had traversed the seas from Arabia to Indonesia and China since the eighth century, their adventures forming the substance of Sindbad the Sailor's tales in the *Arabian Nights*. The Portuguese had little to trade, and

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88. Cited Murray, *Reason and Society in the Middle Ages*, p.238.

89. Wang Gungwu, 'China and South-East Asia 1402-1424' in J. Ch'en and N. Starling eds. *Studies in the Social History of China and South East Asia*, Cambridge: Cambridge University Press, 1970.

90. Cited by McNeill, *The Pursuit of Power*, p.46. For more on the difference between Portuguese and Chinese attitudes to imperialism see Robert Finlay, 'Portuguese and Chinese Maritime Imperialism', *Comparative Studies in Society and History*, Vol.34, No.2, April 1992, pp.225-241.

simply wanted to divert trade to Portugal. Consequently they set about destroying what had been a competently organized native economy, routinely demolishing Arab, Egyptian and Gujarati vessels. Their manner of proceeding in this task of conquest is illustrated by the way Vasco da Gama dealt with the ruler of Calicut, the Samorin. Da Gama insisted not only that Portugal should have access to the port, but that all Muslims be excluded. Samorin was willing to admit the Portuguese, but not to exclude the Muslims. Winius, an historian of the foundations of the Portuguese empire wrote of da Gama's response:

> Da Gama's response must have taken the Semorin completely by surprise: the admiral suddenly gave the order to hoist anchor, swung his ships in close to shore, and opened fire, hurling stone and metal cannonballs into the city's streets for an entire day before sailing off towards Cochin. In addition to this barbarous act, which killed indiscriminately, he committed one even more appalling: he butchered or burned alive several hundred innocent fishermen who had assumed that peace was in the offing and had sailed out beyond the Portuguese fleet to pursue their day's catch.[91]

Later the Portuguese sacked and destroyed every city along the Arabian coast which refused to put itself under Portuguese protection.[92]

In these military engagements the Portuguese were distinguished by their courage and ferocity. As Winius wrote in relation to their conquest of Malacca, 'As at Goa, the Portuguese soldiers in Malacca were experienced in fighting as a team; they cut throats with a joy no Asians could match (save perhaps the Bandanese), and their group psychology made it a point of pride to vie with one another in discounting their injuries and fighting on... Men, like the Portuguese, who tore into their enemies with obvious relish, were a novelty in Malacca and in most of the Indian states.'[93]

However it was the Spanish conquest of the American civilizations which revealed the full destructiveness of European civilization. In murdering the rulers of these civilizations who had accepted them as guests, enslaving their populations and destroying their cultures, the Spanish conquistadors displayed a seldom matched degree of treachery, brutality, and self-righteousness. It resulted in the population of Mexico being reduced from 25 to 30 million at the time of the conquest to three million in 1568, less than fifty years later, and to 1.6 million in 1620.[94] The 7 to 8 million population of Hispaniola (Santo Domingo) had been reduced to less than 300 in 50 years, the Spanish having produced a death rate of 40% a year. Ultimately the only Indian survivors were a few half-breeds.[95]

There has been a tendency to whitewash this by describing the destruction of life as simply due to the introduction of disease. To begin with it is not known to what extent steps which could have been taken to stop the spread of diseases were ignored, or even that the spread of disease was not deliberate. It is known that the English settlers in North America gave blankets taken from people who had died of smallpox to the Indians, and that scabs from people with smallpox had been taken to Australia by its first white settlers, following which the aboriginal population was

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91. Bailey W. Diffie and George D. Winius, *Foundations of the Portuguese Empire: 1415-1580*, Minneapolis: University of Minnesota Press, 1977, p.224.

92. Ibid. p.238.

93. Ibid. p.259.

94. William H. McNeill, *Plagues and Peoples*, N.Y.: Anchor Press, 1976, p.203f.

95. Emmanuel Le Roy Ladurie, *The Mind and Method of the Historian*, [1978] tr. Sian Reynolds and Ben Reynolds, p.79.

devastated by smallpox. Apart from this, people's susceptibility to disease is largely a function of the state of mental and physical health. For instance it is now being argued that it was malnutrition which paved the way for the plagues in fourteenth century Europe, and that the plagues decreased with improvements in food.[96] The high susceptibility of the Indians was not entirely lack of resistance. It is necessary to take into account that an independent people had been reduced to slavery with many being forced to work in mines under atrocious conditions. Furthermore it was not simply death which caused the collapse of populations. Henry Reynolds has pointed out that Australian aboriginals, and Mark Twain that the Congolese, avoided having children because of the insecurity, the threats and the conditions they were forced to endure as a consequence of the European invasion.[97] And lest the propensity of Europeans for destruction be underestimated, it should be recalled that at the end of the nineteenth century the Belgians killed 10 million of the 25 million population of the Congo, while in 1904 the Germans in South-West Africa almost completely exterminated the Herero people; in both cases without the help of disease.

The conquest of the Inca civilization, described in the famous work by William H. Prescott, *History of the Conquest of Peru* illustrates the manner in which the Spanish proceeded. Prescott described the land of the Inca empire through which Pizarro and his band of would be conquerors travelled, and the nature of their advance:

> The industry of the inhabitants ... had turned these streams to the best account, and canals and aqueducts were seen crossing the low lands in all directions, and spreading over the country, like a vast network, diffusing fertility and beauty around them. The air was scented with the sweet odours of flowers, and everywhere the eye was refreshed by the sight of orchards laden with unknown fruits, and of fields waving with yellow grain and rich in luscious vegetables of every description that teem in the sunny clime of the equator. The Spaniards were among people who had carried the refinements of husbandry to a greater extent than any yet found on the American continent... Everywhere, too, they were received with confiding hospitality by the simple people; for which they were no doubt indebted, in a great measure, to their own inoffensive deportment. Every Spaniard seemed to be aware, that his only chance of success lay in conciliating the good opinion of the inhabitants, among whom he had so recklessly cast his fortunes.[98]

Having successfully deceived the Inca people as to their intentions and having been accepted into the presence of their leader, Atahualpa, the Spaniards prepared to attack. Having completed the military preparations, 'mass was performed with great solemnity by the ecclesiastics who attended the expedition; the God of battles was invoked to spread his shield over the slaves who were fighting to extend the empire of the Cross; and all joined with enthusiasm in the chant, "*Exsurge, Domine*," "Rise O Lord! and judge thine own cause."...[W]hatever were the vices of the Castillian cavalier, hypocrisy was not among the number. He felt that he was battling for the

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96. Thomas Cox, 'The Impact of Western Expansion on World Ecosystems: Comment' in *Environmental History* ed. Kendall E. Bailes, Lanham: University Press of America, 1985, pp.587-93; reporting the work of Andrew B. Appleby.

97. Henry Reynolds, *The Other Side of the Frontier*, Harmondsworth: Penguin, 1982., p.125ff.

98. *The Complete Works of William H. Prescott: History of the Conquest of Peru*, Vol.1, New York: Thomas Y. Crowell & Co., 1847, p.259f.

Cross... With feelings thus kindled to a flame of religious ardour, the soldiers looked forward with renovated spirits to the coming conflict...'[99]

After having lured Atahualpa unarmed into the Spanish camp, and before the attack, Valverde, a Dominican friar and chaplain to Pizarro, approached him, expounded to him the doctrines of the true faith and asked him to acknowledge himself a tributary of the Emperor, Charles the Fifth. Atahualpa showed offence at this, describing the Pope as being 'crazy to talk of giving away countries which do not belong to him.'[100] He declined to accept Christianity and affirmed his faith in his own God, the Sun 'which lives in the heavens, and looks down on his children.'[101] The friar hastened back to Pizarro, informed him of Atahualpa's response and exclaimed: 'Do you not see, that, while we stand here wasting our breath in talking with this dog, full of pride as he is, the fields are filling with Indians? Set on, at once; I absolve you.'[102]

The attack began, the unarmed retinue of Atahualpa was slaughtered and Atahualpa captured. Prescott wrote of this: 'The number of slain is reported, as usual, with great discrepancy. Pizarro's secretary says two thousand natives fell. A descendant of the Incas - a safer authority than Garcilasso - swells the number to ten thousand.'[103]

Having captured Atahualpa, the Spaniards used him as a means of protection, and then as a means of attaining gold and silver from the empire. Pizarro agreed to release him if he would fill a room twenty-two feet by seventeen feet with gold to a depth of nine feet, and to fill a smaller adjoining room twice with silver. An immense amount of gold and silver arrived, but Atahualpa was not released. When the Spaniards had no further use for him he was sentenced to death by burning. A copy of the judgement was submitted to the friar, Valverde for his signature, which he gave without hesitation, declaring that, 'in his opinion, the Inca, at all events deserved death.'[104] This was commuted to death by garotting after Atahualpa had agreed to become a Christian. The execution was carried out on August 29, 1533. The following morning, his funeral obsequies were performed with great solemnity, Pizarro and the cavaliers going into mourning and the troops listening with devout attention to the service for the dead delivered by Father Valverde.

Following this the Spaniards continued their pillaging of the empire, burning its villages and cities and torturing its inhabitants in their rapacious search for gold, and any Indian leader who attempted to stand in their way was burnt alive. In this way an entire civilization was totally destroyed. The Inca empire originally had a population of seven or eight million (perhaps as many as ten million). By 1560 the figure was two and a half million, and by 1590 between 1.3 and 1.5 million.[105]

While behaviour of Europeans towards the rest of the world revealed the nature of Europeans most clearly, this was merely the generalization of a mode of behaviour and thought which had come to permeate European civilization. In the same century as Spain destroyed the civilizations of the Americas, the inquisition in Europe developed into an orgy of sadistic, mass torture and murder. Witch-hunting

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99. Ibid. p.290.

100. Ibid. p.296.

101. Loc.cit.

102. Ibid. p.297.

103. Ibid. p.300.

104. Ibid. p.342.

105. Le Roy Ladurie, *The Mind and Method of the Historian* p.77.

became a craze, revealing an unparalleled degree of misogyny. Efforts to subjugate nature were expanded as never before, and associated with this, the lower classes were exploited with a new level of intensity. This gave rise to widespread peasant riots and wars. All these developments resonated with each other as heretics, women, peasants and nature were identified with each other as evil, disorderly matter which must be brought under control and made to accord with a higher principle of masculine, rational order.[106] Increasing social tensions throughout Europe culminated in the seventeenth century with the Thirty Years War of 1618 to 1648 which decimated Europe's population.

However these developments inaugurated a new social order and produced forms of life and ideological struggles which destroyed the coherence of the medieval world-orientation. The new social order, capitalism, was nevertheless a continuation of the developments which had been taking place in feudal society. It institutionalized atomistic thinking, individualism and the degraded status of nature and of people. But it also introduced new problems. It is an order in which the struggle for economic security produces effects which deprive people of such security. It is associated with a form of science in which each advance in knowledge further disorients people. And it has developed in such a way that the efforts of people to attain recognition of their own significance undermines the institutions which accord such recognition. So while this order originated in and was based on the modes of being and thinking of feudal society, it led to radically new developments. It is the nature of these developments which has given rise to the modern world-orientation, and it is the relationship between this world-orientation and the rise of world capitalism which will be examined in the next chapter.

106. See Easlea;, *Witchcraft, Magic & the New Philosophy* for a detailed analysis of this.

5

MECHANISTIC MATERIALISM AND CAPITALISM: THE ORIGINS OF NIHILISM

One of the most significant manifestations of the dissolution of the feudal order was the demise of the values of the aristocracy. With the development of nominalism which denied reality to universals, the ideal forms which had defined all human significance for the aristocrat lost their ontological status. As Shakespeare has Falstaff say in *King Henry IV*:

> Honour pricks me on. Yea, but how if honour prick me off when I come on? how then? Can honour set-to a leg? No. Or an arm? No. Or take away the grief of a wound? No. Honour has no skill in surgery, then? No. What is honour? A word. What is that word, honour? Air.[1]

However the dualism between forms and the sensible world which had been argued for by Plato in his efforts to establish the reality of eternal values had come to structure the whole culture of Western civilization. While the rise of nominalism undermined some aspects of Platonism, Western culture remained essentially Platonistic in two ways.[2]

Firstly, the dualism between a real, eternal world and a changing, sensible world was not only retained, but reinforced. The real world came to be seen as a mechanical order of inert, immutable matter governed by the immutable laws of motion represented by timeless logico-mathematical relations, while all reality was denied to the qualitative diversity of the sensible world. This amounted to a complete triumph of being over becoming, with all immanent tendencies to realize potentialities being eliminated from the world. Only the totally formed were granted the status of reality, so that the world came to be seen as consisting of bodies occupying space and changing their positions over time - with an active soul or mind an incomprehensible and optional extra.

The assumption of this eternal reality of space and time, matter and motion and the laws of science, was completely taken for granted even by those whose extreme nominalism seemed to contradict it. For instance David Hume assumed a world of atomic events in which the only relation is the observed constant conjunction between similar, contiguous events. But, as Kant realized, this requires an eternal realm of time and space against which events can be mapped. Similarly, despite his arguments that the mind is nothing but a sequence of sense impressions and ideas,

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1. William Shakespeare, *King Henry IV*, Part I, V.i., 126-36, *The Complete Works of Shakespeare*, London: Octopus Books, p.456.

2. The Neoplatonism of the mechanical view of the world has been argued by a number of philosophers and historians of science from Burtt and Koyré to Ivor Leclerc. This continuity is most clearly evident in Spinoza who calls for love to be directed away from what is perishable to what is eternal and infinite, the deterministic order of the world. (See Benedict de Spinoza, *On the Improvement of the Understanding, The Ethics, Correspondence* tr. R.H.M. Elewes, N.Y.: Dover, 1955, 'On the Improvement of the Understanding', p.5 & p.37.)

Hume had to assume an enduring subject who could *expect* sense impressions of events to be constantly conjoined. Only by assuming such an enduring background to events could Hume avoid facing the question confronted by Plato of how there could be knowledge over and above perception in a changing world.

Secondly, despite appearances to the contrary, Platonism was retained in a modified form in the way people defined value and significance by participation in forms. The forms of virtue such as justice, valour, courtesy and prudence lost their status, but were replaced by the purely numerical form of money and by the form of the machine. Only that which could be valued in terms of money was thenceforth seen to be significant. The most highly valued things came to be those which maintained their value, and these became the goal of economic activity. As the seventeenth century economist William Petty wrote: 'The great and ultimate effect of trade is not wealth as such, but preferably an over-abundance of silver, gold and jewels, which are not *perishable*, not as *fickle* as other commodities, but are wealth in all times and all places.'[3] The continued connection between this concern for immutable forms of wealth and Neoplatonic Christianity is most clearly evident in Protestantism. Luther generalized the notion of vocation to secular life, and following Calvin, Protestants regarded the notion of vocation as applicable to business. But the notion of a vocation did not lose its religious roots. As Marx wrote: 'The cult of money has its asceticism, its self-denial, its self-sacrifice - economy and frugality, contempt for mundane, temporal and fleeting pleasures; the chase after the *eternal* treasure. Hence the connection between English Puritanism, or also Dutch Protestantism, and money making.'[4] And in the pursuit of money, the ideal type of order to be adopted by individuals and by society, came to be that of a machine - a totally predictable system made up of unifunctional, replaceable parts.

With this development nature came to be regarded as significant only insofar as it could enter the realm of monetary relations as a resource, relationships between people came to be seen as significant insofar as they were monetary relationships, and people came to be defined in terms of their participation in the economic machine. As Marx pointed out:

> That which exists for me through the medium of money, that which I can pay for ... that am I, the possessor of the money. The stronger the power of my money, the stronger am I. The properties of money are my, the possessor's, properties and essential powers. Therefore what I am and what I can do is by no means determined by my individuality. I am ugly, but I can buy the most beautiful woman. Which means to say that I am not ugly, for the effect of ugliness, its repelling power, is destroyed by money... I am a wicked, dishonest, unscrupulous and stupid individual, but money is respected, and so also is its owner. Money is the highest good, and consequently its owner is also good.[5]

And as relations in the Middle Ages had been understood as secondary and derivative of the ideal forms of religious thought, in the new order relationships have come to be understood in monetary terms, that is, as commodities, whether in the form of resources saleable or prepared for use in production, labour power to be

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3. Petty, *Political Arithmetick*, p.178; cited by Karl Marx, *Grundrisse: Foundations of the Critique of Political Economy (Rough Draft)*, tr. Martin Nicolaus, Harmondsworth: Penguin, 1973, p.231.

4. Marx, *Grundrisse*, p.232.

5. Karl Marx, *The Economic and Philosophic Manuscripts of 1844*, tr. Martin Milligan, New York: International Publishers, 1964, p.167.

exploited, or the products of industry. Again as Marx, who rejected both modes of thinking, pointed out:

> A commodity appears, at first sight, a very trivial thing, and easily understood. Its analysis shows that it is, in reality a very queer thing, abounding in metaphysical subtleties and theological niceties... because the relation of the producers to the sum total of their own labour is presented to them as a social relation, existing not between themselves, but between the products of their labour... In order, therefore to find an analogy, we must have recourse to the mist-enveloped regions of the religious world. In that world the productions of the human brain appear as independent beings endowed with life, and entering into relation both with one another and the human race. So it is in the world of commodities...[6]

These two ways of conceiving the world: as a mechanical order and in terms of money have complemented each other in the development of capitalism to form the mechanistic world-orientation. The avarice which developed with the new capitalist socio-economic formation had a radically different character and relationship to society than in early commercial society. Aristotle had noted that people tended to regard money as wealth and to make its accumulation an end in itself.[7] But as Marx noted, such mania for wealth was destructive of the ancient communities since money was nothing but a means of exchange in these societies.[8] This was true also of late medieval society, and Spain was economically destroyed as a consequence of its discoveries of vast amounts of gold in the Americas.[9] What makes capitalism different is that in the quest for money, entrepreneurs employ labour power not only to produce consumer goods, but by transforming nature, to develop the means of production. For such a system to have been established a new way of thinking was required which could justify these developments, reveal how nature could be transformed, and provide an idea of what the world should be transformed into. Mechanistic materialism served all these functions, and in doing so, the notion of mechanism became more than a means for understanding the world. The idea of the machine came to complement money as the Platonic form to which nature, societies and individuals must be made to conform in order make money.

However mechanistic materialism did not just emerge as the logical outcome of medieval thought. It was developed in the process of an ideological struggle as a particular conception of the world among a number of such schemes of thought which vied for dominance as feudal society and the philosophies on which it was based lost their coherence. To begin with these circumstances provided the conditions for the flowering of a number of philosophies or world-views which had either previously been held in check by feudalism and the Catholic Church, or which emerged for the first time as the self-maintaining dynamics of feudalism weakened. Among the intellectual movements which developed were humanism, partly based on the recovery of Greek and Latin writers, particularly the Stoics, but also on the logic of Peter Ramus; and various forms of Protestantism. Humanism and Protestantism in turn led to vigorous efforts by the defenders of the old order to develop the heritage of feudal philosophy, particularly Thomism, to oppose these

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6. Karl Marx, *Capital*, Moscow: Progress Publishers, 1974, Vol.1, p.76f.

7. Aristotle, *The Politics*, Bk I, Ch.ix.

8. Marx, *Grundrisse*, p.223.

9. Ibid. p.225.

new developments. Another major intellectual movement which developed at this time was a radicalized Neoplatonism in the tradition of John Scotus Eriugena and the Heretics of the Free Spirit, but enriched by the then recently translated writings of Hermes Trismegistus and the Kabbala.[10] Proponents of this form of Neoplatonism, the Hermetics or 'nature enthusiasts', took God to be immanent in the world, and tended to emphasise the world's unity and dynamism. At the same time they tended to support the peasant movements and the communalistic forms of organization which some peasants had developed in late feudal society in their efforts to resist the oppression of the aristocracy. Here I will show how mechanistic materialism was developed as an effort to oppose such political movements and to defend the rising bourgeoisie; how the conception of the world as devoid of meaning was developed and promoted for political purposes. And my contention is that it was at least partly because of the success with which mechanistic materialism was synthesized into a coherent world-orientation, and its enormous success as the foundation for a new science of nature, that capitalism was able to prevail over the more radical political movements.[11]

In this and the the next two chapters I will describe the role of mechanistic materialism in promoting and legitimating the development of capitalism, showing its relationship not only to intellectual ideas which had been developed through the Middle Ages, but also to modes of conceiving the world which had evolved in social practices. The development of mechanistic materialism was a crystallization of a large number of such forms of thinking. Forms of relations within society provided the analogies for the development of this view of nature, which was then analogized to comprehend society. This comprehension reincorporated these forms of thinking into new social practices. The relationship between the formation of this world-orientation and the rise of capitalism will be analysed first, then the inter-relationship between the development of mechanistic materialism and the development of capitalism from the seventeenth century to the present will be examined. The final chapter will show how this world-orientation has become embodied within society and individuals.

The Complications of Capitalist Ideology

Attempting to understand the development of ideology over the last few hundred years presents even more problems than attempting to understand the development of thought in the Middle Ages. There is in Europe and its colonies a great diversity of people separated by language, distance and national boundaries engaged in a diversity of forms of life, which themselves engender different modes of thought. But also the modern era has been characterized by the emergence of 'discursive formations' and 'cultural fields' - to use the concepts of Michel Foucault and Pierre Bourdieu - with considerable autonomy from the rest of society, and there is far greater freedom of expression than in the Middle Ages. Consequently the modern world provides a picture of a vast range of viewpoints rather than of a society dominated by a unified culture. Mechanistic materialism itself has been formulated in a variety of different ways. However the situation in capitalist society is essentially the same as in feudal society. Too small a focus, both spatially and

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10. See Brian Easlea, *Witchcraft, Magic and the New Philosophy*, Sussex: Harverster Press, 1980; Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution*, [1980], London: Wildwood House, 1982, esp. Ch's 3 & 4; and Frances A. Yates, *Giordano Bruno and the Hermetic Tradition*, London: Routledge & Kegan Paul, 1964.

11. The discussion of the ideological conditions preventing the emergence of capitalism in China by Max Weber in *The Religion of China*, tr. Hans H. Gerth, N.Y.: Free Press, 1951, Ch.8 provides support for this contention. See also William McNeill, *The Pursuit of Power*, Chicago: University of Chicago Press, 1984, p.'s 40 & 50.

temporally, hides the existence of a real pattern in modes of thought. When Europeans are compared with traditional societies or with other civilizations, or if modern Europeans are compared with feudal Europeans, it immediately becomes apparent that the diverse points of view expressed are far more inter-related and have far more in common than at first appears, and what tolerance there is for alternative viewpoints in modern Western societies can be partially explained by the degree of entrenchment of the prevailing ideology and how ineffective is the opposition to it.

Nevertheless there is diversity, and to simplify this study I will focus on the dominant economic powers in the world, first Britain and then later, USA. It was in England that after the decline of population in the fourteenth and fifteenth centuries, the struggle between peasants and landlords resulted in the consolidation of land-holdings, the dispossession of peasants, and the employment of the dispossed as wage-labourers, thereby paving the way for the establishment of industrial capitalism.[12] The struggles in France and Germany west of the Elbe led to the consolidation of a free peasantry who resisted the development of a capitalist mode of production, while east of the Elbe, feudalism established itself for the first time. Consequently it was in England and Scotland, and then later in the United States that the forms of thinking required to justify and defend the developments of capitalism were developed in their most coherent form. Germany on the other hand, as a late-comer to capitalism, provided the most critical analysis of the forms of thought deriving from Britain, while France tended to echo both English and German thinking without producing the coherence of thought of either - it was a Frenchman, Cousins, who coined the term eclectic to describe his own philosophical position.

Further difficulties arise when attempting to understand the role and significance of mechanistic materialism in the formation and development of capitalism. To begin with, there is an asymmetry between those who have defended it and those whose behaviour has been influenced and legitimated by it. One of the greatest mechanists, Thomas Hobbes, was a defender of the old order and was unsympathetic to the rising bourgeoisie, while those more sympathetic to capitalism such as Newton and the Latitudinarians attacked the extreme mechanistic thought of Descartes and Hobbes, developing a diluted version. The French revolutionaries were also opposed to the extreme version of mechanistic materialism, executing its greatest proponent at the time, Lavoisier.[13] In more recent times very few of the supporters of capitalism have espoused such materialism as a doctrine. On the other hand, many of those who have been opposed to the oppressive effects of capitalism, for instance the radical utilitarians in Britain and most of the early Marxists, attempted to develop and justify their views in terms of mechanistic materialism.

Another complication is the strong countervailing set of ideas to mechanistic materialism which have developed along with it. For instance while mechanistic materialism implies that nature is totally devoid of significance except insofar as it can be put to use for human ends, and humans are simply mechanisms moved by appetites and aversions, there has emerged since the seventeenth century a new sensibility to and appreciation of the natural world,[14] and an elevation in the status of individuals. This has continued to develop in the Western nations up to the present, and finds its fullest expression in literature. Such opposition to the

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12. For an analysis of this see Robert Brenner, 'Agrarian Class Structure and Economic Development in Pre-Industrial Europe', *Past and Present*, No.70, Feb. 1976, pp.30-75.

13. See Charles Coulston Gillispie, 'Science in the French Revolution' in *Proc. N.A.S.*, Vol.45, pp.677-684, esp. p.678.

14. Keith Thomas;, *Man and the Natural World: Changing Attitudes in England 1500-1800*, London: Allen Lane, 1983.

mainstream of ideas has two sources. Firstly there has emerged a countervailing philosophical vision which has seen nature as active and divine, and humans as social and creative.[15] This originated with the Hermetic philosophers, was promoted by Spinoza and Leibniz and was then taken up by the Romantic movement which was most fully developed in Germany by the *Naturphilosophen*. This has had a continuing influence on Western culture. Secondly and more deeply rooted in Western culture there has been a strong development of the individual moral conscience which is difficult to reconcile with mechanistic materialism.

A third problem arises from the relationship of mechanistic materialism to science. It is generally assumed in our society that science in the seventeenth century overcame superstition and the tendencies towards anthropomorphism to discover the true nature of the world. It is a simple matter to deny this and to show the extent to which the form science has taken has been strongly influenced by the social context in which it has developed. But this leaves the problem that if our most reliable body of knowledge is relative to its social context, how can any belief be validated; and in particular, how can the argument that social context affects scientific beliefs then be defended against charges that this argument is simply the product of a particular social context?

My contention is that these should not be taken as reasons for rejecting the claim that mechanistic materialism provides the ideological underpinnings of capitalism, but as indicating the complicated nature of the relationship between ideology, truth, social dynamics and individuals. An effective ideology is one in terms of which people define the world as they engage in it. In claiming that mechanistic materialism dominates the modern world it is being claimed that it is the concepts of mechanistic materialism which actually mediate people's most important interactions with nature and with each other. It is the mode of thinking which structures the major institutions of society. It is not necessary for those people whose whole mode of being in the world incorporates the mechanistic materialist world-orientation in this way to actually espouse the doctrine. In examining the history of the ideology of capitalism, as with feudalism, what is being considered is the history of the modes of thinking embodied in institutions and social practices which individuals must incorporate to make their way in life.

Given my claim that people are struggling to make sense of the world and to attain a sense of their own significance, it is hardly surprising that those who are gaining the most power and material benefits from a society based on mechanistic materialist modes of thought should fail to acknowledge this, even to themselves, and to openly embrace radically opposed, though impractical, ideas about the world. Not only is it easier to exploit people if they can be indoctrinated with the notion that they should subordinate their egoism to the principles of morality, or to treat them as objects to be manipulated while disguising the fact, but it is difficult to think of the world as making any sense, or of oneself as being anything of intrinsic significance, in a purely mechanical world. Consequently those in positions of power are generally unlikely to espouse mechanistic materialism, though they will always take its implications to be the hard-headed appraisal of any situation. Those who are most oppressed on the other hand are less likely to have embodied mechanistic materialism, and with the upper classes representing a desirable ideal to be attained, they are less likely to be concerned that life is of no significance. Conversely they are likely to be impressed by the modes of thought which actually

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15. See Margaret C. Jacob;, *The Radical Enlightenment: Pantheists, Freemasons and Republicans,* London: George Allen & Unwin, l98l.

move those with power over them, and will consequently be likely to wish to emulate what will appear to them to be their realism. That is, because they are oppressed they are likely to believe that the modes of thinking of their oppressors come to grips with the world as it really is. By defending this doctrine explicitly, spelling out its implications and forcing social relations to accord with it, the oppressed, especially those who aspire to upward mobility rather than social transformation, further its hegemony in ways those born to power could not achieve by force or fraud.

For such reasons the development of mechanistic materialism cannot be explained psychologically, but is characterized by an objective dynamic transcending the individuals who participate consciously or unconsciously in its development. As with the development of mathematical ideas studied by Lakatos, the basic analogy dominating a society 'becomes a living, growing organism, that *acquires a certain autonomy* from the activity which has produced it; it develops its own autonomous laws of growth, its own dialectic.'[16] The efforts of those people articulating this analogy (who frequently are at the same time committed to contradictory ideas) are only a fumbling realization of this dialectic.

The countervailing ideas to mechanistic materialism are also for the most part an aspect of its domination. Exalting nature or people explicitly in such a way that this does not interfere with participation in the whole complex of life forms which are degrading and destroying both nature and people blurs and softens the appearance of this degradation. The development of the mechanistic materialist ideology involves at the same time the neutralization of potentially competing world-orientations by reformulating them as ineffectual polar oppositions to it, as Christian Neoplatonism deformed the tradition of laughter and parody by reducing it to the polar opposite of its own exalted conception of life, and Romanticism, which was originally presented as rationally superior to mechanistic materialism and an alternative foundation for science, has been reduced to such an opposition by rendering it as irrationalist and emotionalist and expelling it from science to the humanities. In this 'feminine' role it is allowed a little influence, but only on inessentials. Romantic utopianism has become a mere negation of mechanistic science, in fact its shadow, where what is required to replace it is a negation of the negation which transcends the dichotomy between rationality and emotion, the sciences and the humanities.

But the situation is still more complex. The development of the heroic moralism and the highly developed individual conscience has as deep roots in Western culture as mechanistic materialism, but has been directly and effectively in opposition to its implications. Not only this, but both these forms of thinking have their roots in the activist individualism which was seen in Chapter IV to have given rise to the Promethean efforts to gain power over the world. The individual conscience has been accentuated in Protestantism and in the more Protestant branches of Catholicism through the internalization of the Court of Conscience, the generalization of the notion of vocation to the secular realm, and, despite the notions of predestination, the ascription of total responsibility to individuals for not only their actions, but also their thoughts; while at the same time it has been in these branches of Christianity that the rejection of the material world has been accentuated and which were most responsible for the development of mechanistic materialism. While the ethical notions associated with the individual conscience are irrational from the point of view of mechanistic materialism and have been disregarded or

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16. Imre Lakatos, *Proofs and Refutations: The Logic of Mathematical Discovery*, ed. John Worrall and Elie Zahar, Cambridge University Press, 1981, p.146.

assumed to be irrational by philosophers, they have engendered an extension and distortion of rights theory, utilitarianism and other ethical doctrines beyond their rational limits to express this conscience. Kantian ethical theory based on the categorical imperative to act only on universalizable principles can be seen as providing bad reasons for this heroic moralism, and his whole philosophy with its division between the noumenal and phenomenal realms can be seen as a struggle to reconcile this moralism with mechanistic materialism. Heroic moralism has been responsible for the egalitarianism and concern for the individual characteristic of Western civilization, culminating in the development of democratic socialism in the Scandinavian nations, particularly in Sweden. Much of the driving force (as opposed to the sentimentalism) of environmentalism is a modern expression of this heroic moralism. Its existence alongside mechanistic materialism represents a major fissure or contradiction in the culture of Western Europe.

The question of what status scientific views have if mechanistic materialism is so intimately a part of the ideological foundation of capitalism is a more complex problem. It will be considered more fully in Chapter XII where a particular epistemological theory. However the essential point can be made briefly: that if understanding is taken to be the goal of disciplined enquiry it is not a question of one theory about the world being true or false, but of the depth of understanding and what is revealed and what concealed by the different theories. This allows for the possibility of different paths taken in science being successful in different ways. To demonstrate that a particular path has been taken because of the nature of the society within which natural philosophers or scientists were living and because of their ideological motivations does not invalidate the achievements made by following such a path. On the other hand, focusing on the effects of the context and motives underlying such decisions should be beneficial to science by revealing to what extent past decisions to support or develop theories have been based on their coherence with particular ethical commitments rather than problems within science itself, by revealing distortions in the interpretations of the achievements of science, by revealing alternative paths which could be explored and by making clearer the limitations of the paths which have been taken. At the same time, allowing that the development of science is an aspect of the development of the ideology on which society is founded without science being entirely determined by society implies that the direction of society's development is itself affected by the immanent dynamics of science. The dynamics of society, ideology and science are conditional causes of each other while being irreducible to each other.[17]

The Background to the Seventeenth Century Cultural Crisis

The development of mechanistic materialism came at the end of a long ideological struggle associated with the loss of legitimacy of the Roman Church, the development of commercial capitalism, the rapid development of military technology, the rise in power of the territorial kingdoms, particularly of France and Britain, and the dispossession and impoverishment of large sections of the population. Despite the defeat of the Crusades in the Holy Lands, the power of the Roman Church increased, peaking towards the end of the thirteenth century when Conradin, the last of the Hohenstaufen, grandson of Frederick II, the Emperor of the

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17. For an analysis of the problems associated with viewing science in its social context see Michael Mulkay, *Science and the Sociology of Knowledge*, London: George Allen & Unwin, 1979.

Holy Roman Empire, was executed at Naples in 1268. By this stage popes had come to regard themselves, in accordance with the hierarchical medieval world-orientation, as more than men, though still less than God, and the Church had come to regard the laity as nothing but serfs, instruments whose function was to yield willing obedience.[18] However in achieving their temporal power, conducting their power struggles against Christians as crusades against apostates, levying taxes and selling indulgences to finance these, and attempting to gain total control over intellectual life, they aroused increasingly strong opposition from all levels of European society. This manifested itself in the defeat of Boniface VIII in his struggle with Philip the Fair of France at the beginning of the fourteenth century. Following this the papacy was shifted to Avignon where it remained until 1376. In 1378, the Great Schism began with the election of two popes, one at Rome and one at Avignon, producing a period of utter chaos in the Church. In 1409 there were three popes. These events took place against the background of the greatest crisis of the Middle Ages, the Black Death which between 1347 and 1349 killed a third of Europe's population. Then in the fifteenth century Europe suffered an economic decline.

These developments were associated with the emergence of mercantile capitalism, first in the major city states of northern Italy, then in northern Europe. The increase in wealth of the merchant class unmatched by political power had led to sharp class divisions and eventually the transformation of these societies. From the fifteenth century onwards northern Europe was characterized by a progressive political centralization leading to the emergence of powerful absolutist monarchs. This was associated with the rise of Protestantism in a form which legitimated the rule of those opposed to Rome and gave much greater scope for economic activity. These developments gave rise to increasingly bitter conflicts which were intensified by the rapidly evolving technology of warfare, culminating in the Thirty Years War of 1618-1648.[19]

Underlying these religious, political and military struggles, social life was characterized by an intensification of the struggle for survival within a disintegrating social order. There were severe food shortages and price inflation, dispossession of land from the poor and the pauperization of a large proportion of the population, numerous peasant revolts or wars, violent millenarian movements, and a rapid growth in the population of cities. Cities were characterized by widespread poverty, malnutrition, frequent plagues and fires, with scarcely any social organization to deal with such problems. The general population were helpless before such catastrophes.[20] By the end of the fifteenth century kinship and bondage had already been largely replaced by commercial contract as the basis for relationships between most people, with the majority of the population being free peasant proprietors. However in Britain especially, the smaller proprietors were gradually forced off their land during the enclosure movement as arable land was converted to sheep pasture. The dispossessed became a roving population of paupers who were seen as such a threat to society that Henry VIII (1491-1547) executed 2% of the total population of England, 'without producing any improvement in the morals of the

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18. Friedrich Heer, *The Medieval World*, tr. Janet Sondheimer, Cardinal, London, 1974, p.329ff.

19. On the arms races within Europe and their effects at this time, see William H. McNeill, *The Pursuit of Power*, Chicago: University of Chicago Press, 1982, Ch.'s 2 & 3.

20. For a description of life in Great Britain at this time, see Keith Thomas, *Religion and the Decline of Magic*, [1971] Harmondsworth: Penguin, 1980, Ch.1.

nation.'[21] While tradesmen were initially buffered from commerce by their guilds, this respite was short-lived. During the sixteenth century there was a rapid acceleration in the process of capital accumulation, accompanied by a sharp decline in real wages to less then 50% of their level at the beginning of the century.[22] As John Maynard Keynes wrote of this period: 'Never in the annals of the modern world has there existed so prolonged and so rich an opportunity for the businessman, the speculator and the profiteer.'[23] The upswing in economic activity was paid for by increased toil, hardship, impoverishment and dejection of the majority of the population. The power of the guilds in Britain to control wages, the labour force and the quality of goods had been totally destroyed by the end of the seventeenth century, and individuals were left in isolation struggling for a livelihood against the forces of the market. Some 20% of the total population of Britain were unemployed, that is, some 45% of the active population. Individuals had to dominate or be dominated, use other people or be used. In this social environment all principles governing the struggle for power, disintegrated.

All these religious, political, economic, military and social changes generated vigorous intellectual efforts to defend different social movements and new forms of organization, and these radically changed the intellectual environment of Europe.[24] It was in northern Italy that the most original break with medieval political thought occurred. Before 1250, with the reign of Augustine's thought denying the significance of temporal life, politics was not considered as a distinct branch of moral philosophy. But the Italian city republics which had established themselves in the twelfth century contravened the hierarchical form of organization of feudalism, and found themselves struggling to defend their integrity both against the feudal powers (the Holy Roman Empire and the Church) and against the rise of despotism from within. Augustinian thought provided no basis to legitimate this. The most important early defence, and the point of departure for all subsequent defences of these republics was made in response to the efforts by the Papacy to gain control of the city republics by exploiting the class divisions to support the rise to power of tyrants. In defence of liberty Marsiglio of Padua (c.1275-1342) argued in *The Defender of Peace*, that the Church can only be a congregation, a voluntary gathering of the faithful and therefore cannot claim any jurisdictional power, and that in fact the members of the Church must be subject to the highest secular legislator of each independent kingdom or city republic. Following Aristotle, Marsiglio argued that the goal of such legislation must be at all times the common benefit of the citizens.

The Italian defence of liberty culminated in the Florentine Renaissance of the early fifteenth century. It drew on various aspects of Scholasticism, Neoplatonism and particularly Stoicism. At this time liberty or '*libertas*' took on an almost technical meaning in diplomacy as 'independence and self-government'. However after the French invasions of Italy from 1494 onwards, despots were able to consolidate themselves. The most original political thought developed at this stage was that of Machiavelli (1469-1527) who set out to 'draw up an original set of rules' for the

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21. P. Ravenstone *A Few Doubts*, p.464, cited by Arghiri Emmanuel, *Profit and Crisis*, [1974], London: Heinemann, 1984, p.19.

22. Andre Gunder Frank;, *World Accumulation 1492-1789*, N.Y. and London: Monthly Review Press, 1978, p.53.

23. Cited ibid. p.7 from John Maynard Keynes, *A Treatise on Money*, 2 vols, London: Macmillan, 1930; New York: St. Martin's, 1972.

24. See Quentin Skinner;, *The Foundations of Modern Political Thought*, 2 vols, Cambridge: Cambridge University Press, 1978, for the best and most comprehensive study of these ideas.

Prince or despot on the basis of 'things as they are in real truth, rather than as they are imagined.'[25] In his concern that city republics preserve their liberty, Machiavelli focussed his attention on how political leaders could gain, then maintain power in a society in which the medieval forms of relationships between people based on hierarchy and honour had effectively dissolved, and political life was dominated by military force. He rejected Cicero's contention that the crowning splendour of virtue is justice since he argued this would not guarantee liberty. He exalted courage, orderly behaviour, temperance, and most especially prudence, but also recommended cruelty, perfidy and deception to achieve and maintain power. In this way he originated the doctrine that reasons of State transcend ethics.

Most of the political thought of northern Europe either developed or challenged themes developed by the Italians. However nearly always this was influenced in one way or another by the attacks of the nominalists on Platonic realism. This attack began with William of Ockham (c. 1285-1347) who, on the basis of a reinterpretation of Aristotle's logic, rejected the reality of universal forms and argued that only individuals have reality. In rejecting universal forms, Ockham and his followers severely limited the role of reason in ethical debates and the possibility of knowing God by reason, and supported Marsiglio of Padua's notion that the Church is nothing but a congregation of faithful individuals. This was then used to justify a sharp distinction between ecclesiastical and secular authority and to defend political authority as an independent, autonomous corporation with the fullest authority to regulate its own affairs. Ockham's ideas were most important for their later influence. The first major movement away from the hierarchical conception of power was made at the time of the Great Schism by the conciliarists who defended the authority of the General Council over the Church, leading to the defence of the Ockhamite doctrine by Gerson (1363-1429). While the conciliarists were defeated, Gerson's ideas were revived and further developed at the beginning of the sixteenth century by John Mair and Jacques Almain at the Sorbonne in their defence of the notion that the authority of a ruler derives from the people.

The northern Renaissance was inspired by the spread of Italian ideas into northern Europe. Northern humanists developed the ideas on law, further extended the study of Greek and Latin writers, particularly the Stoics, and vigorously opposed the doctrines of Machiavelli. However this movement was soon eclipsed by the rise of Protestantism, in particular by the rise of Luther (1483-1546) and Calvin (1509-1564). The Lutherans adopted the Ockhamite doctrine that the Church is simply a congregation of the faithful and can therefore lay no claim to temporal power, and in doing so played an important role in legitimating the emergence of unified and absolute monarchies independent of Rome. However in the face of persecution by Catholic rulers later Protestants questioned the absolute power of rulers, developing a justification for resistance by force against injustice and for religious freedom.

These ideas and the political movements associated with them led to a counter-attack by the Jesuits based mainly in Spain, beginning with Francisco de Vitoria (c.1485-1546) and culminating in the work of Suarez (1548-1617), on the basis of a revival of Thomism.[26] However in the process of developing their ideas these thinkers were compelled to defend the notion that political society was a human invention, and were led to the attempt to deduce society as a 'social contract' arrived at from an imagined 'state of nature', although these canonical phrases were rarely used.

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25. Niccolo Machiavelli;, *The Prince*, tr. George Bull, Harmondsworth: Penguin, Ch.XV, p.90.

26. This is described in Skinner, *The Foundations of Modern Political Thought*, Vol. 2, p.154ff.

During the sixteenth century the conflict between Protestants and Catholics increased and more radical efforts were made to justify the right of individuals to resist their rulers, while at the same time more radical efforts were made to justify the absolute rule of kings. These developments occurred particularly in France where the Calvinist Huegenots were being massacred with the support of the Catholic government. While such defence was mounted from a variety of intellectual positions, the most original Protestant defence of violent resistance was made by John Mair's student, George Buchanan (1506-82). To argue his position, Buchanan adopted the Stoic idea that humans had originally wandered in the fields like animals, and that therefore political society had to be seen as the outcome of a series of decisions. On this basis he argued that since the whole body of a people agree together to set up a lawful government, the entire populace, and not merely the elected representatives, have a right to resist the government. When a Huguenot seemed likely to inherit the French throne, similar ideas were defended by the Jesuit theologian Juan de Mariana in his *History of Spain* published in 1592. Thus the defence of individual liberty from tyrannical rulers emerged as a by-product of the struggle between implacably opposed religious groups. Cromwell justified his execution of Charles I in terms of the principles of Buchanan and Mariana.

By the late sixteenth century it had become evident that the protagonists of rival religious creeds were willing to fight each other to the death. Addressing this problem Jean Bodin (1530-1596) argued both against the right of people to resist the ruler and for the divorce of the powers of the State from the duty to uphold any religious faith. He argued that the sovereign has power to legislate for everyone without their consent, that sovereignty is perpetual and unconditional, and the sovereign himself is not subject to the laws he promulgates. He is bound by divine laws, natural law, the law of nations and the provisions of the natural constitution, but not by any ecclesiastical law. But at the same time, Bodin insisted that 'wars made for matters of religion' are not in fact 'grounded upon matters directly touching his estate'.[27] Thus in Bodin the modern notion of the State as 'a form of public power separate from both the ruler and the ruled, and constituting the supreme political authority within a certain defined territory',[28] the ultimate reification of social relations, was formulated for the first time. Henceforth, the problems of political philosophy centred on the nature of the State and its power, and the rights and duties of individuals *vis-a-vis* the State. Western civilization had succeeded in constructing a realm of reified political relations to mediate its social relationships. This had a major effect on how social relations were conceived. While Roman legal theorists had defined *ius naturae* as "that which nature has taught all animals, Hugo Grotius (1583-1645) redefined natural law in a totally homocentric way, expelling nonhumans from membership in the realm of cosmic justice.

While such developments in religious and political philosophy eventually paved the way for modern political thought, their original promulgation had the effect of helping to discredit old forms of thinking without providing any solid foundation for adjudicating between opposing positions. The Thirty Years War was a manifestation of the failure to solve this ethical chaos.

Mechanistic Materialism as a New World-Orientation

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27. Jean Bodin *The Six Books of a Commonwealth* tr. Richard Knowles, Cambridge Mass., 1962, p. A14.

28. This is cogently argued by Skinner, *The Foundations of Modern Political Thought*, Vol.2, p.353.

Mechanistic materialism can be seen as expressing the orientation to the world engendered by such circumstances, and as the product of efforts to come to terms with them. First, it was a development of those modes of thought associated with the struggle to dominate nature. It emerged as feudal society was dissolving and mercantile capitalism was becoming increasingly important. As Edgar Zilsel has pointed out, this period, characterized by the rise in power of the merchant class bent on making and selling things, radically increased the status of artisans among the educated classes and further intensified the struggle to develop technology.[29] The pre-occupation with dynamics reflected this as was shown by Leonardo Olschki in the case of Galileo and B. Hessen in the case of Newton.[30] Specific instances of ideas central to mechanistic science having been inspired by the struggle to develop technology have been noted by a number of historians. Edward W. Strong has revealed the importance of practical operational methods intimately connected with technology for the development of mathematics.[31] J. Delevsky has shown how the efforts to provide a mathematical basis for Mercator's projection developed for navigational purposes helped inspire mathematical ideas which were largely responsible for the development of the calculus. More recently David Bloor has pointed out that the acceptance of 'one' as a number, and thereby the development of the conception of negative numbers and functions, followed from the replacement of the counting of things, by measurement in engineering, as the prime practical application of mathematics.[32] However what is perhaps most important about this period is that astronomy, which had been the preserve of the elite of society, and mechanics which had for the most part been the preserve of the lower orders, were brought together, and the theoretical and practical approaches to understanding the world were thereby integrated into a unified approach to the world.[33]

Mechanistic materialism was also an expression of the growing detachment from, abstract attitude towards, and general alienation from the world, especially by the commercial class.[34] While René Descartes' philosophy in which the world was portrayed as a geometrical, extended order, and minds as isolated self-subsistent substances clearly expressed this attitude, that this was not merely an incidental aspect of Descartes' ideas is evident from its accord with other cultural developments. Art exemplified this. Throughout the Middle Ages, artists had become steadily more concerned to accurately represent the diversity of the physical world, a trend which culminated in the geometrical orientation of the vanishing-point perspective developed by Brunelleschi in Florence in the fifteenth century. Brunelleschi, an architect, was attempting to accurately portray an octagonal

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29. Edgar Zilsel, 'The Origins of Gilbert's Scientific Method' in Philip P. Wiener and Aaron Noland eds, *Roots of Scientific Thought: A Cultural Perspective* (from the *Journal of the History of Ideas*), N.Y.: Basic Books, 1957, pp.219-250.

30. Leornardo Olschki, *Galileo und seine Zeit*, Halle, 1927; and B. Hessen, 'The Social and Economic Roots of Newton's *Principia*', in *Science at the Crossroads*, London, 1931. These and other such studies have been discussed by Lynn White Jr. in *Medieval Religion and Technology*, Berkeley: University of California Press, 1978, p.24n.

31. Edward W. Strong, *Procedures and Metaphysics: A Study in the Philosophy of Mathematical-physical Science in the Sixteenth and Seventeenth Centuries*, Berkeley, 1936.

32. David Bloor, *Knowledge and Social Imagery*, London: Routledge & Kegan Paul, 1976, Ch.6.

33. Edgar Zilsel;, 'Copernicus and Mechanics' in *Roots of Scientific Thought*, pp.276-280. See also Norman Diamond, 'The Copernican Revolution', Les Levidov ed. *Science as Politics*, London: Free Association Books, 1986, pp.7-37 who emphasises more the relationship between new concepts and changing social relations.

34. The nature and development of this abstract attitude is best described by F. Borkenau;, in *Der Übergang vom feudalen zum Burgerlische Weltbild, Studien zur Geschichte der Philophie der Manufakturperiode*, Paris: Librairie F. Alcan, 1934. For a defence of Borkenau's work against criticisms, especially those of H. Grossmann, see Valeria E. Russo, 'Les Transformations De L'Image Du Monde: Notes Sur F. Borkenau' in *L'Esprit du Mécanisme: Science et Société Chez Franz Borkenau*, Cahiers S.T.S., Paris: *Centre National de la Recherche Scientifique*, 1985, pp.133-154.

building on a flat surface, but his discovery of how to do this was adopted by virtually all artists until the late nineteenth century.[35] This involved the unification of pictures by the total subordination of the composition to a rigid geometrical scheme which privileged one point, contrasting radically with the composition of Chinese paintings in which different scenes had some autonomy while contributing to the pattern of the whole. In the sixteenth century Pieter Breugel (1525-69) made secular themes the subject of his paintings rather than religious or mythical themes. But in these pictures the activities of people were interwoven with their physical settings which were largely the work of imagination rather than representations of the world in which Breugel lived. Then in the seventeenth century in Holland, at the same time that Descartes was living in Amsterdam writing his works, artists such as Johannes Vermeer who were selling their paintings to the rising bourgeoisie, brought this to fulfilment in a new objective and generalized approach consisting of representations of landscapes completely independent of human activity.

However, the most significant thing expressed by mechanistic materialism was the loss of any meaning in the world. This is comprehensible against the background of the social changes taking place at the time. It was first recognized in northern Italy (where it occurred first) that the old order had broken down and that neither society nor the cosmos could any longer be seen as reflecting the natural ethical order on which feudal society had been based. This is the real significance of Machiavelli (1469-1527) who noted that: 'contemporary experience shows that princes who have achieved great things have been those who have given their word lightly, who have known how to trick men with their cunning, and who, in the end, have overcome those abiding by honest principles'[36] and observed:

> One can make this generalization about men: they are ungrateful, fickle, liars, and deceivers, they shun danger and are greedy for profit; while you treat them well, they are yours. They would shed their blood for you, risk their property, their lives, their children, so long ... as danger is remote; but when you are in danger they turn against you... The bond of love is one which men, wretched creatures that they are, break when it is to their advantage to do so; but fear is strengthened by a dread of punishment which is always effective.[37]

The rise of the Protestants in Northern Europe was also a manifestation of this recognition, For Luther (1483-1546) people are inherently sinful, and it is inevitable that their inclinations, their will and their reason will be opposed to God's commandments. They have no control over their fate, Everything is predestined, and if people obey the commandments of God, they do so by His grace alone. For Luther, all we can do is 'hope for grace that we may be justified and forgiven for our inability to obey the fiats of a cosmic despot.'[38] Consequently Luther rejected the value of the sensible world even more completely than St Augustine, recognizing inner experience as the only true value, and rejected the medieval effort to establish an objective structure linking God and man, eternity and time, the other world and this world, spirit and flesh.[39]

The disorientation associated with the disintegration of the old order and all its values was expressed in literature. Shakespeare (1564-1616) and Racine (1639-

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35. The developments in medieval architecture and art which culminated in Brunelleschi's achievement is brilliantly described by Walter Horn in 'Survival, Revival, Transformation' in Robert L. Benson and Giles Constable eds. *Renaissance and Renewal in the Twelfth Century*, Cambridge: Harvard University Press, 1982, pp.711-758.

36. Niccolo Machiavelli, *The Prince*, tr. George Bull, Harmondsworth: Penguin, 1961, Ch. XVIII, p.99.

37. Ibid., Ch.XVII. p.96f.

38. Alasdair MacIntyre, *A Short History of Ethics*, London: Routledge & Kegan Paul, 1967, p.123.

39. Charles Trinkaus, 'The Religious Foundations of Luther's Social Views' in *Essays in Medieval Life and Thought*, ed. John H. Mundy et.al., N.Y.: Biblo and Tanden, 1965, p.73.

1699) in particular gave expression to what this meant in their tragedies. For instance Shakespeare, who represented the perspective of the aristocracy, had Macbeth, portrayed as an upstart who had murdered his king to attain the throne and then maintained it by murdering all who threatened his position, totally isolating himself from others, expostulate on hearing of the death of his queen and former confidant:

> To-morrow, and to-morrow, and to-morrow,
> Creeps in this petty pace from day to day,
> To the last syllable of recorded time;
> And all our yesterdays have lighted fools
> The way to dusty death. Out, out, brief candle!
> Life's but a walking shadow, a poor player,
> That frets and struts his hour upon the stage,
> And then is heard no more; it is a tale
> Told by an idiot, full of sound and fury,
> Signifying nothing.[40]

The mechanistic view of the world can be seen as a reflection of this state of mind, and the rise of this conception of the world and the disintegration of the old society was drawn at the time by John Donne (1572-1631) in his *Anatomy of the World*:

> And freely man confesse that this world's spent,
> When in the Planets, and the Firmament
> They seek so many new; then see that this
> Is crumbled out again to his Atomies.
> 'Tis all in Peeces, all coherence gone;
> All just supply, and all Relation:
> Prince, Subject, Father, Sonne, are things forgot,
> For every man alone thinkes he hath got
> To be a Phoenix, and that then can bee
> None of that kinde, of which he is, but hee.
> This is the world's condition now.

Such a vision of the world was to some extent anticipated by the Gnostics.[41] Accepting the Platonic division of reality between the sensible world and the ideal world of eternal forms the Gnostics accentuated the lowly status of the sensible world in relation to the ideal world, representing the sensible world as the creation of an evil demon. But even for the Gnostics the world was not totally indifferent to humans, and behind the appearances, discoverable by knowledge, there was still the realm of ideal forms. In mechanistic materialism on the other hand all reality is denied to the non-quantifiable qualities of the sensible world and the real world behind these appearances is conceived of as meaningless, inert matter. The world is understood from a perspective outside the world, from that of the infinite universe. The subject is conceived of as essentially unrelated to his or her world, and therefore

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40. Shakespeare, *Macbeth*, V. v. 16.

41. Hans Jonas has pointed out the similarities between Gnosticism and mechanistic materialism in this respect in 'Gnosticism, Existentialism and Nihilism' in *The Phenomenon of Life*, [1966] Chicago: Uni. of Chicago Press, 1982, Ninth Essay, pp.211-234.

in abstraction from time and place. As Pascal (1623-62) expressed the view of the world from the perspective of mechanistic materialism:

> I see the terrifying immensity of the universe which surrounds me, and find myself limited to one corner of this vast expanse, without knowing why I am set down here rather than elsewhere, nor why the brief period appointed for my life is assigned to me at this moment rather than another in all the eternity that has gone before and will come after me. On all sides I behold nothing but infinity, in which I am a mere atom, a mere passing shadow that returns no more. All I know is that I must soon die, but what I understand least of all is this very death which cannot escape me.[42]

Mechanistic Materialism as Ideology

However quite apart from the creative originality required to formulate the mechanistic conception of the world, it is an oversimplification to see new ways of conceiving things as nothing but expressions of a way of experiencing the world. While the conditions of life made a mechanical view of the world plausible, its development must be seen as an explicit affirmation of the meaningless of life, and this affirmation only makes sense in relation to an ideological struggle between different groups of people. In particular, the development of mechanistic materialism only makes sense as a struggle against the Hermetic philosophers, the 'nature enthusiasts' who interpreted the same conditions as a sign that a new age was about to dawn.

Hermetic philosophy was a revival of a radical version of Neoplatonism in which, in opposition to the more conventional Neoplatonic Christianity, it was held that God is immanent in the world, that nature is active and divine and that the end of history, the millenium which was evidently at hand, would not involve a transcendence of the world, but the establishment of a new order on earth based on brotherly love and a reunification of humanity with nature. They believed that the religious and political reform of the world could be effected by uniting dissidents in a new religion of nature, with the sun as a visible, unifying symbol of the deity; and they proposed to unite humanity with God through an understanding of nature's hidden forces, forces which could be manipulated magically for human benefit. By bringing God down to earth they collapsed the hierarchical structure of the cosmos and the ideological foundations for the hierarchical structure of society, and by presenting the world as active, self-moving and self-organizing, they provided the justification for people to be self-organizing and to create a new egalitarian social order in harmony with the world. Thus Giordano Bruno (1548-1600) aspired to 'bring men once again into communication with divine, living nature.'[43] and Campanella (1568-1639), who typified the Hermetics, revived the call for an egalitarian distribution of wealth based on an original harmony between people and nature. These ideas underlay the development of alchemy and the Rosicrucian Enlightenment.[44]

These Hermetics were then vigorously attacked. Campanella spent twenty-seven years in prison and Bruno was burnt by the Inquisition in 1600. The Rosicrucians were crushed as a major force in Europe when the Austro-Spanish armies invaded

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42. Blaise Pascal, *Pensées*, Louis Lafuma ed., tr. John Warrington, London: Dent, 1973, p.6, fr.11.

43. Easlea, *Witch-Hunting, Magic and the New Philosophy*, p.104.

44. See Frances A. Yates;, *The Rosicrucian Enlightenment*, London: Routledge & Kegan Paul, 1972.

Bohemia in 1620, the first act of the Thirty Years War, but their notion that a new order was about to be established had a profound influence on the whole of Europe. Ideas deriving from this movement were taken up by the radical elements in the English civil war. The True Levellers, the Seekers, Ranters and Diggers who embraced these doctrines became a significant force after the civil war, refusing to pay church tithes, demanding a redistribution of land and property, instituting lay preaching and acting according to their own definitions of marriage and morality.[45] In doing so they provoked a violent reaction on the part of the establishment. But more importantly these social movements and their millenarian ideas both inspired and impelled the ruling elites of Europe into efforts to provide an opposing philosophy.[46]

This opposing philosophy was the mechanical philosophy. The originators of this philosophy were inspired by the Rosicrucians to believe that the present was a new age and that a new science of nature would bring greater power to humanity, but because of their opposition to their religious and social ideals, or for reasons of personal interest in an environment in which such ideals were anathema, they were concerned to oppose Hermetic ideas and to distance themselves from this intellectual movement. What was defended was the effort to re-establish humanity's rightful dominion over the lower orders of creation in accordance with orthodox interpretations of the Bible, rather than harmonizing with it.[47] Thus, Francis Bacon (1561-1626), who was a pivotal figure in legitimating the new philosophy, wrote: 'For man by the fall fell at the same time from his state of innocency and from his dominion over creation. Both of these losses however can even in this life be in some part repaired; the former by religion and faith, the latter by arts and sciences.'[48] Unlike the Hermetic philosophy, in this philosophy there was no program for the ethical and political advancement of humanity. Bacon's *New Atlantis*, unlike Thomas More's *Utopia*, was elitist rather than egalitarian, and the moral order was not considered to be an issue. Furthermore, the proponents of the mechanical philosophy were concerned to affirm the meaninglessness of temporal life and to reject the ascription of intrinsic value to nature in order to undermine the revolutionary implications of Hermeticism and to legitimate the emerging capitalist political and economic order.

The transformation of the Hermetic ideal of power through harmonizing with nature to the ideal of power through subjugating nature was effected by the mechanical philosophers by analogizing their aggressive orientation towards other people, and particularly, towards women.[49] Bacon more than anyone illustrated this. Taking the social philosophy of those who had described existing social reality as a model for the study of nature, he wrote: '...we are much beholden to Machiavel, and writers of that kind, who openly and unmasked declare what men do in fact, and not as they ought to do...'[50] For such people, females had come to symbolize the disorder

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45. For a study of these movements see Christopher Hill, *The World Turned Upside Down: Radical Ideas During the English Revolution*, Harmondsworth: Penguin, l975.

46. See Yates, *The Rosicrucian Enlightenment*, Ch's 8 & 9 for an analysis of this relationship. For a detailed analysis of Francis Bacon's relationship to his Hermetic predecessors, see Paolo Rossi, *Francis Bacon: From Magic to Science*, tr. Sacha Rabinovitch, Chicago: Uni. of Chicago Press, 1968, esp. Ch.1.

47. On this, see William Leiss, *The Domination of Nature*, Boston: Beacon Press, 1974, esp. Ch.3.

48. Francis Bacon, *The New Organon*, in *The Works of Francis Bacon*, James Spedding, Robert Leslie Ellis, Douglas Devon Heath, eds. 14 vols, London: Longmans Green, 1870, Vol.IV, pp.247-248.

49. Both Merchant in *The Death of Nature* and Easlea in *Witch-Hunting, Magic and the New Philosophy* have examined this.

50. Francis Bacon, 'Advancement of Learning' [1605] in *The Physical and Metaphysical Works of Lord Bacon*, tr. Joseph Devey, London: Henry G. Bohn, 1853, Bk III, Ch.ii, p.281.

of the sensible world of nature in opposition to the ideal, rational, masculine world. The aggressiveness towards women which gathered pace in this era culminated in the witch-hunts of the sixteenth and seventeenth centuries during which 100,000 people were tried for witchcraft, eighty-three per cent of them women.[51] In 1585, two villages in Germany were left with only one female inhabitant.[52] Such women were generally held to have had sexual intercourse with the devil to satisfy their uncontrollable lust. Bacon, who had been involved in the persecution of women as a judge in the witch trials, generalized the method he had used to interrogate witches to investigate nature.[53] He called for an unbridled inquisition of nature, for nature to be put to the wrack and tortured to reveal her secrets as witches had been tortured to confess. He argued: 'For like as a man's disposition is never well known or proved till he be crossed, nor Proteus ever changed shapes till he was straitened and held fast, so nature exhibits herself more clearly under the trials and vexations of art than when left to herself.'[54] He described nature in terms which, as Brian Easlea wrote, amounts to a call for its gang rape:

> Nor is mine a trumpet which summons and excites men to cut each other to pieces ... but rather to make peace between themselves, and turning with united forces against the Nature of Things, to storm and occupy her castles and strongholds, and extend the bounds of human empire, as far as God Almighty permit.[55]

Because of this aggressive orientation, Bacon dismissed concern with the purposes of things as a suitable object of investigation, and focused on that aspect of nature which could be reshaped, namely matter. Forms were dismissed as fictions of the human mind - unless identified with the laws of action. Continuing his use of females as an analogy, he wrote that, 'teleology is a barren thing, or as a virgin consecrated to God'[56] and repeatedly referred to matter as a 'common harlot'.[57] He then suggested that Democritus, who had conceived of nature as nothing but atoms and the void, that is, as matter without purpose, had a superior understanding of causation than did Plato and Aristotle.[58]

The motivation for this evaluation of the different ancient philosophers is clear. If one's sole interest in nature is to subjugate it, then the only relevant form of causation is the mechanical causation considered by the atomists, and the relevant form of understanding nature is that which sees things as decomposable into bits of matter which can then be rearranged. However while Bacon flirted with Democritean ideas, he still took formal and final causes to have a place in the world. Descartes (1596-1650), who was the first to fully elaborate a mechanical view of the world (although he opposed atomism), eliminated potentiality entirely from the material world by defining matter as extension. With this conception of matter all

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51. Merchant, *The Death of Nature*, p.138.

52. Loc.cit.

53. The language of aggressive sexual domination used by Bacon has been most thoroughly analysed by Merchant, *The Death of Nature*, Ch.7.

54. Cited ibid. p.169, from Francis Bacon, '*De Dignatate*,' *Works*, Vol.4, p.298.

55. Francis Bacon, 'The Advancement of Learning', [1605] in *The Physical and Metaphysical Works of Lord Bacon*, tr. Joseph Devey, London: Henry Bohn, 1853, Book IV, Ch.i, p.150.

56. Ibid. Bk III, Ch.v, p.144.

57. As pointed out by Merchant; in *The Death of Nature*, p.l7l.

58. Bacon, *The Advancement of Learning*, ed. William Aldis Wright, Oxford: Clarendon, Bk.II, Ch.vii, Sect. 7, p.119f.

motion, apart from thinking which was conceived to be radically disjoined from the material world, had to be conceived of as locomotion: change in position, which is the form of motion relevant for efforts to control the world. Motion which is not change of position, that is, generation and growth which can be fostered or destroyed, but which having their own dynamics cannot be completely moulded to human purposes, was defined out of existence. Descartes concluded that in place of the speculative philosophy of the Schoolmen, his physics provided a practical philosophy which could 'make ourselves, as it were, the lords and masters of nature.'[59]

However, more important than the facilitation of the growing exploitative attitude towards nature, the mechanistic conception of the world was designed to undermine the nature enthusiasm of the Hermetics on which their radical religious, social and political doctrines were based, and to legitimate the form of life of the emerging capitalist order. Since capitalism completed the reduction of nature and people to instruments, all meaning had to be seen to come from a transcendental source. By projecting the meaninglessness of life and the absence of freedom onto the physical world, the mechanistic world-orientation presented the meaninglessness of life and powerlessness of the vast majority of the population as the only possible state of affairs, justifying the social order which rendered people's lives meaningless. Since in terms of this world-orientation any significance which could be attributed to the world and to life could only come from a transcendent deity, it justified passivity in the face of the vicissitudes of life and legitimated the established church which mediated between individuals and this deity.

This was clearly evident in the work of the French monk, Marin Mersenne, who published his first onslaught on the Hermetic tradition in 1623, the year of the outbreak of the Rosicrucian scare in France.[60] Mersenne was a friend of Descartes, and his massive attack on the Hermetics cleared the way for the rise of Cartesian philosophy. The project of reconceiving the nature of the world to undermine the appeal of the nature enthusiasts and to legitimate a new form of life was then taken up in England, particularly by Boyle and Newton. These thinkers feared and detested the kind of social order that would be established if men came to believe that they, and not God and his appointed representatives, could master the course of history. Boyle in particular, who had lost most of his estates in the English civil war, hated the revolutionaries and detested the philosophy which legitimated their aspirations. Consequently they formulated a version of mechanical materialism which emphasised at every turn the providential role of the deity as the source of order and harmony, imposed through laws at work in nature, and capable of being imitated in society. This served as the ideology of the latitudinarians: the low Church of England Whigs who subsequently came to dominate political and social life in Britain.[61]

Robert Boyle (1627-91) began his attack on the Hermetics by criticising their view of nature. He wrote in his 'Free Enquiry into the Vulgarly Received Views of Nature':

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59. René Descartes, 'Discourse on the Method' [1637] in *The Philosophical Writings of Descartes*, tr. John Cottingham et.al., Volume I, Cambridge: Cambridge University Press, 1985, p.142f.

60. See Francis Yates, *The Rosicrucian Enlightenment*, London: Routledge & Kegan Paul, 1972, pp.111-13.

61. See Margaret C. Jacob, *The Radical Enlightenment*, London: George Allen & Unwin, Ch.2, esp. p.66; and S. Shapin, 'The Social Uses of Science', in G. Rousseau and R. Porter, eds., *The Ferment of Knowledge. Studies in the Historiography of Eighteenth-Century Science*, Cambridge: Cambridge University Press, l980, pp.93-l39.

> ...there is lately sprung up a sect of men, as well professing Christianity, as pretending to Philosophy, who ... do very much symbolize with the antient Heathens, and talk much of God, but mean such a one, as is not really distinct from the animated and intelligent universe.[62]

In opposition to this he declared that matter is brute and inanimate. Motion is an accidental property of matter which must be imposed from outside according to the laws of motion laid down by God and sustained by His will, as civil society must be controlled by law and sustained by the Anglican Church which interprets God's will to people. While denying the possibility of the general population taking political control of society, he defended the Protestant ethic: an ascetic life of unremitting hard work devoted to sober self-interest.

This conception of being was then used to attack the respect for nature, supported by the Hermetic philosophers, which was standing in the way of its subjugation. This respect was particularly manifest in the opposition to the development of mining, and there was considerable opposition to such projects as the draining of the Fens by those people whose livelihoods were being threatened. As Boyle put it (still characterizing nature as female):

> The veneration wherewith men are imbued for what they call nature, has been a discouraging impediment to the empire of man over the inferior creatures of God: for many have not only looked upon it, as an impossible thing to compass, but as something impious to attempt ... and whilst looking upon her as such a venerable thing, some make a scruple of conscience to endeavour to emulate any of her works as to excel them.[63]

Boyle's efforts were completed by Newton (1642-1727) and those of his followers who developed the implications of Newtonian physics for religion and society in the Boyle lectures.[64] While Newton conceived space as the sensorium of God and gravity as His activity in the world, thereby offering an alternative to the extreme mechanism of Descartes or Hobbes, he was, as E.A. Burtt wrote:

> ... squarely behind that view of the cosmos which saw in man a puny irrelevant spectator (so far as being wholly imprisoned in a dark room can be called such) of the vast mathematical system whose regular motions according to mechanical principles constituted the world of nature.... The world that people had thought themselves living in - a world rich with colour and sound, redolent with fragrance, filled with gladness, love and beauty, speaking everywhere of purposive harmony and creative ideals - was crowded now into minute corners in the brains of scattered organic beings. The really important world outside was a world hard, cold, colourless, silent and dead... [65]

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62. R. Boyle, *The Works of the Honourable Robert Boyle*, London: Millar, l744, Vol.4, p.376.

63. Boyle, 'A Free Inquiry Into the Vulgarly Received Notion of Nature' in *The Works of the Honourable Robert Boyle*, Vol.4, p.363.

64. See Margaret C. Jacob, *The Newtonians and the English Revolution 1689-1720*, Ithaca: Cornell University Press, 1976.

65. Edwin Arthur Burtt, *The Metaphysical Foundations of Modern Physical Science*, 2nd ed., London: Routledge & Kegan Paul, 1932, p.236f.

Newton was concerned to justify the vision of nature as a world of 'brute and stupid' matter because such a world would require God to order it, and this view of the world would enhance the ruling oligarchies and the established churches and justify a life of hard working asceticism. Only God, mediated by the Church of England which promised an afterlife to those who conformed to its dictates, could give any significance to life in such a barren world. Accordingly, Newton wrote to Bentley who in his Boyle lectures was using Newton's ideas to justify an ethics of self-denial and obedience: 'when I wrote my treatise upon our system, I had an eye upon such principles.'[66]

So, the view of the world as devoid of potentialities or powers, as consisting of nothing but inert matter moving blindly, endlessly, meaninglessly, a view which had become plausible as people's lives were rendered increasingly meaningless, was developed and promoted for ideological reasons. While political and social theory became the site of later ideological conflicts, it has been this underlying mechanistic conception of the nature of the world which has been the foundation for the legitimacy of the prevailing order. The struggle to maintain the conception of the world as devoid of meaning and creative potential has been a persistent feature of the modern world. It was to support the prevailing conservative ideology that the eighteenth century biologists Bonnet and Spallanzani argued for the preformationist theory of generation and rejected epigenesis (the creative emergence of order in the development of the organism) as argued for by Buffon and Needham, despite the support Spallanzani's own experiments and observations gave to the epigenetic theory. Diderot on the other hand embraced the notion of epigenesis as evidence of nature's creativity to support his more radical political views. Similarly, the politically radical Joseph Priestly promoted the conception of matter as essentially active and creative.

The Concepts of Mechanistic Materialism

While the general orientation to life engendered the breakdown of the feudal order and the ensuing ideological struggle between supporters and opponents of different political and social tendencies within Europe provided the primary impetus towards the transformation of the world-orientation dominating European society in the seventeenth century, the nature of society also influenced the way nature was conceived by providing a mathematical, abstracting type of thinking, a way of refining concepts, and many of the basic concepts which could be used in the construction of the mechanistic conception of the world.

It is hardly conceivable that mathematical physics would have been established outside a society dominated by monetary relationships. Monetary relationships had provided the forms of thinking in Greek society which were then developed independently of commerce by Pythagoras and his followers and then applied to understanding nature. But in the ninth century money played a small role in exchange.[67] Charlemagne had to force people to accept the coin he paid his soldiers as tender, and he had great difficulty finding people with enough knowledge of mathematics to control his financial affairs. The study of mathematics was encouraged, but those who studied Greek works on the subject had the greatest

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66. Quoted Jacob;, *The Newtonians and the English Revolution 1689-1720*, p.156.

67. The most thorough study of the relationship between the development of a monetary economy and the ultimate rise of mathematical physics was made by Alexander Murray, *Reason and Society in the Middle Ages*, Oxford: Clarendon, 1978, Part II.

difficulty understanding its most simple aspects. The reason for the establishment of many of the early medieval learning institutions was the demand for people knowledgeable in mathematics to deal with an increasingly monetarised economy. Mathematics also became increasingly important in warfare as commanders of armies found it necessary to calculate the relationships involved in troop formations. While mathematics developed beyond the requirements of accounting and military organization, it was the quantification of human relationships, culminating with the development of commercial capitalism, which led to a general familiarity with mathematical relationships and sustained what mathematical advances were made.

Closely associated with this quantitative mode of comprehension of relationships, the exchange economy, along with the development of a print culture, produced an abstracting form of thinking which denied objects their qualitative diversity.[68] As Marx pointed out: 'Every moment, in calculating, accounting etc., that we transform commodities into value symbols, we fix them as mere exchange values, making abstraction from the matter they are composed of and all their natural qualities.'[69] This leads things to be seen not in their context, but abstractly in relation to the transcendent order of the money economy. For instance a coat is something produced to be worn, and is a coat only insofar as it is used as such. But as a commodity, its being used is irrelevant. It is seen as a cypher with a certain exchange value expressible in monetary terms. This is precisely the form of thinking which was developed by the mathematical physicists, particularly Galileo, Descartes and Newton, who came to see matter as inert, devoid of non-quantifiable properties, in purely quantifiable relationships to other matter.[70]

This form of abstraction is central to the notion of conservation which has been a basic principle of the development of the mechanistic view of the world.[71] The principle of conservation had been formulated by the Ancient Greeks, notably by the atomists and by Anaxagoras who held that nothing comes into being and nothing passes away, and it was also defended by Lucretius. But the principle took on a new impetus with the redevelopment of a monetary economy in which accounting, both in relation to business and in personal affairs, was based on the principle that money must come from somewhere, and spending cannot be greater than income without going into debt. This assumption of quantitative conservation over time subsequently formed the principle of the conservation of mass, of momentum, of energy, of electric charge, of spin, and so on.

As noted in the last chapter, Western Europe was unique in its development of law. Universities began as schools for lawyers, and the scholastic technique of analysis and synthesis deriving from Plato was used to refine legal concepts, producing a highly coherent body of law which came to regulate almost all human relationships. This same concern for precision of concepts was then taken over by those investigating the physical world, so concepts used by natural philosophers in Western Europe came to be defined with far greater rigour than the concepts used by

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68. His research on this is summarized in Walter J. Ong;, *Orality and Literacy: The Technologizing of the Word*, London: Methuen, 1982.

69. Marx, *Grundrisse*, p.142.

70. This was noted by Alfred Sohn-Rethel;. See his *Intellectual and Manual Labour*, London: Macmillan, 1978; and 'Science as Alienated Consciousness' in Les Levidow ed. *Radical Science Essays*, London: Free Association Books, 1986, pp.104-139, esp. p.129.

71. The significance of this for science has been analysed by Emile Meyerson in *Identity and Reality* [l907], tr. Kate Loewenberg, New York: Dover, l962.

natural philosophers in China. Without this rigour, the revolution in thought of the seventeenth century would have been impossible.

The most basic concepts of the new world-orientation were those of space and time. While these were only developed explicitly in the theoretical efforts to overcome technical problems in the efforts to comprehend motion, they appear to have been developed in practice before this theoretical development. Aristotle had conceived of place as the interior bounding surface of a body. This notion had prevailed until the sixteenth century when Scaliger, Telesio and Bruno developed the notion of places independent of body, which Bruno referred to as '*spatium*'.[72] This new notion of space was then developed by the Cambridge Neoplatonists and assimilated into Newton's physics to become the infinite, uniform 'container' of all that exists, and in terms of which motion could be defined. While Aristotle's notion of place is the notion which would be developed in the process of accommodating action to the immediate world, and is intimately associated with the sense that everything has its proper place, the notion of space is the concept which emerges when this immediate engagement in the world is mediated by representations of this world. In late feudal society, as we have seen, representational thinking became increasingly important. To begin with, people were using more maps, these were portraying distances by means of a Ptolemaic grid, leading people to define places in the world in terms of an abstract order of representations. At the same time the development of vanishing-point perspective in painting conveyed a new way of seeing the world in which each thing was seen as having a position within a geometrically ordered perspective. Representations of the globe on a flat surface enabled the whole world to be appropriated in imagination according to mathematical principles, and thereby to be seen as containable and conquerable for purposes of human occupancy and action.[73] Finally, the intellectual world was undergoing a revolution with the new approach to knowledge of Peter Ramus inspired by the development of the printing press. This involved the representation of knowledge of the world in diagrams and tables which the printing presses could reproduce. The central focus became the ordering of knowledge by manipulating it visually in such diagrams and tables for remembering and teaching.[74] Bruno developed his new concept of space after having spent a great deal of time designing and manipulating complex diagrams to be used as mnemonic devices. This spatialized conception of the world was consolidated by conceiving it in terms of the easily visualized and representable Cartesian coordinates of analytic geometry, which have dominated scientific understanding of the world up to the present.

The notion of time developed along different lines, but eventually coalesced with the concept of space. Despite the Hebraic notion that the history of the world is a progression, people in the early Middle Ages were supremely indifferent to time, taking little effort to record the birth dates of its rulers, and there was little concern for uniformity in the division of the day.[75] As was seen in the last chapter, the later Middle Ages were characterized by tremendous efforts to measure time more accurately. The development of the mechanical clock eventually led people to

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72. See Ivor Leclerc;, *The Nature of Physical Existence*, George Allen & Unwin, London, 1972, p.157ff.

73. The emergence of this conception of the world and of space and time, pointing out the connection between social life and the concepts articulated within the new mechanical philosophy, is described by David Harvey, *The Condition of Postmodernity*, Oxford: Blackwell, 1989, Ch.15, 'The time and space of the Enlightenment project.'

74. See Walter J. Ong, *Ramus, Method and the Decay of Dialogue*, Cambridge, Mass.: Harvard University Press, [1958], 1983, p.151.

75. See Marc Bloch, *Feudal Society*, Vol.1, tr. L.A. Manyon and M.M. Postan, 2nd ed., Routledge & Kegan Paul, 1965, p.73f.

measure their activities and their lives in terms of the abstract order of clock time, developing in practice the concept of time as independent of change. Developments of clocks were combined with refinements in chronologies and with increasing use of calendars, producing for practical purposes a unified conception of time corresponding to the unified conception of space. As Pierre Bourdieu pointed out: '... just as a map replaces the discontinuous patchy space of practical paths by the homogeneous, continuous space of geometry, so a calendar substitutes a linear, homogeneous, continuous time for practical time, which is made up of incommensurable islands of duration each with its own rhythm...'[76] The new conception of time was appropriated by Galileo and developed theoretically by representing time spatially to describe acceleration. Prior to Galileo all efforts to understand motion had been in terms of distances traversed. The spatial concept of time was fully elaborated and synthesized into a total world-view by Newton, and was reduced to a mere dimension of space by Laplace. Space and time thenceforth became the ultimate, eternal reference framework for all cognition and knowledge.

Other concepts which came to make up the mechanistic materialist conception of nature were associated with concepts in terms of which people had come to understand themselves. To begin with, the individualistic detachment of people and the view of society as composed of separate individuals had been a basic feature of Western culture from the beginning of the feudal era. It was pointed out in the last chapter how one of the reasons why the Irish adopted Christianity was because it gave them a means of conceiving themselves as enduring individual entities. This in turn resonated with the conception of nature as enduring individual substantial forms, and both modes of thinking were supported by the development of terminist logic. The growing individualism in society associated with the rise of commercialism in which individuals came to be seen as legal subjects free to enter into contracts and responsible for all past transactions and bonds, reinforced the view of individuals as enduring substances essentially independent of their relations. So substantialist thinking was thoroughly entrenched in Europe. The development of the conception of nature as composed of immutable bits of inert matter, the ultimate in substantialist thinking, can thus be seen as a culmination of a form of thinking which had been resonating within Western culture for over a thousand years.

Another instance of social relations being used as an analogy to understand nature was the development of the conception of nature as law governed.[77] In China, the Legalists had developed a mechanical approach to understanding people, expressing laws in standardized, quantitative terms. But the Confucians had attacked the Legalist idea that society could be ordered by the imposition of strict laws, and the idea that nature was law governed never developed. Corresponding to the emphasis on spontaneous co-operation in society, nature was seen as dynamic. The nearest to a concept of law developed by the Chinese was the concept of *Li* developed by the Neo-Confucians of the Sung dynasty. But *Li* meant not law but the active principle of order or dynamic pattern of various things in nature.[78] In Europe on the other hand law as a means of organizing society was far more important.

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76. Pierre Bourdieu, *Outline of a Theory of Practice*, Cambridge: Cambridge University Press, 1977, p.105.

77. For an analysis of the relationship between the development of human law and the concept of the laws of nature, and a comparison of Europe and China see Joseph Needham; (with the research assistance of Wang Ling), *Science & Civilisation in China*, Volume 2, Cambridge at the University Press, l956, Ch.18, Sections 8-l8. See also E. Zilsel, 'The Genesis of the Concept of Physical Law', *Philosophical Review*, Vol.51, 1942, pp.245-79, and Francis Oakley, 'Christian Theology and the Newtonian Science: The Rise of the Concept of Laws of Nature', *Church History*, 1961, Vol.30, pp.433-57.

78. Needham, *Science and Civilisation in China*, Vol.2, p.565ff.

With the rise of the great monarchies after the death of Alexander the Great organized on the basis of law, the Stoics developed the idea of a divinity as Universal Law governing the world, including nature. The principle of organization of Hebraic society was also based on laws, and the idea of a divine law-giver is correspondingly the central idea of Judaism. With this background there was a corresponding tendency for the early Christians to suggest that there is a natural law independent of people governing everything. However the idea of laws of nature was not developed in the Middle Ages, though it was proposed by Roger Bacon, despite the fact that there had been a tremendous development and systematization of law and the notion of natural law was developed as part of Christian morality. But in later medieval society the growing emphasis on God as free to will as He chooses associated with nominalism paved the way for the notion that nature is ordered by laws promulgated by God. Then there was a burst of development in legal theory with the breakdown of feudal society and the rise of the absolutist states associated with early capitalism. The most important feature of this was the elimination of reference to social position within law. Law became a set of principles applicable to all people without exception.[79] It was at this time, first sporadically, then systematically in the work of Descartes, that the idea of the universe being governed by the laws of God was fully developed. And as Zilsel has argued, it was no mere chance that the idea of God as a legislator of the universe developed only forty years after Jean Bodin had advocated the development of civil government by statute law which was then most thoroughly implemented in France, the homeland of both Bodin and Descartes.[80]

The Analogy of the Machine

However what really integrated mechanistic materialism into a unified vision, subordinating the Neoplatonist, Aristotelian and atomist elements which had contributed to its formation, was the analogy of mechanisms, and in particular, of the clock itself. In 1370, soon after the invention of the clock, Nicole Oresme had used its ordered movements to characterize motion in the heavens.[81] The role of mechanical analogies in the representation of the virtue of temperance was pointed out in the last chapter. H. Grossmann has pointed out how from the fifteenth century philosophers developed their ideas about the world by direct and conscious analogy with machines: artillery, clocks, hoists, water-wheels, pumps, bellows and so on. However it was in the seventeenth century that the clock metaphor came into its own. Kepler wrote to a friend in 1605: 'I am now much engaged in investigating physical causes; my goal is to show that the celestial machine is not in the likeness of the divine being, but in the likeness of a clock...' and accordingly rejected his former view of nature as ensouled matter.[82] Then William Harvey (1578-1657) used the analogy in relation to physiology in describing the heart as 'a piece of machinery in which though one wheel gives motion to another, yet all the wheels seem to move simultaneously.'[83] Finally Descartes, Hobbes and Newton elaborated a total picture

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79. As noted by Borkenau, *Der Überbang*, Ch.II and elaborated by Russo, 'Les Transformations de L'Image Du Monde', p.148ff.

80. Zilsel, 'The Genesis of the Concept of Physical Law', p.245.

81. See Richard Olson ed., *Science as Metaphor*, Belmont, Calif.: Wadsworth, 1971, p.59.

82. Cited by Olson in Olson ed., *Science as Metaphor*, p.60.

83. Cited by Herbert Butterfield in *The Origins of Modern Science 1300-1800*, 2nd ed., London: Bell, 1957, p.50.

of the world on this basis. The analogy of the machine assimilated into a unified perspective all the separate ideas of the opponents of Aristotlelianism and Hermeticism. It implies that the world is composed of brute and stupid matter, that it is a configuration of parts having a specified location in space, that to understand it requires a specification of these parts in exact quantitative terms, and that these are governed by precise principles which can therefore be expressed as laws describing constancy and change in relation to an abstract space and an abstract, spatialized time. By the beginning of the eighteenth century nature had become for Western civilization, if not for all its members, an infinitely large mechanism composed of inert matter located within space and changing its position over time in accordance with immutable laws of motion. While the idea of what constitutes a machine has evolved from a clock in the seventeenth and eighteenth centuries to a steam engine running down in the nineteenth century to an information processing mechanism in the twentieth century, the machine has remained the dominant metaphor to understand nature up to the present.

However the analogy of the machine became more than just a means to comprehend the physical world. It became the thematic motif symbolizing the ultimate value, the 'meaning of life' for people in Western civilization, just as the ox symbolized the ultimate value for the Nuer, the python for the Fipa and the pangolin for the Lele. In this function it abounds in ambiguities. The machine symbolizes the means for achieving the subordination of nature, while at the same time the already existing total subordination of everything to the functioning of the whole. The mechanistic analogy reveals those aspects of the world which are relevant to its subjugation, but at the same time implies a deterministic world without potentialities which could be actualized. It oscillates between representing humans as separate from the mechanical order of things and therefore totally free to act at will, and as machines totally determined by the laws of nature. The machine symbolizes power over the world and corresponds to Plato's form of the Good as the ultimate end of action, with the mechanical order having functioned as an ideal to be attained from when the virtue of temperance was represented as a clock in the fifteenth century to the Nazi ideal of the Thousand Year Reich and the late twentieth century ideal of the information society. But at the same time the mechanistic analogy implies that there is no feature of the world which is not totally subordinated to this form of mechanical order, and denies any reality to power. In short, the machine as a symbol of the meaning of life represents total power as the ultimate end while denying both intelligibility and meaning to this end. It is an orientation to the world in which heroic moralism has been transmuted into heroic nihilism, the culmination of Western Europe's individualist and activist Christian Neoplatonism, which fulfils itself by denying meaning to everything in the world, including heroism. These ambiguities, which were already present in germinal form in Plato, have underlain all subsequent history of Western civilization.

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MECHANICAL NATURE AND MECHANICAL HUMANS: THE TRIUMPH OF NIHILISM

While the conception of nature as mechanical did much to justify the increasing efforts to control it in the interests of the developing economy and to discredit the Hermetics, another important feature from the point of view of the emerging capitalist socio-economic formation was to provide an analogy for understanding humanity. This amounted to a dismissal of the higher, spiritual side of the Christian Neoplatonic dualism and the affirmation of its degraded side as the sole reality, both in theory and in practice. The only meaning this allowed in the world was the satisfaction of appetites and the struggle for the power to achieve such satisfaction. It undermined both what was left of feudal ideas of nobility and of the communalistic ideology of the Hermetics. It justified a life devoted to the self-interested pursuit of profit by arguing that there is no alternative, and it was able to be used to legitimate the overthrow of any political order which stood in the way of self-interest. Though he himself was actually opposed to the claims to legitimacy and power of the rising commercial classes, the most important philosopher involved in the development of a mechanistic view of humans was Thomas Hobbes (1588-1679). To understand the achievement and significance of Hobbes it is essential that he be seen as the figure who reconceptualized the nature of humans and their relationships on the basis of the mechanistic conception of the world, since nearly all the specific notions which he argued for had already been developed by earlier thinkers.

Hobbes, like Bodin, was primarily concerned with justifying the rule of an absolute monarch in order to ensure peace. He took as his starting point the view of humans as they had largely become at that stage of European civilization and as they had already been described by Machiavelli: egoistic, ruthless and manipulative; and he formulated his ideas as a 'civil science' to investigate the rights of states and the duties of subjects. But the distinctive feature of Hobbes' approach was that he formulated his ideas in terms of the 'resolutive-compositive' method of the physical sciences, conceiving of society and of people as mechanisms which could be explained by analysing them into their constituents, then logically deriving their properties as a consequence of the motion of these constituents.

To begin with, Hobbes analysed society into its constituent members, arguing:

> For as in a watch, or some such small engine, the matter, figure and motion of the wheels cannot be known, except it be taken in sunder, and viewed in parts; so to make a more curious search into the rights of states, and duties of subjects,

> it is necessary, (I say not to take them in sunder, but yet that) they be so considered, as if they were dissolved.[1]

Since the driving principles of the constituents of society have to be understood independently of society in order to explain it, individuals have to be seen as moved entirely by self-interest. The conception of individuals as self-interested was justified by seeing them as mechanisms, since as such, by the very fact of their existence they must be seen as arrangements of matter organized to maintain themselves and augment their power to do so. As Hobbes argued: 'every man ... shuns ... death; and this he doth, by a certain impulsion of nature, not less than that whereby a stone moves downward.'[2] All aversions were seen as impulsions to avoid anything impeding such motion, and all appetites as impulses towards anything which would assist this motion. Accordingly, he concluded that: 'men from their very birth, and naturally, scramble for everything they covet, and would have all the world, if they could, to fear and obey them.'[3] All the mental faculties were understood accordingly. Thought was seen to be internal motion deriving from sensations, motions produced from the effects of objects outside the body on the sense organs. Reason as the regulation of the contents of the mind by desire and design was thereby reduced to the process of calculation in the service of appetites and aversions, and voluntary action was seen as action brought about by this internal motion. Thus Hobbes inverted Plato's scheme in which the appetites are properly subordinated to spirit and spirit is properly subordinated to intellect. Appetites and aversions are the unchosen ultimate human ends. Striving for honour is only striving for signs of power as a means to satisfy appetites or avoid aversions, reason is simply an instrument in such striving and science is merely knowledge of how to bring about different effects.

Good and evil were then redefined as simply what is subjectively desired and what arouses aversion.[4] Laws of nature were referred to, but Hobbes defined this notion in a quite different sense from that associated with the natural law tradition. His is not a moral rule but a council of prudence, for, he says, 'A Law of Nature ... is a Precept, or generall Rule, found out by Reason, by which a man is forbidden to do, that, which is destructive of his life, or taketh away the means of preserving the same...'[5] Similarly the notion of 'right' is simply a description of how men do in fact act -: the Right of Nature, 'is the Liberty each man hath, to use his own power, as he will himselfe, for the preservation of his own Nature; that is to say, of his own Life...'[6], with liberty being understood as the absence of external impediments. Justice was then redefined as the performance of covenants in accordance with a civil power able to coerce people to accept them. These reformulations involved not only the abandonment of the notion of justice as fairness, but a reformulation of the

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1. Thomas Hobbes, *De Cive*, N.Y.: S.P. Lamprecht, 1949, p.10f.
2. Ibid. Ch.1, sec.7, p.26.
3. Thomas Hobbes, *The English Works of Thomas Hobbes*, ed. Sir William Molesworth, 11 volumes, London: John Bohn, 1839-45, Vol. VII, 'Decameron Physiologum: The Dialogues of Natural Philosophy', p.73.
4. Thomas Hobbes, *Leviathan*, [1651] ed. C.B. Macpherson, Harmondsworth: Penguin, 1980, Part I, Ch.6, p.129.
5. Ibid. Part I, Ch.14, p.189.
6. Loc.cit.

notion of liberty so as to separate it from the power to shape one's destiny and thereby also to separate it from its relation to the liberty of society as a whole. People are not seen as choosing their own ends or requiring the means to do so. These ends are brute realities impelling people to act, and the task of political philosophy is to show how these ends can best be achieved. Hobbes argued on the basis of his presentation of individuals as engaged in an endless struggle for power, that without the covenants of society backed by force people are perpetually at war with one another so there is 'continuall feare, and danger of violent death; And the life of man, solitary, poore, nasty, brutish and short.'[7] Hobbes' argument for obeying the covenants of society, acknowledging the power of an absolute sovereign in all circumstances except in cases where one's life is threatened, is that it is the best way of achieving one's egoistic ends. Correspondingly, Hobbes' recommendation that sovereigns should concern themselves with the welfare of their subjects was based entirely on the argument that this is the best way to maintain their power.

Despite the obviously mechanistic language used by Hobbes, there has been a tendency in modern political philosophy to ignore the role of the mechanistic materialist metaphysics in his political writings. This began with Leo Strauss' argument of 1936 that Hobbes developed all his political ideas before becoming acquainted with the methods and ideas of the new science, and that the framework in which his ideas are presented is a mere cloak for these.[8] Strauss himself seems to have abandoned this view,[9] but recent scholarship continues to describe Hobbes as merely having revised the concepts of his predecessors.[10] These tendencies bear commenting on because they reflect the sterility of modern political philosophy.

Firstly they reflect the failure of political philosophers to appreciate the nature of the intellectual creativity involved in conceptual revolutions. To fail to recognize Hobbes' achievement is equivalent to failing to recognize the advances Galileo and Newton made in the study of kinematics over the fourteenth century proponents of 'impetus' theory. The point about Hobbes' achievement is that while most of Hobbes' particular views about people and society had already been proposed, these were part of a vast profusion of ideas with no criteria for choosing between them. The Medieval world-orientation was disintegrating and there was no solid foundation for legitimating either political or ethical views. In particular, few people accepted Machiavelli's ideas, but the basis for rejecting them was dissolving. The Thirty Years War which decimated Europe was largely a reflection of this state of affairs. What Hobbes did was to use the achievements of the new mechanical philosophy to provide such a foundation. In doing so, he provided a new way of conceiving humans and transformed the concepts of ethics and political philosophy.

The second way in which modern political philosophy reveals its sterility is in taking for granted that the abstruse trivialities of modern political thought, in which philosophers produce ideas with a multiplicity of minor variations, is the only possible form of this subject. This fails to recognize the extent to which Hobbes' succeeded in providing a reference point and a research program for understanding humanity which has been the foundation of Western thought, particularly

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7. Ibid. Part I, Ch.13, p.186.

8. Leo Strauss, *The Political Philosophy of Hobbes: Its Basis and Its Genesis*, tr. Elsa M. Sinclair, [1936], Chicago, University of Chicago Press, 1952, esp. pp.1-5.

9. Leo Strauss, *Natural Rights and History*, Chicago: University of Chicago Press, 1953, pp.166-77.

10. See for example Richard Tuck, *Natural Rights Theories: Their Origin and Development*, Cambridge: Cambridge University Press, 1979. However for a contrary view see R. Ashcraft, 'Hobbes's Natural Man', *Journal of Politics*, Vol. XXXIII, 1971.

Anglophone thought, in this area ever since. It has underlain the fields of politics, economics and psychology, and the modern doctrines of rights theory, utilitarianism, mainstream economic theory, Social Darwinism and behaviourist psychology are simply the working out of this research program.

The Evolution of Mechanistic Materialism and Capitalism

Once framed, the mechanistic world-view not only served to legitimate the capitalist socio-economic formation and its supporters. It came to be embodied by this formation and its members so as to largely constitute the relationships between people and nature, individuals and society, and interpersonal relationships. In this way it has been reproduced as part of the self-production of the capitalist system and its social relations. Consequently the development of capitalism and the development of the mechanistic world-view have been intimately related, and has further exemplified the tendency for people to use nature as an analogy for understanding society and society as an analogy for understanding nature. To begin with the mechanistic conception of people was spelt out to interpret and legitimate the development of capitalism. This culminated with the rise of modern economics. This, together with the associated Malthusian theory of population, then served as an analogy for understanding the diversity and evolution of species in nature. Evolutionary theory in turn provided the basis for a new development in ideas about society, which are at present being reapplied to nature.

The first major figure to develop the mechanistic conception of humanity to legitimate capitalistic social relations was John Locke (l632-l704). Locke's ideas were not particularly consistent; his importance at the time rested with his willingness to justify the claims to power and the practices of the rising bourgeoisie. This ability to present the venal practices of this class in a favourable light can only be understood against the image of humans implied by the mechanistic view of the world. Locke developed Hobbes' notion that political power was based on a social contract, but argued that the state of nature was not a struggle of all against all, but a social order governed by natural law. However he represented this social order as essentially an exchange economy of rational, property owning egoists. He argued that in such a state of nature, 'every man has a *property* in his own *person*' which includes his labour, and extends to whatever he has 'mixed his labour with'.[11] It is labour, he argued, which contributes almost all the value to anything, that in most of what is useful, 'ninety-nine hundredths are wholly to be put on the account of labour.'[12] The acquisition of property from the commons by labour was justified by reference to God's command that we subdue the earth, and the reason for establishing political institutions and for creating civil society was to enforce the rules under which this economy functioned: 'The great and chief end therefore, of men's uniting into commonwealths, and putting themselves under government, is the preservation of their property'.[13] By conceiving of property, including labour, as independent of civil society, Locke was able to defend the unequal distribution of property and, once money had been introduced, the unlimited acquisition of wealth by the propertied class, to justify the sovereignty of the propertied class to maintain

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11. John Locke, 'An Essay Concerning the True Original, Extent and End of Civil Government' sect. 27; in *Social Contract*, ed. Sir Ernest Barker, London: Oxford University Press, l97l, p.17.

12. Ibid. sect. 40, p.25.

13. Ibid. sect. l24, p.73.

the conditions under which wealth could be appropriated, and at the same time to rule out any interference by government in their acquisition of property. Apart from the right to sell their labour for wages, the working class were to have no political rights, as their impoverished lives would not allow them to develop a sufficient degree of rationality.[14] The proper end of the economy of the nation was to acquire gold and silver in order to quicken and increase trade.

Locke used his philosophy to justify the enclosure movement by which the commons was appropriated by the wealthy farmers at the expense of the peasants. This reduced the yeomanry who had formed the backbone of Cromwell's strength to poverty, depriving them of access to the minimum of natural resources required to live, and forcing them to live solely by selling their labour power for wages. This was the first instance of capitalist appropriation of surplus value.[15] Locke argued that where such people were unable to obtain employment, they should be forced into workhouses which were to become sweated-labour manufacturing establishments. He believed that the children of the unemployed above the age of three, who had hitherto been a burden on the nation, could also be forced to earn more than their keep.[16]

Locke was also important for his development of Hobbes' mechanistic account of the mind. He conceived of thought as a mechanical association of ideas produced in the mind by the effect of matter on the body, and argued that knowledge is the representation of the primary qualities of the external world. This conception of mind and its associated empiricist epistemology undermined any effort to question or replace the mechanical view of the world and any rational ethics, leading Locke to claim that 'Good and evil are nothing but pleasure and pain, or that which occasions or procures pleasure or pain to us.'[17] These irrationalist implications of this conception of mind and its contents were fully spelt out by David Hume (l7ll-76) who argued that: 'Reason is the discovery of truth or falsehood. Truth or falsehood consists in an agreement or disagreement either to the real relations of ideas, or to real existence and matter of fact. Whatever, therefore, is not susceptible of this agreement or disagreement is incapable of being true or false, and can never be the object of reason.'[18] Hume concluded from this that passions, volitions and the ends of actions have nothing to do with reason, that, 'Reason is, and ought to be, the slave of the passions, and can never pretend to any other office than to serve and obey them.'[19] And he condemned metaphysics, calling for works on this subject to be committed to the flames.

With nothing of value in the world but the subjective experiences of the individual, there could no longer be any reason for individuals to concern themselves with anything but the satisfaction of their own appetites and obtaining the means thereto. This justified libertinism. As Diderot (l7l3-84) has his interlocutor in *Rameau's Nephew* say:

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14. On Locke's view of the working class see C.B. Macpherson, *The Political Theory of Possessive Individualism: Hobbes to Locke*, Oxford: Oxford University Press, l964, p.223ff.

15. Karl Marx, *Capital*, Moscow: Progress Publishers, l974, Volume l, p.676f.

16. See Macpherson, *The Political Theory of Possessive Individualism*, Ch.5, esp. p.222.

17. John Locke, *An Essay Concerning Human Understanding*, Bk 2, Ch.28, sect. 5. Similarly Spinoza wrote: 'By *good* I here mean every kind of pleasure, and all that conduces thereto ... By *evil*, I mean every kind of pain..." *Ethics*, Part III, Prop.XXXIX, Note in Spinoza, p.156.

18. David Hume, *A Treatise of Human Nature*, London: Dent, in two volumes, Volume II, Bk III, Part l, sect. l. p.l67.

19. Ibid. Volume II, Bk II, Part III, sect. 3., p.l27.

> So long live philosophy and long live the wisdom of Solomon - drink good wine, blow yourself out with luscious food, have a tumble with lovely women, lie on soft beds. Apart from that the rest is vanity... What does it matter whether you have a position or not so long as you are rich, since you only take up a position in order to get rich? Fulfilling your duties, where does that land you? Into jealousy, upsets, persecution. Is that the way to get on? Butter people up, good God, butter them up, watch the great, study their tastes, fall in with their whims, pander to their vices, approve their injustices. That's the secret.[20]

But libertinism assumes the conception of people as objects to be manipulated, and libertinism and attempts to gain control over people have always been closely associated. If all that is of significance is one's own subjective experiences, then everything in the world, including other people, are only of significance as instruments for achieving one's desired subjective states. And if people are moved only by the desire to achieve pleasurable subjective states, then controlling the conditions for achieving such pleasure provides the means for their total control. The idea of the machine at the same time provides an ideal of what such complete control would be.

So the real importance of conceiving of people as mechanisms animated by appetites and aversions was that it paved the way for a socially engineered society in which people were reduced to nothing but instruments. Michel Foucault described the emergence of this society of engineered people:

> The great book of Man-the-Machine was written simultaneously on two registers: the anatomico-metaphysical register, of which Descartes wrote the first pages and which the physicians and philosophers continued, and the technico-political register, which was constituted by a whole set of regulations and by empirical and calculated methods relating to the army, the school and the hospital, for controlling and correcting the operations of the body.... The human body was entering a machinery of power that explores it, breaks it down and rearranges it. A "political anatomy", which was also a "mechanics of power", was being born; it defined how one may have a hold over others' bodies, not only so that they may do what one wishes, but so that they may operate as one wishes, with the techniques, the speed and the efficiency that one determines. Thus discipline produces subjected and practiced bodies, "docile" bodies.[21]

The most important thinkers for the development of this orientation were the utilitarians, in particular Helvetius (l7l5-7l) and Bentham (l748-1832). They proposed a mechanics of politics to maintain order in society by manipulating the mass of pleasure-pain mechanisms composing it for the good of society as a whole as they conceived it, that is, to produce the maximum amount of pleasure with the minimum amount of pain. Bentham's proposals for prison reform were particularly important in facilitating the embodiment by society of the mechanistic conception of people as objects to be efficiently controlled. This reform was based on a new architectural model, the 'Panopticon', consisting of a central tower from which all prison cells could be observed without the prisoners knowing when they were being observed. Each prisoner was to be perfectly individualized and constantly visible. Bentham's influence began with prisons and reformatories, but the Panopticon was

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20. Denis Diderot, *Rameau's Nephew and D'Alembert's Dream*, tr. L. Tancock, Harmondsworth: Penguin, l976, p.65.

21. Michel Foucault, *Discipline and Punish*, p.138 & 140.

designed as a general model for the control of people and he proposed it explicitly for 'manufactories', 'mad-houses', 'hospitals' and 'schools'. In concluding his work, Bentham accurately prophesied that people 'should see a new scene of things spread itself over the face of civilization.... All by a simple idea in architecture.'[22] As Foucault noted: 'The panoptic arrangement provides the formula for ... generalization. It programmes, at the level of an elementary and easily transferable mechanism, the basic functioning of a society penetrated through and through with disciplinary mechanisms.'[23] By such generalization all the major institutions together with the buildings in which they were situated came to define people as objects to be manipulated and moulded to function as cogs within the social machine, creating a totally transparent society. These resonated with each other, allowing the same social schemes of perception and thought to be generalized from institution to institution.

Political Economy

The development of political economy was also founded on a mechanistic conception of people, and furthered its domination. Traditionally economics had meant 'household management'. Xenophon's *Oikonomikos* written before the middle of the fourth century B.C. began with a long introduction on the good life and the proper use of wealth, and included sections on the leadership qualities necessary for a householder and on wifely virtues and the training of a wife. The longest section of all was on the practicalities of farming. There was nothing on economic analysis, the efficiency of production or on marketing. This way of understanding economics survived almost unaltered to the eighteenth century.[24] In his *Short Introduction to Moral Philosophy* published in Latin in 1742, Adam Smith's teacher, Francis Hutcheson, devoted the first chapters of Book III, entitled 'The Principles of Oeconomics and Politics,' to marriage and divorce, the duties of parents and children, and the relationship between masters and servants. Otherwise it was exclusively about politics. Various subjects associated with modern economics, such as money, interest rates and trade were investigated, but except for the finances of rulers which were treated as economic issues by analogy, these subjects were dealt with as part of the domain of ethics or political philosophy. The 'economy' had not become an object in its own right, and at least theoretically the ends to be achieved by society: enabling people to live the good life, to achieve salvation or whatever, had been defined independently of economics.

But Hobbes had begun a reorientation in thinking. In developing his conception of humans in *Leviathan*, he had written a chapter, 'Nutrition and Procreation of a Commonwealth', using Harvey's conception of the body as an analogy to describe society.[25] The nutrition of the social body was seen to depend upon the fruits of land either given freely or through the exchange of labour. The circulation of nourishment was seen to be facilitated by money, which Hobbes compared to blood. The driving force for the functioning of this process was seen to be the self-interest of society's component individuals. And the only end of value in this system was seen to be the satisfaction of appetites and avoidance of aversions of individuals and the reproduction of the system as a whole. While Hobbes still did not separate political economy from political philosophy, he provided the framework on which all later economic thought has been based.

Hobbes' ideas were first taken up by William Petty. Though Petty was primarily concerned with such issues as raising finance for the government and developed his ideas unsystematically, the

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22. Bentham, 'Panopticon', *The Works of Jeremy Bentham*, Bowring ed. Edinburgh, Vol. IV. p.66.

23. Foucault, *Discipline and Punish*, p.209.

24. See M.I. Finley;, *The Ancient Economy*, Berkeley and L.A.: University of California Press, 1974, p.18f.

25. Hobbes, *Leviathan*, Pt II, Ch.24.

influence of Hobbes led him to conceive money in terms of its role in the functioning of the system and to conceive wealth as the effect of present or past labour. Petty was the first to investigate the velocity of circulation of money and to attempt to measure national income, though he still recognized land as a major contributor to wealth. 'Labour', he wrote 'is the Father and active principle of Wealth, as Lands are the Mother.'[26]

Petty influenced the French thinker Cantillon and the Physiocrats, who then fully developed the conception of society as an organism requiring a flow of nutrition, and it was in relation to this effort that the term Political Economy was first coined. Cantillon defined land as the source of wealth, labour as the power which produces it, and all material products as its constituents, and was followed in this by the Physiocrats. The culminating work of the Physiocrats was Quesnay's *Tableau Economique* which presented in an abstract mathematical model the flow of commodities throughout the entire process of production and consumption in accordance with natural law, moral as well as physical, preordained by God. The system was divided into three classes: the farming class, the landowner class, and a 'sterile' class that included manufacturers. The farming class was seen as the source of all wealth. Only the land was seen as having a real potential to generate more than had been put into it by labour. The surpluses from farming flowed to the landowners and from there to the 'sterile' sectors of the economy. Thus the basis of wealth was rent on land, and the surpluses acquired by the landowners and spent by them on consumption flowed through the entire system.

The notion of the economy as an object of investigation in its own right was developed to its fullest extent in the eighteenth century by Adam Smith (1723-90) in his *The Wealth of Nations*. Smith was strongly influenced by the epistemology of his close friend, Hume. He took scientific theories to be means of organizing sense impressions. In his study of the development of astronomy he compared such theories to imaginary machines which are 'invented to connect together in the fancy those different movements and effects which are already in reality performed.'[27] His study of political economy was thus undertaken in the spirit of the physical sciences as a disinterested search for the simplest imaginary machine to account for the phenomena. He described the principles (the original formulation of which he attributed to Descartes) which he believed distinguished Newtonian astronomy as superior to its predecessor:

> [I]n Natural Philosophy, or any other science of that sort, we may either, like Aristotle, go over the different branches in the order they happen to [be] cast up to us, giving a principle, commonly a new one, for every phenomenon; or, in the manner of Sir Isaac Newton, we may lay down certain principles, primary [known?] or proved, in the beginning, from whence we account for the several phenomena, connecting all together by the same chain. This latter, which we may call the Newtonian method, is undoubtedly the most philosophical, and in every science, whether of Morals or Natural Philosophy, etc., is vastly more ingenious, and for that reason more engaging, than the other.[28]

Smith recast Political Economy to accord with this ideal.

To achieve his task, Smith construed Political Economy in a narrower sense than the French political economists. Rejecting the physiocratic conception of it as dealing with the happiness and improvement of political society, Smith conceived of it as a branch of the science of a statesman or legislator having only two objects: to enable people to enrich themselves, and to provide public

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26. *The Economic Writings of Sir William Petty*, ed. C.H. Hull, 2 vols, Cambridge: C.U.P., 1899, II, p.377.

27. Adam Smith, 'The History of Astronomy' in *Essays on Philosophical Subjects* ed. W.P.D. Wightman and J.C. Bryce, Oxford: Clarendon Press, 1980, IV.19, p.66.

28. Adam Smith, *Lectures on Rhetoric and Belles Lettres* ed. John M. Lothian, Edinburgh: Edinburgh University Press, l963, p.l39f. For a study of Smith's philosophy of science, see Andrew Skinner 'Science and the Role of Imagination' in Andrew S. Skinner, *A System of Social Science: Papers Relating to Adam Smith*, Oxford: Clarendon, 1979, Ch.2.

revenue.[29] While in *The Theory of Moral Sentiments* Smith had developed a conception of human motivation antithetical to that of Hobbes, in *The Wealth of Nations* Smith was compelled to conceive people in abstraction from their social relations and therefore as egoists in order to have independent constituents and a single principle in terms of which the economic mechanism could be explained. He assumed that all people have an innate disposition to struggle to better their condition which 'comes with us from the womb and never leaves us until we go to the grave',[30] and that there is 'a certain propensity in human nature... to truck, barter, and exchange one thing for another.'[31] This self-interest is the driving force of the economy. As Smith wrote: 'It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.'[32]

This view of humans together with the Lockean notion that people have a right to consume or exchange the products of their labour (what they have mixed their labour with) provided Smith with the basis for an objective theory of value. He argued:

> The real price of everything, what everything really costs to the man who wants to acquire it, is the toil and trouble of acquiring it... What is bought with money or with goods is purchased by labour as much as what we acquire by the toil of our own body... They contain the value of a certain quantity of labour which we exchange for what is supposed at the time to contain the value of an equal quantity.[33]

Although he did not fully develop this labour theory of value (it was only fully developed in the nineteenth century by Ricardo and Marx), Smith's theory was sufficient to enable him to characterize and explain in accordance with his conception of science the economy as a mechanism, driven by the efforts of individuals to better their condition, in which commodities are produced and circulated through the exchange of money. The quantity of labour embodied in commodities functioned as the equivalent of matter in physics as the unchanging substance circulated through society. At the same time it provided the basis of a new conception of progress as the development of the economy's capacity to produce saleable commodities.

This reformulation of economics involved the rejection of the Physiocrats' analysis of the productivity of the different classes of commercial society. Smith argued that this society consists of landlords, wage-earners and capitalists receiving rents, wages and profits for their participation in the system. Since the pursuit of each of these is required for labour to produce and for its productivity to increase, he argued that all three classes are productive. This paved the way for the idea that it is the search for profit by capitalists which is the prime driving force for the accumulation of capital, and thereby for economic progress. In this way nature was relegated in status from the generator of all true wealth in society to a mere abstract

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29. Adam Smith, *An Inquiry into the Nature and Causes of The Wealth of Nations* (l776) ed. Edwin Cannan, N.Y.: The Modern Library, 1965, IV, Introd., p.397.

30. Ibid. p.324.

31. Ibid. p.13.

32. Ibid. p.14.

33. Ibid. p.30.

limitation on economic progress, and all human ends apart from those exchangeable as commodities were excluded from consideration. This conception of nature and this exclusion of all but the most base human interests was later presupposed by Ricardo and Malthus.

Smith's system was based on an image of the economic system as a machine and of humans as Puritans moved by sober self-interest. This image of the economy was presented as a model of reality and that of humans as a universal characterisation of human nature; but surreptitiously both these images function in his system as Platonic forms of how society should be and how individuals should act to realize the ideal form of society. This is no accident; it was clearly recognized as such by Smith who, strongly influenced by Plato, had argued in *The Theory of Moral Sentiments*:

> ...if you would implant public virtue in the breast of him who seems heedless of the interest of his country, it will often be to no purpose to tell him, what superior advantages the subjects of a well-governed state will enjoy... You will be more likely to pursuade, if you describe the great system of public police which procures these advantages, if you explain the connexions and dependencies of its several parts, their mutual subordination to one another... if you show how... all the several wheels of the machine of government be made to move with more harmony and smoothness, without grating upon one another, or mutually retarding one another's motions.[34]

A good machine is one which functions efficiently, and for the economic machine to function efficiently, individuals must accord with the image of humans presented by Smith. Thus idleness, profligacy and unproductive spending were seen as vices and attributed to the royal courts and their aristocratic retinues while industry and thrift were continually praised. This ideal of efficiency was synthesized by Smith into his theory along with the mechanistic conception of nature as devoid of significance except insofar as it could be moulded for human purposes and sold on the market, the atomistic view of society, rights theory and utilitarianism, and the notion of divine providence, 'the invisible hand' which ensures that individuals pursuing their own interests will increase the wealth of the nation to the benefit of all. As Marx put it:

> This sphere... within whose boundaries the sale and purchase of labour-power goes on, is in fact a very Eden of the innate rights of man. There alone rule Freedom, Equality, Property and Bentham. Freedom, because both buyer and seller of a commodity, say of labour-power, are constrained only by their own free will. They contract as free agents, and the agreement they come to, is but the form in which they give legal expression to their common will. Equality, because each enters into relation with the other, as with a simple owner of commodities, and they exchange equivalent for equivalent. Property, because each disposes only of what is his own. And Bentham, because each looks only to himself. The only force that brings them together and puts them in relation with each other, is the selfishness, the gain and the private interests of each. Each looks to himself only, and no one troubles himself about the rest, and just

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34. Adam Smith, *The Theory of Moral Sentiments*, Indianapolis: Liberty Press, 1982, Part IV, Ch. 1, Section 11, p.186.

> because they do so, do they all, in accordance with the pre-established harmony of things, or under the auspices of an all shrewd providence, work together to their mutual advantage, for the common weal and in the interest of all.[35]

Along with Millar, Lord Kames, Ferguson, Robertson and Dalrymple (and paralleling the work of the physiocrats in France, particularly Turgot), Smith placed this analysis of capitalism in a broader scheme of philosophical history, a secularized version of the Christian notion of Universal History centred on the notion of 'Progress'. According to this general theory, which was inspired by the work of Montesquieu, society naturally tends to progress over time through four more of less distinct modes of subsistence.[36] These are hunting, pasturage, agriculture and commerce. To each of these modes of subsistence there correspond different sets of ideas and institutions relating to law, property, and government, and also different sets of customs, manners, and morals. The driving force leading from one stage to the next is the self-interest of historical actors striving to better their condition. Commercial society represents the highest achievement in this effort.

Thus Smith both described, legitimated and reinforced the development of commercial society and the market form of relationship between people. While Smith conceived of his work on economics as part of a sociological history of society, and as subordinate to political philosophy which in turn was seen as part of moral philosophy, he paved the way for the creation of political economy as an independent discipline. Economics came to be the prime interpreter of society to its members, providing them with the concepts in terms of which they were able to define and legitimate their relationships to each other, to society and to nature. The effect of economics was to contribute to the growing autonomy of the market system from political and social control. With the development of this system, people became nothing but labour power to be sold on the market. The bulk of the population, including children, were forced to work in miserable conditions for long hours in factories and mines, while at the same time large numbers of people were deprived of any means of obtaining a livelihood. This led Malthus to develop his ideas on population according to which there is an inevitable process of immiseration of the working class, since any increase in income leads to an increase in population until population growth is again checked by starvation. Malthus argued that since economic growth could only occur arithmetically while population growth occurs geometrically, it is impossible for economic growth to ever get ahead of population growth for any length of time. God has designed the world so that the indolent are automatically punished. Malthus concluded:

> A man who is born into a world already possessed, if he cannot get subsistence from his parents on whom he has a just demand, and if the society does not want his labour, has no claim of right to the smallest portion of food, and, in fact, has

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35. Marx, *Capital*, Vol.l, p.l72.

36. For an analysis of the development of this theory of history see Ronald Meek, 'The Scottish Contribution to Marxist Sociology', in Ronald L. Meek, *Economics and Ideology and Other Essays*, London: Chapman and Hall, 1967, and 'Smith, Turgot, and the "Four Stages" Theory', in Ronald L. Meek, *Smith, Marx and After*, London: Chapman and Hall, 1977, and Andrew Skinner, 'A Scottish Contribution to Marxist Sociology?' in *Classical and Marxian Political Economy*, ed. Ian Bradley and Michael Howard, London: Macmillan, 1982, pp.79-114; and 'Historical Theory' in Skinner, *A System of Social Science*, pp.68-103. See also Gladys Bryson, *Man and Society: The Scottish Inquiry of the Eighteenth Century*, Princeton: Princeton University Press, 1945.

no business to be where he is. At Nature's mighty feast there is no vacant cover for him. She tells him to be gone.[37]

Darwinism and Social Darwinism

The picture of humanity inspired by capitalist society provided an analogy for the further development of the mechanistic view of nature.[38] Hitherto, it had been impossible to account for the ordered nature of matter composing the forms of life in terms of mechanistic science except by invoking the intervention of the Deity. Evolutionary theories had been proposed to account for this order using progress in society as an analogy, but there was no satisfactory mechanism proposed to account for such evolution. With the development of capitalist society, the emergence of the new political economy and the publication of Malthus's work, Darwin and Wallace were provided with the means for conceiving such a mechanism. Darwin, who avidly read the works of the political economists, and particularly Malthus, was familiar with the way cattle breeders improved their stock through breeding. Using nineteenth century English society as an analogy, Darwin was able to conceive the breeder within nature which led to the origin and diversity of species as population pressure generating a struggle of all against all, allowing only the fittest offspring to survive. So, as economic development came to be understood as the product of individuals pursuing their own interests in competition with everyone else, with the population being regulated through the starvation of the less fit, evolution came to be understood as the product of competition for survival in nature; and as economic progress came to be understood in terms of technological adaptation, the evolution of life came to be understood in terms of the development of new forms of adaptation. As Marx wrote to Engels, 'It is remarkable how Darwin recognizes among the beasts and plants his English society with its division of labour, competition, opening up of new markets, "inventions," and the Malthusian "struggle for existence."'[39]

Darwin made some attempt to apply his ideas about evolution to humanity in *The Descent of Man.* In this work he endorsed the oppression of non-white races on the grounds that the 'unfit' must inevitably make way for the more 'fit', and he praised the role of capitalism in facilitating this, asserting: 'the inheritance of property by itself is very far from an evil; for without the accumulation of capital the arts [technologies] could not progress; and it is chiefly through this power that the civilized races have extended, and are now everywhere extending their range, so as to take the place of the lower races.'[40] However Darwin himself did not develop evolutionary theory into a general theory of humanity and society, and into the general cosmology which came to be known as Social Darwinism.[41]

The most important figure in the development of Social Darwinism was Herbert Spencer - although it would be more appropriate to describe Darwin as a Spencerian than Spencer as a Darwinist. Spencer had argued in *Social Statics*, published in

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37. Cited from the first edition of Thomas Malthus' *An Essay on the Principle of Population* by Eduard Heimann in *History of Economic Doctrine*, Oxford: Oxford University Press, 1964, p.86f.

38. On this, see Robert M. Young;, *Darwin's Metaphor: Nature's Place in Victorian Culture*, Cambridge: C.U.P., 1985.

39. Marx to Engels, June 18, 1862, in Saul K. Paddover ed. *The Letters of Karl Marx*, Englewood Cliffs, Prentice Hall, 1979, p.157.

40. C. Darwin, *The Descent of Man and Selection in Relation to Sex*, 2nd ed. London: Murray, 1874, p.207.

41. See Kenneth Bock, 'Theories of Progress, Development, Evolution' in Tom Bottomore and Robert Nisbet eds, *A History of Sociological Analysis*, London: Heinemann, 1978, pp.39-79.

1851, eight years before the publication of *The Origin of Species* for a reformulation of utilitarianism on evolutionary grounds. He argued that the greatest happiness for the greatest number could only be realized in society when each individual could 'claim the fullest liberty to exercise his faculties compatible with the possession of like liberty by every other man.' While this required a society of people who took pleasure in the pleasure of others, Spencer argued that there was an evolution of humanity towards this goal, beginning with the predatory instincts of aboriginal man 'clearing the earth of inferior races of men', followed by slavery which provided the 'stringent coercion ... required to make [aboriginal man] submit contentedly to the necessities of his new state', and finally by modern *laissez-faire* capitalism which provided the conditions for the individuation of and union between people, 'by the most elaborate subdivision of labour; that is, by the extremest mutual dependence...' In this process 'all desires inconsistent with the most perfect social organization are dying out, and other desires corresponding to such an organization are being developed.'[42] Correspondingly, Spencer argued against social reformers:

> That rigourous necessity which, when allowed to operate, becomes so sharp a spur to the lazy and so strong a bridle to the random, these pauper's friends would repeal... Blind to the fact that under the natural order of things society is constantly excreting its unhealthy, imbecile, slow, vacillating, faithless members, these unthinking, though well-meaning, men advocate an interference which not only stops the purifying process, but even increases the vitiation - absolutely encourages the multiplication of the reckless and incompetent by offering them an unfailing provision, and discourages the multiplication of the competent and provident by heightening the difficulty of maintaining a family.[43]

Thus Britain's *laissez-faire* capitalism was to realize a utilitarian heaven on earth.

However it was only after the publication of *The Origin of Species* that Spencer saw his way to developing a whole cosmology which would represent and legitimate the evolution of humanity and the development of capitalism as being part of a cosmic evolutionary scheme, and to developing a general science of humanity - an intellectual manoeuvre recognized by Frederick Engels who wrote of it:

> The whole Darwinian theory of the struggle for existence is simply a transference from society to organic nature of Hobbes' theory of *bellum omnium contra omnes* and of the bourgeois economic theory of competition, as well as the Malthusian theory of population. When once this feat had been accomplished, it is very easy to transfer these theories back again from natural history to the history of society, and altogether too naive to maintain that thereby these assertions have been proved as eternal natural laws.[44]

So in the sixth edition of *First Principles* published in 1862 Spencer argued that: 'Evolution is definable as a change from an incoherent homogeneity to a coherent heterogeneity, accompanying the dissipation of motion and integration of matter...',[45] an idea which he then devoted the rest of his life to elaborating into his

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42. From *Social Statics*, London: John Chapman, 1851, extracted in Herbert Spencer, *On Social Evolution*, ed. J.D.Y. Peel, Chicago: Uni. of Chicago Press, 1972, p.16 and pp.21-25.

43. Herbert Spencer, *Social Statics*, abridged, together with *The Man Versus the State*, New York: Appleton, l892, p.l5l.

44. Frederick Engels;, *Dialectics of Nature*, Moscow: Progress Publishers, 1976, p.307f.

45. Herbert Spencer, *First Principles*, 6th ed. London: Williams and Norgate [1862], 1904, p.291.

'System of Synthetic Philosophy', the theoretical framework for his massive *The Principles of Sociology*.

While grounded in evolutionary theory, Spencer's sociology can be seen as developing the philosophical history, the 'natural history of humanity', of the Scottish Enlightenment as represented by Adam Smith's *Wealth of Nations*, Millar's *Distinction of Ranks* and Ferguson's *History of Civil Society*, and as a continuation of the work of Saint-Simon and his followers towards developing a new intellectual synthesis in the service of the new industrial society. Comte, a former disciple of Saint-Simon, characterized and attempted to lay the foundations for this intellectual synthesis, representing it as 'positivism', the final triumph of science over theology and metaphysics, and as a positive philosophy to live by in place of the critical philosophy of the Enlightenment. It was Comte who coined the term sociology to characterize the study of society which was to be the highest development of positivism and the basis for a secularized ethics. Spencer reformulated Comte's project, and in taking over the concept of sociology he attempted to lay the principles for and to build a rigourous science which would also serve as an ethics.

While the notion of evolution through differentiation and integration served as the basic principle of Spencer's sociology, it was elaborated by comparing societies to organisms. Both were seen as growing, generating increasingly complex structures with increasing dependence between parts or systems. While in accordance with a basically mechanistic view of the world Spencer defended methodological individualism, the view that society must ultimately be explained in terms of the behaviour of its component parts, he also argued that societies tend towards equilibrium. This then provided sociology with its basic concepts: structure, function, system and equilibrium which have dominated mainstream sociology ever since. In terms of these concepts Spencer examined the differentiation of societies into various institutions: ceremonial, political, religious and economic, including joint stock companies and unions.

With this Darwinian conception of humanity, the Hobbesian idea that reasoning is simply a mechanical process by which individuals calculate what is to their advantage in the struggle to increase their power, was reinforced. An organism, population or system maintains itself by demarcating itself from and adapting itself to a changeable, hypercomplex environment. This view of life undermines the assumption underlying rights theory that society is a rational construction based on principles which all rational people must acknowledge. As the American Social Darwinist sociologist, William Sumner wrote: 'There can be no rights against Nature except to get out of her whatever we can, which is only the fact of the struggle for existence stated over again.'[46] Similar sentiments were expressed by Austrian Social Darwinist sociologist Gumplowicz: 'The premises of "inalienable human rights" rest upon the most unreasonable self-deification of man and overestimation of the value of human life.'[47]

Further Refinements of the Mechanistic Image of the World

The development of Social Darwinism coincided with the demise in economic theory of the labour theory of value with its implicit commitment to the rights of people to the products of their labour. In the 1870s classical economics began to be

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46. William Sumner, *What Social Classes Owe To Each Other*, New York: Harper and Rowe, l883, p.l35.

47. Ludwig Gumplowicz, *The Outlines of Sociology*, Philadelphia: Philadelphia Academy of Political Science, l899, p.l80.

challenged by the neo-classical marginalist school, inspired by Jevons in England, Walras in France and Menger in Austria, which defined value entirely in terms of the subjective decisions or preferences of individuals. Neo-classical economists were committed to utilitarianism and to developing economics as 'the mechanism of utility and self-interest', as Stanley Jevons put it.[48] This facilitated the further elaboration of the mechanistic conception of society. Jevons noted:

> The Theory of Economy thus treated presents a close analogy to the science of Statical Mechanics, and the Laws of Exchange are found to resemble the Laws of Equilibrium of a lever as determined by the principle of virtual velocities. The nature of Wealth and Value is explained by the consideration of indefinitely small amounts of pleasure and pain, just as the Theory of Statics is made to rest upon the equality of indefinitely small amounts of energy.[49]

By using mathematical physics as a model, the neo-classical economists developed utilitarianism along new lines.[50] In the reformulation of physics by Lagrange and Hamilton, the total energy of a system was represented as dependent in a critical way upon the position of the mass-point. Position was defined in terms of a gravitational field, later identified as potential energy, which was described by partial differential equations with the sum of potential and kinetic energy being taken to be conserved within a closed system. This conservation law then served as the foundation for constrained maximization techniques to calculate the paths of mass-points under the influence of impressed forces. Adapting this scheme to economics, forces are redefined as prices, displacements as infinitesimal changes in the quantities of individual goods, gravitational potential energy as utility, and kinetic energy as expenditure. Constrained maximization or minimization of an imponderable quantity, 'utility', led directly to a conservative field, which in turn is seen to fix the permissible configurations of prices.

With this development of neo-classical economics, which still underlies mainstream economic thought, the scope of economics was further restricted, and in 1890, with the publication of Alfred Marshall's *Principles of Economics*, the term 'economics' as opposed to 'political economy' came into use for the first time. In the neo-classical scheme, agents are classified as consumers or producers and are simply assumed to have 'tastes' or 'goals' which, subject to certain constraints, they seek to satisfy to the maximum. There was no attempt to analyse the content of these tastes, goals or constraints. And while economics based on the labour theory of value had at least included nature as something to be worked on and had focussed attention on how much surplus labourers were capable of producing over their own needs, marginalism virtually excluded nature from consciousness. The economic process was represented as a circular diagram between production and consumption within a completely closed system. Any shortage of natural resources due to the destruction of nature was registered as increasing prices, and therefore as increasing national income. The jettisoning of the labour theory of value also excluded from consciousness all consideration of the real contribution to production of various participants in the economy. It justified the efforts of people to obtain whatever

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48. W. Stanley Jevons, *The Theory of Political Economy*, 4th ed. London: Macmillan, 1911, p.21.

49. Ibid. p.viii. Walras defended the new approach to economics on the same grounds.

50. The nature of this development has been analysed by Philip Mirowski in 'Physics and the Marginalist Revolution', *Cambridge Journal of Economics*, Vol.8, 1984, pp.361-379 and in 'Mathematical Formalism and Economic Explanation' in *The Reconstruction of Economic Theory*, Boston: Kluwer-Nijhoff, 1986, pp.179-240.

returns they could through the market, whether through the selling of their labour power, through exploiting labour power in manufacturing, or through speculative buying and selling of commodities and companies.

This fitted in with Social Darwinism, and by identifying evolutionary progress with the survival of the fittest and economic success with survival, those who were successful in business were provided with justification for their behaviour. Thus John D. Rockefeller declared in a Sunday-school address: 'The growth of a large business is simply the survival of the fittest ... This is not an evil tendency in business. It is merely the working out of a law of nature and a law of God.'[51] By winning out in the economic struggle ruthless capitalists were furthering evolutionary progress. The amount of money they made could then be regarded as both as a quantitative measure of their value to evolutionary progress, a reward for their contribution to this progress, and a means to enable them to perpetuate themselves. Another multimillionaire American capitalist, Andrew Carnegie, expressed in his autobiography how troubled he was at the collapse of Christian theology, until he read Darwin and Spencer. 'I remember that light came as in a flood and all was clear.' he wrote. 'Not only had I got rid of theology and the supernatural, but I had found the truth of evolution.'[52] Through competition humanity was continually evolving upwards in an endless march towards perfection. In another essay he wrote of this law of competition: 'It is here; we cannot evade it; no substitutes for it have been found; and while the law may sometimes be hard for the individual, it is best for the race, because it ensures the survival of the fittest in every department.'[53] As the evolutionary notion of progress provided the secular equivalent of the Christian notion of historical progress, being wealthy became the secular equivalent of being one of the elect, with participation in the form of money replacing participation in the forms of Christian virtue as the defining criterion of election.

However the development of capitalism outside Great Britain generated global competition between industrial powers for control of resources. Under these circumstances Herbert Spencer's optimistic identification of industrialism with the end of military societies lost its plausibility, and Social Darwinists were concerned not only with the competition between individuals, but also with the competition between nations and races. As such, it was used to justify both the destruction of races already conquered, and the destruction of people yet to be conquered. In Britain Sir Francis Galton wondered that 'there exists a sentiment, for the most part quite unreasonable, against the gradual extinction of an inferior race.'[54] In the 1870s the Argentine government decided in to apply the scientific principles of Social Darwinism by exterminating all the remaining Indians in the country. In 1885 in the USA the Rev. Josiah Strong published the best selling *Our Country: its Possible Future and Its Present Critics* in which he argued that the world was entering on a new stage of history, 'the final competition of races for which the Anglo Saxon is being schooled.' Strong argued that this race would soon move down on Mexico, Central and South America and over Africa, and declaimed: '[C]an anyone doubt

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51. Cited by Richard Hofstadter, *Social Darwinism in American Thought*, Boston: Beacon Press, 2nd ed., 1955, p.45.

52. *Autobiography of Andrew Carnegie*, Boston, 1920, p.327; quoted by Hofstadter, p.45.

53. Ibid. p.45f.

54. F. Galton, *Inquiries into Human Faculty and Its Development* 2nd ed. New York: Dutton, 1883; cited by R.C. Lewontin, Steven Rose, and Leon J. Kamin, *Not In Our Genes: Biology, Ideology, and Human Nature*, N.Y.: Pantheon Books, 1984, p.22.

that the result of this competition of races will be the "survival of the fittest"?'[55] This sentiment swept the nation. Later the US President, Theodore Roosevelt, declared: 'If we stand idly by, if we seek merely swollen, slothful ease and ignoble peace, if we shrink from the hard contests where men must win at hazard of their lives and at the risk of all they hold dear, then the bolder and stronger peoples will pass us by, and will win for themselves the domination of the world.'[56]

With this more nationalist and racist form of Social Darwinism, a more activist orientation by business managers and governments was called for. This was associated with developments in the human sciences oriented towards predicting and controlling human behaviour. It was this, according to Hamilton Cravens, which effected a major shift in civilization.[57]

To begin with Social Darwinism inspired the eugenics movement which led to efforts by Galton, Cattell, Burt, Spearman and others to develop tests to measure mental ability in order to estimate people's genetic endowment of intelligence. These tests were subsequently used to stream students in education and to develop institutions to improve the genetic stock of society, either by screening immigrants or by segregating the intellectually feeble from the rest of the population to prevent contamination of the genetic stock. Justifying the use of intelligence testing in schools, the influential American educator Ellwood P. Cubberley wrote:

> Our schools are, in a sense, factories in which the raw products (children) are to be shaped and fashioned into products to meet the various demands of life. The specifications for manufacturing come from the demands of twentieth-century civilization, and it is the business of the school to build its pupils according to the specifications laid down. This demands good tools, specialized machinery, continuous measurement of production to see it is according to specifications, the elimination of waste manufacture, and a large variety in the outputs.[58]

The testing movement, financed by corporate foundations - particularly the Carnegie Foundation, helped meet the need for 'continuous measurement' and the 'elimination of waste manufacture', and it justified eugenic policies. As one of the most influential psychologists involved in the development of I.Q. testing, Edward L. Thorndike wrote in 1940:

> By selective breeding supported by a suitable environment we can have a world in which all men will equal the top ten per cent of present men. One sure service of the *able* and *good* is to beget and rear offspring. One sure service [about the only one] which the inferior and vicious can perform is to prevent their genes from survival.[59]

However the most important role of I.Q. testing was to justify the social divisions in society as being part of the natural order of things.

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55. Cited by Hofstadter *Social Darwinism in American Thought*, p.179 from *Our Country*, p.175.

56. Theodore Roosevelt 'The Strenuous Life' [1899] in *The Works of Theodore Roosevelt*, XIII, p.331; cited ibid. p.180.

57. Hamilton Cravens, *The Triumph of Evolution*, Philadelphia: University of Pennsylvania Press, 1978, esp. p.7.

58. From *Public School Administration*, Boston: Houghton Mifflin Co. 1916, p.338. Cited by Clarence J. Karier, 'Testing for Order and Control in the Corporate Liberal State', in Ned Block and Gerald Dworkin eds, *The I.Q. Controversy*, London: Quartet Books, 1977, pp.339-369, p.344. This is a superb study of the proponents of I.Q. testing, their relation to eugenics and their influence.

59. E.L. Thorndike, *Human Nature and the Social Order*, N.Y.: Macmillan, 1940, p.957; cited ibid. p.347.

At the same time, F.W. Taylor developed his time and motion studies of work into a system of scientific management, dedicated to reducing people to 'trained gorillas' so totally submerged in the rationalized work process that pleasure, sensuality, and critical thinking would be almost totally stifled, in order to maximize industrial output. This was associated with the development of the production line, exemplified in Ford's car factories.

The impetus to conceive life mechanistically combined with a concern to control people more efficiently then inspired the development of the behaviourist sciences of humanity in which humans were represented as nothing but stimulus-response mechanisms. Behaviourism can be seen as the continued development of the utilitarian program to control society according to scientific principles. It was a science of human behaviour designed to accord with Darwin's revolution in biology, modelled on the prevailing image of the physical sciences - in the hope that this would enable it to achieve a similar level of technological control over people as had been achieved over the physical world. People trained in behaviourist approaches to understanding people found employment in advertising agencies, in large business organizations and in government, particularly in education and military organizations. Hannah Arendt spelt out the significance of this:

> If economics is the science of society in its early stages, when it could impose its rules of behaviour only on sections of the population and on parts of their activities, the rise of the 'behavioural sciences' indicates clearly the final stage of this development, when mass society has devoured all strata of the nation and 'social behaviour' has become standard for all regions of life.[60]

Social Darwinism played a major part in the ideology of all participants in the First World War and it remained the dominant framework of social and political thought until the Second World War. In Germany, where Darwinism and Social Darwinism had been reformulated and popularized by Ernst Haeckel (1834-1919), Social Darwinism flowered with the rise of Nazism.[61] The Social Darwinist basis of Nazism was given typical expression by the Austrian Nobel Prize laureate Konrad Lorenz who wrote in 1940:

> The selection of toughness, heroism, social utility ... must be accomplished by some human institutions if mankind in default of selective factors, is not to be ruined by domestication induced degeneracy. The racial ideas as the basis of the state has already accomplished much in this respect.[62]

Himmler was an ardent exponent of Haeckel's ideas. Dr Mengler was an eminent geneticist. Hitler so fully embraced Social Darwinism and the idea that progress occurs through the struggle between nations and races that he accepted the right of the Russians to destroy Germany after they had demonstrated their military superiority. But the Nazis were only putting into practice and carrying out the logical implications of the most respectable ideas of twentieth century science.

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60. Hannah Arendt, *The Human Condition*, Chicago: University of Chicago Press, l958, p.45.

61. On this see Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League*, New York: Elsevier, 1971.

62. Quoted by Lewontin et.al. *Not in Our Genes*, p.30.

The New World of Information and Cybernetics

But Hitler's Germany was defeated, and the identification of Social Darwinist ideas with both Nazism and the economic ideas which had brought about the Great Depression temporarily weakened their influence. The Allies disowned their earlier Social Darwinian rhetoric, while the Germans were more or less compelled as losers to disavow Social Darwinism as part of their display of contrition for killing thirty odd million people. Consequently for the twenty five years after the Second World War the main goal in Western societies came to be the maintenance of full employment without inflation and the maintenance of political stability by providing for the needs of the entire population, with the exception of a few dark-coloured minorities.

The development of the welfare State which emerged from this was associated with the coming to dominance of Keynesian economics (reformulated in USA to accord with neo-classical economics) in which macro-economics was separated from micro-economics, and macro-economics raised to pre-eminence.[63] This tended to further reify the economy, shifting the object of concern away from satisfying the needs of individuals to the state of the economy as a whole. The aim of Keynesian economists was to eliminate economic fluctuations and inflation, and to maintain a sufficient rate of growth to maintain full employment. Since the economy must expand at 4% per annum to achieve this, the sale of the most wasteful, harmful goods and services was economically justified to keep the economy expanding. This involved the replacement of the utilitarian conception of humans as rational hedonists with definite wants to be satisfied, by a conception of humans as irrational hedonists whose wants had to be manipulated so they would act in a way appropriate to the requirements of the economy.[64] At the same time this form of economics continued to exclude from consciousness the environmental impact of economic growth and the ways in which the centres of the world-economy are draining off capital and non-renewable resources from the economic peripheries.[65]

With the growing complexity of government and business organizations associated with the more active role of the State and the expansion of capitalism after the Second World War, a new science of management emerged designed to enable managerial elites to control society in their interests. The 'socio-technical systems theory' which developed from this united information theory, cybernetics, operations research, games theory and cost-benefit analysis with systems theory into a generalized instrument for control.[66] In doing so, it has refined and reintegrated the mechanistic conception of humanity, and finally enabled Social Darwinism to be revived. As Mike Hales pointed out:

> Although developed in reaction to the mechanistic nature of Taylorism, the socio-technical approach contains its own form of mechanism, rather broader in conception and more subtle, but still mechanistic. The operator of an effectively designed automated system fits into the machinery of production in as calculated

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63. John Maynard Keynes' *General Theory of Employment, Interest and Money* was published in 1936, but his ideas were only fully implemented after the Second World War.

64. The changing image of humans in economics is described in Walter A. Weisskopf, *The Psychology of Economics*, Chicago: University of Chicago Press, l955; and 'The Image of Man in Economics' in *Social Research*, Vol. 40, l973, pp.547-63.

65. On this, see Dieter Groh and Rolf-Peter Sieferle, 'Experience of Nature in Bourgeois Society and Economic Theory: Outlines of an Interdisciplinary Research Project,' *Social Research*, No.3, 1980, pp.557-581.

66. For an analysis of this see Robert Lilienfeld, *The Rise of Systems Theory: An Ideological Analysis*, N.Y.: Wiley, 1978.

> a way as does the assembly-line worker.... Management science which leans on systems theory tends to have a strong stream of cybernetics in it, and both system theorists and cyberneticians view organisms and organizations as organic machines in which the parts are significant only with respect to the functions they perform in the adaptation of the whole to the environment.[67]

The most important component of this new science of control has been information theory. Information theory was originally developed as a means to understand and develop the technology of communications and to provide a mathematical description of the laws governing systems designed to transmit and manipulate information. To do so quantitative measurements of information and of the capacity of various systems to transmit, store and otherwise process it were set up. Cybernetics, which emerged from the efforts to develop control systems for machines, was then formulated in the same terms. In information theory, information is treated as a statistical quantity, a signal is considered as a particular choice from a statistical ensemble of possible signals, and the effectiveness of a control system in processing and measuring information is then measured by some kind of average for all the possible signals in the ensemble. This enables it to be related to the rest of physics through thermodynamics. Thermodynamics originated in nineteenth century efforts to measure the efficiency of machines, but was reformulated in terms of the principle of the conservation of energy and then systematized by Clausius, who introduced the concept of entropy to characterize the irreversibility of energy transformations. At this stage, thermodynamics was thought to be inconsistent with a mechanical view of the world, and 'energism' based on thermodynamics was promoted in opposition to it. But then Bolzmann sought to explain the macroscopic thermodynamic properties of systems in terms of the laws of motion of elementary particles - that is, in accordance with Newtonian physics, by conceiving entropy in terms of the statistical probability of occurrence of arrangements of atoms within systems. A low entropy system is a highly improbable arrangement of matter. A number of physicists who had speculated on the nature of entropy suggested that it could be described as loss of information. However it was not until C.E. Shannon working on the theory of information produced an equation equivalent to Clausius' equation defining entropy, that negative entropy could be formally defined as information (although thermodynamics and information theory remain largely independent disciplines). While systems theory originated in 'energism', and while its most eminent proponents, von Bertalanffy, Paul Weiss and Ervin Laszlo have been concerned to replace the mechanical view of the world, the development of information theory facilitated its incorporation back into the mechanistic world-view. The mechanistic version of systems theory was refined with the development of information processing technology, particularly computers, and all organizations came to be represented as information processing mechanisms, as cybernetic or self-regulating feed-back systems.[68]

With this development, mechanists were provided with new concepts to analyse the nature of life, society and the human mind, and a means to further specify the meaning of efficiency as the form to be aimed at by organizations. The ideas of systems theory were applied in ecology in the 1950s by Eugene Odum who

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67. Mike Hales, 'Management Science and "The Second Industrial Revolution"', *Radical Science*, ed. Les Levidow, London: Free Association Books, 1986, pp.62-87, p.72f.

68. For a representative sample of writings on early systems theory, see F.E. Emery ed. *Systems Thinking*, Harmondsworth: Penguin, 1969.

developed his notions on the basis of flow charts of energy, using such concepts as 'productivity', 'efficiency', and 'yield' in accordance with the emphasis on efficient control. As Donald Worster commented on this: 'In this age of computer-run organizations and the carefully arbitrated resolution of all discords, it was probably inevitable that ecology too would come to emphasize the flow of goods and services - or of energy - in a kind of automated, robotized, pacified nature.'[69] With the reformulation of systems theory in terms of information theory, information theory was also incorporated into biology. In population biology forms of optimization theory have been taken over from management science as techniques for the prediction and explanation of evolution.[70] It is assumed that organisms are struggling for resources that are in short supply, that they must invest time and energy to acquire these resources and then reinvest the returns partly in acquiring fresh supplies of resources and partly in reproducing. That organism is most successful which acquires the greatest net surplus for investment in successful reproduction. Similarly, as noted by Lewontin and his colleagues, Crick's metaphor of DNA controlled protein production is based on the sophistication of modern economies in which considerations of production are becoming less significant than control and management:

> It was to this new world that information theory, with its control cycles, feedback and feed-forward loops, and regulatory mechanisms, was so appropriate; and it is in this new way that the molecular biologists conceive the cell - an assembly-line factory in which the DNA blueprints are interpreted and raw materials fabricated to produce the protein end products in response to a series of regulated requirements.[71]

Such imagery dominates the textbooks and teaching of the new biology, with drawings laid out in assembly-line style.

With this revised conception of nature, it could again serve as an analogy to understand and legitimate developments within society. Social Darwinism had been in the background as the hard-headed view of society even during its apparent eclipse after the Second World War. It was implicitly held by most of those people working on I.Q. testing and elaborating mechanistic views of humans and functionalist views of society. Typically, if somewhat more honestly than most behaviourist psychologists, the foremost exponent of the stimulus-response analysis of human behaviour B.F. Skinner wrote: 'A scientific analysis may lead us to resist the mere blandishments of freedom, justice, knowledge, or happiness in considering the long run consequences of survival.'[72] However until the mid-1960s this Social Darwinism was only defended surreptitiously. The resurfacing of fully fledged Social Darwinism incorporating the new information systems theory began in sociology.

Sociology in the United States had been dominated since the 1930s by Talcott Parsons. Parsons' main concern had been to legitimate and shore up liberal capitalism while it was felt to be under threat from Communism.[73] While

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69. Don Worster, *Nature's Economy: The Roots of Ecology*, New York: Anchor Books, 1979, p.313.

70. See for example John Maynard Smith, 'Optimization Theory in Evolution' in *Conceptual Issues in Evolutionary Biology*, Elliot Sober ed., Cambridge Mass.: M.I.T. Press, 1984, pp.289-315.

71. Lewontin et.al. p.59.

72. B.F. Skinner, *Science and Human Behaviour*, New York: Macmillan, l953, p.436.

73. On this, see Alvin Gouldner;, *The Coming Crisis of Western Sociology*, N.Y.: Equinox, 1971.

formulating his ideas through a critical analysis of European thinkers, notably Weber, Durkheim and Pareto, and while overtly committing himself to the philosophy of Alfred North Whitehead,[74] Parsons inherited and worked within the basic framework of categories of Spencer's sociology - those of system, structure and function - but without Spencer's historical dimension. In the 1960s Parsons attempted to reformulate his theory to take history into account by using ideas from cybernetics, and in so doing, reconstructed the full Social Darwinian framework.[75] Society was represented as evolving by functional differentiation and then reintegration through a hierarchy of cybernetic systems, ranging from the economy which gets information feedback through the symbolic medium of money to regulate adaptation to the natural environment, the personality system which gains information feedback through the symbolic medium of power to serve the function of goal attainment: establishing priorities between goals and mobilizing system resources for their attainment, the social system getting feedback through the symbolic medium of influence which functions to integrate the acting units, to the cultural system which gets its feedback through the symbolic medium of commitment and functions to maintain and control tensions in the social pattern. Each of these four subsystems was seen as differentiating into four sub-subsystems, each subsystem with its own information feedback. Everything in society was then explained and evaluated in terms of its contribution to improving the capacity of society as a whole for survival and expansion in its competition with other such systems.

While in the United States Parsons' ideas were eclipsed by approaches devoted to providing knowledge for social engineering, this redirection of sociology was itself underpinned by Social Darwinism and was justified by Parsons' systems approach; and Parsons' ideas have recently been revived.[76] They have been taken up and developed by general systems theorists, most notably by the German sociologist and former student of Parsons, Niklas Luhmann whose ideas fully justify the reduction of sociology to social technology.

After the revival of Social Darwinism in sociology, the new field of sociobiology emerged. While this was ultimately inspired by Spencer, it was based on the synthesis of population biology, the new genetics of Watson and Crick, and ethology.[77] Genes, represented as repositories of information, were made the focus of evolutionary theory, and were represented as organizing and constructing bodies, including humans, as mechanisms for their survival.[78] Drawing on the cost-benefit analysis, investment opportunity cost, games theory and so on, sociobiologists again used social relations as analogies for understanding nature to explain away the appearance of altruistic behaviour of animals, representing it as nothing but the programming of bodies by genes to perpetuate their own kind. These ideas were

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74. On Parsons' relationship to Whitehead, see Andrew S. Dawson, *Parsons and Whitehead*, M.A. thesis, La Trobe University, 1991.

75. See Talcott Parsons, *Societies: Evolutionary and Comparative Perspectives*, Englewood Cliffs: Prentice Hall, 1966 and 'Some Problems of General Theory in Sociology' in J.C. MacKinney and E.A. Tyriakian eds, *Theoretical Sociology: Perspectives and Developments*, N.Y.: Appleton, Century & Crofts, 1970.

76. On this see Richard Münch, 'Parsonian Theory Today', in Anthony Giddens and Jonathon Turner, *Social Theory Today*, Cambridge: Polity Press, 1988, pp.116-155.

77. The founder of sociobiology, E.O. Wilson reportedly looks upon Spencer as 'one of his heroes' (Michael Ruse, *Taking Darwin Seriously: A Naturalistic Approach to Philosophy*, Blackwell: Oxford, 1986, p.97). E.O. Wilson's main work is *Sociobiology: the New Synthesis*, Cambridge: Harvard Univerity Press, 1975. The most popular exposition of sociobiology is Richard Dawkins *The Blind Watchmaker*, Harmdondsworth: Penguin, 1988.

78. Richard Dawkins, *The Selfish Gene*, Oxford: Oxford University Press, 1976, esp. p.21.

then extrapolated back to society, slightly modified in some cases to take into account the self-replicating nature of culture, to account for human behaviour. To take culture into account, Richard Dawkins coined the term 'meme' to refer to the units of cultural transmission.[79] In this way socio-biologists have offered a new justification for seeing late capitalism as in accordance with nature, and Dawkins has accordingly criticised the welfare state as unnatural.

Complementing sociobiology both in terms of the concepts used and the implications of the ideas being promoted, philosophers and psychologists have been using information theory, cybernetics and analogies with computers in their renewed attempts to explain the mind, or rather 'intelligence', mechanistically, representing humans as cybernetic organisms or 'cyborgs'.[80] Anglo-American philosophy has come to be dominated by the philosophy of language, the major proponents of which are those dedicated to representing language as a rule-governed mechanism for encoding and conveying knowledge or information about the world. Cognitive psychology has replaced behaviourism as the dominant paradigm in psychology, but this merely allows for an inherited information processing mechanism to function between the stimulus and the response, and occasionally for reflexive feedback circuits. Closely associated with developments in the philosophy of language and cognitive psychology, evolutionary epistemologists have refurbished the instrumentalist theory of knowledge, in some cases representing scientific theories as nothing but ways of gaining, organizing and processing information about the world selected according to their contribution to systems in their struggle for survival.[81] And the doyen of computer science, Marvin Minsky, has argued accordingly that since computers are rapidly overtaking humans in their capacity to process information, they must be regarded as the next stage of evolution.

At a practical level the resurfacing of Social Darwinism has been associated with renewed efforts to mechanize social control. It has been associated with the use of data from I.Q. testing by Jensen and Eysenck to justify discriminating between races and to justify less spending on the education of the underprivileged, in the explanations of rebellious behaviour in terms of people's defective brains, and in the rejection of the demand by women for equality on the grounds that male domination is built into our genes by generations of evolution. It underlay support for the new Cold War of the 1970s and 80s and the massive increases in expenditure on armaments. With increasing levels of unemployment in wealthy nations, with a massive redistribution of income from the poor to the rich both within nations and between nations and with increasing starvation in Third World countries, it has been important for enabling the sufferings of the poor to be dismissed as the inevitable by-product of progress as the weak and unintelligent are expelled from the system.

The new Social Darwinism provided the intellectual climate necessary for the demise of Keynesian economic theory in favour of monetarism, rational expectations theory, and supply-side economics, the doctrines associated with efforts by the New Right to dismantle social welfare provisions and institutions and to promote free markets to allow a struggle for survival between individuals and

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79. Ibid. Ch.11.

80. See D.C. Dennett; *Brainstorms*, Hassocks: Harverster Press, 1978; J.A. Fodor;, *The Language of Thought*, Hassocks: Harvester Press, 1976; and M.A. Boden, *Minds and Mechanisms*, Hassocks: Harverster Press, 1983 and *Computer Models of the Mind: Computational Approaches in Theoretical Psychology*, Cambridge: C.U.P.: 1988. Jeremy Campbell has described these developments in very general terms in *Grammatical Man: Information, Entropy, Language and Life*, Harmondsworth: Penguin, 1984.

81. On Darwinian epistemology see Ruse;, *Taking Darwin Seriously*, pp.148-206. Not all evolutionary epistemology is mechanistic. See Kai Hahlweg and C.A. Hooker eds, *Issues in Evolutionary Epistemology*, N.Y.: S.U.N.Y. Press, 1989 on this.

firms to generate economic progress.[82] And Social Darwinism is now filling a gap left by Keynesian economic theory and behavioural sciences as to what is the point of continued economic growth. Rather than seeing the purpose of economic growth as simply maintaining full employment and indefinitely increasing levels of consumption, and the development of the human sciences as simply means to manipulate people to ensure that they continue to consume more and feel good while they are doing so, economic growth and the control of people required to achieve it are increasingly understood as part of the struggle for power between nations. Comparisons are continually being made between economic growth rates and rates of technological advance (particularly of information technology) in different countries. It is assumed that those nations with the fastest growth rates will dominate those nations with slower growth rates in the future as Western societies with their more efficient economies have dominated other societies in the past. The next stage of this growth is seen as the integration of information technology into administration to achieve greater control over economic and social processes of society and economists have turned to systems analysis, games theory and cost-benefit analyses to interpret and regulate the functioning of the economic system. Anything which does not contribute to such economic advance and the development of technology (particularly information technology), whether this be social welfare or education which does not churn out business administrators and technocrats, is seen as an expendable luxury.

The political programme associated with this new Social Darwinism was developed and partly implemented by Zbigniew Brzezinski. Brzezinski argued that we are entering the 'technetronic' (technological + electronic) age in which humans will be remoulded by the new technologies and sciences associated with information processing, and he outlined the possibilities and dangers this posed for US power.[83] He then played a leading role in the establishment of the Trilateral Commission composed of leading ruling class figures from North America, Europe and Japan designed to guide a network of inter-imperialist co-ordination in accordance with this image of the future, and then as President Carter's National Security Advisor, steered US foreign policy into the new militarism which was brought to fruition under President Reagan.[84] The political agenda of Reagan was made clear by a Reagan advisor, Simon Ramo, who argued for 'the principal political need as being not more democracy but more systems analysis, since the more precisely a system can be modelled, the more easily it can be controlled from the top.'[85]

The Collapse into Nihilism

Yet this is not a full description of the ideology of the modern era. Quite apart from the presence of its negation by various romantic idealists and the persistence of relics from earlier eras: concern with nobility by upper classes in Europe, concern

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82. For an analysis of the new economics see Lester C. Thurow, *Dangerous Currents: The State of Economics*, Oxford; O.U.P., 1983; and Andrew Gamble, 'The Political Economy of Freedom', in *The Ideology of the New Right*, ed. Ruth Levitas, Cambridge: Polity Press, 1986, pp.25-54.

83. See Z. Brzezinski, *Between Two Ages: America's Role in the Technotronic Era*, Harmondsworth: Penguin, 1976.

84. For a critique of this, see Collettivo Strategie, 'The "Technetronic Society" According to Brzezinski', in Tony Solomonides and Les Levidow eds, *Compulsive Technology*, London: Free Association Books, 1985, pp.126-138. On Brzezinski's role on the foreign policy of the Carter administration, see Fred Halliday, *The Making of the Second Cold War*, 2nd ed., London: Verso, 1986, p.216, 218 and onwards.

85. David Dickson;, *The New Politics of Science*, 2nd ed., Chicago: Chicago University Press, 1988, p.54.

with rights at least for people of European origin in USA, and so on, there is a dim recognition that Social Darwinism, or euphemistically, belief in 'progress', does not overcome the meaninglessness of a mechanistic vision of the world. If life is just an endless struggle for survival, then what is the point of anything? In fact Social Darwinism was the final product of a culture which has reduced the world to an instrument for a transcendental purpose, and foreshadowed the complete dissolution of all reference points which had given meaning to this instrumentalization.

It was Nietzsche who realized the impasse which had been reached by European civilization. As he summed this up:

> From time immemorial we have ascribed the value of an action, a character, an existence, to the *intention*, the *purpose* for the sake of which one has acted or lived: this age-old idiosyncrasy finally takes a dangerous turn ... there seems to be in preparation a universal disvaluation: 'Nothing has any meaning' - this melancholy sentence means 'All meaning lies in intention, and if intention is altogether lacking, then meaning is altogether lacking too.' In accordance with this valuation, one was constrained to transfer the value of life to a 'life after death,' or to the progressive development of ideas or of mankind or of the people or beyond mankind; but with that one has arrived at a *progressus in infinitum* of purposes: one was at last constrained to make a place for oneself in the 'world process' (perhaps with the dysdaemonistic perspective that it was a process into nothingness).[86]

Correspondingly, the heroic moralism of European culture has been gradually whittled down. As Max Weber, who regarded Nietzsche as one of the greatest thinkers of the nineteenth century, argued in the conclusion to his study of the Spirit of Capitalism: 'The rosy blush of its laughing heir, the Enlightenment, seems to be irretrievably fading, and the idea of duty in one's calling prowls about in our lives like the ghost of dead religious beliefs... [O]f the last stage of this cultural development, it might truly be said: "Specialists without spirit, sensualists without heart; this nullity imagines that it has attained a level of civilization never before achieved."'[87] This was written a few years before the First World War which was soon followed by the Great Depression, then by the Second World War. All that remains for this culture which now dominates the world is an endless quest for more efficient means to dominate nature and people, a quest which is foundering on the environmental crisis. We now live in a post-Christian, post-Enlightenment age.

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86. Friedrich Nietzsche, *The Will to Power*, tr. Walter Kaufmann and R.J. Hollingdale, N.Y.: Vintage, 1968, §666.

87. Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, tr. Talcott Parsons, London, George Allen & Unwin, 1930.

7

NIHILISM INCORPORATED

The essential features of the world-orientation which has dominated European civilization have now been revealed. By comparison with virtually every other culture that has existed, European culture promotes an extreme individualism and an extreme detachment from and instrumentalisation of the world: both of nature and of people. Rather than experiencing themselves as participants in the stream of life, in the becoming of the world, people formed by European culture experience themselves as transcendent consciousnesses in a world of 'things' or 'objects' located in space and only externally related to each other. Progress, the ultimate concept of evaluation, is conceived as the increasing subordination of the world to this transcendent consciousness; as the transformation of the entire world into a vast machine serving human purposes (or rather, the purposes of the power élite). As Robert Jungk wrote of the most extreme development of European culture, USA:

> America is striving to win power over the sum total of things, complete and absolute mastery of nature in all its aspects... To occupy God's place, to repeat his deeds, to recreate and organize a man-made cosmos according to man-made laws of reason, foresight and efficiency: that is America's ultimate objective... It destroys whatever is primitive, whatever grows in disordered profusion or evolves through patient mutation.[1]

The rejection of life's spontaneity in favour of what is eternal has been most clearly manifest in the intellectual life of European culture. As Nietzsche noted, 'To impose upon becoming the character of being - that is the supreme will to power.'[2] Thus Nietzsche wrote of the idiosyncrasies of philosophers:

> There is ... their hatred of even the idea of becoming, their Egyptianism. They think they are doing a thing *honour* when they dehistoricise it, *sub specie aeterni* - when they make a mummy of it. All that philosophers have handled for millenia has been conceptual mummies; nothing actual has escaped their hands alive. They kill, they stuff, when they worship, these conceptual idolaters - they become a mortal danger to everything when they worship. Death, change, age, as well as procreation and growth, are for them objections - refutations even. What is, does not *become*; what becomes *is* not ... Now they all believe, even to the point of despair, in that which is.[3]

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1. Robert Jungk, *Tomorrow is Already Here*, tr. M. Waldman, London, 1954, p.17.

2. Friedrich Nietzsche, *The Will to Power*, § 617, tr. Walter Kaufman and R.J. Hollingdale, N.Y.: Vintage, 1968, p.330.

3. Friedrich Nietzsche, *Twilight of the Idols* [1889], tr. R.J. Hollingdale, Penguin Books: Harmondsworth, 1968, p.35.

The mainstream of science is based on this philosophy, and is committed to explaining the entire universe in terms of identities, in terms of eternally valid, mathematical describable laws describing eternally self-identical elements (whether these be elementary particles or space-time points). It must deny creative becoming, and thereby any significance to life. Again, Nietzsche identified the essential problem:

> Has not man's determination to belittle himself developed apace precisely since Copernicus? ... Ever since Copernicus man has been rolling down an incline, faster and faster, away from the centre - whither? ... All science ... is now determined to talk man out of his former respect for himself, as though that respect had been nothing but a bizarre presumption.[4]

But the debasement of life goes much deeper than this. Here it has been shown how through the use of society as an analogy for nature and nature as an analogy for society, and the incorporation of these analogies into social practices, the whole of Western culture has incorporated this orientation.

Through Neoplatonic Christianity, the source of meaning in the world was projected onto an eternal, supersensible realm, leaving the changing sensible world to be seen as having only instrumental value in relation to this eternal order, and that after having evaporated off all meaning from the sensible world, the supersensible realm of forms itself lost its significance. After two thousand years the Platonic pursuit of Being and the rejection of becoming had been successful. To some extent this total elimination of becoming can be seen as a return to Democritus or Parmenides rather than a development of Platonic thought; but the eternal in the form of the economic machine still functions to some extent as the ideal to which everything must be made to conform. The effect of a thousand years of Christian Platonism had been to produce not simply an intellectual acceptance of these doctrines, but to have transformed and delivered the whole of Western society to this dead, meaningless, inert, Parmenidean One: the deterministic, totally predictable, totally controllable 'block' universe of mechanistic materialism. Darwinism, in which all living entities, including humans and human societies are seen as nothing but arrangements of matter instrumentalizing each other in an endless struggle for survival, the outcome of which is pre-determined, not only is a major part of the scientific world-view, but has come to express the reality of everyday social life.

The pervasiveness of this world-orientation is evident everywhere. Piaget noted how very young children appropriate Newtonian concepts of space and time which took the work of men of genius to formulate in the seventeenth century. Such concepts have come to structure their entire world. The philosophy of linguistic analysts who attempted to clarify the conceptual schemes of everyday life, and the phenomenologists who attempted to apply a presuppositionless method to describe the world as it presents itself to consciousness, also revealed this mechanistic world-orientation. The linguistic analyst P.F. Strawson in *Individuals* defended a watered-down Newtonianism, while the phenomenologist Heidegger in *Being and Time* argued that the world is devoid of significance except insofar as it is being used as an instrument. He concluded that the surrounding world is essentially a world of things *zuhanden*, 'ready to use' and that it is only through their relation to our project of existence that we care for them. Anything seen as *vorhanden*, merely present, is

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4. Friedrich Nietzsche, *The Genealogy of Morals*, tr. Francis Golffing, N.Y.: Doubleday, 1956, Third Essay, XXV, p.291f.

stripped of our care and becomes a deficient mode of being, an object of mere curiosity.[5] (Heidegger rejected this mode of thinking in his later work.) Jean Paul Sartre's phenomenological investigations in *Being and Nothingness* (which were also partially transcended in Sartre's later works) revealed how this nihilism is extended to human relationships. He argued that individuals have no basis for choosing one course of action rather than another in a meaningless world, and described the relations between people as a struggle in which one individual either reduces the other to an object in relation to his or her own projects, or is reduced to an object by the other.

Neurotic Adaptations to Mechanistic Materialism: From Osiander to Lyotard and Habermas

This attempt to reveal the coherence of the world-orientation underlying Western culture is in direct opposition to presently fashionable views about the modern world. For instance the 'post-modernist', Jean-François Lyotard, argues that there are no longer any grand narratives of legitimation, and that the attempt to reconstitute such a grand narrative is to be caught up in a type of thinking which is out of step with the most vital modes of knowledge in the postmodern world.[6] In the postmodern world it is necessary to recognize the heteromorphous nature of language games, none of which are epistemologically superior to any other, and to respond to the possibilities for creativity provided by these. But such claims can be best understood as the latest symptom of a neurotic adaptation to and denial of the domination of society by the mechanistic world-orientation.

Neurotic adaptation to the mechanistic world-orientation began with Osiander who wrote a preface to Copernicus' *De Revolutionibus* claiming that the theory of the sun-centred universe was only a device for simplifying the mathematics for making predictions about the motion of stars and should not be taken as a representation of reality. Then, attacking the philosophy of Descartes, Vico argued that knowledge of nature is defective and that we can only really know what humans have created: the social world. After Newton, Berkeley attempted to circumscribe the Newtonian conception of the world by claiming that the real world is the familiar world, and the world postulated by physics only deals with the 'grammar' of reality. Kant argued that the world as conceived by mechanistic science is merely sensations organized by imagination, the forms of intuition and the categories of the understanding, and is therefore not reality but the world of appearance, the phenomenal world. The real world, the noumenal world, could therefore still provide a ground for morality, though it could not be known in the same way as the world of appearance. Each of these strategies was elaborated throughout the nineteenth century and are still being elaborated. In the twentieth century, attempts to delimit the significance of scientific materialism have come from Cassirer's philosophy of symbolic forms, from the phenomenologists and from the linguistic analysts. Spelling out the implications of phenomenology, Husserl argued:

> In regard to nature and scientific truth concerning it ... the natural sciences give merely the appearance of having brought nature to a point where for itself it is

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5. For an analysis of the roots of such attitudes see Hans Jonas, 'Gnosticism, Existentialism and Nihilism' in *The Phenomenon of Life*, Chicago: University of Chicago Press, 1966.

6. Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, [1979] tr. Geoff Bennington and Brian Massumi, Minneapolis: University of Minnesota Press, 1984, p.14.

> rationally known. For true nature in its proper scientific sense is a product of the spirit that investigates nature, and thus the science of nature presupposes the science of the spirit... Spirit is not looked upon here as part of nature or parallel to it; rather nature belongs to the sphere of spirit... It was [transcendental phenomenology] which overcame naturalistic objectivism...[7]

And Wittgenstein argued that science is just one form of life or language game among others, without any privileged status:

> Our language can be seen as an ancient city: a maze of little streets and squares, of old and new houses, and of houses with additions from various periods; and thus surrounded by a multitude of new boroughs with straight streets and uniform houses.

The symbolism of chemistry and the notation of infinitesimal calculus were then described as 'suburbs of our language'.[8]

More recently Jürgen Habermas argued that there is a different rationality involved in communication from the rationality of domination which characterizes the natural sciences. In *Knowledge and Human Interests* he characterized knowledge as constituted by interests, with different interests generating different and equally valid forms of knowledge. The world as understood by the physical sciences is only the world conceived in relation to our efforts to control it, that is, to technical interests. An entirely different approach is required in the human sciences - one in which a 'practical' interest: achieving common understanding, and an emancipatory interest: freeing people from distorted forms of communication, should be the constitutive interests. Retreating from the concept of knowledge constitutive interests with its fixation on consciousness, Habermas then attempted to develop a theory of language which would reveal speech to involve commitments beyond instrumental rationality. He argued that all speech implies a commitment to an ideal speech situation free of external coercion and internal distortions in which participants would respond to the force of the better argument alone. In his *magnum opus*, *The Theory of Communicative Action*, he reformulated this, arguing that there are three validity claims implicitly raised and reciprocally recognized with the utterance of every speech-act - that the propositional content is true, that the performative component is correct, and that intentions are being expressed sincerely. These raise speech above the functionalist rationality of economic and administrative systems. The political problem of the modern world is to prevent functionalist rationality from invading the life-worlds of people and the norms established within it through relatively undistorted communication based on non-instrumental validity claims.

What makes all these efforts to bracket out or devalue the scientific conception of the world neurotic is that they not only deny the real problem, but they prevent its being properly addressed. They have insulated mechanistic materialism from more fundamental questioning. The implausibility of the attempt to circumscribe mechanistic materialism has become progressively greater with the advancement of its research programme into the life sciences and the human sciences. It is simply absurd to present evolutionary theory as anything but an account of the nature of

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7. Edmund Husserl, 'Philosophy and the Crisis of European Man' in *Phenomenology and the Crisis of Philosophy*, tr. Quentin Lauer, N.Y.: Harper Torchbooks, 1965, pp.188-190.

8. Ludwig Wittgenstein, *Philosophical Investigations*, tr. G.E.M. Anscombe, 3rd ed. Oxford: Basil Blackwell, 1968, §18, p.8.

reality, and it is hardly surprising that people take it as such and act accordingly. Husserl's philosophy did nothing to check the rise of Naziism based on Social Darwinism. At the same time such approaches pre-empt the efforts to get at the roots of the problem, to challenge mechanistic materialism on its own ground as the best metaphysical foundation for understanding nature. Thus the tradition which began with Leibniz of attempting to replace mechanistic materialism, the tradition of which process philosophy is the furthest development, has been pushed into the background and almost submerged. Postmodernism and similar intellectual movements which fail to acknowledge the existence of a dominant and coherent world-orientation dominating our whole civilization can be seen as the latest stage of this neurotic adaptation.

Illustrating this, Lyotard defines his position in opposition to the 'modern', in opposition to 'any science that legitimates itself with reference to a metadiscourse ... making an explicit appeal to some grand narrative, such as the dialectics of Spirit, the hermeneutics of meaning, the emancipation of the rational or working subject, or the creation of wealth.'[9] He sets out to oppose two legitimating discourses: the speculative narrative which from the time of Humboldt's university reforms in Germany in the early nineteenth century had been used to justify science as part of the Spirit's self-formation, and the emancipative narrative (of Habermas) which divides the domain of truth from the ethico-political and denies any necessary passage between the two, thereby placing both on the same level. But his real concern is not with these, since he claims that: 'The grand narrative has lost its credibility, regardless of what mode of unification it uses, regardless of whether it is a speculative narrative or a narrative of emancipation.'[10] His anger is directed against the performativity criterion of knowledge (described and defended by Niklas Luhmann), where scientific knowledge is seen as self-validating by virtue of the power it generates, the criterion which grand narratives fail to effectively challenge. With this new criterion, truth, efficiency and wealth come to be synonymous. Science becomes a force of production and scientists are purchased to augment power. Such power is absolute legitimation 'since performativity increases the power to produce proof, it also increases the ability to be right... It is self-legitimating, in the same way a system organized around performance maximization seems to be.'[11]

Lyotard's proposed solution to this problem is based on his argument that in fact science is not as the systems theorists such as Luhmann have presented it to be. He argues that modern science - postmodern science - has revealed through quantum theory, thermodynamics, catastrophe theory etc. the impossibility of attaining the form of total control and predictability aspired to by systems theorists. According to Lyotard, this science, a science 'concerning itself with such things as undecidables, the limits of precise control, conflicts characterized by incomplete information, "fracta", catastrophes and pragmatic paradoxes',[12] cannot be legitimized by grand narratives or by maximized performance criteria, but only by local narratives which inform its powers of imaginative invention. It is to Wittgenstein's philosophy of language games we should turn for intellectual salvation from nihilism.

By taking as his starting point German philosophy which, as the product of Germany's late involvement in the rise of the West, had been dominated by the attempt to encompass and supersede the mechanistic world-orientation through

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9. Lyotard, *The Postmodern Condition*, p.xxiii.

10. Ibid. p.37.

11. Ibid. p.46f.

12. Ibid. p.60.

either a modified Neoplatonism deriving from Hegel or a free floating critical rationality deriving from Kant, Lyotard has failed to see that the systems approach and the performativity criterion he is attacking is the culmination of mechanistic materialism and Social Darwinism. It is the apparent lack of success of the project of German philosophy which has created the illusion that there is no super-ordinate framework of legitimation. But what this failure indicates is the victory of mechanistic materialism and Social Darwinism, a success so complete that no further narrative is required. The performativity criterion which Lyotard is so opposed to does not make science self-legitimating, nor is power self-legitimating. These are legitimated by the underlying theory of being which dominates the modern world, and by the Social Darwinism which is based upon it, and only an explicitly developed alternative theory of being articulated into a grand narrative could challenge this world-view. The developments in science which undermine the performativity criteria which Lyotard refers to are in fact the products of a struggle against the mechanistic world-view - and would not have been possible without the efforts by philosophers such as Bergson and Whitehead to create an alternative metaphysics, and associated with this, an alternative grand narrative to that which has dominated Western civilization. Lyotard seems blind to these broader intellectual struggles.

Lyotard's argument that grand narratives which put all particular narratives and discourses into perspective are neither possible nor desirable, echoes the ideas of Nietzsche who spelt out the implications of the collapse of the attempts by Kant and Hegel to transcend the mechanical view of the world.[13] However Nietzsche thought through the implications of the failure to discover a universally shareable framework of discourse - that relations between people can only be relations of power, that 'life is essentially appropriation, injury, overpowering of the strange and weaker, suppression, severity, imposition of one's own forms, incorporation and, at the least and mildest, exploitation - '.[14] That is, allowing perspectives to proliferate without making any effort to evaluate them must lead in practice to the adoption of the performative criterion that Lyotard is opposing, which in turn will lead to an acceptance of mechanistic science which at the same time legitimates the performativity criterion. This is in fact what happened when the Wittgensteinian philosophy championed by Lyotard came to dominate philosophy in Great Britain. Philosophy was smothered, leaving the way for the complete domination of intellectual life by the performativity criterion of a debased science. And the developments in science which Lyotard praised as a source of hope for the future are being severely hampered precisely because of the unchecked redirection of science into the development of technology which has resulted from the triumph of the performativity criterion. As Peter Dews argued in his critique of postmodernism (which included Foucault, Derrida and Lacan as well as Lyotard), the magical

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13. Lyotard as part of the postmodern movement in France is a manifestation of a dialectic of ideas which has been reproduced at least three times, first with the development in Germany from Kant's attempt to circumscribe the mechanical world-view to Hegel's attempt to subsume it under a broader metaphysical scheme, to the collapse of systematic philosophy culminating in the work of Nietzsche, and second in the development of German Marxism from Kautsky's mechanistic formulation of Marx's ideas to the efforts to graft a Kantian ethics onto this formulation by Vörlander and Bernstein, followed by a reformulation of Marx from the perspective of Hegel by Lukács and Korsch, followed by a rejection of the quest for a totalizing perspective by Horkheimer and Adorno. In the third instance, French philosophy developed from Leon Brunschvicg's Neo-Kantianism to the Hegelianism of Kojève, Hyppolite, Sartre and Merleau-Ponty, to the Nietzschean rejection of Hegelian dialectics and totalizing perspectives by the poststructuralists.

14. Friedrich Nietzsche, *Beyond Good and Evil,* Harmondsworth, Penguin, 1973, §259, p.175.

assumption that the fragmentation of knowledge will somehow break the grip of an oppressive social order is unsustainable. He concluded:

> ... the rejection of the claims of an integrated critical stand-point in post-structuralism, in the mistaken belief that such a stand-point implies repressive totalization, is far from providing a more decisive liberation from the illusions of philosophy, and a more powerful illumination of the contemporary world. The fate of post-structuralism makes clear that critique is not a question of the arbitrary and coercive espousal of premisses and precepts, but rather of commitment to that coherence of thought which alone ensures its emancipatory power.[15]

Dews himself had in mind the later work of Habermas as the coherent system of thought which could serve this purpose. But while one can admire Habermas' heroic effort to systematically defend rationality in a nihilistic age, and agree with his effort to replace a philosophy of consciousness by a philosophy of communicative action, his whole approach represents a failure of nerve in the face of the mechanistic world-view. As he wrote in the first page of *The Theory of Communicative Action:*

> Philosophy can no longer refer to the whole of the world, of nature, of history, of society, in the sense of a totalizing knowledge. Theoretical surrogates for worldviews have been devalued, not only by the factual advance of empirical science but even more by the reflective consciousness accompanying it. With this consciousness philosophical thought has withdrawn self-critically behind itself; in the question of what it can accomplish with its reflective competence within the framework of scientific conventions, it has become metaphilosophy.[16]

In deferring to present scientific conventions, Habermas has accepted the divisions between domains of rational discourse imposed by the mechanistic world-orientation - essentially those proposed by Kant (after having given up the effort to replace the categories of Newtonian physics): theoretical, practical and aesthetic discourse, with two more domains added on: therapeutic critique and explicative discourse.[17] So, in rejecting totalizing philosophy, he has formulated his own defence of rationality within the totalizing perspective of mechanistic materialism and closed off the possibility of displacing it.

With all facets of life permeated by the mechanistic world-orientation, Habermas's conservatism and his subsequent formulation of the main problem of the modern world as the colonization of the life-world by the functionalist rationality of systems - together with his solution: the promotion of values associated with the validity claims of communication as a basis for counter-attacking this colonization - must be rejected as inadequate. To begin with, this leaves the systems of purposive-rational action, notably the economies of affluent core zones of the world economy, to continue their destructive expansion at the expense people in the Third World and of the world ecosystem. Beyond this, this approach does not address, or addresses only very inadequately, the main point raised by Nietzsche - that in the modern world the highest values have devalued themselves, that even if it could be shown

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15. Peter Dews, *Logics of Disintegration*, London: Verso, 1987, p.242.

16. Jürgen Habermas, *The Theory of Communicative Action*, Volume 1, [1981] tr. Thomas McCarthy, Boston: Beacon Press, 1984. p.1f.

17. See ibid. p.23.

that there is an implicit commitment in all speech to non-instrumental notions of validity, the development of a view of the world on the basis of such validity claims has rendered such values meaningless. What is the point of acknowledging such commitments and creating situations of uncoerced communication when people no longer have any grounds for justifying any conviction beyond instrumental or functional efficiency and the need for uncoerced communication? Under these circumstances the provision of sites where communication is free from coercion can only be an instrument of social formations in the struggle for greater instrumental efficiency to win out in the struggle for survival. Social Darwinist systems theorists such as Niklas Luhmann can allow the validity claims associated with communicative action, but then deny their universalist claims, relativizing instances in which they are invoked to instruments in the power struggles of particular social systems.[18] Habermas' explanation for the lack of resistance to the colonization of the life-world by systems dedicated to instrumental control, that consciousness is now no longer false but fragmented, is only one side of the story. It involves a failure to acknowledge the coherence of the mechanistic world-orientation dominating society, including the life-worlds of people, underlying this fragmented consciousness. Consciousness is only fragmented among those who are excluded from power and where this world-orientation is failing as a means to understand the world.

Most commentators on and critics of modern culture have failed to come to grips with humanity's predicament because they have been blind to the coherence and power of the ideas which underpin it. This blindness results from an excessive preoccupation with the ideas of other humanistic intellectuals. But the coherence of this culture lies in the mainstream of science itself and in the forms of thinking embodied within the main institutions and organizations of society and within individuals. A culture must be seen as an ecosystem of practices and general orientations as well as explicitly developed ideas, with each constituting, conditioning, resonating with, disguising and providing the conditions for the development of each other. In European civilization, as in traditional societies, the general orientation to the world is incorporated as a habitus, 'a permanent disposition, embedded in the agents' very bodies in the form of mental dispositions, schemes of perception and thought, extremely general in their application ... the cultivated disposition inscribed in the body schema and in the schemes of thought...'[19] Underneath the fog of cliches and platitudes and polite gestures which take the place of thinking in the modern world, mechanistic materialism is lived as a mode of bodily engaging in the world; it is the orientation to the world which individuals must adopt if they are to make their way in life in modern capitalist societies and which is merely cloaked by neurotic adaptations to it. How is the domination of the mechanistic materialist conception of the world maintained and reproduced?

Science

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18. Habermas has recognized the relationship between systems theory, Social Darwinism and the Nietzschean undermining of reason in his confrontation with Luhmann, and has recognized the social significance of such thinking, but in my view he does not present a convincing refutation of Luhmann and all he stands for. See Jürgen Habermas, *The Philosophical Discourse of Modernity*, tr. Frederick Lawrence, Cambridge: M.I.T. Press, 1987, pp.336-385, esp.p336f.

19. Pierre Bourdieu, *Outline of a Theory of Practice* [1972] tr. Richard Nice, Cambridge: C.U.P., 1977, p.l4f.

To begin with, the officially sanctioned view of the world is the one seen through the objectivist categories of mechanistic science. Scientific experts have gained the status of a priesthood with a virtual monopoly of power to adjudicate on questions of truth and falsity on all but minor issues.[20] Scientific jargon, especially when it is interspersed with mathematical expressions, has attained the status Latin had in the Middle Ages, a superior language, accessible only to a higher order of beings; and scientific experts are those with the credentials to mediate between this higher discourse and the discourse of ordinary mortals. For the normal scientific expert, the world is a mechanical order of matter in which everything is entirely explicable in terms of the properties of its constituents.[21] While mechanistic materialism has been rejected in theoretical physics and in thermodynamics, this rejection is more than compensated for by the dogmatic adherence to a mechanistic framework for research in the mainstream of chemistry, biology, psychology and economics. Mechanistic materialism continues to be identified with science as being the objective, true account of the nature of the world.

While scientists are thus exalted as the custodians of truth, the conditions for the promotion of science guarantee that most scientists will continue to conceive the world mechanistically. To retain their financial support, institutions of education and research must produce and grade people to function within this society, to increase the market price of their labour power and produce knowledge which can be sold as a commodity; and it is knowledge developed on the basis of a mechanistic conception of the world which serves these functions. For instance genetic engineering which has a saleable technological payoff and purveys a mechanistic world-view is being provided with research funds, while funding for the study of epigenesis: the differentiation and genesis of form in organisms, and anti-reductionist ecology, which do not produce marketable knowledge or people with marketable skills and which undermine the mechanistic view of the world, is poor.

This bias is being accentuated with the deliberate reorganization of tertiary and research institutions in almost every Western country to shift research away from the humanities to the sciences, and away from pure science to applied science. As Lyotard has noted:

> Research funds are allocated by States, corporations, and nationalized companies in accordance with [the] logic of power growth. Research sectors that are unable to argue that they contribute even indirectly to the optimization of the system's performance are abandoned by the flow of capital and doomed to senescence. The criterion of performance is explicitly invoked by the authorities to justify their refusal to subsidize certain research centres.[22]

This process is most clearly evident in the United States, where, as David Dickson has shown: 'The notion of scientists as independent scholars, motivated soley by a thirst for knowledge and unconcerned about the eventual utility of their results, has been banished for good.'[23] Almost all studies which could reveal the limitations or lead to alternatives to mechanistic materialism are thus being eliminated as

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20. The parallels between science and religion have been explored by Paul Feyerabend in *Science in a Free Society*, London: Verso, 1978, pp.73-122. On the promotion of 'scientists' as an alternative clerisy in nineteenth century Britain, see Ruth Barton, *The X Club: Science, Religion, and Social Change in Victorian England* (Ph.D. diss., Uni. of Pennsylvania, 1976).

21. As pointed out by Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos*, Toronto: Bantam, 1984, p.68.

22. Lyotard, *The Postmodern Condition: A Report on Knowledge*, p.47.

23. David Dickson, *The New Politics of Science*, 2nd ed., Chicago: Uni. of Chicago Press, 1988, p.46.

irrelevant to the development of technology, and it is almost impossible for most scientists to go against this trend. Of the 700,000 scientists in the United States, only 5,000 have any power to determine what research they do, and such power is usually only obtained through conformity to existing powers in the first place.[24] An élite of 200 to 300 key people actually make all the important decisions about science, and have shown themselves prepared to discipline dissidents who step out of line to address the public.[25] Thus, truth, first of all identified with science, is now identified with technology which is saleable as a commodity.

This devaluation of truth is legitimated by empiricist philosophies of science. The empiricism which developed with mechanistic science was designed for the most part to justify its claims to knowledge and invalidate rival claims, while being consistent with the view of humans as complex machines. In the twentieth century logical empiricists attempted to buttress empiricism by a revived and greatly developed tradition of logic, continuing the effort to account for knowledge mechanistically. Fused with pragmatism, operationalism and more recently, mainstream North American philosophy of language and evolutionary epistemology, this has produced a one dimensional intellectual world.[26] Science, promoted by logical empiricists as the only worthwhile intellectual pursuit, was represented by them as the accumulation of objective knowledge verified by observation and experiment, formulated into mathematically describable laws enabling predictions to made from one observation to another. While subsequent work by historians and historically oriented philosophers of science showed this image of science to be totally at variance with what was involved in the great scientific achievements of the past,[27] logical empiricism has become increasingly institutionalized within science itself. To begin with this took place in a straightforward way, particularly in the human sciences where to demonstrate their scientific credentials, behaviourist theories promoting a mechanistic image of humans were modelled on the view of science purveyed by logical empiricists. But the real success of logical empiricists has occurred in a less direct way. By striving to conceive knowledge and rationality mechanistically, they have provided the basis for the manufacture of computers: machines, which as the logical empiricists understand the process, can think, and through the incorporation of computers into research these machines are now affecting the direction of science. Those areas of scientific enquiry to which computers can be applied to 'model' reality are gaining inordinate prestige and research funding. The effect of this is that in fields such as ecology and economics only those aspects of the world which can be comprehended in terms of bits of information processable by computers are being granted the status of science. This tendency is being reinforced through the incorporation of computers into education. In this way logical empiricism is coming to be the true account of science through its effects upon it.

This has made it difficult to question prevailing scientific ideas or to develop new lines of research. Science is understood and represented in a dogmatically realist

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24. On the state of modern science see David Dickson, *The New Politics of Science*. This updates Hilary Stephen Rose's, *Science and Society*, Harmondsworth: Penguin Books, 1970; and J.R. Ravetz's, *Scientific Knowledge and its Social Problems*, Penguin: Harmondsworth, 1973.

25. In particular those academics who have taken up the cause of the environment have had their careers jeopardised. On this see Brian Martin, 'The Scientific Strait-jacket' in *The Ecologist*, Vol.11, No.1, Jan.-Feb. 1981, pp.33-43.

26. As argued by Herbert Marcuse in *One Dimensional Man*, Boston: Beacon Press, 1964 and more recently by Allan Bloom in *The Closing of the American Mind*, N.Y.: Simon and Schuster, 1987.

27. The main actors in this were Whitehead, Burtt, Fleck, Koyré, Polanyi, Toulmin, Hanson, Kuhn, Lakatos, Feyerabend, Hesse, Shapere, Lauden and Harré. However there were many others.

way insofar as it is mechanistic (without ever revealing mechanistic materialism to be only a particular research programme which, as such, might be questioned), while those theories inconsistent with mechanistic materialism such as relativity theory, quantum theory and non-linear thermodynamics are presented in a highly abstract way which focuses attention almost exclusively on their capacity to make correct predictions.[28] As Levy-Lebond described the typical handbook on such theories:

> It consists, in general, of purely theoretical, exaggeratedly formalistic accounts, from which references to real experiments steadily vanish. Not a single impression is left of the real procedures of scientific activity, of the dialectic between theory and practice, heuristic models and formalism, axioms and history. Modern physics appears as a collection of mathematical formulae, whose only justification is that 'they work'.[29]

Scientists who question the conceptual incoherencies within or between domains of science or attempt to develop new metaphysical foundations which could overcome these problems - such as Ilya Prigogine or David Bohm - immediately lose standing before the priesthood of scientific experts. As a consequence, science has splintered into a cacophony of sub-disciplines inhabited by ultra-specialized ignoramuses pouring out ever increasing quantities of unreadable and unread papers.[30]

This dogmatism is then reinforced by identifying the elaboration of a mechanical view of the world with masculinity. The resonance between gender relations and the development of mechanistic science has been revealed most clearly by Brian Easlea who has exposed the aggressively misogynistic sexual imagery of those espousing mechanistic, reductionist views of the world from Bacon and Newton to the present.[31] The identification of mechanistic science with masculinity is manifest in the division between the 'hard' sciences, most especially physics, and the 'soft' sciences, most especially the human sciences (with the exception of economics, modelled on physics); or as a former Professor of Philosophy at the Australian National University J.J.C. Smart described them, the boy and the girl sciences. This has led biologists and human scientists to struggle to make their works into hard, masculine sciences, and all those who have opposed the reductionist research programmes entailed by this, however convincing their arguments, are seen to have thereby revealed themselves to be 'soft-headed'.[32]

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28. This has close parallels with the medieval world in which the development of astronomy was inhibited because to make the heavens intelligible meant undermining the categories on which medieval social life was based. Astronomy was therefore reduced to making predictions, and even Copernicus was interpreted by Osiander, who wrote the preface to his book, as though this were the sole end of his theory. See Norman Diamond, 'The Copernican Revolution: Social Foundations of Conceptualizations in Science' in Les Levidow ed. *Science as Politics*, London: Free Association Books, 1986, pp.7-37. In the modern world quantum theory has been reduced to making predictions and David Bohm's efforts to reconceptualize the nature of reality to make sense of quantum phenomena have been dogmatically dismissed by mainstream scientists.

29. Jean-Marc Levy-Lebond, 'Ideology of/in Contemporary Physics' in Hilary Rose and Steven Rose (eds), *The Radicalization of Science*, London: Macmillan, 1976: pp.136-75, p.160.

30. See the poignant memoirs of Erwin Chargaff *Heraclitean Fire* N.Y.: Rockefeller University Press, 1978 for a description of what it means to be a scientist in the modern world.

31. Brian Easlea;, *Witchcraft, Magic and the New Philosophy*, Harvester Press, Sussex, 1980, *Science and Sexual Oppression: Patriarchy's Confrontation with Woman and Nature*, London: Weidenfeld and Nicholson, 1981, and *Fathering the Unthinkable: Masculinity, Scientists and the Nuclear Arms Race*, London: Pluto, 1983.

32. Thus T. A. McMullen in 'A Critique of Humanistic Psychology.' *Australian Journal of Psychology* 1982, Vol. 34, pp.221-229 equated humanistic psychology with a retreat from objectivity, belief in the paranormal, magic, prophecy and astrology, and as a symptom of tender mindedness. For a critique of this paper see Arran Gare and Leigh M. Smith 'The Philosophical Foundations of Humanistic Psychology: A Reply to McMullen' in *Australian Journal of Psychology*, Vol.36, No.1, 1984, pp.103-108.

The effect of the identification of different scientific ideas with gender differences has been revealed by Evelyn Fox Keller.[33] Keller described how Barbara McClintock's work on the genetics of corn, revealing how transformations occurred within the genome by transposition of elements, was not given due attention at the time of the publication of her results. The way McClintock was subsequently marginalized revealed how the pervasiveness of a domineering attitude towards the world, symbolizing the Western ideal of masculinity, made it difficult for scientists to contemplate the breakdown of a form of explanation in which an immutable power centre controls in a mechanical way the organism's growth. Keller has pointed out how various possible types of explanatory theory have been similarly ignored in other branches of science, including quantum physics, because they break with this domineering orientation.[34]

Education as Indoctrination in Nihilism

The mechanistic world-orientation, along with the status given to science and scientific experts, is explicitly and implicitly inculcated through education. People are now forced to endure up to twenty years of intense indoctrination, moulding and struggling against each other in educational institutions in order to obtain one of the small number of privileged positions within society. The most important way in which a conception of the world is inculcated by education is through the way disciplines are organized and the status each one is given. As Mary Douglas has argued:

> [The curriculum] is a scheme for fitting together bits of knowledge. As they are connected in the curriculum, so they enter into the minds of the pupils, and, though the details of the contents will fade, the connections are likely to guide their judgements and perpetuate the system of power which the curriculum represents. This feedback, which gives stability to educational systems, also stabilizes cosmologies. The cosmological scheme connects up the bits of experience and invests the whole with meaning; the people who accept it will only be ale to justify their treatment of one another in terms of these ultimate categories.[35]

With the rise of mechanistic materialism the medieval organization of universities, in principle based on the trivium and the quadrivium and with the pre-eminent place given to theology, was replaced by an organization in which the top place was given to science, and in particular to physics, although in recent years, physics has been displaced by economics, business studies and computer science. The humanities make up a rump where they are slowly withering away - along with humanist intellectuals.[36]

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33. Evelyn Fox Keller, *Reflections on Gender and Science*, New Haven, Yale University Press, 1985. Also *A Feeling for the Organism: The Life and Work of Barbara Mcclintock*, New York, Freeman, 1983.

34. *Reflections on Gender and Science*, Ch.7.

35. Mary Douglas, *Natural Symbols*, Penguin: Harmondsworth, 1973, p.10. See also Richard Bernstein, 'On the classification and framing of educational knowledge' in *Class, Codes and Control*, St Albans: Paladin, 1973, pp.227-256.

36. For an account of the dismal state of higher education, see Kevin Robins and Frank Webster, 'Higher Education, High Tech, High Rhetoric', in Tony Solomonides and Les Levidow, *Compulsive Technology: Computers as Culture*, London: Free Association Books, 1985, pp.36-57.

Along with this explicit curriculum, the mechanistic world-orientation is reinforced by a hidden curriculum.[37] Students are taught science (including economics and reductionist psychology) as though there are simple, pre-ordained conclusions to complex issues, and all that is required of students is the mastery of what is regarded as absolutely certain knowledge. Scarcely any time is devoted to investigating alternative hypotheses or to problems scientists have found insurmountable, and the assumptions of science are never looked at. By contrast humanities studies begin with simple phenomena and end by showing the complexities involved. They generally do not arrive at definite conclusions and thinkers studied in the humanities are often presented as having confronted insurmountable problems. The effect of this dichotomy is that even if students appear to be scientifically illiterate, they have come to accept implicitly and uncritically that science, including economics, is dealing with the truth, with objective facts, while the humanities are just playing with ideas, with subjective feelings and preferences. And while acquiring an image of the humanities as just a game, students acquire what Karl Popper called the 'bucket image' of science according to which scientific method is a quasi-mechanical process starting with observation and experiment, then going on to inductive generalization, hypothesizing and verification, finally leading to an addition to the stockpile of objective knowledge. More generally, the hidden curriculum leads students to assume that nature is in the service of humanity, that what exists in nature must be quantified and purified of mysteries and spirits and that the extension of such scientific knowledge is the quintessence of progress. The human sciences conforming to this image: neo-classical economics and reductionist psychology which assume humans to be information processing mechanisms moved by appetites and aversions, are then blest with the mantle of science and accorded the status of objective knowledge, while humanistic social sciences and humanities assuming an image of people as creative, are invalidated. A modern education is an indoctrination in nihilism.

This state of affairs is now being cemented in the humanities departments of universities, the last refuge from the mechanist world-orientation. In concluding his recent book, *The Philosophy of Nature*, Ivor Leclerc argued:

> ... contemporary scientific development has thrown into question in an extremely fundamental way all our inherited philosophical concepts, categories, and basic presuppositions. Nothing like this has happened since Parmenides. Philosophy is being faced in our time with the necessity for a more thoroughgoing rethinking of the fundamental philosophical problems, concepts, and categories throughout its entire range, than philosophy has undertaken since the time of Plato and Aristotle. This rethinking will affect science no less deeply than it will philosophy itself. And the consequences for human life will be no less great than were those of the new science and philosophy of the seventeenth century.[38]

Philosophers have rejected this challenge. Leclerc belongs to a very minor tradition of philosophy and his works are little known. Mainstream philosophers have resolutely adhered to the prevailing world-view to the point of attacking and almost

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37. See David Gordon, 'The Image of Science, Technological Consciousness and the Hidden Curriculum', *Curriculum Inquiry*, Vol.14, No.4, 1984, pp.367-400.

38. Ivor Leclerc, *The Philosophy of Nature*, Washington: CUA Press, 1986, p.208.

destroying philosophy as a discipline.[39] Anglophone philosophy has been reduced to epistemology, logic and philosophy of language designed to legitimate the claims of 'common-sense' and orthodox science to knowledge; and in the process it has become as sterile and trivial as late medieval scholasticism.[40]

Following the usurpation of Anglo-American philosophy by such anti-philosophy, students turned to the study of literature and Continental (usually French) philosophy for views about life to oppose the prevailing intellectual wasteland. But the post-structuralists under the influence of Barthes, Lacan, Foucault, Derrida and Baudrillard have usurped this domain. Following Derrida, the devotees of French philosophy are now 'deconstructing' philosophy, literary theory and literature.[41]

According to Derrida, the standard practice of metaphysicians is to conceive the world in terms of binary oppositions, one of which is assumed to be prior and superior to the other. The second term is made out to be external, derivative and accidental in relation to the first. The second term usually connotes something that endangers the value the first term assumes - thus difference is opposed to identity, absence to presence, undecidability to decidability, and so on. Through a strategy of opposition and prioritization, metaphysics represses everything that troubles its founding values. Deconstruction consists in overturning this system of oppositions and priorities by revealing how what is excluded as secondary and derivative in relation to an originary concept of foundation, ground or origin is in fact more primordial and more general than the metaphysical original. Difference is not derived from identity, but makes identity possible. Derrida exposes how all concepts of foundation, ground or origin must be similarly displaced, and shows that these concepts are points situated in relation to larger systems, chains, or movements.

As taken up in literature departments, particularly in the United States, deconstruction reveals the process of and conditions for the construction of meaning in texts from the available discourses to reveal the lack of unity in what is constructed, to undermine any claim to authoritative reading, and thereby to use the texts themselves against the intentions of their authors. Meaning is located not in the intentions of writers, but in texts and their relation to other texts. Meaning is seen as constantly deferred in the never-ending webs of intertextuality in which all texts are located. Deconstructionists purport to defend the status of the reader against the text and literature against philosophy, and claim thereby to be justifying the proliferation of different points of view, the play of discourse, or as Derrida put it: 'the Nietzschean *affirmation*, that is the joyous affirmation of the play of the world and of the innocence of becoming, the affirmation of a world of signs without fault, without truth, and without origin which is offered to an active interpretation'.[42] In so

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39. To the point at which an anthology embodying the work of the major living philosophers can be published entitled *After Philosophy: End or Transformation* (ed. Kenneth Baynes, James Bohman, and Thomas McCarthy, Cambridge, Mass.: MIT Press, 1987.) Neither Leclerc nor anyone else in the tradition of process philosophy is represented.

40. A good overview of mainstream Anglo-American philosophy is provided by Richard Rorty in *Philosophy and the Mirror of Nature*, Oxford: Blackwell, 1980.

41. For an account of Derrida's ideas and their relation to literary criticism in the United States, see Christopher Norris, *Deconstruction: Theory and Practice*, London: Methuen, 1982. The best overall critical studies of this school are Peter Dews, *The Logics of Disintegration: Poststructuralist Thought and the Claims of Critical Theory*, London: Verso, 1987 and Jürgen Habermas, *The Philosophical Discourse of Modernity*, tr. Frederick Lawrence, Massachusetts: M.I.T. Press, 1987. Most of the central ideas of the post-structuralists were anticipated by Michael Bakhtin who at the same time avoided their relativism. In particular see M.M. Bakhtin and P.M. Medvedev, *The Formal Method in Literary Scholarship: A Critical Introduction to Sociological Poetics*, [1928], Cambridge, Mass.: Harvard University Press, 1985.

42. Jacques Derrida, 'Structure, Sign and Play in the Discourse of the Human Sciences,' in *Writing and Difference*, London: Routledge and Kegan Paul, 1978, p.292.

doing, these cultural critics are undermining any effort to develop any perspective or narrative by which different texts, or even different readings of texts, could even provisionally be evaluated. They are reducing all literature, all philosophy, all rhetoric and all interpretation to one level. As Tzvetan Todorov characterized the views of the deconstuctionists:

> The world itself is inaccessible; discourse alone exists, and discourse refers only to other discourse... Even so, we are not to believe that discourse is better endowed than the world: the latter may not exist, but the former is necessarily incoherent. Deconstructionist commentary always consists in showing that the text studied is internally contradictory... As no discourse is exempt from these contradictions, there is no reason to prefer one sort over another, or to prefer one value over another. In fact, in the deconstructionist perspective, any value-oriented behaviour (criticism, the struggle against injustice, hope for a better world) becomes subject to ridicule.[43]

So while the French neo-Nietzschians have been opposing the Platonist fixation on eternal forms and the Cartesian fixation on the executive consciousness, and affirming the reality of becoming, they have steered philosophy back to the dead end of Cratylus, the Heraclitean philosopher who argued that since everything is in flux there is virtually no point in speaking - precisely the dead end which was Plato's point of departure. In so doing they have inspired an intellectual movement which has contributed significantly to the devaluation of literature and philosophy and created the illusion that any abandonment of the Platonist commitment to the eternal - which is now identified with scientific knowledge - must lead to total relativism.[44] And by purporting to reveal the underlying play of power in the construction of meaning in discourse they have reinforced the prevailing view that life is nothing but a struggle for power.[45]

The Free Market-Place of Ideas

But we appear to live in a time when more is published, when more ideas are canvassed, than ever before. We appear to have a free market-place of ideas. How then can the mechanistic world-orientation prevail under these circumstances?

With the fragmentation and atomisation of society, most people's consciousness of the world after they have finished their schooling derives almost entirely from newspapers, radio, and most importantly, television. In most countries the ownership and control of these are becoming ever more highly concentrated, and with the constraint on the media to satisfy the interests of owners and advertisers there is very little questioning of superficial aspects of the perspectives of those in power, let alone the basic assumptions on which these perspectives are based.[46] As John Pilger described the profession of journalism:

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43. Tzvetan Todorov, *Literature and Its Theorists*, tr. Catherine Porter, Ithaca: Cornell University Press, 1987, p.184.

44. This is not to say that Derrida's ideas should be rejected *in toto*. For an attempt to salvage Derrida's insights while avoiding epistemological nihilism see Michael Ryan, *Marxism and Deconstruction: A Critical Articulation*, Baltimore: John Hopkins University Press, 1982.

45. For an overview of discourse analysis see Dianne Macdonell, *Theories of Discourse*, Oxford: Blackwell, 1986.

46. On the concentration in media ownership and its effects see Bruce M. Owen, *Economics and the Freedom of Expression*, Cambridge, Mass., Balinger, 1975.

> It is censorship by subterfuge: the manipulation of thought and language, such as labels and clichés that deceive and polarise ('moderates' versus 'extremists', etc.) and a conditioned deference to authority and to the 'prevailing view' in the name of objectivity. This is journalism's most insidious restrictive practice. And here the absurdity is Orwellian; for to reject this bias is to be 'controversial' and 'committed' and to invite both direct censorship and the indignation of those whom Robert Louis Stevenson aptly described as 'your sham impartialists, wolves in sheep's clothing, simpering honestly as they suppress'.[47]

In the case of television, everything is transformed into entertainment, and the centralized control of television ensures that it does not aspire to be anything else.[48] As a writer observed in the American Spy magazine, television is not a window on the world, but on the minds of 20 Hollywood cokeheads. So, bombarded with decontexturalized and systematically biased information the individual loses all capacity to put things in perspective. He or she becomes a 'subjectless subject'; a character marked by a 'scattered, disconnected, interchangeable and ephemeral state of "informedness", which one can see will be erased the very next moment to be replaced by new information.'[49]

This information is then fused with advertising and fiction to create an image of the social world consistent with the prevailing world-orientation,[50] an image of glamorous, attractive, high-consuming members of respectable society (the 'winners' in life), very often involved at the forefront of advance into an exciting, high-tech future, fringed by affable, good humoured, usually comic, sometimes a bit roguish people from the lower orders; a nether world of terrorists, gangsters, communists, murderers, Arabs, militant trade union organizers, thieves, habitually unemployed, drug runners and so on bent on the destruction of respectable, glamorous people and the subversion of society; heroic, super-intelligent members of the security forces dedicated to protecting respectable, glamorous people and outwitting these villains; and on the far side of all this, a great mass of hopelessly impoverished, unattractive low-tech people in the Third World (or occasionally on the fringes of the economic centres) starving or killing each other or themselves, totally beyond redemption (the 'losers' in life).[51]

Books, even where they are still read, can no longer counter such images. Apart from a few exceptional cases which are usually unknown to the general public, books no longer provide a medium where new ideas can be presented and evaluated. There are enough examples of major critical thinkers having their works rejected, Noam Chomsky and Andre Gunder Frank, for example, to show the extent to which the major publishers, who now control almost all the publishing houses, censor their publications.[52] But this is not the only problem. There are more subtle ways in

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47. John Pilger, *Heroes*, London: Pan, 1987, p.xiiif. On this, see also Chomsky's *The Culture of Terrorism*, London: Pluto Press, 1988.

48. This is the argument of Neil Postman in *Amusing Ourselves to Death*, London: Methuen, 1987.

49. Theodor Adorno, 'Theorie der Halbbildung', in *Gesammelte Schriften*, Vol.8, p.115, cited and translated by Peter Dews in *The Logics of Disintegration: Poststructuralist Thought and the Claims of Critical Theory*, London: Verso, 1987, p.142.

50. The best study of advertising and its impact is Stewart Ewen, *All Consuming Images: The Politics of Style in Contemporary Culture*, London: Basic Books, 1988.

51. This is not an entirely fair picture. Despite the main thrust of the mass media, television *has* served to reveal and thereby to help check oppression in the world, and through programs on nature to promote a greater awareness of the natural environment and its significance.

54. Noam Chomsky and Edward S. Herman described how the first version of their work *The Political Economy of Human Rights* was suppressed by their publisher in the prefatory note to Volume 1, *The Washington Connection and Third World Fascism*. Andre Gunder Frank was unable to publish his major theoretical work in English, and was unable to publish a major

which books have been prevented from functioning as a means of communication.[53] Publishers concerned with guaranteed markets and constrained by the way bookshops operate either target specialist academic audiences (where libraries provide a guaranteed market) or mass markets (which means aiming at the lowest common denominator). This, combined with changing urban and suburban environments, has virtually destroyed the habitat of autonomous intellectuals, driving them to virtual extinction.[54] So as H. Stuart Hughs wrote: 'The meticulous scientists of words and the "terrible simplifiers" of Jacob Burchardt's nineteenth century nightmare, in their mutually incompatible endeavours,... have the field all to themselves.'[55]

The suppression of ideas consequent to this is disguised by the large numbers of publications which are critical of the prevailing order. But what people are being subjected to is a mass of simplistic social critiques from a multiplicity of different perspectives. What are conspicuously lacking are intellectually rigourous critical works of broad scope which are addressed to ordinary people about their most pressing concerns; works able to challenge the ruling culture by putting it in perspective and providing ideas which could actually displace it. A work equivalent to Marx's *Capital* - consisting of three large volumes and intermingling philosophy, economics, history, social critique, being both technical and polemical and highly critical of all preceding thinkers - would be virtually unpublishable today. Without such works, the dominance of society by the mechanistic, Social Darwinist world-orientation is obscured rather than undermined by this proliferation of opposing ideas. In fact this dominance is reinforced by being disguised. It provokes continual efforts to expose the egoistic motives behind people's moral utterances, and in doing so engenders the illusion that there are no other motives. The pervasiveness of moralistic rhetoric enables people to believe that they are uniquely hard-headed in having understood that there is nothing more to life than the struggle for the means to self-gratification. The market-place of ideas then allows these mass produced minds to maintain the illusion of their individuality by providing them with materials from which to concoct for display their own unique blends of religious, philosophical and scientific exotica. Since everyone involved in making such displays 'knows' that mechanical view of the world and logical empiricism are passé, and no self-respecting member of the power élite would be so gauche as to espouse Social Darwinism, there appears to be little point in attacking these doctrines. And if attacks are made, they can be reduced to another commodity and smothered in the mass of mushy, woolly-minded romanticism which is already widely disseminated throughout society.

Mechanistic Materialism and Everyday Life

However the mechanistic world-orientation is not just a set of ideas and attitudes. It is embodied in everyday life as a mode of being in the world and is reproduced in

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anthology on underdevelopment. See his *Critique and Anti-Critique* N.Y.: Praeger Press, 1983, p.vii and p.297ff. for an account of this. There are many other examples of such suppression of ideas.

53. On the book publishing business see Lewis Coser, Charles Kadushin and Walter W. Powell, *The Culture and Commerce of Publishing* Chicago: University of Chicago Press, 1982.

54. On this, see Russell Jacoby, *The Last Intellectuals*, N.Y.: Basic Books, 1988.

55. H. Stuart Hughs, *Consciousness and Society*, N.Y.: Random House, 1958, p.405. That this is the situation is now recognized by both conservative and radical thinkers. For the state of intellectual life see Allan Bloom, *The Closing of the American Mind*, N.Y.: Simon and Schuster, 1987.

daily practice as part of the self-reproduction of capitalism. The development of capitalism has constrained people in almost every aspect of their everyday lives, from childhood to old age, to conceive the physical world as an order of things (or commodities) to be used or efficiently exploited, life as a struggle of all against all, and value as purely subjective, revealed only by what people are willing to pay. And the human subject has itself become fragmented into saleable parts. As Georg Lukács described the effect of capitalist social relations:

> ... time sheds its qualitative, variable, flowing nature; it freezes into an exactly delimited, quantifiable continuum filled with quantifiable 'things'... in short, it becomes space.... [This] transformation ... cannot ... content itself with the reduction of all objects for the gratification of human needs to commodities. It stamps its imprint upon the whole consciousness of man; his qualities and abilities are no longer an organic part of his personality, they are things which he can 'own' or 'dispose of' like the various objects of the external world. And there is no natural form in which human relations can be cast, no way in which man can bring his physical and psychic 'qualities' into play without being subjected increasingly to this reifying process.[56]

This is associated with the tacit acceptance of the view of reason as nothing more than an instrument of power, as nothing but a means for calculating what is in one's self-interest and for increasing the efficiency of obtaining given ends. As a consequence (and as the Frankfurt Institute philosophers have pointed out), instrumental efficiency has become the ultimate (explicit) reference point for the legitimation of institutions and courses of action.[57] The whole culture of society is now organized around the acceptance of this. As science is justified by its contribution to the control of nature and people, democracy is justified as a means of legitimating power, resolving conflicts and maintaining peace. Public opinion, which has replaced critical discourse as the foundation for democracy, has become an object of scientific manipulation. Outside the realm of objective technical control is only the realm of the subjective, irrational feelings belonging to the domain of private consumption. Individuals are left without grounds for justifying their ideals. They may exalt the dignity of humanity, but they have no rational grounds for doing so. Art has become a mere decoration, and works of art are no longer seen as communicating visions of the world but are reduced to commodities to be invested in and consumed as a series of haphazard emotions.

Subjection to this way of thinking begins at an early age and intensifies thereafter. Children are exposed to extraordinary pressure to adopt it and to behave like predictable mechanisms by parents and teachers, who, venting their own childhood and adulthood frustrations at being made to conform to an oppressive society, strait-jacket children to eliminate any spontaneity or creativity which might

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56. Georg Lukács, *History and Class Consciousness*, tr. Rodney Livingstone, London: Merlin Press, 1971, p.'s 90 & 100.

57. This was the main point made by the Frankfurt Institute philosophers. For the clearest account of their analysis of the debasement of rationality see Max Horkheimer, *Eclipse of Reason*, New York: Continuum, 1974. However these philosophers focussed their analysis on positivist epistemology rather than the mechanistic materialism and Social Darwinism which is the real foundation for legitimating this instrumentalist conception of reason.

hinder them in the rat race they must enter as adults.[58] The competitive organization of society then ensures that those who have successfully embodied this mechanistic orientation to life, who have internalized the aggressive stand-point of their parents and teachers, succeed at the expense of those who are more sensitive, more compassionate, more creative, who think that there might be more noble ends to life than the grubby struggle for self-advancement. The functioning of the market, and the rat-races of business, political, educational and governmental organizations can be counted on to level such illusory ideals and to strip idealists of any influence. Those who succeed will be those who have mastered the arts of ingratiating themselves to their superiors, stabbing their rivals in the back, and treating their subordinates as expendable instruments.

The extension of this world-orientation is obscured, and thereby made more effective, by a division of labour in its advancement. The basic mechanistic framework and the translation of its implications into interpersonal relationships is mostly effected by people who identify themselves as politically leftist and who, albeit in a limp and cynical way, uphold anti-Social Darwinian ideals in relation to economics, politics and international relations,[59] Social Darwinian economic practices are defended by liberals or neo-liberals who are often opposed to reductionist conceptions of people,[60] while conservatives promote a Social Darwinian outlook in politics and international relations while at the same time being critical of science and evolutionary theory, upholding the family in terms transcending utilitarian principles, and defending the intrinsic value of life (providing it is a human foetus).[61]

However this still does not account for the extent to which the mechanistic world-orientation pervades people's thinking. The mechanistic world-orientation is reinforced in ways which escape people's consciousness. It is inculcated through a multiplicity of minor practices without any insight by individuals into how their conception of the world is being shaped. Pierre Bourdieu pointed out:

> If all societies and, significantly, all the 'totalitarian institutions'... that seek to produce a new man through a process of 'deculturation' and 'reculturation' set such store on the seemingly most insignificant details of *dress*, *bearing*, physical and verbal *manners*, the reason is that, treating the body as a memory, they entrust to it in abbreviated and practical, i.e. mnemonic, form the fundamental principles of the arbitrary content of culture. The principles em-bodied in this way are placed beyond the grasp of consciousness, and hence cannot even be made explicit; nothing seems more ineffable, more incommunicable, more inimitable, and, therefore, more precious, than the values given body, *made* body by the transubstantiation achieved by the hidden persuasion of an implicit pedagogy, capable of instilling a whole cosmology, an ethic, a metaphysic, a political philosophy, through injunctions as insignificant as 'stand up straight' or 'don't hold your knife in your left hand'.[62]

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58. On the effects of childhood treatment on adulthood, and how this reproduces itself, see the works of Alice Miller.

59. Leftists who are not cynics are almost invariably involved in defending anti-mechanistic conceptions of people as creative agents.

60. Von Hayek being the exemplary case of this.

61. The peculiar, partly contradictory but essentially complementary relationship between neo-liberals and neo-conservatives is analysed in Ruth Levitas' anthology *The Ideology of the New Right*, Cambridge: Polity Press, 1986.

62. Bourdieu, *Outline of a Theory of Practice*, op.cit. p.94.

It is by such means that people are led to embody the mechanistic world-orientation as a habitus.

The extent to which the institutions of modern societies are devoted to the inculcation of the correct habitus has been brilliantly revealed in the work of Foucault.[63] With capitalism there emerged a multiplicity of new discursive formations: the asylum, the clinic, the prison, the factory, the school etc., all enforcing norms of behaviour. The archetypal example of this was the prison, but the principles developed with the prison reforms, particularly those proposed by Bentham in his *Panopticon* to 'rehabilitate' delinquents by keeping them under continuous surveillance, became paradigmatic for all these institutions. As Foucault wrote:

> With this new economy of power, the carceral system, which is its basic instrument, permitted the emergence of a new form of 'law': a mixture of legality and nature, prescription and constitution, the norm.... [T]he activity of judging has increased precisely to the extent that the normalizing power has spread. Borne along by the omnipresence of the mechanisms of discipline, basing itself on all the carceral apparatuses, it has become one of the major functions of our society. The judges of normality are present everywhere. We are in the society of the teacher-judge, the doctor-judge, the educator-judge, the 'social worker'-judge; it is on them that the universal reign of the normative is based; and each individual, wherever he may find himself, subjects to it his body, his gestures, his behaviour, his aptitudes, his achievements.[64]

The institutions of this control organize a field in which people are objectified and treated as things to be moulded into disciplined, predictable functionaries or cogs within the capitalist economy. At the same time, this objectification has created the individualized subject, and through delving into this subject ever more deeply, it has enmeshed people further in these new power relations. In particular sexuality has been promoted to the centre stage of society.[65] Behind the facade of sexual repression, sexuality has been continually aroused, providing the basis through the deployment of images of normality for an unparalleled control by society over the bodies of its members. Sex has been elevated over the soul, over love, to become the ultimate value, almost more important than life itself. Desire for it, to have access to it, to discover it and to liberate it has attached to each person the injunction to track along the paths laid out by society and to place oneself, one's body, in the grip of its power.

The mechanistic world-orientation is then encoded in a pattern of evaluative conceptual oppositions centred on the relationship between the sexes. Apart from the association of science with masculinity and the arts and humanities with femininity, the division between masculine and feminine is correlated with the divisions between hard and soft, strong and weak, enduring and changing, active and passive, dominant and subordinate, unsentimental and sentimental, dry and wet,

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63. While Foucault is generally associated with the thinkers who were trying to undermine the effort to gain a totalizing perspective, his placing of the discursive formations he studied in relation to the development of capitalism, and his own description of his work as going beyond Marx's efforts to understand exploitation by attempting to comprehend the nature of power, belies this. (See Michel Foucault, *Language, Counter-Memory, Practice*, ed. Donald F. Bouchard, Ithaca, Cornell University Press, p.212f.)

64. Michel Foucault, *Discipline and Punish: The Birth of the Prison*, [1975] tr. Alan Sheridan, Harmondsworth, Peregrine, 1979, p.304.

65. Michel Foucault, *The History of Sexuality*, [1976] tr. Robert Hurley, Harmondsworth: Peregrine, 1984.

rational and emotional, logical and intuitive, definite and indefinite, light and dark, objective and subjective, conscious and unconscious, straight and curved, right and left, good and bad.[66] Masculinity as hard and rational is exalted in opposition to soft and passive femininity. Being female is the only acceptable excuse for being feminine. Ideas are divided between those which present the hard-headed, rational, unemotional, objective, masculine view of the world; and romantic idealist notions which are identified with soft headedness, irrationality, sentimentality, subjectivity and femininity. To see the world as devoid of meaning in which life is a struggle of all against all is to have a tough, masculine view of the world, while to portray the world as having a meaning in itself wreaks of femininity, the sort of sentimental mush which could clog up and impair the efficient functioning of the economy if it were taken too seriously.

Finally, the mechanistic world-orientation has been inscribed in social institutions and in nature so that people are continually confronted with it as the organizing principle of their world. As Hamilton Cravens concluded in his study of the influence of Darwinian evolutionary theory and its associated science of social control in America:

> ... the question of the influence of evolution and of the science of man probably resolves itself not into the number of American citizens who accept these ideas freely but to the extent to which these ideas are and have been embedded in the basic social institutions and social roles of our modern corporate social order, and to the extent these institutions and roles perpetuate the formulae and prescriptions of this science of man and influence the patterns of existence experienced by so many millions of Americans.[67]

All economic institutions presuppose the validity of this conception of the world. This has led to vast technological advances around which economic organizations have been formed, in this way continually presenting nature as a mechanical order of matter to be controlled. These organizations are based on the ideal of achieving the most efficient means of achieving each end, with social structures modelled on the image of the machine in which each functional part is seen as a replaceable cog.[68] As a consequence, 'instrumental efficiency' is embodied in the products of human agency so that cities, buildings, machines and means of transport have come to incorporate the same one dimensional functionalism. In the life-worlds of people everything has a predefined function which in turn defines people as functionaries. The coordination of these functions with all other lives, with institutions, organizations, industry, the State, and with the rest of the world by means of maps and clocks constitutes lived space and time as flat, uniform order which dominates every aspect of people's lives.[69] This functional uniformity is reiterated in the architecture deriving from the Bauhaus, in city planning under the influence of Le Corbusier (despite recent reactions against this), in hyperplanned suburbs, in the incorporation of machines into the domestic economy, in the development of factory

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66. On this see Genevieve Lloyd, *Man of Reason*, London: Methuen, 1984.

67. Hamilton Cravens, *The Triumph of Evolution*, Philadelphia: University of Pennsylvania Press, 1978, p.273.

68. See Jacques Ellul, *The Technological Order*, ed. Carl F. Strover, Proceedings of the Encyclopaedia Britannica Conference, Detroit: Wayne State University Press, l963.

69. The development of standardized space and time from the individual to the global level has been described by Robert K. Schaeffer, 'The Standardization of Time and Space' in Edward Freidman ed. *Ascent and Decline in the World-System*, Beverly Hills: Sage, 1982, pp.69-90.

farms, and in the mass production of everything from battery hens to public opinion.[70] Mechanistic materialism has become all encompassing. It has become the mode of cognition of capitalism, and like the Azande culture in which every strand depends upon every other strand, people cannot get out of its meshes because it is the only world they know.

Since the mechanistic and Social Darwinian orientation to the world is embodied as a habitus, in the relationship between the sexes and in the institutions of society, the lack of explicit affirmation of it by members of the ruling élites is of little significance in judging the extent of its domination.[71] The lack of defence reflects how it is so completely taken for granted that no alternative is seriously conceivable. What is important is that the assumption on which people base their important decisions is that to be hard-headed one must acknowledge that what life is really about is the struggle for survival and power, and everything that gets in the way of this struggle is an expendable luxury. A relaxation of this struggle can be tolerated for a time but it will eventually lead to biological degeneration, to economic inefficiency and to a loss of the ability of society to effectively meet challenges either from rival societies or from challenges within.

So while people espouse all sorts of different ideas, these have become irrelevant to people's world-orientation - which is revealed in the way they live and the decisions they make. While pollution, the greenhouse effect and the hole in the ozone layer over the South Pole led to a new upsurge in interest in the environment, people continued to take for granted the primary and over-riding importance of 'economic progress', in the need to increase productivity, to increase investment, to develop new technology and new consumer products, to maintain full employment, to get people to work harder and to work longer hours. And while some people might even admit that high levels of consumption are inimical to environmental conservation, they will still exalt the West for this very reason and disparage non-capitalist societies because they do not provide people with the same opportunities for conspicuous consumption.

There are some individuals and groups who do genuinely oppose the dominant world-orientation. This reflects the legacy of individual conscience. But it is these people who experience just how entrenched the dominant forms of thinking are, and how difficult it is to go against them. Unable to find an intellectual niche for their views, they tend to be easily demoralized. The wider the breach between the dominant forms of thinking and the opposing views, the more difficult it is for opposing views to find expression by which they could acquire formulation, clarity and vigour. Without finding such expression, the motives founded on these viewpoints tend to wither. Whole ideological movements have been destroyed in this way. This was the case with the New Left radicals of the late 1960s and early 1970s. Shocked by, among other things, the brutality and injustice of the Vietnam War, large numbers of people began questioning and seeing through the whole

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70. See Siegfried Giedion, *Mechanization Takes Command*, Oxford: O.U.P., 1948; Charles A. Jencks, *The Language of Post-Modern Architecture*, N.Y.: Rizzoli, 1977, Part One: 'The Death of Modern Architecture,' and Edward Relph, *Rational Landscapes and Humanistic Geography*, Totowa: Barnes & Noble, 1981, esp. Ch.3 for an analysis of this process and its effects.

71. For this reason one should not take seriously Robert Bannister's claim in *Social Darwinism: Science and Myth in Anglo-American Social Thought*, Philadelphia: Temple Univ. Press, 1979, supported by Donald C. Bellomy in '"Social Darwinism" Revisited', *Perspectives in American History*, 1984, pp.1-129, that Social Darwinism has had negligible influence on conservative thought. Against Bannister and his supporters see Jim Moore, 'Socializing Darwinism', in Les Levidow ed. *Science as Politics*, London: Free Association Books, 1986, pp.38-80. Moore points out the spurious nature of the efforts to separate Darwinian evolutionary theory and Social Darwinism, and has revealed the extent to which people's thinking is dominated by the language of evolutionary theory. See esp. pp.68-75.

facade of late capitalist society, the extent and oppressive nature of its imperialism, the corrupt nature of its democratic and judicial institutions, the complicity of universities in its dynamics, the mind warping nature of its mass culture and the mass media in particular, the emptiness of life as a functionary in this system, and so on. But while intellectuals such as Marcuse provided students with insights into the nature and extent of oppression, there was no viable foundation on which an opposing direction could be established. The New Left was reduced to a media event, and its protest spluttered out into a mindless hedonism, furthering entrenching the forms of life on which the existing order is based.

The Postmodern Condition as Nihilism

Not even the embodiment by people of mechanistic materialism and Social Darwinism can explain the destructive aggressiveness of Europeans. Underlying this is the recognition that the images and ideas which formerly inspired people have lost their meaning. In 1921 G.B. Shaw wrote that:

> ...the Darwinian process may be described as a chapter of accidents... There is a hideous fatalism about it ... If it be ... a truth of science, then the stars of heaven, the showers of dew, and winter and summer, the fire and heat, the mountains and hills, may no longer be called to exalt the Lord with us by praise: their work is to modify all things by blindly starving and murdering everything that is not lucky enough to survive the universal struggle for hogwash.[72]

The Great Depression and the Second World War further shook people's faith in the ideal of mechanical efficiency and evolutionary progress. Twenty-five years of economic prosperity in at least some nations seemed to provide some grounds for optimism about the future, despite the constant threat of nuclear war; but with the subsequent economic decline, with increasing evidence that affluence in the centres of the world-economy is intimately tied to the impoverishment of vast numbers of people in the Third World, and then the growing evidence of global environmental destruction, this optimism is evaporating. The dominant thematic motif of European civilization has lost its power to orient people in life. And as Archibald MacLeish pointed out in his poem *The Metaphor:*

> A world ends when its metaphor has died.
> An age becomes an age, all else beside,
> When sensuous poets in their pride invent
> Emblems for the soul's consent
> That speak the meanings men will never know
> But man-imagined images can show:
> It perishes when those images, though seen,
> No longer mean.

Nietzsche argued at the end of the nineteenth century, 'Nihilism, this weirdest of all guests, ... stands before the door.'[73] This nihilism has now taken over the house. The

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72. George Bernard Shaw, *Back to Methuselah: A Metabiological Pentateuch,* N.Y.: Brentanao, 1921, pp.xlv-xlvi.

73. Friedrich Nietzsche, *The Will to Power*, §1. The first Russian to use the term nihilism (in the 1820s), Nadhezin, used it to designate scientific materialists - particularly those influenced by Locke.

final outcome of Western culture is a society of lonely people, perpetually insecure, denied a sense of their own significance, and too disoriented to begin to understand the cause of their situation or the possibility of its being different.[74] Correspondingly, the free floating resentment of the nineteenth century has evolved into the free floating malice of the twentieth century.

Nihilism has revealed itself in the loss of commitment to truth and, where intellectual life has not been totally reduced to the development of technology, by the predominance of intellectual game playing and the dilettantish pursuit of the latest intellectual fashions.[75] Academic writing has been reduced to a frenetic churning out of papers to publish before the fashions change and some new intellectual guru is proclaimed.[76] The effect of this is evident in the state of ethical and legal discourse and practice. Alasdair MacIntyre argued that:

> ... in the actual world in which we inhabit the language of morality is in ... grave disorder... What we possess, ... are the fragments of a conceptual scheme, parts which now lack those contexts from which their significance derived. We possess indeed simulacra of morality, we continue to use many of the key expressions. But we have - very largely, if not entirely - lost our comprehension, both theoretical and practical, of morality.[77]

And Harold Berman in his magnificent study of the development of European legal thought described a similar situation:

> ... 'public policy' has come dangerously close to meaning the will of those who are currently in control: 'social justice' and 'substantive rationality' have become identified with pragmatism; 'fairness' has lost its historical and philosophical roots and is blown about by every wind of fashionable doctrine. The language of law is viewed not only as necessarily complex, ambiguous, and rhetorical ... but also as wholly contingent, contemporary, and arbitrary ... These are harbingers not only of a 'post-liberal' age but also of a 'post-Western' age.[78]

In everyday life, nihilism is experienced as disorientation, as loss of direction, as emptiness. As progress is seen as increasing control over the world, as making everything in it, including other people, into predictable instruments for human purposes, individuals are increasingly experiencing life as fragmentary, disorganized and uncontrollable, as a flux within which all boundaries are dissolving. Christopher Lasch attempted to describe the response to this situation in his book *The Minimal Self*. He argued that in the modern world:

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74. One of the best descriptions of this state is still David Riesman's description of 'other-directed' people in *The Lonely Crowd*, N.Y.: Anchor Books, 1954.

75. This situation has been described in different ways by both radicals and conservatives. Despite the description of Herbert Marcuse's *One Dimensional Man* by Allan Bloom in *The Closing of the American Mind*, p.226 as 'trashy culture criticism', this work is essentially a conservative version of Marcuse's argument, the basic argument of the Frankfurt Institute philosophers, that reason has been eclipsed, and the subsequent nihilism has permeated everyday life. The state of the humanities has worsened considerably since the publication of *Crisis in the Humanities* ed. J.H. Plumb, Harmondsworth, Penguin, 1964.

76. Hilary and Steven Rose, *Science and Society*, Harmondsworth, Penguin, 1970, p.xv estimated that if scientific publications continued to increase at the rate of the time, in 100 years they would weigh more than the earth.

77. Alasdair MacIntyre, *After Virtue: A Study in Moral Theory*, 2nd ed., Notre Dame, Indiana: University of Notre Dame Press, p.2.

78. Harold J. Berman, *Law and Revolution: The Formation of the Western Legal Tradition*, Cambridge, Massachusetts: Harvard University Press, 1983, p.41.

> People take one day at a time. They seldom look back, lest they succumb to a debilitating "nostalgia"; and if they look ahead, it is to see how they can insure themselves against the disasters almost everybody now expects. Under these conditions, selfhood becomes a kind of luxury, out of place in an age of impending austerity. Selfhood implies a personal history, friends, family, a sense of place. Under siege, the self contracts to a defensive core, armed against adversity.[79]

However Lasch's account does not go far enough. It fails to capture the fragmentation of the self and the associated emotional flatness, the drifting quality of everyday life. Being 'armed against adversity' implies an heroic quality which not only lacking, but which is being denied as a possibility. Life in the late twentieth century is better described as the 'condition of postmodernity', a condition wherein people can only respond to the speed of change by accepting disorientation as a normal condition - even celebrating it as 'fun'.[80]

The postmodern condition involves a retreat from differentiation - whether between the aesthetic and the social, between high and low culture, or between superior and inferior forms of life. It is a regression from discursive signification which gives priority to words and narratives over images and which operates through critical reflection, to figural signification which is visual rather than literary, which juxtaposes signifiers taken from everyday life and operates through the spectator's unmediated immersion in the spectacle. As Fredric Jameson has noted, this is akin to schizophrenia, a condition characterized by a loss by the subject of 'its capacity actively to extend its pro-tensions and re-tensions across the temporal manifold and to organize its past and future into coherent experience' so that its cultural productions can be nothing but 'heaps of fragments'.[81] People now live through an ever recurring present, and the fading memories of pasts which seemed to have a future are now regarded as nothing but aspects of the present.

Many people have taken refuge from this chaos by returning to old gods, in being born again Christians or Moslems or Shintos, while others pack into the psychiatric clinics, working their way through, and successively placing their loyalty in, a series of psychiatric therapies. However most have surrendered entirely to the flux of the present, distracting themselves into mental oblivion with television and home videos, seeking ever more intense stimulii or living vicariously through the mass media constructions of the sleazy, pseudo-glamorous lives of celebrities. Increasing numbers of teenagers and young adults are voting against the postmodern condition with their lives, relieving the world of their unwanted creative potential by suiciding.

The free floating malice which characterizes twentieth century nihilism is dangerously manifest in the fascination with violence and war. The devastating wars fought by Europeans this century were not anomalies but clear expressions of a malignant civilization. Hitler was only unusual in that he treated some Europeans as Europeans had been treating people of other races in the Americas, Africa, Asia and Australia; he brought the nihilism of Western culture to fruition. In the postmodern scene, images of violence are mass produced in films such as *Bladerunner*, *The Cook,*

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79. Christopher Lasch, *The Minimal Self: Psychic Survival in Troubled Times*, London: Norton, 1985, p.15.

80. This is best described by the Marxist David Harvey in *The Condition of Postmodernity*, Oxford: Blackwell, 1989, or in a postmodern style by the proponents of postmodernism, Arthur Kroker and David Cook in *The Postmodern Scene*, 2nd ed., N.Y.: St. Martin's Press, 1988.

81. Fredric Jameson, *Postmodernism*, Durham: Duke University Press, 1991, p.25.

the Thief, his Wife and Her Lover and *The Wild Ones*, and in films of past wars and projected future wars. However it is the small to medium scale wars have displayed the greatest power to capture audiences. Such wars, the Falklands War, the invasion of Grenada, Panama and Haiti, the bombing of Libya and the war against Iraq have become the most popular form of entertainment, and bombing raids are timed to coincide with prime television time.

The exhilaration experienced from violence associated with military might is not confined to the general public, but is clearly evident in the sadistic glee of those developing the technology of destruction. Thus Feigenbaum and McCorduck exuberantly proclaimed the possibilities for computer technology:

> The so-called smart weapons of 1982, for all their sophisticated modern electronics, are really just extremely complex wind-up toys compared to the weapon systems that will be possible in a decade if intelligent information processing systems are applied to the defense problems of the 1990s.[82]

Similar sentiments were evident in the comment of the head of ARPA's information processing research office on smart robot weapons: 'This is a very sexy area to the military, because you can imagine all kinds of neat, interesting things you could send off on their own little missions around the world.'[83]

While nuclear war strategy is now concerned with the survival of missiles rather than people and projected victory is measured by a hypothetical body count, the power of nuclear weapons elicits a morbid fascination, a fascination clearly evident in the unpopularity of any group in Britain, France or the United States which proposes nuclear disarmament. With a contracting of people's temporal horizons this fascination is particularly gruesome. Even the Nazis were concerned with the long-term future of humanity and saw their own struggle for power in terms of this. Today's megalomaniacs are only interested in the exercise of power for its own sake, or as a means to augment this power.

Those rebelling against this nihilism are losing the means to do so. Language itself is now a hindrance. Not only does it lead people to think in terms of things with properties, privileging being over what is becoming, but it has been debased by modern social life. Despite the efforts of such figures as Karl Kraus and George Orwell to alert people to the importance of language, the potential of language to facilitate expression has been steadily eroded by the mass media, by politicians, by bureaucrats, by academics, and by the mechanistic world-orientation which allows no significance to expression. It has been reduced to a means for recording information and for manipulating people and it is now difficult to use language for any other purpose. Conversation not serving such purposes has been reduced to idle chatter, or dried up completely. People live lives of quiet desperation because they no longer have the means to express their desperation. What Nietzsche noted in the nineteenth century has become even more true today:

> Man can no longer make his misery known to others by means of language; thus he cannot really express himself anymore... The results of this inability to

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82. Cited from Edward Feigenbaum and Pamela McCorduck, *The Fifth Generation: Artificial Intelligence and Japan's Computer Challenge to the World*, Reading: Addison-Wesley, 1983 by Joe Weizenbaum in 'The Myths of Artificial Intelligence' in Tom Forester ed. *The Information Technology Revolution*, Cambridge: MIT Press, p.90.

83. Cited ibid. p.91.

> communicate is that the creations of common action... all bear the stamp of mutual non-comprehension.[84]

We are fast heading towards the form of society projected by Samir Amin, where:

> There are no more individuals, neither men nor women. These beings - one does not know what to call them - are neither human nor animal, neither liberated nor alienated, neither conscious nor animated by false consciousness. They are perfectly plastic. Their nature is no longer determined by other men but by the perfect machine... These beings no longer speak - they have nothing to say, since they have nothing to think or feel. They no longer produce anything, neither objects or emotions. No more art. No more anything. The electronic machine produces - the word itself has lost all meaning - everything, these beings included.[85]

Western Culture Against the Environment

By revealing the Platonistic, mechanistic, Social Darwinian, and ultimately, nihilistic ideological underpinnings of Western civilization, and in particular, of the Anglophone nations, by showing how they are incorporated by society and individuals, it is now possible to understand why, except in the case of a few cosmetic issues, the problems of the environment are so inadequately addressed. And through this, it is possible to see what the environmentalists are up against.

To begin with, notions of morality when they do play a part in discourse are merely a surface decoration. As Erving Goffman pointed out:

> In their capacity as performers, individuals will be concerned with maintaining the impression that they are living up to the many standards by which they and their products are judged... But, qua performers, individuals are concerned not with the moral issue of realizing these standards, but with impressions that these standards are being realized. Our activity, then, is largely concerned with moral matters, but as performers we do not have a moral concern in these moral matters. As performers we are merchants of morality.[86]

And underlying this superficial morality, the concepts and modes of thinking which actually affect the way people choose to live are inimical to environmental preservation.

Money plays a major role in this respect. Since for most people in Western capitalist societies the significance of anything is perceived in terms of money, anything outside the realm of the monetary economy cannot be taken into account without a great deal of effort. People tend to be as blind to the significance of unpriceable phenomena as were the feudal aristocrats to the significance of commoners who did not participate in the forms of aristocratic virtue. This does not mean that anything which cannot be priced will not be valued at all, but when it

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84. Friedrich Nietzsche, *Richard Wagner in Beyreuth*, 5 tr. Tracy B. Strong in 'Language and Nihilism: Nietzsche's Critique of Epistemology', *Theory and Society*, Vol.3, 1976, pp.239-263, p.248.

85. Samir Amin, 'In Praise of Socialism', *Monthly Review*, September 1974, p.12.

86. Erving Goffman, *The Presentation of Self In Everyday Life*, Edinburgh: Edinburgh University Press, 1956, p.156.

comes to decision making, the significance of what cannot be priced will appear shadowy, unreal, nothing but the product of emotion. This includes not only unique species of life and wilderness areas, but also people outside the monetary economy, people who are not seen as actual or potential resources. In Anglo-Saxon cultures the plight of the unemployed can barely be recognized as of any significance by their more fortunate members. Where the people suffering are the poor of the Third World, it is generally beyond the capacity of most members of the wealthy nations to acknowledge that they are real. If such people are considered, their plight tends to be defined in terms of the monetary economies of these nations. For instance Dr Stephen Enke and Mr Richard A. Brown, two members of the U.S. Cosmos Club argued:

> Why should publicly financed resources be devoted to preventing infant mortality when the economic worth of such marginal infants is negative? The economy would be better off without them. The burden of proof is surely on those who recommend diversion of health resources from caring for producing adults to caring for consuming children.[87]

However the significance of money goes deeper than this. The multi-millionaire mining magnate, Lang Hancock, characterized environmentalists as 'those unwashed ... dole bludging drop-outs' and described the environmental movement as the 'number one enemy of civilization'.[88] To understand such outbursts it is necessary to recognize that there is more involved than simply failing to see the significance of environmental problems. The explanation for such attitudes lies in the importance of money to people's identity. Money is the sign of election to a superior order of being, and is the basis of the moral order through which people are defined as significant and respected. As Marx wrote, 'That which exists for me through the medium of money, that which I can pay for ... that am I...'[89] Or as Barbara Kruger put it: 'I buy, therefore I am.' Money is sex appeal. Consequently to attempt to interfere with people's money making is not simply to deprive them of a certain amount of purchasing power (although increasing spending on consumption is the appropriate display of their money); it is to attack their very being, the only way in which their significance can be recognized. This applies not only to the wealthy but to small businessmen and to labourers. To be a labourer threatened with unemployment is to be threatened with being defined as a parasite. Just how money is important to working people has been shown by Robert Frank in his study of the role of status seeking as a motivating factor in economic life. To make his point he looked at people working in the nuclear power industry cleaning up radiation spills. While workers were fully aware of the risks of radiation exposure, there was no shortage of workers willing to accept as much exposure as their employers were willing to pay them for, stating as their reason: 'We need the money.' Frank argued from this that:

> The acceptance of such terms of employment may appear to signal a careless, if not totally irrational, disregard for the future. Yet if concerns about relative

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87. Stephen Enke and Richard Brown, 'Economic Worth of Preventing Death at Different Ages in Developing Countries', *Journal of Biosocial Science*, Vol.4, No.3, July, l972; cited by David Dickson, *Alternative Technology and the Politics of Technical Change*, Glasgow: Fontana/Collins, l974, p.l6l.

88. *The Australian*, April 10, 1978. This was brought to my attention by Dr Patsy Hallen, Murdoch University.

89. Marx *The Economic and Philosophical Manuscripts of l844*, p.l67.

> standing are an important motivating force for individuals, such behaviour need not be *individually* irrational at all. The forward move in the income hierarchy it enables may be more than enough to compensate for the future damage it will cause.[90]

Where the concern to be honourable has lost its meaning and been replaced by the quest for status, where having money is the only way to gain status, to enter the magical world portrayed in advertisements, to be seen and to feel oneself to be 'somebody', and where having more money than others is a zero-sum game in which the people to whom one wishes to be seen as significant are those who have more status than oneself, people will sacrifice their futures to increase their incomes in the present. And where people are sacrificing their own lives, they are not going to be overly concerned about the plight of others or the future of the environment. Consequently it is generally those people who have been able to gain some sense of their significance outside the monetary economy who have contributed to the environmental movement, and they are a small minority.

Underlying the fetishism of money is the mechanistic world-view. Mechanistic materialism undermines any alternative ideas in terms of which people could define their significance, while at the same time rendering people as blind to the degradation of life as were the Australian Aboriginals to Joseph Banks' ship. Achievements are seen as the degree of success with which everything and everyone are reduced to predictable instruments, until the world is made to run like a well-oiled machine (the 'ideal Platonic form' which individuals and society should conform to). People, especially when they live in the Third World, are of no significance unless they serve the economic machine. It is this which Leon Rosselson describes in *Who Reaps the Profit, Who Pays the Price?:*

> You take the earth from out of the earth
> You throw the corpses in
> One crop is as good as another
> As long as the cash comes pouring in
>
> The wheels must never stop turning
> The machine must be obeyed
> The future has got to be fuelled
> And there's a price to be paid

The fact that making the world totally predictable means obliterating all spontaneity, ultimately destroying life itself, is not acknowledged since spontaneity and life are incomprehensible from the perspective of a mechanistic world-orientation. So long as the greatest efficiency is achieved in the means to each defined end, nothing better can be conceived.

This outlook is buttressed by the mechanistic vision of evolutionary theory. According to this, progress, seen as essentially improvements in organizational efficiency for survival and expansion, has been achieved through the struggle for survival. Consequently it is inevitable that the behaviour of people who are the product of this evolutionary struggle will be based on self-interest and that people will be evaluated in terms of how efficiently they pursue their interests. A few

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90. Robert H. Frank, *Choosing the Right Pond: Human Behaviour and the Quest for Status*, N.Y.: Oxford University Press, 1985, p.143.

negative side-effects are of no great significance in relation to the general trend of progress engendered by this self-interested struggle. And in a world in which evolutionary progress is the consequence of such a struggle it must be accepted that there will be continual transformations of the world, with older species making way for the new, and changes destructive to one form of life providing the conditions for the development of new forms. The development of humans and their institutions is a continuation of this evolution and it is inevitable that humanity, as the most highly evolved species, will radically transform its environment. The treatment by humans of animals is the inevitable process of exploitation by one species of organism of others characteristic of all nature. The subjugation of wilderness areas and the extinction of species must be seen as a continuation of evolutionary progress as the less fit make way for the more fit. The destruction of non-European cultures and the rise of capitalism is the continuation of evolution at the level of societies. European civilization and capitalism in particular have revealed themselves to be superior by their technological advances which have enabled them to not only dominate the rest nature more effectively, but also the rest of humanity.[91] Based on the recognition of the role of competition in generating progress, with its scientific and technological advances, the capitalist economy is the acme of civilization and the ultimate product of evolution. Even the destruction by affluent governments of Third World democracies in the name of Freedom, and the imposition of grotesquely oppressive dictatorships to facilitate exploitation of their countries' resources, is fully justified if all life is essentially the struggle for the means to survival. The imminent starvation of large numbers of people is the inevitable consequence of over-population, the natural means by which the inferior members of the species are eliminated. And this in itself is useful in that it can provide a weapon to superior societies in the struggle for power. As a report from the Central Intelligence Agency noted in August, 1974, the shortage of grain 'could give the United States a measure of power it had never had before... Washington would acquire virtual life and death power over the multitude of the needy ...'[92] Pollution of the human environment is an inevitable by-product of development to which the human organism must adapt. Where some people die as a consequence of pollution this must be seen as indicative of their inferior genetic endowment. As a freelance British consultant, F.J.C. Roe wrote in February, l978: 'Cancer in its many forms is undoubtedly a natural disease. It is probably one of nature's ways of eliminating sexually effete individuals who would otherwise, in nature's view, compete for available food resources without advantage to the species as a whole.'[93] The exhaustion of the resources necessary for sustaining existing industries is a challenge which will, as it has in the past, stimulate the development of new forms of technology based on the exploitation of different resources.

The definition of the significance of people in terms of their money is tacitly recognized as simultaneously a measure of their significance for the economic life of society; that is, for economic progress, and thereby for evolutionary progress. This assumption has been brought out in the film *Wall Street* in which the takeover wizard Gorden Gekko, a character based in part on Ivan F. Boesky whose insider trading on the stock exchange landed him in gaol, stated in an address: 'The point is, ladies and

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91. This is essentially the argument of one of the main theorists of the New Right, Friedrich Hayek. See *The Fatal Contract*, London: Routledge, 1988.

92. Cited by Susan George in *How the Other Half Dies*, Penguin, Harmondsworth, 1977, p.211. This power was used in the same year to punish Bangladesh for trading with Cuba. After the withdrawal of food aid 100,000 people died of starvation.

93. Cited by Samuel Epstein in *The Politics of Cancer*, San Francisco: Sierre Club Books, 1978, p.299.

gentlemen, greed is good. Greed works, greed is right. Greed clarifies, cuts through and captures the essence of the evolutionary spirit.' Environmentalists who would interfere in money making are seen as attempting to go against the course of nature. They are interfering with progress, the highest development of which is manifest in the technological advances of modern capitalism. They are threatening to weaken the capacity of these capitalist countries to survive in their struggle with other capitalist nations, particularly those peopled by different races. Environmentalism can be understood as the expression of resentment by those who have not been able to succeed in the economic struggle, who have fallen out of the monetary economy to become parasites on those who have been successful, the 'winners' in life.

What can be said about this conception of things? Environmentalists if they confronted these ideas might dismiss them as simply a rationalization of self-interest. But this is to accept the prevailing view that people are essentially egoists, and ideas are simply means to further individual interests. However there appears to be more involved. The notions on which the ruling élite of capitalism are justified tend not to be thought out. They are the ideas which the members of the most successful culture in the world are socialized to accept. However they have a solid foundation in a well worked out world-orientation backed up by the mainstream of science. The efficacy of this science is demonstrated by its technological achievements and by the success of Western societies in dominating civilizations based on different ways of conceiving the world. The Chinese may have had a more benign civilization with a more attractive conception of the world, but then look what happened to it.

Because of the nature of its inculcation and the way the dominant world-orientation is disguised, it has been difficult to question it. But if it is questioned, there are answers forthcoming. For instance, if the world is conceived of as nothing but configurations of matter whose motion is governed by immutable laws there is no reason to regard any one configuration as superior just because it happens to have survived. However Social Darwinists do not have to refer to any other criteria than the capacity for survival, and on this basis it appears clear that humans are a higher form of life than those forms from which they evolved, and that modern capitalist civilization is a higher form of humanity than previous civilizations or the primitive societies from which it has developed. With these developments explained in terms of the struggle for survival, there are compelling reasons to evaluate everything in terms of survival value. To maximise these advances in survival power it is necessary to accept the demise of the less fit. The way to continued progress in this direction is to allow the struggle for survival to continue unimpeded.

The notion that people are always moved by self-interest can also be questioned. Firstly, there are examples of people whose behaviour cannot be accounted for in terms of self-interest, and secondly, if people were deterministically moved by their appetites and aversions, there would be no need to justify self-interested behaviour since such behaviour, and the evolutionary progress it leads to, would be automatic. However socio-biologists have explained apparently altruistic behaviour by arguing that it is not the individual as such which is the unit of evolutionary struggle but the genes.[94] Altruistic behaviour is selected for because it increases the chances of survival of the gene types which produce it. On the other hand where altruistic behaviour is excessive, as when it is extended beyond the members sharing the same genes or even beyond the members of the same species, this can be explained as a genetic defect in the individual, an excess of altruistic characteristics which, like

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94. See for example Richard Dawkins, *The Selfish Gene*, Oxford: Oxford University Press, 1976.

physical deformities, will be eliminated by evolutionary necessity.[95] And adherents to Social Darwinism need not regard themselves as choosing to be self-interested, or as defending this choice. They can regard their use of everything and everyone as instruments for their own selfish ends as a fact about the world which is explained by Social Darwinism, and if they attack opponents of such selfish behaviour, this can be seen as clearing away the debris standing in the way of their achieving these ends.

But supposing all talk of evolutionary progress is dismissed as simply the residue of the Christian notion of providence which is really incompatible with a fully consistent mechanistic materialism, and the nihilism implicit within mechanistic materialism is accepted. In this case individuals must see their lives as a brief moment between two infinities of nothingness with only one chance to experience what life has to offer. Even if people who accepted such a view of life felt any concern for the fate of life in the world, and there is no reason why they should, they would be disinclined to sacrifice or even risk sacrificing any significant part of their lives to meet the challenge of its problems. People who have come to believe that subjective experience is the only real value in life, who have come to live by the principle 'if it feels good, do it,' are not going to waste much of their lives pondering the fate of the earth. As a distinguished Professor of Political Economy at the University of London wrote in *Business and Society Review*: 'Suppose that, as a result of using up all the world's resources, human life did come to an end. So what?'[96] More commonly the acceptance of this nihilism is associated with an emotional shallowness, an indifference to or vindictive enjoyment in the suffering of those who are being subjugated, and an obsession with money, power games, and conspicuous consumption. The attitude of the affluent to the environmental crisis is perhaps best conveyed by a full page advertisement in the Australian *Financial Review* by Commodity Technical Trading Ltd.[97] Titled 'How to trade the Greenhouse Effect', and quoting the predictions of scientists on how disastrous will be the effects of environmental destruction on food supplies, the advertisement describes how huge speculative profits could be made on the food commodities futures markets. So, we are left with the question asked by Robert Heilbroner in his book *An Inquiry Into the Human Prospect*:

> When men can generally acquiesce in, even relish, the destruction of their living contemporaries, when they can regard with indifference or irritation the fate of those who live in slums, rot in prison, or starve in lands that have meaning only insofar as they are vacation resorts, why should they be expected to take the painful actions needed to prevent the destruction of future generations whose faces they will never live to see?[98]

In short, so long as people experience the world and organize their lives through the categories of mechanistic materialism, while these are not replaced as the basis of the objective, scientific picture of the world, environmentalists have no grounds to justify their concerns or to expect others to take them seriously. The present behaviour of individuals and nations is all that can be expected. This does not mean

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95. See Garrett Hardin, 'Discriminating Altruisms' in Michael Tobias, *Deep Ecology* San Diego: Avant Books, pp.182-205 for such an argument.

96. Cited by Robert L. Heilbroner, *An Inquiry into The Human Prospect*, N.Y.: W.W. Norton, 1975, p.170.

97. *Financial Review (Australia)*, Oct.5, 1988, p.11.

98. Ibid. p.143.

that environmentalists are wrong in much of what they have attempted to bring to the attention of the public. The world is becoming over-populated. People are starving and dying from the effects of pollution. Ecosystems are being destroyed. We may be heading for the destruction of civilization. But so what? This is an inevitable consequence of human nature and a natural part of evolution.

The Irrelevance of Moral and Political Philosophy

In Chapter II I tried to reveal the extent of the failure of the attempts by environmentalists to defend their position. I argued that the main problem was their tendency to base their arguments on assumptions which have been responsible for the problems in the first place, or else they have failed to fully transcend these assumptions. With the perspective provided by the analysis of ideology in Western civilization it should now be possible to bring these intellectual failures into sharper focus.

To begin with, the nature of the dominant ideology throws further light on why it is hopeless to attempt a defence of environmentalism in terms of the prevailing ethics and social philosophy. What has underlain the mainstream of this philosophy is the Hobbesian view of humanity and its place in the world. This is most clearly manifest in the assumption that while moral obligations are problematic, there is no problem with self-interest. Rights theory, utilitarianism and Kantian ethical philosophy are all predicated on this assumption. The formulation of Social Darwinism on the basis of a fully developed mechanistic materialism has produced a disjunction between the 'official' ethics, based on extensions of rights theory, utilitarianism and Kantian categorical imperatives demanding constraints on egoism, and the effective ethics extolling egoism as the mainspring of evolutionary progress.

This situation made the very meaning of ethics problematic, and rather than attacking the foundations of Social Darwinist ethics, most philosophers in the English speaking world withdrew into technical issues. Thus A.J. Ayer wrote of his own work that it:

> ...is entirely on the level of analysis: it is an attempt to show what people are doing when they make moral judgements; it is not a set of suggestions as to what moral judgements they are to make. And this is true of all moral philosophy as I understand it. All moral theories... in so far as they are philosophical theories, are neutral as regards actual content.[99]

Ayer argued that ethical assertions are simply expressions of emotions aimed at influencing other people. As pointed out by MacIntyre, this emotivist theory of ethics expressed the pedantic recognition by Oxbridge philosophers what had been already recognized and brilliantly conveyed by Kierkegaard and Nietzsche: that the project of establishing morality within the framework of a world-orientation which denies the reality of a human potential to be realized, has failed; and that therefore all moral conflicts are nothing but the struggle by individuals to make their own subjective viewpoints prevail.[100]

Moral philosophers thus abrogated their traditional role, and ultimate duty, of orienting people in the world and showing them how to live. Philosophers conceived

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99. A.J. Ayer, 'On the Analysis of Moral Judgement' in *Philosophical Essays*, London: Macmillan, 1954, p.245f.

100. MacIntyre, *After Virtue*, Chs 2-4.

rationality in such a way as to make it inapplicable to ethical decision-making. To prefer justice to injustice or dignity to degradation is presented as having no more rational foundation than preferring red to blue or chocolate to ice-cream. And with a few notable exceptions the state of philosophy and attitude of philosophers today is much as R.G. Collingwood described them in 1939:

> The pupils, whether or not they expected a philosophy that would give them ... ideals to live for and principles to live by, did not get it; and were told that no philosopher (except of course a bogus philosopher) would even try to give it. The inference which any pupil could draw for himself was that for guidance in the problems of life, since one must not seek it from thinkers or thinking ... one must look to people who are not thinkers (but fools), to processes that were not thinking (but passion), to ideals that were not ideals (but caprice).[101]

As analytic philosophy came to dominate philosophy and philosophers turned their backs on questions about the nature of the world and of humanity and with how to live, philosophy lost its cognitive status to the sciences. It is to scientific experts that people now turn for the concepts to orient themselves for action in the world. In particular it is the economists and psychologists who provide the most influential and important of these concepts, becoming in effect the equivalent of the medieval casuists spelling out the implications of the prevailing world-view for how people should live. Of these, economists have the greater influence. Their concept of the economy as a complex machine provides society with the equivalent of Plato's model of the republic as the ideal form in which society must then strive to participate. Correspondingly the concepts 'economic' and 'uneconomic', 'profitable' and 'unprofitable' and 'economically efficient' are the most important concepts of evaluation in the modern world. How people should live is represented in the image of 'economic man' - the image of humans as efficiently functioning cogs in the economic machine, and the most important index for judging society as a whole is the rate of growth of GNP. Even when economic concepts are not immediately evaluative their use relates things and people to an evaluative context. For instance to see anything as a resource is to see it as something economically useful which should be exploited as efficiently as possible. The role of economists as casuists is complemented by psychologists with their notions of 'abnormal', 'subnormal', 'neurotic', 'deviant', 'inadequate personality' etc. defining negatively the positive ideal of the 'psychologically healthy' or 'normal' person: the contented, emotionless, mindless, efficiently functioning cog in the economic system. Biologists provide the Neo-Darwinian framework (and the ultimate evaluative notions - 'fitness for survival' and 'survival value') for these human sciences, and this in turn is supported by the physical scientists who represent nature as totally devoid of meaning.

The extent to which ethical doctrines are acceptable is the extent to which they accord with and can support the ethical doctrines implicit within these sciences. Emotivism has come to be taken as common-sense since it is consistent with the mechanistic view of the world and with empiricism to see all value as merely subjective, and to see the relations between people as a struggle for supremacy without rational foundation. This also accords with a market economy in which people are seen to be free when they can express their subjective impulses in the market place; and it is instrumentally useful to see people's supposed convictions as emotions, since this implies that they are of no more significance than any other

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101. R.G. Collingwood, *An Autobiography*, London: Oxford University Press, l939, p.48.

emotion, and that such convictions can be manipulated and controlled. But other ethical doctrines have not been entirely excluded. Rights theory and utilitarianism to some extent have retained their influence in the wealthy nations of the world, though apart from rhetorical purposes only in their original crude forms. The notion of rights has been subsumed under Social Darwinism where it is used by individuals, companies and nations to justify pursuit of their own interests at the expense of others without hindrance from superordinate institutions, and utilitarianism survives in the behavioural sciences designed for the efficient manipulation and control of people, and in the narcissistic, compulsive consumerism of the privileged members of the wealthy nations and the comprador classes in the Third World

It is the extensions of rights theory and utilitarianism which are excluded by Social Darwinism. If philosophers develop rights theory to justify the freedom of individuals, business organizations or nations to pursue their interests independently of any constraints from superordinate authorities, to accumulate as much wealth as they can without taking responsibility for others, they are likely to get a hearing outside philosophy. This is what elevated Robert Nozick to fame. To oppose freedom on the basis of rights theory in order to facilitate the struggle for survival as did Garrett Hardin is also a way of gaining attention. But if rights theory is developed in a way which does not accord with Social Darwinism, as with John Rawls' *Theory of Justice*, it will appear as nothing but an intellectual exercise, of value in the intellectual world only as a subject for another intellectual parlour game. In a world in which all living things are struggling for survival, where reason can only be the product of evolution and therefore an instrument in the struggle for survival, how can there be any rational justification for notions of rights which would interfere with this struggle? Similarly in the case of utilitarianism. Cost-benefit analysis provides the basis for the efficient scientific organization of society. It complements the prevailing economic doctrines, and is therefore acceptable. But the idea of extending the notion of the greatest happiness for the greatest number to people who are not functional members of the economy and have no capacity to threaten it, to the unemployed and people in Third World nations or even to animals, can hardly be taken seriously.

What then can be said about environmental philosophy? Much of the work in this field represents the efforts of fairly conventional analytic philosophers; to be relevant. Such philosophers attempt to develop rights theory and utilitarianism to deal with environmental problems. But by invoking these largely discredited doctrines they are implicitly invoking and reinforcing the Hobbesian view of humans, the view formulated to accord with the new mechanical philosophy which was the ultimate expression of the medieval orientation towards aggressive domination of nature and other people, and the view which is most fully developed in Social Darwinism. This is equivalent to John of Salisbury's invocation in the twelfth century of the analogy of the body to describe society in his effort to defend its lower orders. His development of this analogy provided one of the most important constituents of aristocratic ideology in their defence of privilege.

As for traditionalists such as Passmore, it should now be even clearer that they simply have not identified the sorts of ideas which move most people to action. They have attempted to find a niche for their concerns in the ideas which disguise the dominant ideology rather than within this ideology itself. Looking back to what is said in the Bible or by various Christian thinkers to find seeds for a new attitude to nature misses the point stressed by Lynn White that what is important with a world-orientation is not what is explicitly confirmed, but people's sub-verbal assumptions about who they are, about their relation to the rest of the world, and

about their destiny. In elaborating and developing Lynn White's point I have tried to support White's contention that Christianity is the source of the destructive attitude to the environment. However the source is no longer the cause, and it is now mechanistic materialism vouchsafed by science and institutionalized within capitalist society which is the ideological root of environmental problems. Christianity survives, but except for a fairly small minority this merely disguises the more basic commitment to a mechanistic and Social Darwinist world-orientation. Ideals deriving from it gain plausibility from the general population only insofar as they do not effectively contradict this underlying conception of the world.[102]

This means that the only hope for the future of humanity - and most other species of life on earth - lies in the development of a radically new way of thinking about the world, and associated with this, a radical reformulation of ethics and political thinking which overcomes the mechanistic world-orientation. But while the deep ecologists proposed such changes, the previous two chapters should reinforce what was argued in Chapter II. Deep ecology has tended to be a further expression of the 'impractical, irrational feminine side' of Western culture.[103] As such it complements rather than challenges the dominant metaphysics, providing an outlet for the sentimentality of the affluent, serving as the foundation for movements to convert some wilderness areas into parks, but nothing more serious than this.

Conclusion

What this work has attempted to show so far is that the inadequacy of the intellectual efforts of environmentalists to confront environmental problems, to provide an alternative to this scenario based on foresight and moral constraints, does not imply that these efforts are pointless, that ideas cannot change the way people live. Societies, including Western society, are largely constituted by metaphysical concepts. It is through these that the world is understood and the relations between people and between society and nature are defined. These metaphysical concepts are developed for the most part through the elaboration of analogies. It is because of the particular metaphysical framework underlying Western culture and the analogy on which it is based that efforts to come to grips with environmental problems are so grossly inadequate. But this whole metaphysical framework together with the understanding achieved in terms of it and the social relations constituted by it are open to question and replacement. This is what the environmentalists must strive to do.

However there is more to the domination by society of a metaphysical system than the prevalence of a set of beliefs about the world. A dominant metaphysics is a set of assumptions about the nature of the world and the place of people within it which is taken so much for granted by most people that they are not aware of doing so. It is embodied by people and is manifest in their general orientation to the world. These assumptions and the orientation they engender are presupposed in the social practices and institutions of society so that the organization of practices and the products of activity all come to reflect and reinforce the dominant metaphysics. And not only do metaphysical systems perpetuate themselves by dominating how people

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102. The way in which Christianity has been adapted to the modern world-orientation is clearest in Southern USA. A leading southern evangelist, Gerry Falwell, expressed the sentiments of this movement when he argued: 'Jesus was not a pacifist. He was not a sissy.' (Cited by A. Crawford, *Thunder on the Right*, Pantheon: New York, 1980, p.159f.)

103. This masculine/feminine opposition between the dominant culture and the deep ecologists corresponds to the two modes of defence against separation anxiety identified by Freudians: omnipotent domination of and regressive fusion with nature.

think and experience the world in all aspects of their daily lives, but the forms of social organization based on them develop self-perpetuating dynamics of their own which reproduce these modes of thought. If these assumptions are questioned they are vouchsafed by the dominant intellectual institutions of society; in the modern world, by the mainstream of science.

All this should give some idea of the extent of the task confronting any serious challenge to the prevailing metaphysics. If the whole culture is dominated by this metaphysics and all its parts are mutually reinforcing, even most of the intellectual and social movements which are nominally opposed to it, a challenge to it must be seen as a total challenge to the society and all the forms of thinking associated with it, from those embodied in practices to intellectual disciplines and the way they are organized. It is not impossible to challenge this metaphysics, since despite its pervasiveness it is continually breaking down, revealing glimmerings of a world which cannot be forced into the framework of mechanistic thinking. Like the culture of the Sandwich Islanders after contact with Europeans, the efforts to extend the concepts of Western culture to confront new problems, and environmental problems in particular, is destroying its coherence.

To be successful, a critique of the existing order must do everything to highlight these incoherencies, to reveal how what has been taken for reality is only the defective perspective of a particular culture. However, it should also provide some guidance for overcoming these incoherencies. What this study has shown is that it is necessary to develop a new metaphysics that can replace mechanistic materialism. To achieve this, the new metaphysics must be able to provide the means to comprehend and assimilate what has been achieved under the aegis of the old metaphysical assumptions while showing how to overcome the defects of the science, the philosophies and the social order built on these assumptions. Then, to become an effective force, it must also be able to articulate the problems and aspirations of those who have the potential to gain cultural, social, economic and political power. In the sequel to this book, *Beyond European Civilization: Marxism, Process Philosophy and the Environment*, I will offer a candidate for this task. Beginning with a study and critique of Marxism and its failure within the Soviet Union, I will propose and elaborate a version of process philosophy, showing how this can serve as the foundation for the natural and human sciences and for ethics and political philosophy. I will show how process philosophy supports a framework of ideas that could enable people to understand themselves as conscious participants in the becoming of the world and provide them with the orientation required to create the future.