

**SUSTAINABILITY:
A SURVEY AND
CRITICAL ANALYSIS**

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DECLARATION

In accordance with the University of Edinburgh's Regulation 3.4.7 for Postgraduate Study, I declare that this PhD thesis is my own work and composition.

Simon Dresner

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ABSTRACT

The terms 'sustainability' and 'sustainable development' have been widely used in the context of environmental issues since the 1987 Brundtland Report, but there has been controversy about what they mean, if anything. This thesis examines how a concept like sustainability is used to attempt to change the world and how, conversely, its meaning is changed by the political context in which it is used. Some people have seen sustainable development as an attempt to co-opt environmentalist concerns, rather than a genuine shift in approach.

This thesis examines the contemporary debate about sustainability and its historical origins in wider concerns about Progress that have been present since the beginning of the modern age at the end of the eighteenth century, but were largely dormant from the middle of the nineteenth century until the 1970s. Following a review of literature, many of the key players in the debates of the last twenty years were personally interviewed. Sustainability is shown to be a concept coined by environmentalists in the 1970s to counter criticism that concern about the environment was unimportant relative to social problems like poverty. It also had the advantage that it placed opponents of environmentalism on the rhetorical defensive.

The thesis explores the sharp debates in recent years as environmentalists and economists have struggled for control of the concept. It shows how adoption of the concept of sustainability requires a rethinking of the utilitarian philosophy that has been the ethical basis for economic theory to date. It also shows that environmentalists have retreated from simplistic neo-Malthusian thinking about economic growth.

The uptake of the idea of sustainability is seen as marking a loss of confidence in the modern age's identification of Progress with crude domination of nature. There is growing acceptance of the idea of physical limits in view of the increasing evidence. Paradoxically, the concept of sustainability is based on criticism of modernity's approach to nature but retains modernity's optimism about the rational control of society. The recent collapse of confidence in socialism has underlined scepticism about that aspect of modernity just as much as the environmental crisis has undermined its goal of the domination of nature.

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PART ONE

INTRODUCTION AND METHODOLOGY

CHAPTER 1.1

INTRODUCTION

Stories about environmental issues now often appear in the media. In the last few years it has become frequent for somebody to be quoted commenting that the trend in question is 'unsustainable'. It may be said about anything - ranging from emissions of carbon dioxide changing the Earth's climate down to the environmental impact of disposable nappies. In the 1990s, the idea that we should live 'sustainably' has become a central slogan in environmental discussions. When the Norwegians slaughter minke whales, they defend the activity on the grounds that it is sustainable. Their environmentalist opponents are then forced to argue that there are other criteria of judgement apart from sustainability.

Why has this idea of sustainability become so important recently? One reason is because the idea of sustainability is much more powerful rhetorically than an idea like being 'environmentally friendly'. But that cannot be the entire explanation. After all, the term was hardly heard until the late 1980s, twenty years after the contemporary environmental movement got going.

The idea of sustainability in something like its modern form was first used by the World Council of Churches in 1974.¹ It was proposed by Western environmentalists in order to get round Third World objections to worrying about the environment when human beings in many parts of the world suffer from poverty and deprivation.

The idea only came to prominence in 1987, when the United Nations' World Commission on Environment and Development, chaired by the future Norwegian prime minister Gro Harlem Brundtland, published its report *Our Common Future*.² The central recommendation of this report, usually known as the Brundtland report, was that the way to reconcile the competing demands for environmental protection and for economic development was through a new approach: Sustainable Development. They defined it as development that "meets the needs of the present without compromising the ability of future generations to meet their needs."³

The slogan 'sustainable development' was quickly taken up by governments and international agencies. At the UN Conference on Environment and Development (UNCED), which took place in Rio de Janeiro in 1992, the world's political leaders pledged their support for the goal. However, the sight of such unanimous support from politicians has encouraged the suspicion among some environmentalists that sustainable development is a meaningless idea. Different people appear to use the slogan in different ways, some emphasising development through economic growth, and others emphasising sustainability through environmental protection.

Some environmentalist critics have claimed that the idea of sustainable development is a contradiction in terms, and can be used merely as a cover for continuing to destroy the natural world.⁴ On the other side of the debate, some economists have argued that sustainable development is too cautious about the future. It could lead to sacrifices of economic growth for the sake of excessive concern about depletion of natural resources. Defenders of the concept argue that disagreement about sustainable development does not show that it is meaningless. Rather, it is a 'contestable concept' like liberty or justice. Most people support these goals but disagree about what exactly constitutes liberty or justice.⁵ It is also sometimes argued by environmentalist supporters of the sustainable development slogan that the compromises inherent in combining 'sustainable' with 'development' were a necessary price to pay to get the idea of sustainability into the political mainstream at all.

However, the debate about sustainability is not simply about 'environment versus growth'. The idea of sustainable development was originally used by the Brundtland Commission to try to get round that polarised debate which had run from the early seventies. Although sustainability is often presented as a matter of prudence, even of common-sense - that you should not destroy the basis of your own existence - it is really more a question of *equity*. People who engage in unsustainable practices are not usually the ones who suffer the consequences. Concern about sustainability must be based on moral obligations towards future generations, not just personal self-interest. A crucial sentence in the Brundtland report stated: "Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity

within each generation.”⁶ In this way, the Brundtland Commission’s conception of sustainable development brought together equity between generations (intergenerational equity, in the jargon) and equity within generations (intragenerational equity).

Bringing these two ideas together was a political masterstroke. From the late sixties, when the present-day environmentalist movement was starting, leftists and representatives of the Third World had frequently accused environmentalists, with their concerns about ‘the population bomb’ and ‘the limits to growth’, of being unconcerned about the plight of the poor. They saw all this talk of ‘limits’ as a cover for traditional conservative arguments that wealth was too scarce for everyone to share in it - a thinly disguised justification for inequality.

The historical precedent for this view was Karl Marx’s critique of the argument put forward by Robert Malthus at the end of the eighteenth century. Malthus had claimed that uncontrolled population growth among the poor meant that wealth could not be distributed more equally, as some supporters of the French Revolution wanted. The numbers of poor would quickly grow to eat up any surplus and reduce everyone to a state of bare subsistence.

Marx and his colleague Friedrich Engels argued that Malthus’ argument was false and was simply an excuse for inequality. The poor could learn the same ‘moral restraint’ against large families that apparently had kept the rich from breeding themselves into poverty. More importantly, they argued that Malthus’ concept of natural limits was oppressive and conservative. It justified social injustice and ignored the potential for scientific and technical progress.

Ironically, today it is free market economists who most enthusiastically echo Marx and Engels' faith in growth and progress. In the 1990s, environmentalists have taken up Brundtland's idea of the connection between intergenerational and intragenerational equity. Using the concept of 'environmental space', Friends of the Earth now claims that sustainability requires that people in the North reduce their consumption of resources per head to a level that everyone in the world would be able to live on indefinitely.

Environmental economists instead define sustainability in terms of non-depletion of capital. It is argued that we are presently depleting the 'natural capital' of the Earth, as the green economist Herman Daly put it, treating the world "as if it were a business in liquidation."⁷ However, there is disagreement about to what extent advancing technology replaces human-made capital for natural capital, and how far the idea of non-depletion of natural capital should be taken. Oil is currently being consumed at a million times the rate at which the reserves were laid down. Should we immediately reduce our consumption a millionfold in order to be sustainable?

Even radical Greens see the absurdity of that line of thinking. The debate between 'strong' sustainability and 'weak' sustainability is about whether, in general, the proceeds from running down natural capital like oil reserves, that can be substituted for, should be invested directly in substitutes for those resources - such as solar power technology, or can be invested in other forms of capital - such as education. Another debate is about whether there is such a thing as 'critical' natural capital that cannot be substituted for by technology, and must be preserved absolutely.

The dispute between environmentalists and economists over sustainability is not just about the capacity of technological progress to substitute for natural resources. In the absence of sufficient understanding of the natural environment and of the capacities of future science and technology to deal with any problems, it involves disputes about how to deal with indeterminate risks. Economists tend to average out such risks in their calculations, burying worst-case possibilities in the average, so tending to advocate risky approaches to environmental futures. Environmentalists instead highlight worst-case outcomes and suggest that extra efforts should be taken to avoid them.

There are parallels between the risky approach that economists take with the future and their lack of support for egalitarianism in the present. Both are a result of the assumptions of the utilitarian philosophy underlying mainstream economics. Most environmentalists are more left-wing, and it turns out that there is a real philosophical parallel between their interest in equity to future generations and equity within generations. Drawing on the theories of the philosopher John Rawls, I will suggest that there are very severe tensions between the utilitarian basis of mainstream economics and sustainability's concern for equity within and between generations. The difficulties of incorporating sustainability concerns into mainstream economic thinking cast doubt on the assumptions underlying economic approaches such as cost-benefit analysis in environmental policy-making.

The concept of the links between concern for these two kinds of equity has in the last few years led to a debate around the concept of 'environmental space' - the idea that the Earth's limited capacity to support human use of the environment for economic purposes should

be equally shared between the population of the world, rather than predominantly for the benefit of the minority who live in industrialised countries.

Is the idea of sustainability primarily about the economic prospects for our descendants, or ultimately about the preservation of the natural world for the sake of posterity? The debate between environmentalists and economists about sustainability involves not just how we want to treat the poor of today and our descendants, but also about how we value the natural world. Do considerations of sustainability lead to the protection of the natural world? Or is an ethical concern for nature for its own sake necessary to bring about sustainability?

Richard Norgaard, an environmental economist at Berkeley, has argued that the concept of sustainable development marks the beginning of the dominant strand of Western culture's break with an idea it has been firmly wedded to for the past two centuries - faith in Progress.⁸ When people believed in Progress they did not worry about taking care of the environment for the sake of their children and grandchildren. Progress was seen in terms of the mastery of nature. People assumed that advancing science and technology, by increasing human mastery of nature, would decrease our dependence on it. In recent decades, faith in human beings' capacity to successfully master nature or even to collectively control our own destiny has been diminished. Too many grand projects for improving the condition of humanity have ended in social and environmental disasters.

The present debate about sustainability is part of a wider re-evaluation of many of the values that have been passed down to us since the

Enlightenment. It is the ideas of the Enlightenment that inspired Western culture's optimism about science and progress. For a long time, that optimism appeared to be amply borne out. Only in recent decades has widespread doubt set in about the direction that our path of development is taking us.

However, the environmental movement also shares many Western post-Enlightenment values, while criticising others. It has an ambivalent relationship to modernity itself. The commitment to equity that is crucial to the idea of sustainability comes straight out of the values of the French Revolution. The concept of sustainability is also an extension of the sort of commitment to large-scale social reform that the Enlightenment brought to the Western world. So sustainability combines much of the social optimism of the Enlightenment with disillusion about the means by which its goals were pursued.

What is more, the idea that we can achieve a condition of sustainability implies that we will be able to consciously take control of our destiny and redirect development in a different direction. The socialist movement was about taking control of our historical destiny, and it ultimately failed in its attempt to consciously transform the world to bring about a new society. To try to achieve sustainability is to set ourselves a goal as ambitious as any of the aims of the Enlightenment.

The thesis is structured in four parts. Part One provides an introduction provides an introduction to the investigation and outlines the methodology adopted for the research. Part Two deals with the historical background to the emergence of the concept of sustainability, based on a review of the literature. Part Three turns to consider the current debates,

drawing heavily on interviews with key players in these debates. Finally, Part Four returns to a more historical consideration of sustainability in the context of a re-assessment of modernity.

¹World Council of Churches (1974) Report of Ecumenical Study Conference on Science and Technology for Human Development, Geneva: World Council of Churches

²World Commission on Environment and Development (1987) *Our Common Future*, Oxford: Oxford University Press

³ibid, p. 8

⁴Tim O'Riordan (1988) 'The Politics of Sustainability' in *Sustainable Environmental Management: Principles and Practice*, edited by R. Kerry Turner, London: Belhaven

⁵Michael Jacobs (1991) *The Green Economy*, London: Pluto

⁶WCED (1987), p. 43

⁷Herman E. Daly (1992) *Steady-State Economics*, Second Edition, London: Earthscan, p. 248

⁸Richard B. Norgaard (1994) *Development Betrayed*, London: Routledge

CHAPTER 1.2

METHODOLOGY

This section outlines how the project was conducted. It deals with the research questions behind the project, the theoretical approach taken, and the research design and implementation. A list of interviewees is included at the end of the section.

Research questions

The thesis project was first conceived in early 1991 as a piece of research examining the concept of sustainability. The terms sustainable development and sustainability had already achieved considerable popularity in discussions of environmental issues since the Brundtland report. I was interested in considering claims on the one hand that sustainable development marked a major advance in the environmental debate, and on the other hand that the idea was self-contradictory or meaningless. Did 'sustainable development' have a meaning?

During an extensive survey of the literature, a number of further issues emerged. Some claimed that the intention of the Brundtland Commission in adopting the term sustainable development had been to

overcome the past controversy about economic growth and put the environment on the agenda in a more positive way. Others put the contrary view that the intention was to avoid the crucial issues by putting forward a slogan that was in fact meaningless. So just what was the intention behind the adoption of the term sustainable development?

The concept of sustainable development could be interpreted as an attempt by environmentalists to force the mainstream to adopt the environmental agenda in order to place them on the defensive. On the other hand, it could be seen as an attempt by the mainstream to adopt environmental rhetoric in order to co-opt environmentalist concern and in that way neutralise it. Just who was co-opting whom?

The development of ideas about sustainability since the Brundtland report had mostly taken place in the field of environmental economics. It seemed that environmental economics was the meeting point for environmentalists and economists to express their competing world-views. Just what was going on between these two crucial groups?

Another question concerned the difference between sustainable development and sustainability. The Brundtland report had used both expressions. However, some environmentalists claimed that sustainable development and sustainability were quite different ideas. Sustainable development was primarily about continuing the growth agenda by other means. Sustainability put the environmental agenda first. Was 'sustainable development' in fact different from 'sustainability'? What was the significance of different interpretations of sustainability? Did it mean that agreement was fundamentally impossible to achieve, or just that consensus about such a new idea would take time to emerge?

The continuation of the seventies growth debate in more recent discussions of sustainable development leads to the question of whether or not economic growth is compatible with achieving a state of sustainability. The growth question also relates strongly to the issue of equity within generations.

I was also interested in the philosophical basis of concern for sustainability and in the relationship between concern for future generations and concern for members of the present generation. Does a concern for the welfare of future generations automatically require concern for the welfare of the poor of the present day, as the Brundtland Commission claimed? What is the philosophical basis of concern for the welfare of members of future generations that do not actually exist?

The most fundamental question was whether it is possible to implement the goal of sustainability at all. How would you set about achieving such a major change in social and economic practice? Is sustainability a state to be achieved, a goal to be aimed for but never attained, or just a slogan for people to rally round?

The empirical research sought to explore these questions in more depth and to clarify and carry forward the debates in the literature by talking to those involved in these debates.

Theoretical approaches

My main interest in the research was in substantive issues rather than social scientific theory itself. I did not attempt to follow a particular epistemology, seeing theory only as a guide to the conduct of the research.

I was looking at the debate in terms of attempts to use ideas to obtain power and change the world, so my basic approach to the research project was based on a 'Machiavellian' interpretation. In this century, a number of authors have taken up Machiavelli's¹ approach to political power to explain social phenomena. I will outline the work of Foucault, Latour, Callon and Gramsci which particularly strongly relates to these concerns.

Michel Foucault's 'genealogy' is a way of writing history that addresses how ideas about the world appear and change the way the world is organised.² Foucault challenges conventionally accepted views - such as that prison exists to reform criminals - showing that, although prisons were intended to have that function, it has been known for well over a century that they do not. He asks what social purpose prisons have served after their original purpose has been lost. Foucault does not accept functionalist explanations of social phenomena which explain them as devices to maintain social stability. In Foucault's interpretation, ideas and institutions are instead seen as historically contingent. Their power resides not in themselves but in their relationships with the rest of the world. He looks at the way that ideas that grant some people control over others can be challenged.

Foucault's work addresses the organisation of the world primarily in terms of the control of the human being, focusing on issues such as prisons, mental institutions and the construction of sexuality. His post-structuralist approach has been taken up quite widely in social science. More recently, Bruno Latour and others have developed 'actor-network theory'.³ It addresses the organisation of the social and natural world together. Latour concentrates on how scientists and engineers turn their theories or inventions from ideas into accepted social facts by forging

alliances, not just with people, but with nature. Like Foucault, he looks at the relationship between knowledge and power. Whereas Foucault refused to define what power was, Latour explains power in terms of number and strength of connections. By establishing connections between things that were previously unconnected, an actor obtains power over the elements connected. The more connections one can establish with a particular element, the more power over that element one has. Having a lot of connections enables one to act at a distance, and a previously weak actor can become powerful. To have a lot of power, it is necessary to tie together a lot of elements in a network.

Michel Callon, a colleague of Latour's at the *École des Mines* in Paris, has elaborated actor-network theory through the concept of 'translation'.⁴ Translation is the way in which elements are defined and thereby constituted and positioned in relation to other subjects. Successful translation leads to a situation where the elements work together towards a desired goal - they are said to be convergent. In a convergent network, because the elements are strongly tied together in mutual relationships, they are difficult to break apart and re-problematise - the network is said to be relatively irreversible. Callon uses a term also used by Foucault, that of 'normalisation'. For Callon the normalisation of a network occurs as it becomes convergent and irreversible. The relations between actors and intermediaries become stable and routine. Foucault's conception of normalisation is similar, but also emphasises the establishment of disciplinary mechanisms to maintain the network.

A major criticism that can be made of Latour's and Callon's theories, however, is that they operate only at a 'micro' level of direct interactions between players, and ignore the broader social structures and other

'macro' level phenomena.⁵ Another approach, also influenced by Machiavelli's writings, but more able to deal with 'macro' level phenomena is Antonio Gramsci's theory of hegemony.⁶ Gramsci's theory examines how power is maintained in society through the establishment of ideological 'hegemony' rather than domination by the use of force, and by the formation of alliances around a coalition of interests and ideas. There are also clear parallels with Foucault's work. Neither accepts the functionalism that is a consequence of the rigidities of orthodox Marxist and structuralist thought. Instead, they emphasise the way that power is constructed and can be challenged. Gramsci, as a Marxist of sorts, gives more emphasis to the material *Realpolitik* of a situation than the post-structuralist Foucault does. However, unlike orthodox Marxists, he does not see classes as simply pre-existing entities, rather as things that are themselves constructed by a process of negotiation. But Gramsci grants ideas less life of their own than Foucault does. His theory of power is more materially based.

In my opinion, Marxism had an undue influence on Gramsci's thought, and structuralism on Foucault's. Although Gramsci's Marxism is not functionalist, it retains a key flaw in Marxist thought, the belief that it alone stands outside the world and provides an Archimedean position from which to view the world. Foucault's thought abandons the structuralist belief that an understanding of linguistic relationships provides a secure basis for knowledge, but retains the linguistic philosophers' belief that language is the basis for knowledge. Both Gramsci's and Foucault's theories of knowledge and power show influences of systems of thought that they had partially, but not completely, transcended.

All these approaches examine how a stable set of relations, variously called *irreversibility*, *normalisation* or *hegemony*, are achieved. They approach the issue from different perspectives. Gramsci takes the perspective of the subaltern class in its attempt to take the dominant position in society. Latour takes the perspective of scientists and engineers attempting to translate their ideas into networks of power. Foucault looks at history from the perspective of the present, and attempts to show how arbitrary and contingent the conceptions of truth that have emerged are. The perspectives are different, both in orientation and scale.

Gramsci's concept of 'hegemony' emphasises the extent to which in order to gain and keep power it is necessary to have an ideological hold over people, so that your interpretation of the world seems like 'common sense' to them. Gramsci argued that any group which seeks to transform a modern society must obtain ideological hegemony first. According to Gramsci, a hegemonic group articulates its interests as being central to the general interest. It forms alliances by showing how the interests of its allies are linked to these central interests. A Gramscian interpretation of sustainable development could be as a concept put forward in an attempt to achieve the status of 'common sense' for environmental concerns, placing opponents on the rhetorical defensive and attempting to construct a broad coalition of interest in support of the phrase.

Foucault and Latour's approaches are more useful when looking at the development of theories of sustainability in environmental economics. In Foucauldian terms, environmental economics could be seen as the discipline being created to academically embody the concept. Callon's

concept of translation can be used to consider attempts to incorporate ideas from environmentalism into economics.

Both Callon's concept of translation and Gramsci's idea of hegemony imply that enrolment is a double-edged sword. The dominant party must in some ways, if only rhetorically, be seen to address the concerns of the subordinate groups. In this process, both parties are to some extent transformed. All three approaches see the normalisation of a new set of social relations as an uncertain achievement that is potentially reversible. They tell us something about the strategies for bringing about change, but the outcomes of these processes are not predetermined - they depend on the particular circumstances.

Research design

My aim in conducting the interview study was to speak to as many of the key participants in the debate as possible. These were mainly academics and diplomats. At that stage, I had identified the role of environmental economists as crucial to the theoretical development of the concept of sustainability. The United Nations process leading from Brundtland through UNCED was the most important factor in the emergence of sustainable development as an issue in international politics. My intention was to conduct interviews with people who had played a critical role in either the theoretical or political development of the concept in order to get a more detailed understanding than was possible just from the published literature and examine in more detail questions arising from this. To do that, I tried to interview people who had written books or papers that had been particularly important in the emergence of the concepts of sustainability and sustainable development.

Another interest I had was to look at attempts at implementing sustainability. I conducted a number of interviews in the Netherlands focusing on the national debate about sustainability, which is probably the furthest advanced anywhere. Since the late eighties, and the publication of the first National Environmental Protection Plan, the rhetoric of sustainability has been central to Dutch environmental policy. Much of the recent work on the 'environmental space' approach to sustainability discussed in later chapters has been conducted in the Netherlands.

As well as conducting interviews, I directly observed international negotiations at the 1994 meeting of the Commission on Sustainable Development in New York, at the first Conference of the Parties to the Framework Convention on Climate Change which took place in Berlin in 1995, and attended some sessions at the 1994 World Bank/IMF General Meeting in Madrid.

The original interview schedule was piloted with a test sample in the Edinburgh area. The first stage of the fieldwork was a series of interviews conducted in Britain in spring 1994. The next stage was a field trip to the United States in summer 1994. I had not originally expected that it would be possible to interview anyone from the Brundtland Commission or any of the main UNCED negotiators. In the end, though, when attending the CSD meeting in New York, I was able to interview Nitin Desai, who had worked on the Brundtland report, and Ismail Razali, Malaysia's UN ambassador, who had played an important role in UNCED. After the CSD, I spent several weeks in the United States and interviewed a number of figures. Between interviews, I spent time at the Library of Congress in Washington to do further reading of the American literature. After my trip to the United States, where it had proved difficult to

interview the World Bank employees I had planned to talk to, I managed to interview Andrew Steer, the director of the World Bank environment department, in Madrid. I also made a few trips to the Netherlands to conduct interviews there with academics, environmentalists and civil servants.

(a) Recruitment of Interviewees

The interviewees were chosen to represent participants in both the theoretical and political debates about sustainability. In practice, many of the leading theoreticians had also had some involvement in the politics. Professor David Pearce and Professor Hans Opschoor, for example, had both been advisers to their national governments. Some interviewees proved much easier to gain access to than others. It proved impossible to interview Maurice Strong, the former Secretary-General of UNCED, for example. In some cases, persistence did pay off. For example, after several unsuccessful attempts to arrange an interview, I did manage to get an interview with David Pearce.

(b) Interviews

The interviews focused on the following areas:

- Professional life and work
- Understanding of the emergence of the debate.
- Drawing on their writings (if any), their own personal involvement in the debates.
- Views on substantive issues related to economics and ecology.

- How these substantive issues impinged on their own work and practice.

Initially, an interview schedule was drawn up. Early interviews in which I tried to cover most of the schedule proved unsatisfactorily shallow, however; and later an approach was adopted focusing on key questions about issues the interviewee was directly involved in. Before each interview, I attempted to read as much as possible that the interviewee had written and work out which parts of the interview schedule and which additional questions were particularly relevant.

Interviews usually lasted between 45-90 minutes.

(b) Transcription and Analysis

The interviews were transcribed afterwards, a task that took approximately 6-12 hours of work per interview. Transcription and preliminary analysis took place between groups of interviews, helping with refinement of the interview technique.

(c) Table of Interviews

In addition to the interviews listed below, I was able to interview three Dutch civil servants and two British civil servants working on the issue of sustainability.

NAME OF SUBJECT	POSITION	DATE
Paul Ekins	Research Fellow, Department of Economics, Birkbeck College, London; co-founder of the New Economics Foundation and noted 'green economist'	14.3.94

Tim O’Riordan	Professor of Environmental Sciences, University of East Anglia; leading writer and commentator on environmental issues	15.3.94
Tom Burke	Political adviser to the UK Environment Secretary	22.3.94
John Pezzey	Research Fellow, Centre for Social and Economic Research on the Global Environment, University College London; important theorist of sustainability as a concept in environmental economics	23.3.94
Norman Myers	Research Fellow, Green College, Oxford	20.4.94
Sir Crispin Tickell	Warden of Green College, Oxford; UK Prime Minister’s adviser on sustainable development; former British Ambassador to the United Nations	20.4.94
Felix Dodds	Director of UNED-UK; environmental lobbyist at the Earth Summit and the UN Commission for Sustainable Development	26.5.94
Martin Khor	President of Third World Network; leading figure in global NGO lobbying of Earth Summit and Commission on Sustainable Development	27.5.94
Nitin Desai	United Nations Under-Secretary General, Policy Coordination and Sustainable Development; author of Brundtland Commission’s definition of sustainable development	30.5.94

Joke Waller-Hunter	Head of Secretariat, Commission on Sustainable Development	2.6.94
Anne Ehrlich	Assistant Professor of Biology, Stanford University; co-author (with Paul Ehrlich) of <i>The Population Bomb</i> (1968)	6.6.94
Garrett Hardin	retired Professor of Biology, University of California, Santa Barbara; prominent environmentalist in the late 1960s and early 1970s	7.6.94
John Cobb	retired Professor of Theology, Claremont College, California; co-author (with Herman Daly) of <i>For the Common Good</i> (1989)	8.6.94
Dennis Pirages	Associate Professor of Political Science, University of Maryland; editor of <i>The Sustainable Society</i> (1977), the first book about sustainability	22.6.94
Herman Daly	Senior Research Associate, Department of Economics, University of Maryland leading Green economist; author of <i>Steady-State Economics</i> (1977) and (with John Cobb) <i>For the Common Good</i> (1989)	22.6.94
Donella Meadows	Professor of Environmental Studies, Dartmouth College; lead author of <i>The Limits to Growth</i> (1972) and <i>Beyond the Limits</i> (1992)	23.6.94
Dennis Meadows	Professor of Systems Dynamics, University of New Hampshire; co-author of <i>The Limits to Growth</i> (1972) and <i>Beyond the Limits</i> (1992)	24.6.94

Anil Markandya	Research Fellow, Harvard University; co-author of <i>Blueprint for a Green Economy</i> (1989)	24.6.94
Ismail Razali	Malaysian Ambassador to the United Nations; former Chairman, Commission on Sustainable Development	5.7.94
Richard Norgaard	Associate Professor, School of Energy and Natural Resources, University of California, Berkeley; author of <i>Development Betrayed</i> (1994)	21.7.94
Maria Buitenkamp	Senior Researcher, Friends of the Earth Netherlands; lead author of <i>Sustainable Netherlands Action Plan</i> (1993), an exploration of the environmental space concept	24.8.94
Andrew Steer	Director of World Bank Environment Department	5.10.94
Bertram Zagema	Researcher, Friends of the Earth Netherlands	15.12.94
Peter Bosch	Environmental Statistician, Netherlands Central Bureau of Statistics	16.12.94
Hans Opschoor	Professor of Economics, Free University of Amsterdam; former Chairperson of Netherlands Advisory Board on Research on Nature and the Environment; chief proponent of the environmental space concept	19.12.94

David Pearce	Professor of Environmental Economics, University College London; Chair of the Economics Working Group of the Intergovernmental Panel on Climate Change; leading environmental economist; lead author of <i>Blueprint for a Green Economy</i> (1989)	9.2.95
Rob Weterings	Senior Researcher, TNO Institute for Policy Studies Apeldoorn, The Netherlands; collaborator with Hans Opschoor	22.3.95

¹Niccolo Machiavelli (1532) *The Prince*, Cambridge: Cambridge University Press, 1988

²Michel Foucault (1979) *Discipline and Punish*, Harmondsworth: Penguin

³Bruno Latour (1987) *Science in Action*, Milton Keynes: Open University Press

⁴Michel Callon (1991) 'Techno-economic networks and irreversibility', International Conference on the Economics and Sociology of Technology, University of Manchester Institute of Science and Technology

⁵Robin Williams and Stuart Russell (1988) 'Opening the black box and closing it behind you', *Edinburgh PICT Working Paper No. 3*

⁶Antonio Gramsci (1971) *Prison Notebooks*, London: Lawrence & Wishart

PART TWO: HISTORY

CHAPTER 2.1 INTRODUCTION

The debates around sustainability today - about limits to growth and about the domination of nature - are not as new as they are sometimes thought to be. There has been an intellectual debate around these issues since the beginning of the modern age, two hundred years ago. In the nineteenth century, the question of whether there were limits to growth and the social consequences of such limits was the subject of fierce controversy started by Malthus shortly after the French Revolution. His most influential critics, Karl Marx and Friedrich Engels, argued that limits were not natural, but social.

In parallel to this debate, the Industrial Revolution led to an aesthetic backlash to the domination of nature from the Romantic movement. Mary Shelley's novel *Frankenstein* was the first expression of the modern myth of scientific advance rebounding on humanity and its creator. The Malthusian and the Romantic responses to modernity were both influential among intellectuals in the early part of the nineteenth century, but they became marginalised later in the century as scientific and technological progress bounded forwards. These ideas, sceptical of modernity's optimism about scientific progress, are intellectual forebears

of the environmentalism that emerged as a much more powerful force in the late twentieth century.

The late twentieth century environmental movement was sparked off by increasing concern among scientists themselves about the environmental impacts of modern technologies. In the early 1960s, there was growing scientific concern about radioactive fallout from atmospheric testing of nuclear weapons. This was soon followed, after the publication of Rachel Carson's *Silent Spring*, by concern about the impact on wildlife of large-scale use of pesticides. The environmentalism of the 1960s was first led by scientists drawing attention to existing environmental problems. Later in the sixties, the idea of global environmental limits began to emerge as a theme. Paul and Anne Ehrlich's *Population Bomb*, in 1968, and the Club of Rome's *The Limits to Growth* in 1972 were key examples of this trend. After *The Limits to Growth*, environmentalists began to concentrate on the role of the pursuit of economic growth in environmental destruction. Dissident economists like Fritz Schumacher and Herman Daly became prominent in the environmental movement.

The concept of sustainability emerged soon after the 1972 Stockholm UN Conference on the Human Environment. The concept was an attempt to bring together environmentalism with social justice in response to accusations of neo-Malthusianism that had been made about the new environmentalism by representatives of the Third World at Stockholm.

It took until 1987, though, for this attempt to reconcile environment and equity to develop real political force with the publication of the Brundtland report. The slogan of sustainable development soon proved

irresistible for governments and was endorsed by the world's political leaders at the UN Conference on Environment and Development in 1992. Facing up to the implications of sustainable development has proved to be much more difficult, though.

Chapter 2.2, 'Historical Origins of the Debate', deals with the debate about progress until the end of the nineteenth century. Chapter 2.3, 'The Emergence of Environmentalism', describes the development of the modern environmental movement from the late nineteenth century. Chapter 2.4, 'Sustainability Emerging', describes developments from the 1972 UN Conference on the Human Environment in Stockholm until the 1992 UN Conference on Environment and Development (UNCED) in Rio. It concentrates particularly on the Brundtland Report. Chapter 2.5, 'Rio and After', deals with UNCED and its aftermath.

CHAPTER 2.2

HISTORICAL ORIGINS OF THE DEBATE

The Enlightenment

It was the development of Western science that allowed human beings to break free of the technological limits which had constrained earlier civilisations, leading to the emergence of belief in Progress.¹ The rediscovery of Greek science from the Arabs and information gleaned from the Arabs themselves launched European science at the end of the Middle Ages. The invention of the printing press enabled ideas to spread quickly. In the seventeenth century, European scientists began to make dramatic new breakthroughs. The invention of the telescope and Galileo's discovery of moons orbiting Jupiter led to the overthrow of the old Earth-centred view of the universe. The discrediting of the authority of the Catholic Church's teachings about astronomy precipitated the development of rationalism as an ideology for scientists. The power of reason was demonstrated by Isaac Newton when he developed his laws of motion to explain the movement of the heavenly bodies in mechanical terms.

Francis Bacon was a particularly important ideologist of science. In his utopian novel *The New Atlantis*, published in 1627, he introduced the idea that science would enable the domination of nature.² It had previously been believed that man had permanently lost his dominion after the expulsion from the Garden of Eden. Bacon proposed that it could be regained through a scientific understanding of nature's workings. His startling idea was that scientific men could gain powers that had been believed to belong to God. His imagery was striking: "I am come in very truth leading to you Nature with all her children to bind her to your service and make her your slave."³

Another important early ideologist was René Descartes. In *A Discourse on Method*, he put forward the idea that nature could be understood by the use of Reason.⁴ He firmly separated man, who possessed rationality, from the rest of the natural world, which did not and could be regarded as a machine. Even animals, which appeared to be conscious, were in fact mere automata. There were no longer any ethical restraints on what could be done to other living things or the Earth. The first great success of Descartes' vision of scientific progress through the analogy of Nature as a machine was Newton's discovery of the laws of motion. It was followed in the late seventeenth and the eighteenth century by rapid advances in many fields of science.

In the eighteenth century, the Enlightenment and the idea of the Age of Reason looked for the rationality being applied so successfully in science to be turned to other fields. In England, the philosopher John Locke outlined a political theory based on a deduction of the rights to life, liberty and property.⁵ Locke inspired Thomas Jefferson's American Declaration of Independence. The idea of a rational political order took an even more

powerful hold in the French Revolution, inspired by *philosophes* like Voltaire and Rousseau.

In Britain, rationality was applied in the field of economics. Early capitalism began to break down the semi-feudal order and the factory system was created. Intellectual support for capitalism and the market came from the Scottish political economist Adam Smith, as exemplified in his description of the division of labour in a pin factory.⁶ He showed how a complex and difficult task had been rationally broken down into a series of tasks, which could be completed much more quickly when divided up in this way. Smith also reasoned counter-intuitively that efficient economic coordination could be achieved through competition in markets. If each individual acted to maximise their own economic self-interest, "the invisible hand" of the market would bring about the most efficient distribution of resources.

Unlike Locke, Smith and the English tradition of liberalism, who based their theories on the idea that self-interest was natural, but could be harnessed for the general good, Rousseau argued that man was born good, but was corrupted by society.⁷ Adam Smith welcomed the creation of new desires that followed from economic development. Rousseau thought that human desires beyond the need for food and shelter contributed to *unhappiness*. Possessions are not essential for happiness, Rousseau wrote, and the desire for them arises out of comparison with others, and sense of vanity, which Rousseau called *amour-propre*. The result is that people are unhappy in civilised societies, not because they are unable to fulfil their basic needs, but because they cannot fulfil socially created desires. Economic development continually creates a gap between new wants and their fulfilment. Rousseau held that the route to

happiness lay in abandoning society and returning to life as a natural being in a natural world. His ideas inspired the Romantic movement in the early nineteenth century, and are echoed today by the Green movement.⁸

It was Smith, rather than Rousseau, who captured the spirit of the future. At the end of the eighteenth century, the application of the steam engine, starting in England but soon spreading across Europe and America, led to a sudden explosion of manufacturing activity that Engels later named "the Industrial Revolution". Within two generations it had led to the most profound changes in the nature of people's lives since the invention of agriculture several millennia earlier. The technology and social organisation that flowed out of the Industrial Revolution gave human beings a degree of control over nature unparalleled in previous history.

Malthus and Population

Just as the Industrial Revolution was starting to expand the limits of material progress, Reverend T. R. Malthus published his *Essay on Population* in 1798. He argued that the tendency of population towards geometric growth meant that it would always outstrip the growth in food supply. The population was controlled by 'misery' (rising mortality rates due to food shortages) and 'vice' (prostitution and contraception). The standard of living of the labouring classes always hovered around the minimum necessary for subsistence. This tendency towards population increase meant that any improvement in the conditions of the labouring classes could be only temporary and would soon be eaten up by population growth. The poor laws, which provided relief for

unemployed labourers, only encouraged them to have more children than they could support. Those laws should be abolished. The 'iron law of population' would also prevent any permanent improvement in the lot of the masses, making futile any attempt at a more just and egalitarian society, as proposed by Godwin and Condorcet after the French Revolution. Malthus claimed to have come to this view reluctantly: "I have read some of the speculations on the perfectibility of man and society with great pleasure. I have been warmed and delighted with the enchanting picture which they hold forth. I ardently wish for such improvements, but I see great, and, to my understanding, unconquerable difficulties in the way to them."⁹

William Godwin had proposed a utopian anarchist society where property and self-interest had disappeared. People would instead act rationally in the interests of the whole. One of Malthus' first critics was Godwin himself. In 1801, he responded to Malthus and pointed out that if the birth rate could be reduced through 'moral restraint' (delayed marriage) then 'misery' and 'vice' could be avoided.¹⁰ Godwin pointed out that such restraint must exist among the rich, or else they would have bred to the point of poverty themselves, so it could be acquired by the poor. Malthus accepted this point in the second edition of the essay, published in 1803. This marked something of a retreat from the position in the first edition that any improvement in the condition of the masses would automatically be eliminated by increases in population. He came to the view that the condition of the poor could be gradually improved by education about the benefits of delayed marriage. Combined with economic growth, it would gradually raise their living standards. But he continued to argue that redistribution of wealth could not work. It would

only mean that the misery and poverty of the masses would be made general.

Condorcet had died in the Jacobin Terror of 1794. He had been a liberal Frenchman who believed in sexual freedom and advocated contraception as the means to curb population growth. Malthus, like nearly all his English contemporaries, considered contraception to be 'vice'. Malthus argued that contraception discouraged prudence and took away the pressure to support a family that encouraged people to work. Malthus was not, as is often imagined, against population growth. He thought that it was a good thing. What he thought was a bad thing was that the population grew faster than the means to support it. Malthus was not the extreme conservative he is often remembered as having been, either. He was a moderate Whig. He supported civil rights for the lower classes, and even the eventual extension of the vote to them once they had become educated.

Not surprisingly, Socialists in particular hated what Malthus said. There were very few socialists in Britain at that time, but there were a number of socialist thinkers in France. They generally agreed that there was a danger of overpopulation, but they tended to see the solution in improved social and economic organisation, more advanced technology and a consequent rise in the standard of living. They believed that as more varied pleasures became available, people would turn away from unbridled sexuality. They rarely saw value in contraception. The exception was Fourier, who regarded even abortion as legitimate in order for people to enjoy a good sex life.

Fourier believed that a socialist regime would result in a rapid increase of wealth to four times the level it was then. Nonetheless, he was worried about the physical limits of resources. He said the world was finite, and in two centuries would probably have a population of 5.5 billion. Even though the deserts might be reclaimed, the human species would become overcrowded and suffocate through excessive numbers. But he hoped that new conditions of life in a socialist society would humanely limit the population.¹¹

What actually happened was that the population of Britain rose from around ten million to around fifty million in the following hundred years. But thanks to the mechanisation of agriculture and food imports from the outside world, particularly the Empire, food shortages grew less rather than more. A similar pattern was repeated in the rest of Europe. Even so, the population eventually grew to a point that locally available fertiliser was no longer sufficient and it had to be supplemented to maintain the rise in yields, first with guano from Chile, later with artificial fertiliser manufactured from fossil fuels. Britain remains a net importer of food today. As living standards rose and urbanisation continued, the size of families gradually became smaller. Population growth levelled off in Europe in the twentieth century. In the past decade, the average fertility rate in most European and other industrialised countries has fallen well below two children per woman. However, population growth began to increase in the non-industrialised countries of the world as death rates began to fall in the middle of the twentieth century, and by 1992 the world had a population of 5.5 billion, rising at 1.7% a year.

Marx's critique of Malthus

Malthus had been dead for ten years before his fiercest and ultimately most influential critics began their attacks on his ideas. Karl Marx and Friedrich Engels did not deny the phenomenon that Malthus was describing, of the wages of agricultural labourers falling to subsistence levels, but they explained it as a 'reserve army of labour' necessary for capitalist accumulation. The law referred to an excessive number of labourers relative to the means of employment, not subsistence.

Their argument had two parts; firstly, that Malthus' "law" of population was not universal or necessary, and, secondly, that relative surplus population was not an inevitable effect of the human condition, but of the dynamics of capital accumulation. Their intention was to show that the cause of the prevailing poverty and misery in society was not overpopulation, but oppressive economic and political structures. Marx and Engels' view of Malthus was connected to their perceptions of the political consequences of his theories. Marx wrote in 'Critique of the Gotha Program':

But if this theory is correct, then again I cannot abolish the law even if I abolish wage labour a hundred times over, because the law then governs not only the system of wage labour but every social system. Basing themselves directly on this, the economists have been proving for fifty years and more that socialism cannot abolish poverty, which has its basis in nature, but can only make it general, distribute it simultaneously over the whole surface of society!¹²

Engels repeated many familiar arguments against Malthus. He gave Godwin's about the role of sexual restraint in response to Malthus' warnings:

We derive from it the most powerful economic arguments for a social transformation. For even if Malthus were completely right

this transformation would have to be undertaken straight away; for only this transformation, only the education of the masses which it provides, makes possible that moral restraint of the propagative instinct which Malthus himself presents as the most effective and easiest remedy for over-population.¹³

Engels went on to say that it was absurd to talk of overpopulation when only a third of the Earth's land surface was cultivated and the application of agricultural improvements already known could raise the production of this third sixfold. Moreover, he added, the geometrical rise in population was matched by a geometrical increase in science and its application: "And what is impossible to science?"¹⁴. That phrase was a denial of any problem with natural limits - because human scientific ingenuity was such that essentially *nothing* is impossible. In reference to Malthus' theory, Engels says: "our attention has been drawn to the productive power of the earth and mankind; and after overcoming this economic despair we have been made for ever secure against the fear of over-population."¹⁵

The apparent limits to the fertility of land had led the early economists to conclude that there were limits to the growth of the economy. As science and technology began to make possible many things previously unimagined, and mechanisation enormously increased agricultural productivity, the idea put forwards by Marx and Engels, that this kind of growth could continue for ever and that any apparent natural limits were not real, began to take hold. Their criticism of Malthusian natural limits was influential well beyond those who accepted their views generally, and today, paradoxically, is held at least as forcefully by mainstream economists as by the few surviving orthodox Marxists.

Ted Benton¹⁶ has recently analysed Marx and Engels' rebuttal of Malthus' natural limits conservatism. He argues that their 'social constructivist' response that the limits are purely social goes beyond what is necessary to rebut Malthus and, ironically, goes against the materialist spirit of their philosophy. He distinguishes between 'utopian' and 'realist' emancipatory perspectives. 'Utopian' perspectives seek to deny the existence of limits to human emancipation. 'Realist' perspectives accept that there may be limits to what is possible, and seek to achieve transformation within those boundaries.

He goes on to criticise their characterisation of production in terms of material transformation from raw material to product. He points out that many aspects of production, such as farming, are not really examples of such transformation. By such a characterisation, Marx overlooks the extent to which human existence is dependent on the operation of natural ecological cycles, and he overstates both the transformative aspect of praxis and the extent to which praxis is based on domination of nature.

Benton argues that each form of social life does indeed have its own specific material constraints and limits. However, it is possible to adopt social and technical strategies to deal with these limits. For example, recycling is a means of effectively transcending natural limits to the availability of non-renewable resources. The emphasis is instead on adaptive technologies rather than directly transformative ones.

Benton points to some evidence that Marx and Engels in fact acknowledged the trans-historical necessity of human dependence upon naturally given conditions and limits to social activity. There are two famous passages representing the 'ecological Marx' that he quotes. One is

Marx's discussion of the deleterious effects of capitalist agriculture on soil fertility:

By this action it destroys at the same time the health of the town labourer and the intellectual life of the rural labourer. But while upsetting the naturally grown conditions for the maintenance of that circulation of matter, it imperiously calls for its restoration as a system, as a regulating law of social production, and under a form appropriate to the full development of the human race.¹⁷

The other is from Engels:

Thus at every step we are reminded that we by no means rule over nature like a conqueror over foreign people, like someone standing outside nature - but that we, with flesh, blood and brain, belong to nature and exist in its midst, and that all our mastering of it consists in the fact that we have the advantage over all other beings of being able to know and correctly apply its laws.¹⁸

As Benton has pointed out, Marxism does contain within its materialism the possibility of accepting limits to human power. Its reluctance in practice to do so can be seen as ironically reflective of the dominant western ideology since the Industrial Revolution. This ideology, originated by Bacon and identified with the scientific enterprise, sees man as entirely separate and perfectly capable of ruling over nature like a conqueror over foreign people. It is an ideology that sits uneasily with acceptance of modern science, and particularly with the theory of evolution.

Mary Shelley and the Frankenstein Myth

Even in the nineteenth century, the goal of human domination of nature was not universally shared among political radicals. The Romantics were an important intellectual movement at the beginning of the Industrial Revolution. They reacted against what they saw as the increasing estrangement of human beings from nature as the Industrial Revolution

took place. They were opposed to the prevalent mechanistic approach to science, to the humanist separation of human beings from nature, and to the Christian separation of God from nature. It was a Romantic, Mary Shelley, who reworked the old Biblical myth of the danger of eating from the tree of knowledge in a modern secular form which underlies many present-day fears about out-of-control technology - the Frankenstein myth.

In Shelley's novel, the eponymous Dr Frankenstein created a being that destroyed all his family and friends and ultimately himself as well.¹⁹ In the novel the monster was a consequence not just of Frankenstein's egotistical single-mindedness, but also Frankenstein's masculine desire to father a creature entirely his own with no female aid (clearly a severe case of uterus envy). Shelley presents his search in sexual terms reminiscent of Bacon's language: "They [scientists] penetrate into the recesses of nature, and shows how she works in her hiding places," Frankenstein says. Later, "With unrelaxed and breathless eagerness, I pursued nature to her hiding places... a resistless, and almost frantic impulse, urged me forward; I seemed to have lost all soul or sensation but for this one pursuit".²⁰ Frankenstein's science is shown as an obsessive quest for power over nature and for public glory - an example of hubris with ultimately tragic results.

Frankenstein is one of the most famous books ever written, but it is much less well known that Mary Shelley later wrote *The Last Man*, the first book warning of global environmental catastrophe.²¹ The arrogant male scientists of the twenty-second century believe that they now understand Nature and can control it. They are proved disastrously wrong when there is a sudden and inexplicable climatic change, leading

to famine and then a plague that wipes out the human race. Mary Shelley's bizarre imaginings about the dangers of technological and scientific hubris were not taken seriously for over a century, but her ideas were re-invented in the late twentieth century.

John Stuart Mill's Stationary State

John Stuart Mill, who was widely regarded as the greatest English philosopher of his time, was also concerned about the human domination of nature. In his epic *Principles of Political Economy*, Mill devoted a short chapter to the idea of a 'stationary state economy', one which in today's language was not growing. He noted that according to classical political economy, profits and economic growth would ultimately decline over time. Classical political economists, following Adam Smith, had believed that population growth was unavoidable, so therefore an end to economic growth would lead to increasing hardship for the population. Mill pointed out that population growth must be restrained anyway and went on:

I cannot, therefore, regard the stationary state of capital and wealth with the unaffected aversion so generally manifested towards it by political economists of the old school. I am inclined to believe that it would be, on the whole, a very considerable improvement on our present condition. I confess I am not charmed with the ideal of life held out by those who think that the normal state of human beings is that of struggling to get on; that the trampling, crushing, elbowing, and treading on each other's heels, which form the existing type of social life, are the most desirable lot of human kind, or anything but the disagreeable symptoms of one of the phases of industrial progress...

There is room in the world, no doubt, and even in old countries, for a great increase in population, supposing the arts of life to go on improving, and capital to increase. But even if innocuous, I confess I see very little reason for desiring it... It is not good for man to be kept perforce in the presence of his species. A world from which solitude is extirpated, is a very poor ideal... Nor is there much

satisfaction in contemplating the world with nothing left to the spontaneous activity of nature; with every rod 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. If the earth must lose that great portion of its pleasantness which it owes to things that the unlimited increase of wealth and population would extirpate from it, for the mere purpose of enabling it to support a larger, but not a better or a happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compels them to it.²²

Conclusions

Many of the themes that are debated today around the issue of the environment would be recognisable to a Victorian intellectual. The concern about limits to growth in today's environmentalism would remind them of Malthus. The discussion today about the dangers of technology and the limits to scientific certainty would remind them of Mary Shelley. The present-day Green agenda would strike them with its similarity to John Stuart Mill's concerns about the destruction of nature in pursuit of economic growth.

But they would find some aspects of the present debate rather different. The argument that natural limits could always be overcome by science and progress that was made by Marx and Engels comes today more from the right than the left. A Victorian would also be struck by the extent to which we, who live in a world that has seen so much progress in the last century or so, have lost faith in the ideal of a better world in the future. Unlike Victorians, who generally looked to the future optimistically, we tend to look to the future with the feeling that optimism is passé. The

slogan 'sustainable development' is an attempt to sound optimistic which reveals a degree of doubt about the future that most Victorians did not share. Our intellectual mood would strike them as very similar to Romanticism. They would wonder quite why that has happened.

¹Richard B. Norgaard (1994) *Development Betrayed*, London: Routledge

²William Leiss (1972) *The Domination of Nature*, New York: George Braziller

³Bacon, quoted in Leiss (1972) op cit, p. 55

⁴René Descartes (1637) *A Discourse on Method*, London: Everyman, 1992

⁵John Locke (1689) *Two Treatises of Government*, London: Everyman, 1993

⁶Adam Smith (1776) *The Wealth of Nations*, Oxford: Oxford University Press, 1993

⁷Jean-Jacques Rousseau (1755) *Discourse on Inequality*, Oxford: Oxford University Press, 1994

⁸Francis Fukuyama (1992) *The End of History and the Last Man*, New York: Free Press

⁹Thomas Malthus (1798) *An Essay on the Principle of Population*, Oxford: Oxford University Press, 1993, p. 11

¹⁰Kenneth Smith (1951) *The Malthusian Controversy*, London: Routledge & Kegan Paul

¹¹Michelle Perrot (1983) 'Malthusianism and Socialism' in *Malthus Past and Present*, edited by J. Dupâquier, London: Academic

¹²Marx, quoted in Ted Benton (1989) 'Marx and Natural Limits: An Ecological Critique and Reconstruction' *New Left Review* 163: 51-86, p. 60

¹³Friedrich Engels (1844) 'Outlines of a Critique of Political Economy' in Karl Marx and Friedrich Engels, *Collected Works*, London: Lawrence & Wishart, 1987, pp. 439-40

¹⁴ibid, p. 440

¹⁵ibid, p. 439

¹⁶Ted Benton (1989) 'Marx and Natural Limits: An Ecological Critique and Reconstruction' *New Left Review* 163: 51-86

¹⁷Marx, quoted in Benton (1989) op cit, p. 83

¹⁸Engels, quoted in Benton (1989) op cit, p. 82

¹⁹Mary Shelley (1818) *Frankenstein*, Oxford: Oxford University Press, 1994

²⁰Shelley, quoted in Brian Easlea (1983) *Fathering the Unthinkable*, London: Pluto, pp. 30-31

²¹Mary Shelley (1826) *The Last Man*, London: Hogarth, 1985

²²John Stuart Mill (1848) *Principles of Political Economy*, Harmondsworth: Penguin, 1985, pp. 113-116

CHAPTER 2.3

THE EMERGENCE OF ENVIRONMENTALISM

Introduction

This chapter addresses the emergence of the environmental movement over the past century. It shows how contemporary environmental concerns have roots in the environmental movements that appeared at the end of the nineteenth century in the United States. Until the 1960s, though, environmentalism was a marginal concern. The contemporary environmental movement emerged after the publication of Rachel Carson's *Silent Spring* in 1962. The environmentalism of the 1960s and early 70s was led by scientists raising the alarm about unsustainable trends. This wave of environmentalism culminated in *The Limits to Growth* study, published in 1972.

John Muir and the Sierra Club

The organised environmental movement was started by John Muir, a Scottish emigrant to America. In 1864, as a young man of twenty-six fleeing Civil War conscription, he disappeared into the Great Lakes

wilderness. There, he discovered an awe for nature similar to that of the Romantics before. Muir later walked across much of North America, eventually going to California, where he settled and focused his energy on preserving the Sierras.

Muir's first book, *The Mountains of California*, describes the natural wonder of the state, and also the loss of biological diversity in California already apparent due to the pressure of development:

But of late years plows and sheep have made sad havoc in these glorious pastures, destroying tens of thousands of the flowery acres like a fire, and banishing many species of the best honey-plants to rocky-cliffs and fence-corners, while, on the other hand, cultivation thus far has given no adequate compensation, at least in kind; only acres of alfalfa for miles of the richest wild pasture, ornamental roses and honeysuckles around cottage doors for cascades of wild roses in the dells, and small, square orchards and orange-groves for broad mountain-belts of chaparral.¹

Muir's greatest personal achievement against the forces of development was the establishment of Yosemite as a National Park in 1890. Within two years development pressures were so severe that a group of Californians led by Muir founded the Sierra Club to defend the park. The final years of Muir's life were dominated by the unsuccessful 1908-13 campaign to prevent the building of a dam in Hetch Hetchy Valley, the next valley north of Yosemite.

Gifford Pinchot's Conservation

A very different tradition of conservation also appeared in the United States at the turn of the century, personified by Gifford Pinchot, the first director of the US Forest Service. The idea of natural capital was adopted by Gifford Pinchot. Pinchot was the most prominent advocate of 'sustained yield' forestry, in contrast to the rapacious practices of the

'robber barons'. The Conservationist approach he put forward was implemented under the presidency of Teddy Roosevelt in the first decade of the twentieth century. Pinchot was appointed the first director of the US Forest Service. His Conservationism sought to conserve natural resources as it saw the destruction of resources such as forests as wasteful. The justification for conservation was that the resources could be more economically efficiently exploited. Pinchot said that the aim of conservation, echoing Jeremy Bentham's formulation of utilitarianism, was "the greatest good for the greatest number for the longest time." The Conservationist position was known as 'wise use' and became the cornerstone of official thinking about the environment in the United States. It was criticised even from the start by more radical thinkers, often called Preservationists, led by John Muir. The Conservationists believed that *not* utilising natural resources was wasteful. When it was suggested that hydroelectric development of Niagara would spoil the river's beauty, Conservationists responded that it would be crime to let so much energy go to waste.² The two groups fought over the Hetch Hetchy dam, intended to provide water for the rapidly growing city of San Francisco. It was a battle that eventually the Preservationists lost. The Conservationists had supported the dam, claiming it was a wise use of nature for human ends. The Preservationists argued against its construction as it would destroy one of the most beautiful valleys in the world. John Muir personally believed that the crime in building the dam was the destruction of nature more than the loss of aesthetic value. At that time, though, the use of this non-anthropocentric argument was not politically viable.

The Conservationists invented the profession of forestry, which they saw as tree farming. They created America's National Forests, areas of public land set aside primarily to provide for the need for timber. To obtain the maximum 'sustained yield' of timber, foresters grow only one species of tree in neat rows to make for easier harvesting and operate a system of rotation every few decades. The result lacks all the biological diversity of natural forests.

The practical problems with Conservationism lay in its lack of understanding of ecology. The Conservationists brought about the adoption by the US government of the policy of exterminating all predators. It became apparent to some people that this was not necessarily a good idea when it led to the population of deer in the Kaibab Forest near the Grand Canyon exploding, then crashing after they destroyed their food supply in the 1920s.³ One response to these problems was the development of ecology as a science.

Aldo Leopold's Land Ethic

Aldo Leopold decided that the problem lay deeper than insufficient scientific knowledge. Leopold had been trained by Conservationists in the Yale Forestry School, and for the early part of his professional life he accepted Conservationist teaching. Gradually, however, he became disillusioned. The issue that precipitated this change of heart was predator control.⁴ In his book *A Sand County Almanac*, Leopold called for a 'land ethic'.⁵ Leopold's intuition was that the earth was an indivisible living being, each species playing its part in an indivisible whole, and human beings were just one part of that community. The land ethic stated that "a thing is right when it tends to preserve the

integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."⁶ He said that the land ethic "changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it."⁷

Yet Leopold justified the land ethic in anthropocentric terms - essentially that the long-term human interest was best served by a healthy ecosystem, even if the short-term interest was best served by purely economic criteria. That is the argument given for adopting criteria of "sustainability" in decision-making today. Leopold argued that it was not sensible from our point of view to remove a species from an ecosystem without knowing what the long-term consequences would be: "To keep every cog and wheel is the first precaution of intelligent tinkering."⁸ That is another argument that is familiar today, in the form of the precautionary principle.

Rachel Carson's *Silent Spring*

The new environmental movement that emerged in the 1960s was sparked off by Rachel Carson and her book *Silent Spring*.⁹ Carson was a respected writer and scientist who wrote *Silent Spring* to draw attention to the destruction of wildlife by the use of the pesticide DDT. What was new about Carson's book was that it criticised a technology intended to better the condition of the human race, rather than a specific development, and that it revealed *unintended and unpredicted* consequences of this technology.

Carson revealed that our actions could lead to seriously damaging environmental consequences when we interfered with natural systems we did not fully understand. She criticised the unthinking use of the

technological “quick fix” of employing synthetic chemicals to control insects. She warned that these chemicals contained the prospect of a dying world in which springtime would no longer bring forth new life, only silence. Carson concluded that “the ‘control of nature’ is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man.”¹⁰ Carson’s challenge to pesticides was implicitly a challenge to science and the idea of technological progress.

The environmentalism of the late twentieth century has two key concerns: the limits to control that were emphasised by Leopold and Carson, and also the idea of a global environmental crisis - limits of scale on a small planet. Atmospheric nuclear testing was banned in 1963 after the discovery of strontium-90 from nuclear fallout in mother’s milk and in the fat of Antarctic penguins. Not long afterwards, traces of DDT were also found in Antarctic penguins. The notion that the world was not large, but relatively small began to gain currency.

Spaceship Earth

The metaphor of the earth as a spaceship was coined by the American presidential candidate Adlai Stevenson in a campaign speech as far back as 1952.¹¹ It was taken up by the British journalist Barbara Ward in her 1966 book *Spaceship Earth*.¹² The concept was developed simultaneously by the economist Kenneth Boulding. In his essay ‘The Economics of the Coming Spaceship Earth’¹³ Boulding put forward the idea that previous human history had taken place against a background where the scale of human activities was tiny compared to the environment. In this situation, there was always somewhere ‘out there’ to expand to or put



your wastes. He called this a 'cowboy' economy because the idea of an endless frontier was embodied by the American cowboy. What was now happening was that human activity was growing to a size where there was no 'out there' left. In this situation it was no longer possible to try to put problems somewhere else. They would always return to you. He wrote that it would require a 'spaceman' economy because frontiers had shrunk to zero, there was nowhere to expand to, nothing could be simply thrown away and all waste would have to be recycled. Boulding's essay was influential, but the metaphor did not catch on immediately.

In the 1960s there was a growing sense that Western technology had reached every corner of the earth and that with improved communication the world was growing smaller and closer together. This was the time of Marshall McLuhan's 'global village'.¹⁴ It was also the time where a global nuclear holocaust seemed a real possibility. What really brought the metaphor alive was the photographs of the Earth that the Apollo astronauts took from the Moon at the end of the 1960s. The pictures were of a small and beautiful blue-white planet with oceans and clouds, against the blackness of space and the grey of another, lifeless, world. The photograph perfectly visualised the metaphor 'Spaceship Earth' and the environmental movement seized on it. Within a few years the metaphor had become a tiresome cliché, but while it lasted it was extremely powerful. In 1970 the first Earth Day was held. In 1972, at the first UN Conference on the Environment, the official slogan of the conference was 'Only One Earth'.

The metaphor has two different connotations. One is of limits to human activities. The other is of the need for human management of the environment. The two meanings are not entirely incompatible, but there

is clearly a tension between them. One implies that we are overcrowding passengers. The other implies that we are the new commander about to bravely go where no species has gone before, presumably replacing God.

Paul Ehrlich's Population Bomb

The era of 'Spaceship Earth' was the time when fear of global environmental limits began to emerge. Environmentalism came together with a renewed Malthusianism. Concern about exponential population growth, this time in the Third World, came to the fore with the publication of Paul Ehrlich's *The Population Bomb*.¹⁵ Paul and Anne Ehrlich (who co-wrote the book but was denied credit by the publisher) were animal population biologists who had developed these opinions after personally witnessing the hunger and overcrowding in India. The Ehrlichs argued that population growth would lead to massive famines in Asia and Africa in the 1970s. Most controversially, they proposed that some countries, such as India, were such hopeless cases that resources should not be wasted on helping them. This ruthless position was very reminiscent of Malthus himself, the first person to suggest that exponential growth would lead to an imminent collision with natural limits.

The Ehrlichs' terrible predictions of famine and imminent ecological collapse failed to come true. Famines had occurred quite often in India until the 1970s, but have not happened since. The large famines of the 1970s and 1980s in Africa took place mostly in war-torn countries. It seems, though, that at the time the self-proclaimed alarmism of *The Population Bomb* was very influential in raising concern. The theologian and environmentalist John Cobb told me that it was *The Population*

Bomb's alarmism that motivated him to become an environmental activist. Cobb said that although the book had been wrong in its predictions and contained "gross exaggerations", he wanted to acknowledge that it was *The Population Bomb* that shook him into action. The environmental economist John Pezzey was also scared into environmentalism by *The Population Bomb* and other alarmist books of the late sixties. He told me that he now feels cheated by the alarms that were raised about problems that did not turn out so bad as he was led to believe then. This kind of alarmism was an easy target for John Maddox, the editor of the journal *Nature* in his anti-environmentalist polemic *The Doomsday Syndrome*.¹⁶ Today, his optimism appears as wide of the mark as the Ehrlichs' pessimism. Maddox did not believe that there were ecological limits. For example, he argued that there was no shortage of land for cultivation in the world and pointed to the Amazon and Congo basins as large areas suitable for agricultural development.

Costs of Economic Growth

The prominent economist Edward Mishan shook up the economics profession with the publication of *The Costs of Economic Growth*.¹⁷ He argued that calculations of Gross National Product were seriously misleading as a measure of human welfare because they included the costs of defensive measures such as anti-pollution expenditure and failed to count negative effects of affluence like aircraft noise against growth. A decade earlier, John Kenneth Galbraith had made fairly similar arguments against GNP as a measure of welfare, but without the emphasis on environmental externalities.¹⁸ Mishan's argument was sound, but embarrassing to economists. Another of my interviewees, Hans Opschoor, now a professor of economics, was inspired to specialise

in the then non-existent discipline of environmental economics by reading *The Costs of Economic Growth*.

The Limits to Growth

The crystallisation of the concerns of the first wave of environmentalism that ran from around 1966 to 1972 was *The Limits to Growth*.¹⁹ A report by a group of young MIT scientists, it immediately took the world by storm, gaining enormous media coverage. It was translated into 28 languages and sold 9 million copies. *The Limits To Growth* was based on computer models that appeared to show that if the current trends of exponential growth in population and demand for non-renewable resources continued, the world would face severe shortages of food and non-renewable resources by the middle of the twenty-first century. The modellers concluded that "the limits to growth on this planet will be reached some time in the next hundred years."²⁰

The model assumed that there are finite amounts of fossil fuels and minerals available on the Earth. It did not simply assume that you use a certain amount and then run out, but modelled the price behaviour of an increasingly scarce and difficult to obtain resource. The estimates of availability given could be challenged but, the MIT team argued, because of the nature of exponential growth, even if resources were several times larger than the current estimates, they would still become extremely scarce and expensive only a few decades later. According to the model, population growth was happening too fast for demographic transition before collapse unless population control measures were introduced. The authors admitted they had no idea of the capacity of the pollution absorption capacity of the environment, but they felt that with

exponential growth in pollutants it would be reached relatively quickly. They modelled pollution as a single long-lived chemical that in high concentrations would shorten human life and interfere with food production.

The authors explicitly stated that their model was not a definite prediction of what would happen - it was an exploration of the consequences of current trends. They ran versions of the model which assumed various changes, such as enormous potential increases in agricultural productivity, the availability of cheap nuclear power, extensive mineral recycling and very strict pollution control standards. Even with all these running in the model, exponential growth still caused an overshoot of what could be sustainably supported by the planet and a collapse of civilization before the end of the twenty-first century. When they modelled a future with zero population growth and zero capital growth, and assuming a fourfold increase in the technological efficiency of production, and investment in agriculture to end malnutrition, the model gave an ultimately stable state at a European average standard of living: "It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future."²¹

Criticism of *The Limits to Growth*

Critics pointed out that the output of the computer model was determined by the assumptions the programmers had made. The project had been funded by the Club of Rome, an international grouping of prominent scientists, business people and civil servants concerned about environmental problems. They were of an essentially Malthusian

persuasion. Donella Meadows has stated that she and her husband were Malthusians when they started the project. In fact, they started work on the project two weeks after returning from a year in Asia. Donella Meadows told me about the conclusions of the model:

We had kind of intuited it in India, but it was just a feeling to go from one of the world's richest places to one of the world's poorest and to see the soil erosion and to see the children and to see the burgeoning cities and the disappearing forests. You just somehow knew all of this was inconsistent, was offensive, was morally intolerable and furthermore was physically impossible to continue doing things this way. We knew that, but we couldn't put a case for it. It was something *any* intelligent observer knows anywhere they go in the world. So the computer model helped us to put numbers, to put time frames, to get a much neater mental model of the problem and the possible solutions. (Donella Meadows, Dartmouth College, New Hampshire, 23.6.94)

It can be argued that they already knew what they were expecting to find and wrote the model in that way. There is perhaps truth in that. Because of the status computers had at that time, there was a tendency for the public to believe any computer model was correct. The reality was that it all depended on the validity of the assumptions.

The best developed critique of *The Limits to Growth* came from a team at Sussex University's Science Policy Research Unit.²² They pointed out that the computer model was no less subjective or ideological than the mental models on which it was based. They criticised several aspects of the model, but concentrated on the Malthusian pessimism of the assumptions underlying it. The Sussex team examined the model and argued that the assumptions about the rate of technological progress and the availability of physical resources were too pessimistic. They accepted that physical growth cannot continue indefinitely on a finite planet, but held that any physical limits were much more distant. The Sussex team

more generally criticised the determinism of the model as it did not include the feedbacks that would allow for resource substitution, new inventions and changing ways of life. They accused *The Limits to Growth* of discounting the potential for adaptation in human society and putting forward a counsel of despair in proposing an immediate end to growth. The Sussex team claimed that the concentration on disaster in a century distracted from what could be done to solve urgent existing problems, such as the distribution of the world's wealth.

Herman Daly's Steady-state Economy

The ideas in *The Limits to Growth* did not go away, though. They were instead taken up and elaborated. Herman Daly used the law of entropy to attempt to demonstrate that the scale of the economy was limited.²³ Economic activity is about the creation of order (low entropy) in one place. The entropy law demands that a larger amount of entropy is created elsewhere. Daly's former professor Nicholas Georgescu-Roegen had already used that argument.²⁴ He had concentrated on the irreversibility of the use of non-renewable fossil fuels as a source of energy. Daly made the point that economic activity (or rather energy and material throughput) necessarily creates pollution and wastes. More activity means more pollution and waste. There is a limit to how much the biosphere can absorb. Daly concluded that the entropy law set a limit to the scale of the economy. His claim that entropy sets a limit to the physical scale of the economy is now widely accepted, but his conclusion that there is an absolute limit to economic growth is still very controversial.

Global 2000

Ideas about limits to growth even influenced the 1977-81 Carter administration in the United States. President Carter was concerned about the 'energy crisis' and promoted research into renewable energy sources. He commissioned a report on the state of the global environment up to 2000. The report's conclusion was:

If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically and more vulnerable to disruption. Serious stresses involving population, resources, and environment are clearly visible ahead. Despite greater material output, the world's people will be poorer in many ways than they are today.

For hundreds of millions of the desperately poor, the outlook for food and other necessities of life will be no better. For many it will be worse. Barring revolutionary advances in technology, life for most people on earth will be more precarious in 2000 than it is now - unless the nations of the world act decisively to alter current trends.²⁵

The finding from the *Global 2000* study which came as a surprise was a calculation that habitat destruction was likely to lead to the extinction of 500,000 to 2 million species, mostly in tropical forests. Concern about loss of biodiversity quickly moved up to become a major environmental concern. This was despite the fact that it was and remains impossible to accurately quantify the scale of species extinction.

At the end of 1980, Carter lost power to Ronald Reagan, who was a determined anti-environmentalist. As a consequence, environmental leadership passed from the United States to Europe in the 1980s. The environmental movement had already spread in the early 1970s, first to Scandinavia, then to the rest of western Europe, and particularly to Germany. European environmentalism was less concerned with the

wilderness issues that have always remained crucial to North American environmentalism, and was more concerned with the problems of industrialism.

In the 1970s, though, environmentalism was a Western idea of little interest to the Third World. The next chapter describes how environmentalists invented the concept of sustainability in an attempt to overcome Third World hostility to their concerns.

¹John Muir (1894) *The Mountains of California*, San Francisco: Sierra Club, 1988, p. 257

²Juan Martinez-Alier (1987) *Ecological Economics*, Oxford: Basil Blackwell

³Donald Worster (1985) *Nature's Economy*, Cambridge: Cambridge University Press

⁴Roderick Nash (1989) *The Rights of Nature*, Madison: University of Wisconsin Press

⁵Aldo Leopold (1949) *A Sand County Almanac*, New York: Ballantine, 1970

⁶ibid, p. 262

⁷ibid, p. 240

⁸ibid, p. 190

⁹Rachel Carson (1962) *Silent Spring*, New York: Houghton Mifflin

¹⁰ibid, p. 243

¹¹Richard B. Norgaard (1994) *Development Betrayed*, London: Routledge

¹²Barbara Ward (1966) *Spaceship Earth*, New York: University of Columbia Press

¹³Kenneth Boulding (1966) 'The Economics of the Coming Spaceship Earth' in *Environmental Quality in a Growing Economy*, edited by H. Jarrett, Baltimore: Johns Hopkins Press

¹⁴Marshall McLuhan (1962) *The Gutenberg Galaxy*, London: Routledge & Kegan Paul

¹⁵Paul Ehrlich (1968) *The Population Bomb*, New York: Ballantine

¹⁶John Maddox (1972) *The Doomsday Syndrome*, London: Macmillan

¹⁷E.J. Mishan (1967) *The Costs of Economic Growth*, London: Staples

¹⁸John Kenneth Galbraith (1958) *The Affluent Society*, New York: New American Library

¹⁹Donella H. Meadows, Dennis L. Meadows, Jørgen Randers and William W. Behrens III (1972) *The Limits To Growth*, New York: Universe Books

²⁰ibid, p. 23

²¹ibid, p. 24

²²H.S.D. Cole, Christopher Freeman, Marie Jahoda and K.L.R Pavitt (1973) *Thinking About The Future: A Critique of 'The Limits to Growth'*, London: Chatto & Windus

²³Herman E. Daly (1977) *Steady-state economics*, San Francisco: Freeman

²⁴Nicholas Georgescu-Roegen (1971) *The Entropy Law and the Economic Process*, Cambridge, Massachussets: Harvard University Press

²⁵Gerald Barney, director (1981) *Global 2000 Report to the President*, New York: Penguin, p. 1

CHAPTER 2.4

SUSTAINABILITY EMERGING

UN Conference on the Human Environment - Stockholm, 1972

The poverty of the Third World was a key issue at the UN Conference on the Human Environment, held in Stockholm in 1972. The Swedish government had been concerned about the damage that pollution from other European countries was doing to their lakes. Initially, Third World governments regarded environmental concern as a luxury for the rich, and argued that the environments of Third World people were blighted by poverty. They regarded it as hypocritical of Western countries to warn them about pollution. Indira Gandhi, prime minister of India, was the only head of state to attend the conference apart from the Swedish prime minister. She told the conference: "Poverty is the worst pollution." The same kind of polarisation and misunderstanding between the West and the Third World was evident two years later in Bucharest at the first World Population Conference.

However, the idea that the environment was a critical development issue was accepted to some extent and was included in the Stockholm Declaration on Human Environment that was agreed at the conference.

The Stockholm Conference did succeed in placing environmental problems on the international agenda for the first time. It led to the establishment of the United Nations Environment Programme (UNEP). It was based in Nairobi and had as its first Secretary-General Maurice Strong, the Canadian who had chaired the Stockholm Conference. Strong coined the term 'ecodevelopment' as a way of verbally reconciling the desire for development and environmental protection. UNEP succeeded in establishing itself as a global environmental conscience, encouraging countries to develop environmental policies and agencies. But based in Nairobi, far from the centres of power in the UN system, UNEP has always been short of funds and one of the weakest agencies in terms of institutional power.

'Small is Beautiful'

In the seventies, the idea of ecodevelopment was often combined with the idea of 'appropriate technology'. The guru of the appropriate technology movement was the dissident economist Fritz Schumacher. In his bestseller *Small is Beautiful* he linked concern about pollution and depletion of natural resources to Third World issues.¹ Schumacher claimed that conventional development strategies promoted islands of Western modernity in the cities, while doing nothing for the vast majority in the countryside. These development projects were dependent on imported technology and experts. Schumacher's solution was rural development that would be on a 'human scale', and based on 'appropriate technology'. Appropriate technology would be small-scale technology that could be understood and controlled by ordinary people, rather than dependent on experts. In the end the downfall of ecodevelopment was its association with Schumacherian views. Rural ecodevelopment did not

allow Third World countries to develop modern economies. The urban elites, who actually controlled the governments of Third World countries, were not content to accept the idea that they could not follow the path to Western modernity.

The Sustainable Society

The seeds of the approach the Brundtland Commission was to successfully take in the 1980s were laid as early as 1974. The concept of a 'sustainable society' emerged at an ecumenical study conference on Science and Technology for Human Development that was convened by the World Council of Churches. They defined it as follows:

First, social stability cannot be obtained without an equitable distribution of what is in scarce supply or without common opportunity to participate in social decisions. Second, a robust global society will not be sustainable unless the need for food is at any time well below the global capacity to supply it and unless the emission of pollutants are well below the capacity of the ecosystems to absorb them. Third, the new social organisation will be sustainable only as long as the use of non-renewable resources does not out-run the increase in resources made available through technological innovation. Finally, a sustainable society requires a level of human activities which is not adversely influenced by the never-ending large and frequent natural variations in global climate.²

The 'sustainable society' concept is notable because it starts with the principle of equitable distribution, which was to be a cornerstone of the Brundtland Report's approach. Still more remarkably, it involves the concept of democratic participation, which became important at the Earth Summit nearly twenty years later. The second and third conditions of the definition are similar to the definitions of physical sustainability used today. What is most interesting is that the original definition started, not with environmental conditions, but with social conditions for

sustainability: the need for equity and for democracy. You could define the debate about sustainability as the ideas that emerge when concern for the global environment and concern for global social justice meet.

John Cobb told me that the idea of the sustainable society emerged in the World Council of Churches in the aftermath of the Stockholm Conference. Like the United Nations, the World Council of Churches was very much influenced by the Third World. Many Third World clergymen thought that the environment was a distraction from justice and development. They saw environmentalism as a 'bourgeois' concern. The idea of a sustainable society - one that would not self-destruct - sounded more serious and also an idea that had less tension with the concern for justice. The environmentalists, led by the anthropologist Margaret Mead, managed to get the World Council of Churches to adopt the phrase "a just, participatory and sustainable society" as an official slogan in 1975.

Very few people were aware of the work in the World Council of Churches. Even Dennis Pirages, who edited *The Sustainable Society*³ in 1977, had not heard of it. Among some academic environmentalists, though, the idea of sustainability was beginning to catch on. *The Sustainable Society* explored the issue of how to reconcile limits to growth with concern for social justice. The book concluded that less growth would make equality more difficult. In a period of growth, it is much easier to direct more of the benefits to those at the bottom. Without growth, improving the lot of the poor would require bringing down the rich, which is politically very difficult.

Sustainable Development

The term 'sustainable development' emerged in the World Conservation Strategy of 1980, published by the International Union for the Conservation of Nature. Sustainable development was defined as "the integration of conservation and development to ensure that modifications to the planet do indeed secure the survival and well-being of all people."⁴ Development was defined as "the modification of the biosphere and the application of human, financial, living and non-living resources to satisfy human needs and improve the quality of human life."⁵ Development could, however, be a threat unless resources were effectively conserved. Development had to be combined with conservation, which was defined as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations."⁶ The definition of conservation included elements of Gifford Pinchot's old definition as "the greatest good for the greatest number over the longest time" and the new definition of sustainable development that was to emerge out of the Brundtland Report.

The World Conservation Strategy foreshadowed many of the ideas associated with Brundtland. It emphasised the importance of incorporating conservation into development planning at the beginning. It identified the main causes of habitat destruction as poverty, population pressure, social inequity and terms of trade that worked against poorer countries. It called for a new international development strategy that would redress inequity, stimulate economic growth and counter the worst poverty.

The problem the World Conservation Strategy had was that it was written by a group identified as being Northern environmentalists. Its concern for habitat conservation was ultimately based on a moral framework that was not universal. The emphasis on the environment in the document did not go down well with development agencies. Worse, the World Conservation Strategy did not discuss political and economic changes that would be needed to bring about the goal of sustainable development, so it lacked practical credibility as well. The task of making the idea of sustainable development politically acceptable fell to the Brundtland Commission.

The Brundtland Report

In 1983, the United Nations General Assembly set up the World Commission on the Environment and Development with the Norwegian Labour Party leader and future prime minister Gro Harlem Brundtland as the chairperson. The outcome of their efforts, *Our Common Future*,⁷ was published in 1987. They came to focus on one central theme:

many present development trends leave increasing numbers of people poor and vulnerable, while at the same time degrading the environment. How can such development serve next century's world of twice as many people relying on the same environment? This realization broadened our view of development. We came to see it not in its restricted context of economic growth in developing countries. We came to see that a new development path was required, one that sustained human progress not just in a few places for a few years, but for the entire planet into the distant future.⁸

They called this new path 'sustainable development', and defined it as "development which meets the needs of the present without compromising the ability of future generations to meet their own

needs.”⁹ That phrase has been repeated, misquoted and re-written countless times since. Its strength is that it is both simple and vague. That is also its weakness. However, the Brundtland Commission’s own conception of what sustainable development would be was more complicated than simply that one-sentence definition. They went on to say:

The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth. The Commission believes that widespread poverty is no longer inevitable. Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes.

Meeting essential needs requires not only a new era of economic growth for nations in which the majority are poor, but an assurance that those poor get their fair share of the resources required to sustain that growth. Such equity would be aided by political systems that secure effective citizen participation in decision making and by greater democracy in international decision making.

Sustainable global development requires that those who are more affluent adopt life-styles within the planet’s ecological means - in their use of energy, for example. Further, rapidly growing populations can increase the pressure on resources and slow any rise in living standards; thus sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem.

Yet in the end, sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs. We do not pretend that the process is easy or straightforward. Painful choices have to be made. Thus, in the final analysis, sustainable development must rest on political will.¹⁰

I have quoted at some length because that passage, immediately following the single sentence so often quoted, summarises well much of what the Brundtland Commission meant by 'sustainable development'.

The Brundtland report set much of the subsequent agenda for both academic debate about sustainability and international political debate about environment and development. Why was the Brundtland report so influential? Many people have claimed that what it said was not very intellectually innovative. It was, after all, the unanimous report of a group of establishment politicians and diplomats from all over the world. But for such a body, the Brundtland report was remarkably innovative politically.

The basic political problem the Brundtland Commission was faced with was how to reconcile concern for environmental protection with the desire for economic development in the South and economic growth in the North. Environmental protection had been seen as a threat to development and growth. Fifteen years earlier, at the UN Conference on the Human Environment in Stockholm, many Third World countries had argued that environmental protection was a luxury for the rich. The Brundtland report drew on thinking in environmental economics and argued that there was a mutual interlinkage between the economy and the environment. A healthy economy required a healthy environment:

We have in the past been concerned about the impacts of economic growth upon the environment. We are now forced to concern ourselves with the impacts of ecological stress - degradation of soils, water regimes, atmosphere, and forests - upon our economic prospects. We have in the more recent past been forced to face up to a sharp increase in economic interdependence among nations. We are now forced to accustom ourselves to an accelerating ecological interdependence among nations. Ecology and economy are becoming ever more interwoven - locally, regionally, nationally, and globally - into a seamless net of causes and effects.¹¹

Environmental resources were often under-valued and over-exploited. The Brundtland Commission stressed the importance of the integration of environmental decisions into central economic decision making. They gave the example of the way that industry ministries would be responsible for promoting production targets, while the resulting pollution would be the responsibility of the environment ministry. The consequence was that environmental costs were often ignored in economic planning. These costs were later paid by society.

At the same time, they argued, a healthy environment was not possible in a world marked by the existence of extreme poverty. Environmental degradation often affected the poorest groups in society most severely, as they were unable to protect themselves from the environmentally destructive activities of richer and more powerful people. The Brundtland Commission also argued that extreme poverty often forced people to practice environmentally destructive activities as a desperate means of ensuring short-term survival:

Environmental stress has often been seen as the result of the growing demand on scarce resources and the pollution generated by the rising living standards of the relatively affluent. But poverty itself pollutes the environment, creating environmental stress in a different way. Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land; and in growing numbers they will crowd into congested cities. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge.

On the other hand, where economic growth has led to improvements in living standards, it has sometimes been achieved in ways which are globally damaging in the longer term. Much of the improvement in the past has been based on the use of increasing amounts of raw materials, energy, chemicals and synthetics and on the creation of pollution which is not adequately accounted for in figuring the costs of production processes. These trends have unforeseen effects on the environment. Thus today's

environmental challenges arise both from the lack of development and from the unintended consequences of some forms of economic growth.¹²

As indicated earlier, development that is sustainable has to address the problem of the large number of people who live in absolute poverty - that is, who are unable to satisfy even the most basic of their needs. Poverty reduces people's capacity to use resources in a sustainable manner; it intensifies pressure on the environment... A necessary but not sufficient condition for the elimination of absolute poverty is a relatively rapid rise in per capita incomes in the Third World. It is therefore essential that the stagnant or declining growth trends of this decade be reversed.¹³

The Brundtland Commission emphasised that sustainable development was a matter of equity both between and within generations, saying "Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation."¹⁴ However, the Brundtland Commission trod very carefully when discussing what sustainable development would mean for the North:

Meeting essential needs depends in part on achieving full growth potential, and sustainable development clearly requires economic growth in places where such needs are not being met. Elsewhere, it can be consistent with economic growth, provided the content of growth reflects the broad principles of sustainability and non-exploitation of others... Hence sustainable development requires that societies meet human needs both by increasing productive potential and by ensuring equitable opportunities for all.¹⁵

So the Brundtland Commission broadly supported economic growth, although with the proviso that there are indeed limits to physical growth:

Growth has no set limits in terms of population or resource use beyond which lies ecological disaster. Different limits hold for the use of energy, materials, water, land. Many of these will manifest themselves in the form of rising costs and diminishing returns, rather than in the form of any sudden loss of a resource base. The accumulation of knowledge and the development of technology can enhance the carrying capacity of the resource base. But ultimate limits there are, and sustainability requires that long before these

are reached, the world must ensure equitable access to the constrained resource and reorient technological efforts to relieve the pressure.¹⁶

The Brundtland report is not always a consistent document. For example, it is critical of the way that income as currently measured fails to take account of the depletion of natural capital, but otherwise uses current measures of GNP growth as real measures of increasing income. At one point it says that raising living standards in the South requires growth in GNP per capita of at least 3%. It then goes on to say that for enough capital to be available, the economies of the North (which have only very slowly growing populations) must grow at a minimum of 3-4% a year. This would seem to give little possibility for increasing equity between North and South. With such a rate of economic growth in the North, it would take very much higher rates of per capita growth in the South to catch up in any reasonable time. Even if there was no growth in the industrialised North, the income gap the Commission reports between the industrialised market economies and the low income economies is so great that at 3% a year it would take about 150 years to bridge the gap.

The report points out that bringing living standards in the South up to current levels in the North would involve expanding the world economy by a factor of 5-10. It goes on to state that an expansion of energy consumption on that scale with current technologies would be an ecological impossibility. With current energy mixes, even a doubling would probably be impossible. So the need is for increased efficiency. However, elsewhere the Commission points out that the earlier stages of industrialisation that many Southern countries are going through tend to involve the development of industries that are particularly energy-

intensive. This is a problem that they mention in passing, but do not go on to address.

There are also many signs within the report of disagreements among Commission members. On the issue of nuclear power, the report actually admits to these disagreements, although in tone the report is predominantly anti-nuclear. On other issues there is more of an attempt to paper over the divisions, for example on consumption patterns. Nitin Desai, now UN Undersecretary-General for Policy Coordination and Sustainable Development, was the member of the Brundtland Commission secretariat largely responsible for the drafting of the first section of the report. When I interviewed him, he said: "The Brundtland report, I admit, is a little careful in its formulations on the issue of consumption." (Nitin Desai, New York, 30.5.94)

The significance of the Brundtland report for environmentalists was that it reflected many of their concerns, even if it did not put forward proposals as radical as they would have liked. And, in particular, the Brundtland report accepted the idea of environmental limits. On the other side, governments and industry could accept the idea of environmental limits because these limits were not seen in the report as a brake on economic development or growth. The report cleverly balanced environmental and economic considerations. Or as the environmental economist John Pezzey put it to me less kindly "It's a very attractive message. You can have your cake and eat it, there's not a conflict. And it's a funny message when you think about it... What I would say is, it depends... But it's a very tricky message because I think it was jumped on by all sorts of politicians who didn't like confronting

people with choices, trade-offs, wanted to pretend they could have everything." (John Pezzey, University College London, 23.3.94)

It is this seeming desire of the Brundtland Commission to tell people they could have everything they wanted and that nobody would have to make sacrifices that explains both its political popularity for squaring a circle and the suspicion it is viewed with by the more sceptical.

Another cause of the attention paid to the Brundtland report was probably that it was in the right place at the right time. The Commission was formed by the United Nations in 1983, a time when the profile of environmental issues was quite low. The reception of the Brundtland report should be judged against the background of increasing concern about environmental issues in the late eighties as the Cold War drew to an end and environmental problems became seen as a new global threat to survival. The discovery in 1985 of a large hole in the ozone layer over Antarctica had come as a complete surprise. Evidence was rapidly found supporting the theory that chlorofluorocarbons, chemicals used in refrigeration and aerosols, were responsible. The drama of the Chernobyl nuclear accident in 1986, which spread radioactive fallout across Europe, drew the attention of the entire world. Over the next few years, the environment moved to near the top of the agenda of journalists and politicians. Unlike the first wave of environmental concern in the late sixties, which was confined to Western countries, the environmental wave of the late eighties and early nineties was felt almost everywhere in the world.

The Brundtland report had an important legitimising role, particularly among Southern governments. After Brundtland, few governments

continued to dismiss environmental concern as merely a Western or 'bourgeois' luxury. By emphasising the connections between the environment and more traditional concerns with economic development, the Brundtland report forced governments and international agencies such as the World Bank to start to begin to think and talk about the issues. Real action, however, tended to be much less forthcoming.

¹E.F. Schumacher (1973) *Small is Beautiful*, London: Blond & Briggs

²World Council of Churches, quoted in Elizabeth Dowdeswell (1994) 'A global view' in *Partnerships in Practice*, London: Department of the Environment

³Dennis Pirages, editor (1977) *The Sustainable Society*, New York: Praeger

⁴International Union for the Conservation of Nature (1980) *World Conservation Strategy: Living Resources Conservation for Sustainable Development*, Gland, Switzerland: IUCN, Section 1.2

⁵ibid, Section 1.3

⁶ibid, Section 1.4

⁷World Commission on Environment and Development (1987) *Our Common Future*, Oxford: Oxford University Press

⁸ibid, p. 4

⁹ibid, p. 8

¹⁰ibid, p. 8-9

¹¹ibid, p. 5

¹² ibid, pp. 28-29

¹³ibid, pp. 49-50

¹⁴ibid, p. 43

¹⁵ibid, p. 44

¹⁶ibid, p. 45

CHAPTER 2.5

RIO AND AFTER

Hopes for the Earth Summit

The most obvious direct consequence of the Brundtland Commission's work was that in 1992 the United Nations Conference on Environment and Development (UNCED), often called the Earth Summit, took place in Rio de Janeiro. Such a conference had been one of the concrete proposals made in the Brundtland report. UNCED was the largest international conference ever held, including over a hundred heads of state. The intention of UNCED's organisers was to provide a focus for global concern about the environmental and development crises. It was also hoped that the end of the ideological divisions of the Cold War and the demands that it had made upon Western budgets would yield a large 'peace dividend'. Maurice Strong, who was Secretary-General of the conference, had a plan for what he wanted to achieve:

- Conventions on climate, biodiversity and forests
- An Earth Charter
- Agenda 21, a global action plan outlining the sustainable development priorities for the twenty-first century

- An agreement on new financial resources to implement Agenda 21, and progress on agreements to transfer environmentally sound technologies from North to South
- A strengthening of UN institutions, including an Earth Council

Strong had some success with all these, except for a forest convention, which did not emerge at all. However, the content of the agreements reached was rather less impressive.

The Framework Convention on Climate Change

The main impetus for the Climate Convention came from the 1990 report of the Intergovernmental Panel on Climate Change (IPCC), a body of leading scientists advising the United Nations.¹ They had predicted that, if carbon dioxide emissions continued to rise, a global average temperature rise of 1.5 to 4.5°C could be expected over the next century. The global average temperature now is only 3°C higher than in the depths of the last Ice Age. According to the IPCC, a 60% reduction in carbon dioxide emissions from present levels would be needed to stabilise the climate. They proposed that a 60% reduction should take place by 2040 to avoid dangerously rapid climate change.

In the climate negotiations, it became clear that the best that could be broadly agreed was that the governments of industrialised countries would set a target to return carbon dioxide emissions to 1990 levels by 2000. The United States, which emits more carbon dioxide than any other country, refused to accept a target for even stabilising carbon dioxide emissions, saying that it would be economically damaging. The Framework Convention on Climate Change signed at Rio reflected this. The convention did accept that climate change was a serious problem and that action could not wait for resolution of scientific uncertainties. It also

accepted that industrialised countries should take the lead. As a result of American pressure, it had no binding targets or dates, although it indicated that a first step would be for industrialised countries to stabilise carbon dioxide emissions at 1990 levels by 2000. The framework convention also included arrangements for the future negotiation of a binding convention.

The Convention on Biological Diversity

In the biodiversity negotiations, the US administration of President Bush took an even more obstructive line and eventually refused to sign the Convention on Biological Diversity. This was despite the fact that the biodiversity convention dealt more with ensuring access to biodiversity (predominantly in the South) for countries with biotechnology (predominantly in the North) than with actually protecting biodiversity. President Bush regarded the framework for access to biodiversity as a threat to the American biotechnology industry.

The convention affirmed that countries have 'sovereign rights' over biological resources in their territory, which should be shared internationally on mutually agreed terms. These terms included recognition of indigenous knowledge as intellectual property due royalties. Countries which signed the convention must develop plans to protect biodiversity and submit information on them. However, there was no requirement for new plans, no standards for the plans to meet and no international action plan for the preservation of biodiversity. Environmentalists were disappointed, and even Jacques Delors, the president of the European Commission, (not normally noted for his environmentalism) called it 'too timid.'²

The Statement on Forest Principles

The Statement on Forest Principles emerged after negotiations on a forests convention collapsed. Pressure for a forests convention had come from Western countries concerned about tropical deforestation. Countries with tropical forests, particularly Brazil, regarded the idea of international intervention in their use of forests as intolerable. The document emphasised the right of national sovereignty over forests.

The Rio Declaration

The Rio Declaration on Environment and Development was the substitute for Maurice Strong's 'Earth Charter'. The name was changed at the insistence of Southern countries which objected to the environmental emphasis in the proposed name. Strong had intended a brief and inspiring statement of a new global environmental ethic. What actually emerged was a lengthy and uninspiring piece of diplomatic jargon. A sign of the lack of a new environmental ethic is the first four principles of the 27 in the declaration. The first principle stated that "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature."³ The second principle of the Rio Declaration affirmed the sovereign right of states to exploit resources according to their own environmental and development policies. The third principle asserts the 'right to development'. The fourth principle makes environmental protection 'an integral part of the development process'.

The important environmental principles that the Rio Declaration included which were absent from the Stockholm Declaration are the precautionary principle (Principle 15) and the 'polluter pays' principle

(Principle 16). However, both principles were heavily qualified. In general, the Rio Declaration was a step backward from the Stockholm Declaration. The Rio Declaration is mostly about development, while the Stockholm Declaration had been mostly about the environment and was also much more internationalist in tone.

Agenda 21

Agenda 21 was intended to be a framework of action for achieving sustainable development. Over 500 pages long, it is a document of mind-boggling complexity. There are some important recurring themes. Perhaps the most important is the 'bottom-up' approach, emphasising the role of citizens (particularly women), communities and NGOs. Development, for perhaps the first time in an international agreement, is seen as something built by people, rather than from the top down through large state projects. The entire tone of Agenda 21 is about participation and open government. UNCED had an unprecedented degree of NGO involvement, and this was institutionalised in the document. Agenda 21 also emphasises the role of the market, trade and business in bringing about sustainable development. Both these features of Agenda 21 can partly be attributed to the demise of state socialism and the general disillusionment with bureaucratic approaches to problems. However, the emphasis on participation is also the result of intensive lobbying from NGOs. Even regimes which clearly do not believe in democratic participation did not feel strong enough to oppose the principle, although they have not carried it out.

Agenda 21 emphasises the importance of adequate knowledge and institutions, known in UN jargon as 'capacity building'. Almost every

chapter includes references to education and the development of 'human resources'. Agenda 21 is also full of references to the importance of integrated approaches to environment and development. It calls for institutions that transcend traditional sectoral divisions and attempt to deal with the linkages underlying specific problems.

Missing from Agenda 21 was adequate discussion of several important, but controversial, issues known as 'black holes'. These include consumption patterns, population, international debt and militarism. Chapter 4 of Agenda 21 is devoted to consumption patterns, and does include a reference to 'unsustainable patterns of production and consumption', particularly in industrialised countries as a matter of grave concern. The chapter also calls for national strategies and policies to encourage 'sustainable consumption patterns'. The chapter is extremely weak on specifics, though. Industrialised countries, especially the United States, resisted the entire theme and had the text toned down considerably.

Chapter 5, dealing with population growth, had to be called 'Demographic Dynamics and Sustainability'. All references to contraception were also removed at the insistence of the Vatican and the Philippines. However, the chapter did support the right of women and men to decide on the number and spacing of their children. It also included the following statement: "The growth of world population and production combined with unsustainable consumption patterns places increasingly severe stress on the life-supporting capacities of our planet".

Militarism and international debt proved to be issues that were just too controversial, and were not mentioned at all, despite the obvious fact that

both were major problems. They were later tackled at the UN Social Summit in Copenhagen in March 1995. The other area of extreme difficulty in the negotiations for Agenda 21 was finance. Maurice Strong's UNCED Secretariat produced an estimate that funding the programmes in Agenda 21 would cost \$600 billion a year, of which about \$125 billion a year should be aid from industrialised countries. That \$125 billion was (coincidentally?) equivalent to the unmet UN target for official development aid of 0.7% of GNP.⁴ Western countries were simply not prepared to put forward that kind of money, particularly in a recession, although all of them except the United States had agreed to the aid target in principle. They eventually came up with \$2 billion over three years, directed through the World Bank-controlled Global Environmental Facility (GEF) - about 0.5% of the sum asked for.

The Commission on Sustainable Development

The implementation of Agenda 21 was to be overseen by the Commission on Sustainable Development (CSD), a watered-down version of Strong's Earth Council. The CSD meets annually for three weeks in New York and has a small secretariat. The CSD is officially just one of many sub-committees that report to the UN Committee on Economic and Social Affairs (ECOSOC), notoriously a bureaucratic graveyard. In practice, the CSD is rather more influential than its lowly place in the UN system would suggest. That is because national environment ministers lead the delegations of some important countries. They have far more power in the real world than ECOSOC does.

The South at UNCED

The CSD is not going to succeed in implementing anything like Agenda 21, though, if for no other reason than that the funds to do it are not being released. For Southern governments, UNCED was ultimately a failure because the funds and technology transfer they had hoped for from Agenda 21 have not materialised. The thinking behind the South's strategy in the UNCED negotiations was outlined in a policy document from the South Centre, a think tank funded by the G77 group of Southern states:

Two strategic considerations should guide the South's negotiating position... (a) ensuring that the South has adequate 'environmental space' for its future development, and (b) restructuring global economic relations in such a way that the South obtains the required resources, technology, and access to markets...

In the UNCED negotiations proper, the South should... insist on tilting the balance towards development and considerations of global economic reform, in order that the South may be offered some hope of being able to follow a path of sustainable development. Issues on which the South should receive firm commitment from the North are: (i) debt relief; (ii) increased ODA [official development aid], (iii).. access to international liquidity; (iv) stabilisation and raising of commodity prices; and (v) access to markets in the North.⁵

The restructuring of global economic relations had been one of the recommendations of the Brundtland report, reflecting Southern concerns. In the 1980s, nearly all countries in the South became trapped in a cycle of debt after the interest rate on apparently cheap loans they had taken out in the 1970s rose dramatically. As a consequence, these countries had to call on the Western-controlled International Monetary Fund (IMF) to avoid complete bankruptcy. The 'structural adjustment' conditions attached to IMF loans were tough. They involved cutting

public expenditure (including health and education budgets), privatisation of industries, opening markets to imports and increasing exports. Because most Southern countries were dependent on the export of a small number of commodities each, and over a hundred countries were increasing their exports in line with IMF instructions, the consequence was that the price of commodities fell on the world market and the Southern countries were no better off. The debt crisis meant that for several years the South was making larger debt repayments than it was receiving in aid and loans. The poorest countries of the world were subsidising the rich. The cuts in education and health meant that for the people of the South, the eighties were a 'lost decade' for development. Finally, the pressure for exports to pay the debt encouraged the unsustainable exploitation of the environment.

The crisis that the South had faced for the past decade was at the top of their agenda. They hoped that with the idea of 'environmental space', the limited carrying capacity of the Earth, they had finally found a bargaining chip to get a better deal. Ismail Razali, Malaysia's UN ambassador and the first chairman of the CSD, was one of the most important negotiators for the South at UNCED. Two years later, he told me in frank terms about the strategy pursued:

We thought here was a chance that we could also blackmail the North into accepting this proposition that the only way you could solve these problems with global environment was to do something in the South in a very prominent fashion. If the millions of the poor in the South have no chance towards development, then worse environment will result from that. At the end of the day, whether you're a big frog or a small frog, you will drown in the same pond because the pond is contaminated. (Ismail Razali, New York, 5.7.94)

The idea was that the North would provide a lot of aid and technology:

So for a while the industrialised countries were frightened by this prospect. That environmental pollution was transboundary. Would go to Europe, to the United States. And they would pay money to make sure this doesn't happen. But after Rio.... very little adjustment was being made in the industrialised world. The onus of change was being placed on the shoulders of the countries of the South. And the promised means of implementation to help phase in sustainable development in the Third World, the poor countries, was not there. Because governments of the North became bankrupt or were not in a position to do it. And more important, because their own citizens didn't want them to make that sacrifice. Here in the United States, it is easier to talk in terms of helping the Russians because if the Russians fall, we are back possibly to a Cold War situation. Can you talk in terms of the Americans paying money to help the people in the developing world? So that's a disappointment of Rio. We have in the last two years seen a situation where the industrialised countries have not been able to make available the means of implementation, either through financial transfers or technology. But at the same time, many developing countries feel that if the means are not there they are not obliged to continue with efforts towards helping the environment. Some major countries may decide to go the unsustainable route. (Ismail Razali, New York, 5.7.94)

The problem that 'greenmail' has is that essentially Third World countries have to threaten to destroy their own environments with unsustainable development. They will obviously suffer much more from doing this than people in the North, so the threat is not very credible. Razali now seems to recognise that attempting blackmail over environmental space was not a successful strategy.

The North at UNCED

Northern governments were negotiating from a much stronger position. They had most of the money and most of the power. The money that they did in the end put up for GEF is to fund projects in Southern countries on climate change and biodiversity. It was specifically tied to issues of the *global* environment. It is also worth noting that the three conventions negotiated at UNCED were all dealing with issues that the

North was more concerned about than the South. African countries wanted a convention on desertification, but the North was not interested. A Convention on Desertification emerged only in 1994.

However, the UNCED did mark a change in Western attitudes to some extent. The fact that consumption was dealt with at all is really quite remarkable. The non-binding commitment to stabilise carbon dioxide emissions suggested that the West, twenty years after *The Limits to Growth*, was beginning to think seriously about limits to physical growth.

The Significance of UNCED

Just before UNCED, the three leading members of the original *Limits to Growth* team published a sequel, *Beyond the Limits*, in which they argued that it was now clear that some important environmental limits had already been passed.⁶ They claimed that the hole in the ozone layer had been the first definitive sign that a global limit had been reached. They also pointed to collapsing fisheries around the world and indications of global warming as evidence that further global limits had been passed. On the other hand, they quietly admitted that their earlier predictions about fossil fuel and mineral reserves had been too pessimistic. They also accepted that energy and materials efficiency had increased more than they had expected twenty years earlier. The conclusion they emphasised, though, was that global environmental limits were now in sight in the early 1990s, when in the original computer model they had been expected in the late twenty-first century.

The Northern interest in the UNCED process was dominated by concern about global environmental issues. Although the Rio Declaration does not reflect it, the feature of UNCED which is most significant was the

emergence of *global environment* as a major issue in international politics. Rio was a major political event in a way in which Stockholm had not been. Twenty years before, the environment, let alone the global environment, was not seen as a central political problem. The question which UNCED was unable to settle was how to handle limits to the Earth's environmental space. That is the issue which post-UNCED debates on sustainability centre on, as will be explored in later chapters.

NGOs at UNCED

Despite unprecedented access to the negotiations, NGOs did not have a major influence on the agreements negotiated by the governments at UNCED. Pratap Chatterjee and Matthias Finger, in an overwhelmingly negative account of the UNCED process from a radical Green perspective, argue that NGOs failed at Rio.⁷ However, they do admit that mutual learning between North and South took place. Andrew Steer, director of the World Bank Environment Department, told me that he thought that UNCED had made Northern environmentalists think differently about development. Martin Khor, president of the Third World Network, wrote:

The UNCED process forged new and stronger links between Northern and Southern groups, between development and environmental activists. It would now be difficult for environmentalists to stick to wildlife issues or population, without simultaneously addressing international equity and global power structures.⁸

Business for Sustainable Development?

At the time, another important outcome of UNCED was widely seen as the formation of the Business Council for Sustainable Development (BCSD). It was founded at the initiative of Stephen Schmidheiny, the

Swatch billionaire, who had been appointed as special adviser to Maurice Strong. Schmidheiny persuaded forty-eight other international business leaders to join his group. Schmidheiny published a book, *Changing Course*, as the BCSD's manifesto.⁹ Schmidheiny drew on the theory of Total Quality Management (TQM) to argue for a revisioning of the business approach to the environment. TQM focuses on the customer and the idea of looking at the overall production process from a product's conception until it ends up at the customer. The TQM approach holds that low quality is a sign of organisational inefficiency. Schmidheiny argued that pollution, like low quality, is a sign of inefficiency and waste. Environmental efficiency, like quality, should be built into the production process from the start.

Schmidheiny accepted that the environment cannot complain in the same way as a dissatisfied customer. Preferably, business should regulate itself to avoid government intervention which would ultimately be more rigid and less efficient. When governments got involved, Schmidheiny favoured economic instruments, like ecotaxes, over more rigid regulation. In urgent cases, Schmidheiny thought regulation might be justified.

At UNCED, the BCSD worked quite well with the traditional business lobbyist, the International Chamber of Commerce. Later, however, a split emerged between Schmidheiny and the less environmentalist ICC. Since UNCED, little has been heard from the BCSD, and the ICC has reasserted itself.

After Rio: Environment off the agenda

In the day-to-day world of global politics, the environment and sustainable development have generally sunk down the international agenda since UNCED. The South had some success in controlling the agenda for the UN Conference on Social Development held in Copenhagen in March 1995, called the Social Summit. It dealt with the issues of poverty, unemployment and social exclusion. The South used the Summit as a sounding board for its concerns about the debt burden and unfair trade relations. Without much interest from Northern governments, however, the Social Summit was doomed to be ineffective at bringing about change.

After their failure to get what they wanted at UNCED, many Southern governments were pleasantly surprised to get anything. The long-running GATT (General Agreement on Tariffs and Trade) negotiations finally led in 1994 to an agreement by Western countries to lower some of their barriers to Southern imports, in exchange for a lowering of barriers to imported goods in Southern countries. This development was considered good news for many countries in Asia and Latin America, but it was bad news for the poorest countries, mostly in Africa, which had received protected access to Northern markets under the Lomé Convention.

The negotiations also led to the creation of an important new international body, the World Trade Organisation (WTO), a younger sister to the World Bank and the IMF. For many environmentalists, however, the creation of the WTO and the move towards free trade was extremely worrying. The more radical Green wing of the environmental

movement is opposed to free trade on the fundamental grounds of belief in local self-sufficiency and maximum decentralisation. Among environmentalists generally, though, there is a fear that international free trade tends to encourage a lowering of environmental standards for short-term competitive advantage. Proponents of free trade counter-argue that protected industries are often very bad environmentally.

What worries environmentalists most is the fact that there will be a WTO Panel to decide if regulations are acting as barriers to trade. It succeeds the GATT Panel which ruled that US sanctions against tuna caught without following safeguards to protect dolphins was an unfair barrier to trade. The strong fear is that the WTO Panel, with much more sweeping powers than the GATT Panel, will be biased towards putting trade before the environment.

The American influence

Another problem for the environmental agenda has been the Republican Congress elected in the United States at the end of 1994. After the election of the presidential ticket of Bill Clinton and Al Gore in 1992, environmentalists had high hopes. Al Gore, the new vice-president, had strongly criticised former President Bush's attitude at UNCED and even published a widely-praised book supporting action to protect the global environment.¹⁰ President Clinton signed the Biodiversity Convention soon after he took office.

At the 1994 World Population Conference in Cairo, the US administration pledged to put in its share towards a fund for women's health and access to contraception. The World Population Conference itself was a considerable success. The idea that access to contraception is a

human right proved capable of uniting all states except the Vatican, Sudan, Saudi Arabia, Iraq and Nicaragua. At the 1984 World Population Conference in Mexico, the Vatican had been powerfully supported by the United States, then under the influence of right-wing Christian fundamentalists. Meanwhile, since 1984, disputes about whether population growth needed to be stopped had been sidestepped. A large body of research suggested that women across the world wanted fewer children and better access to contraception. The line many Southern countries had taken in 1974 and 1984 - that smaller families would have to wait for development - was discredited.

A month after the Cairo conference, the right-wing Christian fundamentalists returned to the stage when the Republicans won control of the US Congress. Suddenly, the more constructive line the Clinton administration had taken came to an end. With the Republicans trying to abolish most of America's environmental legislation, the administration was unwilling to sign up to commitments it could not hope to get past its Congress at the first Conference of the Parties to the Framework Convention on Climate Change (COP-1), held in Berlin in April 1995. The Americans continued to block any binding targets or timetables.

Climate Summit

The conference discussed a draft protocol proposed by the Alliance of Small Island States (AOSIS), calling for a 20% reduction in carbon dioxide emissions from industrialised countries by 2005. This target had been endorsed by the IPCC scientists as a first step towards a 60% reduction by 2040. The AOSIS Protocol was opposed not just by the United States, but by all the Western countries. Enthusiasm for cutting carbon dioxide

emissions was actually much less in Berlin than it had been in Rio. In 1992, several Western countries had committed themselves to ambitious targets of up to 20% reduction in carbon dioxide emissions. However, estimates by the Climate Secretariat in 1995 showed that only two Western countries were not still increasing their emissions. Britain had cut its emissions by closing much of its coal industry and replacing coal with natural gas for electricity generation. This policy had not been pursued for the sake of the climate however, but was an unexpected side-effect of the rules for the privatisation of the electricity generation industry. Germany was reducing its emissions by counting the old East and West together. Falls in the former East, as inefficient old industry closed, were more than compensating for increases in the former West. Emissions from the other parts of the former Eastern bloc were falling as well for the same reason. In 1992, it had been thought that stabilising emissions by 2000 would not require much effort. Despite the commitments, little was done and now the target is not being met.

The 1995 Second Assessment Report of the IPCC that came out at the end of the year states that the balance of evidence is that global warming is already taking place.¹¹ At the second Climate Conference, held in Geneva in July 1996, the Clinton administration suddenly changed position and accepted the principle of binding targets, leaving Australia isolated in opposition. Another important development was that the fossil fuel lobby was balanced by the insurance industry. Insurers lobbied for action to reduce carbon dioxide emissions, concerned by a pattern of increasing storm damage widely regarded as an early sign of climate change. There is now much more optimism that the third Climate Conference, to be held

in Kyoto at the end of 1997 will finally lead to a binding convention and the start of international action on the issue.

¹Intergovernmental Panel on Climate Change (1990) *Climate Change: The IPCC Assessment*, Geneva: World Meteorological Organisation

²Jacques Delors (1992) Speech to the Plenary, UNCED, 13 June

³United Nations Conference on Environment and Development (1992) 'The Rio Declaration on Environment and Development', Rio de Janeiro: UNCED Secretariat

⁴Michael Grubb, Matthias Koch, Koy Thomson, Abby Munson, Francis Sullivan (1993) *The 'Earth Summit' Agreements: A Guide and Assessment*, London: Earthscan

⁵South Centre (1991), quoted in Grubb et al (1993) op cit, p. 26

⁶Donella H. Meadows, Dennis L. Meadows and Jørgen Randers (1992) *Beyond the Limits: Global Collapse or a Sustainable Future*, London: Earthscan

⁷Pratap Chatterjee and Matthias Finger (1994) *The Earth Brokers*, London: Routledge

⁸Martin Khor (1992) Editorial, *Third World Resurgence*, 24-25, p. 4

⁹Stephen Schmidheiny (1992) *Changing Course*, Cambridge, Massachusetts: MIT Press

¹⁰Al Gore (1992) *Earth in the Balance*, New York: Houghton Mifflin

¹¹Intergovernmental Panel on Climate Change (1995) *Climate Change 1995*, Cambridge: Cambridge University Press

CHAPTER 2.6

CONCLUSION

A number of points emerge from a review of the history of the debate. The concept of limits to growth was used by Malthus as an argument for the maintenance of inequality and against the idea of human perfectibility. His critics initially used two counter-arguments. The first was that the limits to food production, which he claimed were immediate, in fact lay in the distant future. Their second counter-argument was that even if the limits were immediate, the correct response would be to improve the condition of the poor so that they could lower their birth rate, rather than to just accept their starvation as inevitable.

Later, Marx and Engels argued that Malthus had been seeking to use the concept of natural limits as an apparently immutable justification for unequal social relations. Engels even appeared to claim that the advance of science meant that there never could be natural limits to social progress. This faith in the power of science was to become a crucial feature of modernity.

Although from the Romantics onwards there was some opposition to the idea that it was desirable to use science for the domination of nature, the success of economic and technological progress in transforming the lives of people in the West led to the marginalisation of this viewpoint for a long time. It was only from the 1960s that this opposition emerged as a major force in Western societies. In the late twentieth century, when the debate about limits to growth returned, similarly Malthusian conclusions were initially drawn. Critics of the new environmentalism initially argued that the environmentalists were conservatives opposed to progress for the poor. It was in response to this criticism that the slogan of sustainability was invented by environmentalists in the World Council of Churches. The Brundtland Commission's formulation of sustainable development emphasised the importance of equity. By the time of UNCED, the idea of global environmental limits was used as an argument for a more equal sharing of the environmental space available. Although that attempt failed, the concept of equitably sharing the Earth's environmental space has become increasingly important in recent thinking about sustainability that will be described in Part Three.

Modern environmentalism owes its origins to scientists like Rachel Carson, Paul and Anne Ehrlich, and Donella and Dennis Meadows. By the end of the eighties, the general scientific community took concerns about threats to the global environment very seriously. The mainstream of the economics profession, however, has not done the same. Although the 'limits to growth' debate of the seventies has become less significant, there is still fundamental disagreement between environmentalists and economists. It will be apparent in Part Three that the conceptual development of the concept of sustainability since the Brundtland report

has been largely under the influence of a relatively small group of economists concerned about environmental issues. Other economists have remained critical of the entire idea. The difficulty that economists have had with sustainability will be shown to be related to the philosophical basis of mainstream economic theory in a particular version of utilitarianism.

Sustainability was originally invented as a political concept by environmentalists in the 1970s responding, not to economists on the right, but to Marxist-inspired critics on the left. These leftist critics claimed that concern about environmental limits was Malthusian disregard for the poor, or 'bourgeois' sentimentality. The intention was to create a term that was difficult rhetorically to oppose. The very first World Council of Churches definition of a 'sustainable society' also brought together the idea of physical sustainability within environmental and resource limits with the idea of social sustainability in terms of equitable distribution and political participation. The Brundtland Commission drew the parallel between equity to future generations and equity for the people of the present. By tying these two kinds of equity together, the Brundtland Commission tried to create a common platform for environmentalist concerns about the future and Third World concerns about development. They also hoped to be able to get round the debate about limits to growth by accepting the environmentalist case of limits to physical growth, while rejecting their claim of absolute limits to economic growth. Although this compromise position carries a lot of weight intellectually, it is more difficult to put the idea into practice.

Brundtland's conception of sustainable development was an attempt to steer a middle ground between environmentalist criticism of industrial

society and the orthodoxy of growth and development. The political genius of the idea was that it had a little bit to offer everybody. Observers were divided on whether it was genuinely an attempt at reform or an attempt to have your cake and eat it. Was the vagueness of Brundtland's definition of sustainable development a politically necessary compromise or an invitation to duplicity, allowing everyone to claim to be a friend of the environment?

The difficulty of turning sustainable development from a slogan into real change became increasingly apparent after UNCED. It was very apparent that despite everything the North and the South were still at cross-purposes. Northern governments were interested in the idea of environmental limits as a threat from the South. Southern governments were interested in environmental limits as an argument for a more equitable distribution of wealth internationally. At UNCED, it was among NGOs that North and South, environmentalists and development activists, began to come to terms with each other. Bringing together the physical and the social aspects of sustainability proved to be a unifying goal for them.

The debate about the implications and the implementation of sustainable development has not gone away after nearly a decade. The definition is still a subject of controversy, as is the question of growth. New debates about the sustainability of 'natural capital', environmental space and ecological tax reform have emerged. In the last few years, the tension between the goal of sustainability itself and the assumptions of mainstream economics have come to the surface too.

PART THREE: THE PRESENT DEBATES

CHAPTER 3.1 INTRODUCTION

The intellectual debate about sustainability and sustainable development since Brundtland has been conducted mainly on the terrain of the new discipline of environmental economics. It is not a unified discipline, though. One group of environmental economists apply ideas from the neoclassical mainstream of the economics profession. Other environmental economists are critical of economic orthodoxies and often support the political agenda of the Green movement.

It is interesting to note that many of the 'green economists' I interviewed came to economics after having developed an interest in environmental issues. Herman Daly is an exception as he chose economics for intellectual reasons in the 1950s. It was his experiences in Brazil in the 1960s that turned him into an environmentalist. Hans Opschoor was interested in the natural world and wanted to study geology, but was forced to study economics by his father in the 1960s. John Pezzey was a young environmentalist in the 1970s who studied mathematics and worked as a meteorologist before deciding to go back to university and become an economist. Paul Ekins was an engineer who retrained as an economist in the 1980s after having become an environmental activist.

The last two consciously chose economics as they had come to the conclusion that economics was central to environmental reform.

Richard Norgaard originally studied mathematics. He worked as a river guide in his vacations, and became interested in environmental problems after the Glen Canyon was flooded for a dam project. He decided to switch to economics after concluding that economics was crucial for an understanding of environmental issues. At that time, in the early sixties, 'it was a perverse thing to do'. Only in the 1980s did it become more common for people interested in environmental issues to train as economists.

The fact that most of these people were not originally economists, but environmentalists, may explain why they found it so easy to challenge the conventional economic paradigm - some of them entered the profession with the intention of doing just that. This is in line with Thomas Kuhn's observations about paradigm-challenging scientists usually being new entrants to their discipline.¹ What it also reveals is that the challenges to economic thinking from an environmental perspective have very largely come from environmentalists-turned-economists, rather than ordinary economists.

The paradigm dispute between environmentalists and economists runs through the entire debate about sustainability. The most obvious disagreement between these groups historically has been about the issue of economic growth. Much of the debate about the meaning of sustainable development has been about the role of economic growth, carrying on the argument that has been going on since the 1970s.

In more technical economic terms, a debate has been conducted about definitions of sustainability in terms of capital. GNP as a measure of income does not take account of the running down of 'natural capital', such as forests and oil reserves. Sustainability has been given an economic definition as 'non-declining capital'. The idea is that the running down of capital should not be counted as income. There is disagreement about to what extent increases in human-made capital can compensate for the loss of natural capital.

Some economists have cast doubt on the need for any sustainability rules and the pursuit even of sustainable development. They argue that the traditional economic approach of optimal development is able to cope with the future perfectly well. All that the goal of sustainability does is introduce extra unnecessary constraints on the path of development.

This argument depends on a very high level of confidence in the capacity of technical progress to overcome any problems that may emerge in the future. More interestingly, the path of optimal development turns out to be one that is not risk-averse, or even disaster-averse. The difference between optimal development and sustainable development is in the approach taken to large-scale risks. Sustainability emerges out of the principle that it is worth lowering the *average* expectation of income in order to minimise the risk of the worst-case outcome - rather like taking out insurance.

The 'maximin' approach that sustainability takes to equity between generations is rather similar to the maximin approach to equity within generations familiar to political theory from the work of the philosopher John Rawls. It appears that the risk-indifferent approach to the future that

economists frequently adopt has strong parallels with their inegalitarian approach to the distribution of wealth in the present. Both are a consequence of the classical utilitarian basis of mainstream economic theory.

This section of the thesis looks in detail at key parts of the current debate about sustainability, drawing on the interviews I conducted with key players. It is divided into four chapters. Chapter 3.2, 'The Meaning of Sustainability', concentrates on the definition of the term sustainable development and whether it means something different from sustainability. What does the word 'development' add exactly? Is it just a euphemism for economic growth? Chapter 3.3, 'Taking Sustainability Into Economics', looks at attempts to incorporate the concept of sustainability into economics and the problems that have been encountered. Chapter 3.4, 'Putting a Price on the Planet', looks at one of the key differences about values between economists and environmentalists that underlies many of these disputes. Finally, Chapter 3.5, 'Moral Philosophy and Sustainability', looks more generally at the philosophical disputes around the concept of sustainability.

¹Thomas Kuhn (1970) *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press

CHAPTER 3.2

THE MEANING OF SUSTAINABLE DEVELOPMENT

Introduction

The starting point for the concept of sustainable development was the aim to integrate environmental considerations into economic policy. In that way, the concept became a meeting point for environmentalists and economists. More profoundly, it was conceived as an attempt to bring environmentalist ideas into the central area of policy, which in the modern world is economics. It was to be the ground on which the mainstream was to consider the environmentalist case.

The concept of sustainable development carefully balanced environmental concern with endorsement of economic growth, at least in the South. It was deliberately conceived as being something more palatable than the hardline environmentalist message. Rather than challenge the idea of growth directly, it sought to modify the kind of growth strategies that were pursued.

The result of this aim for balance between environmental and economic concerns was a consensus on a definition that was at the very least rather vague. Some have seen the vagueness as meaninglessness: you can claim anything as part of sustainable development. Another view is that although there is much disagreement at present, with time the meaning will become clearer as people learn a new environmental language. Others have argued that sustainability is like other important political ideas, such as liberty and justice, which are 'contestable concepts'. Because people do not agree on the exact meaning does not mean that there is no meaning at all. They argue that sustainable development is a concept that has succeeded in moving the debate forward and towards the environmentalist position.

Defining Sustainable Development

'Sustainable development' is a meeting point for environmentalists and developers. The environmental scientist Tim O'Riordan argued in his 1988 essay 'The Politics of Sustainability' that the reason for the popularity of the term sustainable development lay in the way that it could be used both by environmentalists, emphasising the sustainable part, and by developers, emphasising the development part.¹ The definition of sustainable development given by the Brundtland Commission, 'development which meets the needs of the present without sacrificing the ability of future generations to meet their needs', is often criticised as hopelessly vague or, in the language of experts, non-operationalisable. In his 1988 essay, O'Riordan expressed the concern that the vagueness of the definition would allow people to claim almost anything as part of 'sustainable development', reducing the term to meaninglessness.

In 1994, Dennis Meadows spoke for many radical environmentalists when he told me he thought that sustainable development was a meaningless term:

Meadows: I consider that the term sustainable development as it is currently used is an oxymoron. People, if you probe beneath the surface, what they really want, what they really mean when they say that term, is sustainable growth. And growth is not sustainable. Certainly not physical growth. So I see that the term sustainable development has so quickly passed into common usage that it really has no meaning. Or it has fifty different meanings. So you go to a conference where people are talking about sustainable development and they're just talking past each other, because they're all interested in something different. For the Third World sustainable development means redistributing the wealth from the rich to the poor. For the rich countries, sustainable development means that the poor countries quit having so many kids. So it's not been a very useful term for structuring any kind of collaboration or even moving ahead. And I don't know if it will be. It may be too late to save that term. I use the term 'survivable development'. Which means unfolding in a way which can survive discontinuities and a crash.

SD: Yes. That's kind of like Pezzey. He has the two different terms. What about sustainability? I mean when people talk about things like sustainable cities, or just trying to achieve sustainability. How do you feel about that. Do you think that still has some hope, or is it too late?

Meadows: It's a rallying call like freedom or liberty. People will come round and wave their flags when you say that word. So it has some political influence, but as a basis for any kind of detailed or feasible planning, I just don't see it. Cities are inherently unsustainable. By their very nature. So I just don't see it as a very useful term. Even the Brundtland Commission used the term sustainable development to mean really sustainable growth. (Dennis Meadows, University of New Hampshire, 24.6.94)

Criticism of the vagueness of Brundtland's definition is accepted to some extent by the author of the definition himself, Nitin Desai, an economist and former staff member of the Commission, who is now UN Under-secretary General for Policy Coordination and Sustainable Development. When I asked how he would define sustainable development, he said:

Having been guilty of many, including the ones you see in the Brundtland Report, I hesitate to add yet another. And I would urge at this point, the issue is not of defining sustainable development, as of understanding it. Take the word 'development' itself. The value of any definition of development is simply the clue that it gives to the moral premises of the person who's giving the definition. So one person will describe development in terms of improving prospects for human beings, human resource development. Someone else will describe it in terms of growth. They are not really very valuable as operational definitions. It's not as if someone decides "I want development. Now let me find out what it is". That's never the way things work. You don't need definitions for definitions. Definitions are useful only for the clue that they give you for the premises on which somebody works. If you can't define development adequately, how can you define sustainable development in a simple formulation? (Nitin Desai, New York, 30.5.94)

Desai makes an important point. The problem in agreeing on the meaning of sustainable development is not fundamentally about agreeing upon a precise definition, but about agreeing upon the *values* that would underlie any such definition.

Sustainability or Sustainable Development?

The degree of difference about values becomes apparent when you consider another question: are sustainability and sustainable development the same thing or different? This is a strange question to have to ask. It seems obvious that they must be different because otherwise the word 'development' would be entirely superfluous, but it is politically important for many people to avoid making a distinction. Making a distinction drives a wedge into the consensus that formed the basis of the Brundtland Report and now Agenda 21 around the mutual need for environmental protection and Third World development. 'Sustainable development' is the cornerstone of that consensus. In

Agenda 21 the terms 'sustainability' and 'sustainable development' are used interchangeably.

For environmentalists like Dennis Meadows, on the other hand, the mention of the word 'development' makes them see red. Tim O'Riordan drew a distinction in 1988 between sustainability and sustainable development.² He saw sustainable development as a term that ultimately gave priority to development, while the idea of sustainability was primarily about the environment. His analysis is rather borne out by Nitin Desai:

What I'm going to focus on is the political acceptance of sustainable development in the international sphere. And I'm going to start really with the Brundtland Commission. I was part of the staff and in fact was the person who was principally responsible for the front end of the report which dealt with the review of development and the basic conceptual chapter on sustainable development. How did it come in the Brundtland Commission? Remember the Brundtland Commission was called the World Commission on Environment and Development. And maybe I could give you an insight as to how this appeared in the Brundtland Report. Because that's where much of the politics of sustainability started. Basically the Brundtland Commission was a broad based commission which included people both from industrial countries as well as developing countries. And around the time I was brought in there was a feeling that the issue of development was not receiving sufficient attention, that environmental management would stop the very necessary growth which was required in developing countries in order to meet some very basic needs. So the feeling was that the issue of development had to be injected into this agenda in some ways. That's one of the reasons incidentally why I was brought in. I was essentially a development man, working on the development side in India. The notion of sustainable development entered the Brundtland Commission basically as an attempt to find the meeting ground from a perception which saw environmental matters essentially as matters which controlled towards a perception which saw the issue more in terms of *re-directing* growth. If you look carefully at that chapter of Brundtland which talks about sustainable development, and look also at the fine print in it, not just the famous definition which everybody comes up with, but the rest. What were the components of sustainable development which were spoken of there? And you

will see that it is an attempt essentially at talking in terms of redirecting development and growth, rather than stopping it. Because it recognises very clearly that you must meet people's needs. That's the way in which the process itself started. I believe that the impact of the Brundtland Report was very great because there was a widespread perception in many circles that environmental policy as we have traditionally understood it was not effective. It was end of the pipe. So quite apart from the very real concern of developing countries to inject their *need* for development into any global thinking and resource management, there was also the feeling in industrial countries that if you really wanted to tackle environmental problems you'd have to move upstream. Not end of pipe solutions, but you have to move into the factors which shape decisions, into economics. From ecology to economics. So both of these came together in the notion of sustainable development. And that's why the report had such a strong impact. Because it wasn't just a plea reaffirming what was already agreed in 1972 in Stockholm. It was basically seen as a new political approach which sought to inject the issue of resource management, environmental management into the very heart of economic policy making and development policy. And it therefore responded to the concerns which many people had. That's how the whole business of sustainable development started. (Nitin Desai, New York, 30.5.94)

I asked Nitin Desai whether he thought there was a difference between sustainability and sustainable development:

Desai: I would treat sustainability purely as an attribute of sustainable development. The difference to me is purely verbal. I don't see a conceptual difference as such. And certainly that's not there in any of the texts which we are involved in, where more or less they're used interchangeably. It's purely grammatical, the difference.

SD: Yes, in Agenda 21 they're used so interchangeably it's almost like they are one. Some people have argued they're quite distinct. But some people have argued, like you're saying, that one of them is an attribute of the other. But in Agenda 21, it's not even used like that, is it?

Desai: It's used interchangeably. Purely where grammatical style or stylistic elegance requires. But there's no *deep* sense in which Agenda 21 requires any distinction to be made between sustainable development and sustainability of development.

SD: So is that the view you have? Or do you think -

Desai: I would say that's the view I have. Because I think that would really be hair-splitting. If we were to try to draw a very fine line between sustainable development and the sustainability of development. As far as I can see, the two things should mean the same thing. (Nitin Desai, New York, 30.5.94)

Desai is playing with words. The distinction between 'sustainable development' and the 'sustainability of development' is indeed a very fine one. The real significance of the issue of the difference between sustainability and sustainable development is not so much about the meaning of sustainability as the meaning of development. Is development about economic growth or about human development? The term 'sustainable development' has become associated with support for economic growth. A preference for 'sustainability' is associated with an anti-growth agenda.

Sustainable Development through Economic Growth?

Development through economic growth lies at the heart of the UN's interpretation of sustainable development. The question of whether sustainability is compatible with economic growth will be discussed further in the next chapter. But when I talked to Joke Waller-Hunter, the head of the Commission on Sustainable Development secretariat, she made clear that vagueness about the implications of sustainable development for growth was vital to the current consensus:

Waller-Hunter: It's easy to reach consensus on a term like sustainable development. But of course then the problem is while it's easy to reach consensus on the term, more work should be done on the definition. Although I wouldn't promote a very specific defining of the terms, because the consensus that is now achievable on sustainable development would most likely disappear.

SD: Why do you think it's easy to achieve consensus on that term?

Waller-Hunter: Because in the view of the Brundtland Commission, the mother and father of the term more or less as it is used now, it includes the possibility of growth, economic growth, in developing countries, and it doesn't exclude economic growth in industrialised countries. While at the same time the message is that quality of the economic growth should be such that the negative impacts on poverty, on the environment and the on the use of natural resources will be limited. (Joke Waller-Hunter, 2.6.94)

The identification of sustainable development with the growth agenda has made radical environmentalists deeply suspicious of it. The acceptance of the concept of 'sustainable development' by governments and other institutions seen as representing the status quo has fuelled the belief among radical environmentalists (such as Nicholas Hildyard,³ editor of *The Ecologist*) that the whole idea is being used as a smokescreen. The statement in the Maastricht Treaty that one aim of the new European Union would be sustainable development is an example of the problem. In that case, matters were further complicated when the first English translation of the treaty used the term 'sustainable growth', which is a term that has been used in economics since the 1940s to describe something quite different - a rate of economic growth that will not lead to inflationary overheating.

Linguistic confusion

The present situation is one of linguistic confusion. Does that mean that sustainability is meaningless? Donella Meadows said:

I think we're struggling for the language now for a whole set of concepts that are urgent in our conversation that hadn't been while the world was unfull as Herman [Daly] would say. We didn't need all this language about limits and sustainability and we didn't develop it and our language is now very much lacking. And sustainable development is it seems to me used in a million different ways, mainly for political purposes. I was reading a great article about the mouthing of sustainability over and over again

not going to bring us to sustainability. Sustainability is my word for the moment to talk about what I do. Not sustainable development, and lord knows not sustainable growth. And I mean Herman Daly's very clear, very strict definition. You have stable population. You have stable throughput. And you have that stable throughput for each source and sink below its limits. To me that's sustainable society. That's a physical definition. That's the envelope within which everything else has to take place. Then we have social sustainability. Then we have the question of decent human lives, justice. To me it was clear from the model 25 years ago. Sustainability means meeting those physical requirements; and beyond that, meeting those social requirements that have to be met so that the system doesn't blow itself apart socially.

And I'm very aware that not everybody uses the word in those ways. I think that's what happens. The Eskimos with all their supposed words for snow needed them and pointed to this kind of snow - you used this word, and that kind of snow - you used that word. Often enough that everyone had a shared experience of snow x and snow y and snow z. And then they didn't have to go through all the rigmarole, but for a while they had to. And that's where we are right now. We have to develop whole mindsets about sustainability and we may someday, we're beginning to do this, have deep sustainability, you know like deep ecology. Strict sustainability and not-so-strict sustainability and sustainable growth for the people who are just catching on and really don't get it yet. We'll have to have words like that. We'll have to say "I mean sustainability with regard to pollution sinks."

SD: Yes. There's terms like very strong, strong, weak and very weak sustainability.

Meadows: Yes. People say because we're in this linguistic confusion that therefore we shouldn't do anything, we shouldn't go anywhere, we don't know what we're talking about. And to an extent we don't know what we're talking about. And talking about it is the first step towards a shared social experience that will get us to move to do the things that we need to do. It's a mess. But social transformations are messy. (Donella Meadows, Dartmouth College, New Hampshire, 23.6.94)

That last sentence of Donella Meadows' is particularly worth bearing in mind. There is disagreement and confusion at present, but it may not be permanent.

A 'contestable concept'?

Another view is Michael Jacobs' in his book *The Green Economy*.⁴ He argues that sustainable development is a 'contestable concept': one that affords a variety of competing interpretations or conceptions: 'Many political objectives are of this kind: liberty, social justice and democracy, for example. These concepts have basic meanings and almost everyone is in favour of them, but deep conflicts remain about how they should be understood and what they imply for policy.'⁵

Because something is a contestable concept does not mean that it has no meaning at all. Words have meanings when there is a consensus among a language community about what they mean. You cannot be like Humpty-Dumpty in *Alice Through the Looking-Glass*: "'When I use a word,' said Humpty-Dumpty in a scornful tone, 'it means what I want it to mean, neither more nor less.'"⁶ People do try to distort the use of words for political ends, but there are limits to how far it is possible to succeed in that. Very few people believed that the German Democratic Republic was a democracy.

What kind of definition?

How tightly is it possible to define legitimate use of the term sustainability? Herman Daly is quite strict:

SD: How do you feel about the term or concept of sustainability? Or perhaps they're slightly different, the term and the concept?

Daly: I think it makes sense to talk about sustainable development. It does not make sense to talk about sustainable growth. Growth being defined as physical expansion. Development as qualitative improvement. Though I would say sustainable development ought to be thought of as development without growth, that is without growth beyond the physical carrying capacity of the ecosystem, the regenerative and absorptive capacities. So in that

sense I think the Brundtland Commission did us a great service by putting the idea of sustainable development on the agenda, although for them it's practically the same as sustainable growth. They think the economy has to grow by a factor of between five and ten, which I think is not reasonable. Nevertheless, in spite of all the contradictions, they probably had to accept the contradictions in order to get the consensus, to get the term out. That forced people in places like the World Bank to deal with the words. You start thinking about the words, and you're forced to write something. And that's what happens to bureaucrats. All throughout the UN system, once the Brundtland Commission said sustainable development, everyone had to start thinking about it and writing about it, or even writing about it without thinking about it. Whenever bureaucrats have to write about things, they start thinking a little, or at least they start looking around for somebody who has already thought around enough to have written something, and stimulates thought and discussion. There's a lot of nonsense written. But not everything's nonsense. Hopefully it'll begin to filter through. So I think on balance it's been a very helpful and beneficial thing. We're in danger now, though, of losing the impetus through mush. The term just becoming a catch-all for everything that's good. People want to talk about moral sustainability and political sustainability and psychological sustainability. I think all that is just way off the mark. All these other things may be good, but I think the term sustainability, or sustainable development, ought to be really kept within its environmental context, its ecological sustainability. So if something is not socially sustainable, well, maybe it's socially good or bad, but I don't think it helps to stretch the sustainability idea too far beyond its real meaning or its basic meaning, which I think is the non-consumption of capital. Of natural capital in this case. You can say there is such a thing as moral capital or social capital and if you run that down, it's not sustainable. OK, I'll accept that. But that's sort of a metaphorical extension. I wouldn't want to halt action on environmental sustainability until such time as we had agreement on what is moral sustainability. (Herman Daly, University of Maryland, 22.6.94)

Daly emphasised the physical aspect of sustainability. Tim O'Riordan, Professor of Environmental Sciences at the University of East Anglia, emphasised the social aspects:

SD: How would you define sustainability?

O'Riordan: Well basically I think it's a social question. Therefore one should see it in terms of social well-being, institutions, civil

rights, the minimisation of armaments, the control of deprivation of the very poor, the provision of a minimum standard of living and access to a decent quality of environment, also education and employment for all peoples. So I see sustainability as primarily a social and political issue with a strong ethical undertone. And the so-called *physical* dimension fits within that, but it isn't predominant. That's the reverse of what most people see.

SD: Why do you see it that way?

O'Riordan: Because I think that's what Brundtland was trying to get at, never properly understood. And I think that you cannot have sustainability in an unequal society. An unequal society will produce non-sustainability by definition. An equal society at least has the chance of producing sustainability, but that's not guaranteed.

SD: Why will an unequal society be unsustainable?

O'Riordan: Because an unequal society will create poverty and a desire for acquisition and create protectiveness and a whole host of property right issues which allow dominant groups to acquire and control at the expense of sub-dominant groups. Just by definition that means sub-dominant groups will suffer inadequate access to resources and they will therefore abuse the little resource access they've got in order just to survive. This has been seen time and time again in the modern age.

SD: You've criticised the Brundtland Commission's definition. You said you didn't think it meant anything. Would you like to say why?

O'Riordan: It's like the wonderful phrase by Gifford Pinchot that conservation is the greatest good for the greatest number for the longest time. It doesn't mean anything until its operationalised. What does it mean in terms of forestry management, like the spotted owl in the Pacific Northwest? It's the same with Brundtland. It talks about providing needs for today and providing needs for tomorrow. So the diminishment of the needs for tomorrow is not achieved as a result of trying to meet the needs of today. All that does is provide you with a basic concept. But if you look at *anything* we're doing wrong now in terms of resource extraction or pollution discharges or international management of the commons, there's not an inkling of evidence that we're seriously addressing the needs of tomorrow by actually deliberately sacrificing some of the needs of today. Despite that Brundtland rhetoric, it's not been put into effect. Now it's not just a function of inadequate guidance, it's largely a function of inadequate

understanding of what's involved with that particular definition. So for my money, though it's a neat definition, it tells you nothing about the operationality of a given problem. (Tim O'Riordan, University of East Anglia, 15.3.94)

Dimensions of Sustainable Development

There appears to be a substantial difference in how Daly and O'Riordan conceive of sustainable development. Should priority be granted to physical or social criteria? Let me quote the sentences immediately after the Brundtland Commission's famous definition:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

Thus the goals of economic and social development must be defined in terms of sustainability in all countries - developed or developing, market-oriented or centrally planned. Interpretations will vary, but must share certain general features and must flow from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it.

Development involves a progressive transformation of economy and society. A development path that is sustainable in a physical sense could theoretically be pursued even in a rigid social and political setting. But physical sustainability cannot be secured unless development policies pay attention to such considerations as changes in access to resources and the distribution of costs and benefits. Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation.⁷

In this crucial passage, Brundtland seems to be identifying the crucial elements of sustainable development as meeting basic needs, recognising environmental limits, and the principles of intergenerational and

intragenerational equity. Its emphasis on social aspects is indeed similar to O'Riordan's, although he is much more radical in his egalitarianism.

Nitin Desai mentioned two important aspects of thinking in the Brundtland Commission: 'that you must meet people's needs' and 'to inject the issue of resource management, environmental management into the very heart of economic policy making and development policy'. You will remember that when I asked him for his definition of sustainability or sustainable development, he did not give one, saying: "at this point the issue is not of defining sustainable development, as of understanding it". He went on to say:

If you can't define development adequately, how can you define sustainable development in a simple formulation? It is better to say a series of sentences which give you a clue. Brushstrokes if you like, which define the outlines of the idea, rather than a neat outline. I told you one dimension: asset management. Another dimension: A key feature of sustainable development. What is the qualification that sustainability brings to whatever is a normal understanding of development? One, asset management. Two, one of the features of development quite often is that it reduces options for others. I develop my land area in a manner which reduces options for my neighbours. Or it may reduce options for my children. If I cut down the forests my children will find it very difficult to recreate those forests. The second dimension I would give is trying to minimise the reduction of options for others. So think consciously "Are we, through this activity, enhancing options for people? Options in terms of choices available to them for living reasonably. Or are we reducing them? This dimension is necessary to get a better understanding of issues like biodiversity, species loss and so on. A real concern is that by doing that we're reducing options for the future. The third brushstroke is responsibility. That sustainable development is responsible development. That if my acts of production and consumption have some consequences on you, then I accept responsibility for those consequences. Either responsibility which is reflected in rearranging my consumption so as to reduce that, or my compensating you for the harmful effects. If you like, 'polluter pays principle'. Something which alters the way we think about development in the normal sense. The final element I would give here. The fourth element is equity. That any pattern of

development which widens options for me and reduces options for you, which involves an unrequited passing on of costs from me to you. Which gives me one level of living, and you a completely different level of living, to me is not acceptable. So the fourth brushstroke is in terms of equity. So equity, responsibility, widening of options, asset management. These don't constitute a definition, they constitute, if you like, the brushstrokes which give you some indication of the direction of development. I believe this is what to be looking for. That sustainable development is really about the *direction* of development. (Nitin Desai, New York, 30.5.94)

In this passage Desai identified a number of rather overlapping ideas. His brushstrokes are suggestive, but vulnerable again to the accusation of vagueness.

When I asked Joke Waller-Hunter about the Brundtland Report, she said:

I think the major message is the shift of responsibilities in decision-making. For me the very important message is that it should be the economic sectors that should be a hundred percent accountable for the impact of what their activities on the environment. Second one is the Brundtland Report highlighted the unbalance between the use of resources between the North and the South. And the message for sustainable development means equity. Sharing of natural resources between North and South - I think that's the second very important message. And of course the third one being that poverty alleviation is the *major* priority if you would ever try to achieve sustainable development. These three messages for me are major. And in industrialised countries more focus was given to the first message, that there should be a shift in decision-making. And that thinking permeated rather slowly. But I think that's what sustainable development is about. (Joke Waller-Hunter, New York, 2.6.94)

Michael Jacobs identified three core elements of sustainable development: entrenchment of environmental considerations in economic policy-making; a commitment to equity both within and between generations; and development being used as a notion of economic welfare which acknowledges non-financial components.⁸

Waller-Hunter and Jacobs identify two out of three similar elements at the core of sustainable development. The ideas of integrating the environment into economic policy and of the importance of North-South equity are crucial features of Brundtland's concept of sustainable development. In that sense, sustainable development is not such a vague idea as it is sometimes accused of being. The problem of actually operationalising sustainable development remains, however.

Joke Waller-Hunter claims that Agenda 21 is an operationalisation of sustainable development by giving concrete policy directions. But that is not a widely held view. Most people I spoke to were dismissive of Agenda 21, which was commonly criticised as a shopping list. Waller-Hunter admitted that a weakness was that 'the level of concreteness in Agenda 21 isn't such that it can be readily implemented.' Tim O'Riordan wanted to give Agenda 21 five years before making judgement as to its usefulness; but he also told me that Agenda 21 was not really about sustainability, but basic environmental protection measures in Southern countries.

The difficulty in giving an operational definition of sustainable development, or even in reaching agreement on what are the key elements of the idea, lies in the fusion of two concerns that pull in somewhat different directions: the environmental and the social.

The notion of needs leads to Brundtland's concern for intragenerational equity. The notion of limits underlies Brundtland's concern for intergenerational equity. Gandhi is supposed to have said "The world has enough for everyone's need, but not enough for everyone's greed." As David Pearce has pointed out, the biggest fundamental obstacle for any

attempt to operationalise Brundtland's definition of sustainable development is the seeming impossibility of determining what exactly are 'needs'.⁹

Since sustainable development as presently defined seems to be non-operationalisable, is it of any value? In 1993, Tim O'Riordan wrote a new essay called 'The Politics of Sustainability' where he admitted that "the phrase has stuck... Like it or not, 'sustainable development' is with us for all time."¹⁰ I spoke to one initial critic who had been won round to the usefulness of the idea of sustainable development. I asked Hans Opschoor, a professor of economics at the Free University of Amsterdam and then chairman of the Dutch government's Advisory Committee on Environmental Policy, his opinion on sustainable development:

Opschoor: There's a nice story by which I can illustrate what I think. At the time the Brundtland Commission was writing, I was directing the Institute for Environmental Studies downstairs here, and I was very much at a distance, though monitoring what happened in the commission. As a consequence of that I think we were the first to have a symposium on the report after it came out. At that time we had people from the Brundtland Commission making presentations. I was to be one of the speakers and I had a very critical presentation on how you couldn't operationalise the concept of sustainable development, and how vague a notion it was. A kind of notion that could cover up for all sorts of nasty things from any perspective, etcetera. It so happened that the now minister of development cooperation, Jan Pronk, who then was a Member of Parliament, sat next to me behind the table waiting for his turn to give his presentation. He glanced through my notes and he kicked me under the table and said "You're not going to say that. If you say that you're assisting in torpedoing a concept which might have an international policy impact." So I thought a lot about that. And in fact I changed my presentation. I did maintain it was hard to make operational, etcetera, but I wasn't prepared to throw the concept away yet. Almost eight years after the fact, I think I'm happy I made that decision. I'm not saying that the concept is a very precise one. It is very imprecise. It is much easier to say what is unsustainable than to indicate where sustainability begins. There are all kinds of grey areas. You have strong and weak sustainability and what have you. But nevertheless, it turned out

to be one way of getting close to two hundred countries together, and I don't see any other way would have been as effective. Now the Conference on Sustainable Development [UNCED] wasn't all that successful, but you have commissions on sustainable development in the UN system. You have the EU sort of adopting the notion of sustainable development, even though they call it sustainable growth. Of course all these things are pains in the neck, but at least nobody can bypass the issue any longer. It's very undone to not say "Yes I'm in favour of sustainable development." It's politically incorrect to be against it, I would say. And as long as we haven't got a better concept or set of concepts, I'm prepared to go by it and see how much further we can come.

SD: Why do you think it became so popular?

Opschoor: Because it has in it anything anybody might want to have. If you're an environmentalist it has sustainable, and if you are not saying precisely what you mean by that term it sounds very ecological. Of course if you hear the subsequent debate about sustainable development, people like David Pearce and Solow and Carl Mayo have developed it - weak sustainability to a certain degree being acceptable under the notion of sustainability, then it becomes much more of a tricky subject. Anyhow, the ecologists or the environmentalists could at least say that the environment was there. Economists saw development. I found out recently that if you go back to the very ancient IMF/World Bank documents and the discussions surrounding the original charters, even in the forties they were talking about sustainable growth, and what they meant was on-going growth. There was nothing environmental yet. Growth had to carry on and not be stopped in any way. So maybe the old guys still remembered that and it sounded nice in their ears. So it has something for everybody, I think. And if you're not paying too much attention, you're fairly happy with what comes out of it. So it is a kind of vague, undefined something. But still, it gives an opportunity to address people with totally different paradigms and say "OK, if you're in favour of sustainable development, what about the sustainability of this or that?" That sort of notion lends itself to carrying on a debate, even though as a policy objective it has to be specified to make any sense at all. (Hans Opschoor, Free University of Amsterdam, 19.12.94)

Conclusion

The findings in this chapter suggest that the vagueness of the concept of sustainable development seems to have turned out to be more useful for

environmentalists than some early critics thought it would. Although the concept of sustainable development has not led to radical changes in practice, it has set the terms of debate in a terrain more favourable to environmentalism. It seems that the tactic has been to keep the concept of sustainable development vague in order to maintain the consensus. The strategy fits in very much with the interpretation that sustainable development is being used as a concept of enrolment. By gaining the assent of other groups to a concept which puts the debate on ground chosen by environmentalists, they are able to try to slowly push forward, using the rhetorical advantage of 'common sense' that the term gives them. It is a strategy that could have been directly modelled on the one advocated by Gramsci¹¹ for a group challenging the dominant ideology. The next stage of the environmentalists' strategy has been to translate the concept of sustainability from politics into economics.

¹Tim O'Riordan (1988) 'The Politics of Sustainability' in *Sustainable Environmental Management: Principles and Practice*, edited by R. Kerry Turner, London: Belhaven

²ibid

³Nicholas Hildyard (1993) 'Foxes in charge of the chickens' in *Global Ecology*, edited by Wolfgang Sachs, London: Zed

⁴Michael Jacobs (1991) *The Green Economy*, London: Pluto

⁵Jacobs (1991) op cit, p. 60

⁶Lewis Carroll (1872) 'Alice Through the Looking-Glass' in *The Penguin Complete Lewis Carroll*, Harmandsworth: Penguin, 1982, p. 196

⁷World Commission on Environment and Development (1987) *Our Common Future*, Oxford: Oxford University Press, p. 43

⁸Jacobs (1991) op cit

⁹David Pearce, Anil Markandya and Edward B. Barbier (1989) *Blueprint for a Green Economy*, London: Earthscan

¹⁰Tim O'Riordan (1993) 'The Politics of Sustainability' in *Sustainable Environmental Economics and Management: Principles and Practice*, edited by R. Kerry Turner, London: Belhaven, p. 37

¹¹Antonio Gramsci (1971) *Prison Notebooks*, London: Lawrence & Wishart

CHAPTER 3.3

TAKING SUSTAINABILITY INTO ECONOMICS

Introduction

This chapter explores in some detail the debates about how to modify the economic system in order to implement sustainability. What follows is a brief outline of the issues to be covered.

One of the most telling criticisms of conventional economics which environmentalists have been making since the time of *The Limits to Growth* is that in calculating GNP statistics economists treat the consumption of the Earth's capital as if it were income.

The first part of this chapter discusses economic definitions of 'sustainability' starting from this point. The idea has been that a state of sustainability would be achieved if capital was non-declining. It is not that simple, though. There is controversy about whether to consider human-made capital and natural capital together (weak sustainability) or separately (strong sustainability). If they are counted together then increases in human-made capital can compensate for running down

natural capital. Is that legitimate? Are the two kinds of capital substitutable in that way?

The question turns largely on the issue of the extent to which technology can compensate for the loss of natural resources. Weak sustainability assumes almost infinite substitutability by technology, an assumption which environmentalists regard with scepticism. Strong sustainability also assumes some substitutability, however. The difficulty is that any assumption about substitutability is ultimately rather arbitrary.

However, there is a more fundamental problem with attempts to define sustainability in terms of capital. How do you compare the value of different kinds of capital? Strong sustainability assumes that decreases in one aspect of natural capital can be compensated for by increases in another kind of natural capital. To what extent is that idea legitimate either? How can you compare oil reserves and endangered species?

Mainstream economists can use this argument to cast doubt on the whole notion of sustainability. To them, it seems better simply to include the economic value of natural capital in the national income accounts. This approach amounts to the same as calculations of 'optimality' that are made conventionally in economics. Sustainability in terms of natural capital raises problems for environmentalists too. If different kinds of natural capital are to be allowed to compensate for each other, then they must be reduced to some common unit of measurement.

The second part of the chapter turns to a different approach to sustainability that has become popular in the last few years. The concept of 'environmental space' attempts to make sustainability more concrete by dealing with the physical components separately. The idea is to look at

each component and consider what would be a level of activity that could be supported by ecosystems without irreversible damage. The total amount of activity that could be supported in such a way is referred to as the 'environmental space'.

The environmental space concept is closely linked to the issue of distribution. Starting from the position of a more or less fixed amount of environmental space, the current situation (where it is disproportionately exploited by the industrialised countries) seems unjust. The environmental space concept has been used to argue for a much more equal level of consumption across the world. It is these egalitarian implications that seem to have made it a particularly controversial idea.

In contrast to the natural capital concept, the environmental space concept starts from a more environmental approach to sustainability. It leads quickly to concrete questions about what sort of consumption patterns would be sustainable with present or plausible future technologies and about what sort of lifestyle changes might be needed.

The environmental space concept can be seen as a way of making the goal of sustainability more concrete, but it does not itself imply particular policy mechanisms for implementing the goal. The Dutch government's National Environmental Policy Plans in recent years have attempted to implement aspects of the environmental space concept to bring about 'sustainability' in the Netherlands. The attempt to dramatically increase the environmental efficiency of their economy through voluntary agreements and limited regulation has not been as successful as was originally hoped.

The third part of the chapter discusses ecological tax reform, a mechanism that has been proposed for the implementation of the environmental space concept. Ecological tax reform goes beyond the common idea of environmental taxes by aiming to redirect the entire taxation policy away from taxes on labour towards taxes on the use of energy and natural resources. Ecological tax reform would make energy more expensive, but make labour cheaper. The hope is that the consequence would be to reduce both pollution and unemployment. Ecological tax reform would ultimately involve restructuring the entire economy and is currently regarded with caution by politicians.

Although the environmental space concept is not directly about limiting economic growth, it tends to suggest that, in order to release enough environmental space for Southern countries to increase their material standard of living, Western consumption patterns should be cut back in some ways. In that way, it leads us back to the debate about limits to economic growth. The final part of the chapter revisits the economic growth debate.

Even though both sides in the old seventies debate now accept that Gross National Product is not really a measure of either human welfare or environmental destruction, to a remarkable extent they continue the debate as though it were. The debate has become a lightning rod for their real point of difference: whether it is economic or environmental values that should reign supreme.

Sustainability in terms of capital

The idea of sustainability originally emerged out of 'limits to growth' thinking. The 'sustainable' part of Brundtland's 'sustainable

development' is based on 'the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.'

In *Blueprint for a Green Economy*, David Pearce and colleagues defined sustainability in economic terms as 'non-declining capital.'¹ They took capital to mean not just monetary and human capital, as economists conventionally consider capital to be, but 'natural capital', the value to human beings of the Earth itself. The idea of natural capital had already been used in the Brundtland Report. Over the next few pages I will outline the debates both about how to assess sustainability in terms of capital and whether the entire approach is a useful one.

Very simply, the non-declining capital rule can be refined into either 'strong sustainability' or 'weak sustainability.' The strong sustainability rule is 'non-declining natural capital.' The weak sustainability rule is 'non-declining total capital.' Weak sustainability allows human-made capital to substitute for natural capital.² Strong sustainability does not. Just how much 'substitutability' of capital is there?

The concepts of weak sustainability and strong sustainability can be refined further. 'Very strong sustainability' assumes no substitutability and would not allow any element of natural capital to be depleted. For example, it would not allow oil to be taken out of the ground. I do not know of anyone who actually belongs to this school of thought. Moderate 'strong sustainability' only allows natural capital to be depleted when it is compensated for in another way. For example, oil can only be taken out of the ground if the revenue is used for the development of solar energy technology. This school of thought includes Herman Daly. 'Very weak

sustainability' assumes infinite substitutability and adheres simply to the total capital rule. Solow founded this school of thought. Moderate 'weak sustainability' conserves 'critical natural capital'. *Blueprint for a Green Economy* explained:

There are many environmental assets for which there are no substitutes. No one has yet found a way of (feasibly) recreating the ozone layer, for example. The climate-regulating functions of ocean phytoplankton, the watershed protection functions of tropical forests, and the pollution-cleaning and nutrient-trap functions of wetlands are all services provided by natural assets and for which there are no ready substitutes. If man-made and natural capital are not so easily substituted, then we have a basic reason for protecting the natural assets we have.

Technological advances could of course one day advance the degree of substitution between the two types of capital. *Perhaps*, one day, we will not need the oceans for food or climate regulation, or the nutrient values of the world's coastal margins, but that raises the issue of how to behave if we cannot be certain that such substitution will take place. If we do not know an outcome it is hardly consistent with rational behaviour to act *as if* the outcome was a good one. Most of society is "risk-averse": we act so as [to] avoid bad consequences. If environmental risks have the potential for large negative payoffs then risk-aversion dictates that we protect natural environments, at the very least until our understanding of how they function in terms of life-support grows.³

Some economists have criticised the entire notion of sustainability. They argue that the aim must be to maintain income, rather than capital. The conventional economic goal of 'optimality' already does that, they say.

Why not 'optimality'?

The most forthright attack on the theoretical basis of sustainability has come from Wilfred Beckerman, a former economics professor at Oxford, in his anti-environmentalist polemic *Small Is Stupid*.⁴ He draws a simple distinction between 'strong sustainability' and 'weak sustainability'. He claims that environmental economists originally favoured 'strong

sustainability', but then they realised it would mean no oil, so they switched to weak sustainability. He then goes on to claim that 'weak sustainability' is in practice exactly the same as optimality.

Beckerman does not appear to understand the concept he is criticising. He seems unaware that even very weak sustainability counts the consumption of natural capital against income. Conventional measures of optimality fail to do this, and count such consumption as income.

Secondly, Beckerman assumes total substitutability of human-made capital for all forms of natural capital, without any apparent awareness that this is in any way a problem. John Pezzey said to me about Beckerman: "I suspect he's a pure economist who doesn't have really much education about science."

A much more sophisticated critique of the theory of sustainability than Beckerman's comes from the Cambridge economics professor Partha Dasgupta. At the World Bank's International Conference on Environmentally Sustainable Development held in Washington DC in 1993, he attacked the definition of sustainability in terms of non-declining capital, provoking an illuminating dispute with Andrew Steer, director of the World Bank's Environment Department.

Dasgupta⁵ attacked the definition of sustainability as non-declining capital as being far too loose to be of any use. No net accumulation of the overall capital base is recommended. He condemns this as "foolishly conservative". If an economy happens to be poor in its resource base today, the formulation condemns it to poverty in perpetuity. Instead, he recommends the theory of 'optimal development'. Dasgupta goes on to say:

Much attention has been given in recent years to defining sustainable development. One early thought - that whatever else it may imply, it must imply non-negative changes in the stock of natural resources (such as soil and soil quality, ground and surface water and their quality, land biomass, water biomass, and the waste-assimilation capacity of the receiving environments) - is a non-starter - not because it is an undesirable goal, but because it is an impossible goal. However, leaving this aside, there is the weakness that the requirement is imposed as a matter of definition on the determinants of well-being (the means of production of well-being), not on well-being itself. Presumably, the focus of concern should be present and future well-being, and methods of determining how well-being is affected by policy. History, introspection, and experience with analytical models since the early 1960s tell us that reasonable development paths would involve patterns of resource substitution over time, and also of substitutions among resources and various types of capital stocks, including knowledge and skills.⁶

He goes on to ask the question "What should be sustained?" He says that sustaining current well-being is not a coherent answer because current well-being is not a given. Many authors have recognised that the starting point should be to consider a just distribution of well-being over time. Dasgupta attacks the idea that this requires the constraint of non-declining natural capital stocks. He accepts that *some* natural capital would have to be conserved for a minimum level of welfare for the future to be guaranteed. But why introduce it as an additional constraint to the maintenance of a minimum level of welfare for future generations? Preservation of an index of natural capital ought to be derived from considering the path of optimal development.

Dasgupta goes on to criticise the lack of ethical argument in formulations of sustainable development. He thinks a better approach would be to look at the total well-being of future generations over different paths of development. Dasgupta uses an approach from Tjalling Koopmans' work on the problem of intergenerational justice. It is to conduct a number of

thought-experiments about the intergenerational implications of alternative sets of ethical assumptions in plausible worlds. The premise is that no single ethical judgement should be taken as decisive.

Dasgupta uses this approach to show that there is a difference between the consumption discount rates used in cost-benefit analysis and discounting of the well-being of future generations. The consumption discount rate turns out to reflect the assumed rate of productivity of capital. This is a point which he says is often misunderstood in much of the environmental literature that is critical of social cost-benefit analysis. On the other hand, the work of economists on global warming assumes that incomes will grow regardless and discounts its costs to negligible amounts.

Dasgupta sees a problem of market failure in the environment needing the construction of shadow prices to reflect the value of environmental goods. He adds that risk and irreversibility must also be taken into account, so the option value of conserving environmental goods must also be included in calculations.

In the discussion after Dasgupta delivered his paper, Andrew Steer summarised Partha Dasgupta's view as being that while the concept of 'sustainable' development is useful in motivating enthusiasm for the environment, it has no useful meaning in theory - and hence, presumably, none in practice. Dasgupta was taking the economist's stance: if you do the intertemporal optimisation right, and use the correct shadow prices, the correct policies will simply fall out of the analysis. This approach was put forward as being much better than assigning 'sustainability' rules, which inevitably will be arbitrary.

Steer commented that when Herman Daly read Dasgupta's paper he was very troubled because he saw a threat to real world policy-making from theoretical economics. In the real world, it is not possible to do the careful intertemporal optimisation calculations using shadow prices.

Steer said that to be on the safe side, we can choose to make a requirement that the value of natural capital does not decline below today's levels. This would provide a broad assurance that welfare accruing to tomorrow's generations from the natural capital stock will not be less than to today's generation. Dasgupta would argue that such a constraint is quite arbitrary and might lead to sub-optimal intergenerational welfare. Steer asked if Dasgupta agreed that in the real world we need some arbitrary rules of thumb to give some assurance that future citizens can lead a good life.

Steer went on to say that economists like himself need to know their limits. There are some things you cannot put a money value on. Often, values imputed to the environment by human beings stem from deeply held spiritual and cultural roots. For many environmental assets, these non-measurable values may be the most important of all. The job of the economist is to do as good a job as possible in estimating those values that can be measured, which should be respected as an important input to the decision-making process, but not the only one. Decisions need to be informed not only by such calculations but also by the views people express in open discussion and the political process - so sound environmental policy-making can operate only in an atmosphere of participation and democracy. In practice, economists tend to condescend to policy-makers when decisions are made on 'non-economic' grounds, and environmentalists tend to harshly criticise economists whose

valuation exercises suggest that, on economic grounds, the costs of protection outweigh the benefits. Steer gave the example of debates over global warming: "The real reason we should do something about global warming is not that it is going to affect the economics of our lives 200 years from now. Rather, it relates to the much deeper spiritual and moral reasons associated with the fact that you and I do not want to hand on to our children's children a world that is very different from the one we inherited."⁷

Partha Dasgupta was unimpressed. He said he did not think the notion of sustainability helped to understand matters. Taking as an example the idea that some index of capital ought to be preserved to sustain consumption, he argued that some types of capital, like coal stocks, would probably be reduced, while others, like water quality, might improve. So there would be a changing mix of capital stocks along the chosen sustainable path. "Thus, to create the index of capital that, by implication, must be preserved, we will need shadow prices, or some surrogate of shadow prices. Where will we get these shadow prices? Plainly, we will need a valuation criterion to obtain them. Thus, we are back to the notion of optimal policies, and the prior question of the distribution of well-being across generations."⁸

The difference between Steer and Dasgupta is partly over how much weight to place on calculations of shadow prices, and partly over how much weight should be given to the principle of precaution. Their exchange brings out the fact that what underlies the definition of sustainability in terms of capital is a desire to *guarantee* the welfare of future generations. Dasgupta does recognise that risk is an issue, and criticises economists who do not take account of the downside of risk in

their calculations - but his own approach is not very risk-averse. He suggests increasing the well-being discount rate for technological developments by the probability of the extinction of the human race as a consequence!

The moderately weak sustainability advocated by Steer elsewhere⁹ still assumes that human-made and natural capital are to a large extent substitutable, although also complementary. The full functioning of the economy is seen to require at least a mixture of the different kinds of capital. Since the boundaries of the critical limits for these kinds of capital are unknown, they say it is sensible to err on the side of caution in depleting resources, especially of natural capital.

Sustainability and survivability

Rules of sustainability based on notions of natural capital are generally justified in terms of keeping options open for future generations. Here, it is helpful to take up John Pezzey's distinction between *sustainability* and *survivability*.¹⁰ He defined sustainability as a path of development that would not lead to declines in average levels of well-being in the future. Survivability was a path of development that would not lead to declines in well-being below a certain minimum necessary for human life. Both sustainability and survivability, according to Pezzey's definitions, are examples of what are called *maximin* rules - rules which seek the best worst option, or to maximise the minimum. They are much more cautious and risk-averse than the utilitarian approach economists have traditionally used since the invention of welfare economics in the late nineteenth century. Pezzey's approach to survivability would avoid paths of development that risk disaster. Dasgupta's approach to optimal

development would discount the value of such paths in proportion to the probability of such a disaster. What underlies notions of sustainability is not a failure to understand economics, but a more risk-averse approach to life than Dasgupta's. Sustainability is derived from the *precautionary principle*, which states that in situations of uncertainty about the environmental impact of an activity, there should be a presumption against doing anything which may have irreversible consequences.

Taking this argument further, it becomes evident that the degree of substitutability of different kinds of capital is crucial. The most cautious approach would be that of very strong sustainability, but it would make human life as we know it impossible. Strong sustainability assumes that natural capital can be substituted for by human-made capital, as when it allows increases in solar energy technology to compensate for the consumption of oil reserves. Its point is that running down any kind of natural capital must be specifically compensated for by an equivalent increase in another kind of capital. For example, loss of forest in one area should be replaced by new forest of a similar type elsewhere, and receipts from depleting oil reserves should be invested in renewable energy technology.

Instead, someone like Andrew Steer, who calls weak sustainability 'sensible sustainability',¹¹ would maintain total levels of capital intact, but allow depletion of natural capital as long as 'critical' levels of natural capital were kept. An example would be investing receipts from oil depletion in education.

Herman Daly would argue that substitutability is much more limited:

Labor and capital funds are "worn out" and replaced over long periods of time. Resource flows are "used up" or transformed into

products over short periods of time. While there may be significant substitutability between the two funds, labor and capital, or among various resource flows, for example aluminium for copper or coal for natural gas, there is very little substitutability between funds and flows. You can build the same house with fewer carpenters and more power saws, but no amount of carpenters and power saws will allow you to reduce very much the amount of lumber and nails. Of course one can use brick rather than wood, but that is the substitution of one resource flow for another rather than the substitution of a fund for a flow. Funds and flows, efficient and material causes, are complements, not substitutes, in the process of production...

Let us suppose, now, that capital can be accumulated faster as renewable natural resources are exploited unsustainably. Will the extra accumulation of humanly created capital be sufficient to offset the extra loss of natural capital? We believe it will be far easier to accumulate enough capital with sustainable use of resources to enable such use to continue than to accumulate enough capital with unsustainable use of resources to meet human needs in the resulting wasteland.¹²

Andrew Steer sees the problem of natural capital in more specific terms:

SD: You say here "Since we do not know exactly where the boundaries of these critical limits for each type of capital lie, it behooves the sensible person to err on the side of caution in depleting resources (especially natural capital) at too fast a rate." Of course that's where the whole crux of the argument lies. I haven't actually come across anyone who argued for truly weak sustainability or what you call absurdly strong sustainability. The argument really lies between what you call sensible sustainability and strong sustainability pretty much. It's really about where the - about what's critical. How broadly you define the criticality. Where would you put the criticality?

Steer: I think you've said something which is *extremely* important, which is, I'm not sure if you meant this. In my judgement, we environmentally aware people like to *broaden* things. We like to say "that's related to that, and that's related to that." We have a sort of general equilibrium view of life. So we tend when we address environmental problems to think in the large. When you come to sustainability, what one wants to do is focus on critical limits which can be fairly specific. So people for example say "We can't keep on using as much energy as we're using." It's just not true. We could use ten times as much energy. But we can't use this *kind* of energy. What's the issue? Where are the real critical ones?

Ozone. We crossed the limit. It's a long painful healing process and we're lucky we didn't go another twenty years. Global warming is clearly another very clear limit. We need to start getting serious about it. Ten years from now we need to have tradeable permits... Forests I think are an issue. One of the things that frustrates me about our biologists and ecologists is that they're not willing to make statements about thresholds at all. At one level our ecologists, not ours [at the World Bank], general ecologists like to talk all the time about thresholds, but when you actually say "OK, are we *close* to the threshold in tropical moist forests? We've been losing them at 0.8% a year. We can't keep on doing that forever. How close are we? What's the real situation?" I would think that twenty years from now, if tropical forests in particular are declining by more than, oh, a fifth of a percent a year, we may be in very deep waters. The plain fact of the matter, though, is it's a specific issue which should be taken on specifically. I don't think the issues I'm most concerned about, such as particulate emissions in the air or dirty drinking water, which I think are the most important environmental problems in many regards in the world, I don't think they are actually really so much to do with sustainability, as you would define it. Because I don't think there are thresholds in an *ecological* sense that are quite as binding, and one of the things that worries me is that an emphasis on sustainability and thresholds can tend to minimise attention to the chronic problems which are less threshold-crossing if you like. It seems to me that's a very important point. Clearly there are some environmental problems where there are real thresholds, and that's what this is all about.

SD: I'm interested you say that, because the argument that would be put forward is that the thing about the thresholds is that you get into an irreversible situation. Whereas, sure, there may be terribly bad levels of air pollution in some cities, but it's a reversible thing. Whereas destroying the ozone layer is pretty irreversible.

Steer: Right. Now academically, that's interesting. But we had this funny thing when we were discussing the World Development Report with the American government and of course the American government has many different constituencies within it. We were making the point that drinking water was a major environmental problem. And the person from the EPA said "Yeah, but you don't need to exaggerate that as an environmental problem, because it doesn't have irreversibilities." So I said "Well, three million children dying every year is pretty irreversible." And this person said "Ah, but it's not like losing species." By saying that, I think suddenly he realised and the whole room realised how ridiculous and outrageous and obscene that is. Yes. Because we've got plenty of human beings, we can afford to lose three million

children a year. No. So I think from a *conceptual* framework you're right, it's stimulating and useful to think about irreversibility because we're worried about the future of the planet. But I, and our institution, we're interested in the future of individuals too, especially poor people. So I make no apology for the fact that we think the fact that 700 million women and children suffer from indoor air pollution each year, equivalent to smoking three packs of cigarettes a day, because they use dung or fuelwood. That to me is an environmental problem that's very serious and if somebody says "Well, you know they're able to grow enough fuelwood to keep themselves going" I'd say "No, that's not the only environmental issue." (Andrew Steer, World Bank/IMF AGM, Madrid, 5.10.94)

Andrew Steer's remarks bring out an aspect of the difference between sustainable development and mere survivability. Survivability only requires that human life can continue. Sustainable development demands that people's needs are met. Environmentalists are often accused of being prepared to sacrifice the interests of the poor. This may or may not be true, but an interesting situation arises when we have to trade off the interests of present and future generations. Weak sustainability allows more room for economic development in the present, but takes more risks with the well-being of future generations. In a sense, the whole idea of 'sustainable development' is based on a trade-off between the interests of the poor today and the whole world in the future.

Steer raises another important point. The non-depletion of natural capital is rather a vague requirement for sustainability. If you are losing the ozone layer, it doesn't help very much if some other kind of natural capital is growing. Different kinds of natural capital are not usually substitutable for each other. This actually casts serious doubt on the usefulness of attempting to achieve sustainability by concentrating on an overall rule of non-declining natural capital. It involves aggregating a

large number of very different things into a single indicator, presumably based on money. A better approach might be to look more specifically at what the actual limiting factors are.

Environmental space

The preservation of natural capital is one way of thinking about sustainability. Another approach that has become popular among environmentalists since about 1992 is to use the concept of environmental utilisation space (usually shortened to 'environmental space'). The idea first appeared in a 1982 paper on the economics of global life-support systems by Horst Siebert, a German economist.¹³ His paper considered environmental constraints on the economy. He took ecological phenomena like resource regeneration functions and pollution absorption functions as a constraint on economic activity, and called the limits to environmental impact they set the 'environmental utilisation space.' In 1987, the idea was taken up and popularised by Hans Opschoor, an economist at the Free University of Amsterdam. He decided that environmental space might be a practicably applicable tool, and started research on the question of what the size of the environmental space actually is. Opschoor told me why he had liked the idea:

I saw a couple of advantages in it. In the first place, it sort of reflects this notion of scarcity or limitedness that I think the environment entails. In the second place, and as an economist it made a lot of sense to me, once you are doing that in the sense of space and so forth, people start asking "How is this space distributed?" Which you don't easily get with similar concepts such as carrying capacity because that seems to be expressed in numbers of people or animals, rather than the *potential* in the environment (Hans Opschoor, Free University of Amsterdam, 19.12.94)

Opschoor was chairman of the Dutch government's Advisory Council for Research on Nature and the Environment from 1990 to 1995. In a report published in 1994, he wrote:

This study starts from the general notion that sustainable development implies that the environmental impacts of human activities stay well within limits of how much environmental space the biosphere can take. We shall refer to this notion as 'environmental space'.

Environmental utilisation space (or environmental space) is a concept which reflects that at any given point in time, there are limits to the amount of pressure that the earth's ecosystems can handle without irreversible damage to these systems or to the life support processes that they enable. This suggests to search for the appropriate threshold levels beyond which actual environmental systems might become damaged in the sense indicated above, and to regard this set of deductively determined critical values as the operational boundaries of the environmental space....

Although some authors tend to argue in favour of a single overall indicator of the environmental space, we feel that at least three different dimensions should be represented:

- a. pollution of natural systems with xenobiotic substance or natural substances in unnatural concentrations;
- b. depletion of natural resources: renewable, non-renewable (and semi-renewable);
- c. loss of naturalness (integrity, diversity, absence of disturbance).¹⁴

The environmental space concept was taken up by the Dutch ministries of Development Cooperation and of the Environment. *Caring for Tomorrow*, a 1988 report from the National Institute for Public Health and Environmental Protection concluded that the Netherlands would have to reduce its resource and energy consumption and its production of wastes to a fifth of the level at that time by 2010.¹⁵

Environmental space was also taken up by Milieudefensie, Friends of the Earth Netherlands. In 1992, just before the Earth Summit, they published

a report translated into English the following year as *Action Plan Sustainable Netherlands*, which explicitly linked sustainable development to environmental space.¹⁶ The Milieudefensie report claimed that as soon as the present over-use of environmental space is recognised, the question that immediately rises is about distribution. The rich countries, with one quarter of the world's population, use three-quarters of the raw materials and energy traded in the world, and are responsible for most of the pollution in the world. Milieudefensie argued:

In order to deal effectively with environmental problems such as the greenhouse effect and the destruction of the ozone layer, the participation of Third World countries is essential. It is no surprise that the representatives of these countries have little interest in introducing a severe environmental policy, since the rich countries keep consuming the largest piece of the cake. A more equitable distribution of the access to natural resources is therefore a tough political condition for the realisation of sustainable development. The West will have to severely limit its unrelenting consumption of resources and simultaneously help the Third World countries to increase their standard of living....

To decide whether a certain country's way of production and consumption meshes with sustainable development, the use of resources and the pollution of that country can be compared with the environmental space belonging to that country. That particular part of environmental space involves the 'world environmental space' divided by the world population and multiplied by the number of inhabitants the country has. Such an exercise shows in a stark manner how far the rich countries live beyond their means.¹⁷

Action Plan Sustainable Netherlands went on to outline how far the Netherlands was living beyond what Milieudefensie regarded as the environmental means of the Earth. They started their calculations from the assumption that the aim was to prevent further environmental degradation, while enabling the entire world population to live at roughly the same level. They calculated that resource consumption and

pollution in the Netherlands would have to be reduced by 80-90% for most activities. The good news was that although life would become much more conservation-minded, involving extensive recycling and the loss of many throw-away items, most of the material comforts of present-day Dutch life would still be possible with the use of technologies already available, or that could be expected by 2010. The exceptions were air travel, use of cars and meat consumption. All these would have to be reduced quite significantly from present Dutch levels. The Milieudefensie calculations were rather 'back of the envelope', but are impressive because they suggest that it is theoretically possible, even with present-day technologies, for a population of several billion people to live in an environmentally sustainable manner with a Western standard of living.

When I spoke to Maria Buitenkamp, the chief editor of the report, I asked her about whether people in the West would be prepared to accept the sort of lifestyle changes proposed. She told me that was a common criticism. People had told her that aeroplanes, cars and high meat consumption are important, not marginal, parts of modern Western life. The report had said that what was being suggested was not a return to the 1930s, but she admitted that for those aspects of life, the changes would be a return to the early 1960s for Dutch people.

Environmental space is a powerful idea because it expresses the idea of sustainability in a more concrete way. Hans Opschoor explained why:

SD: How closely do you think environmental space and sustainability are different ways of talking about exactly the same thing, or do you think there are differences between the two ideas?

Opschoor: Well, they're not really different. In fact, if you look at it mathematically, the way it has been defined the environmental utilisation space is a set of steady-state conditions that are all by definition sustainable: steady-state combinations of extraction from

the environment, pollution, and the capacities of the biosphere to buffer against those things. Given the buffering capacity and magnitude of natural systems, there is so much pollution and extraction that you can see as a steady state, which itself is a sustainable way of exploiting the biosphere. So every point on that surface is a sustainable state. A steady state, thereby sustainable. In fact, it's a kind of set of all possible sustainable ways of using the environment at various levels. The next question becomes: what level of sustainable exploitation does a society want? It normally wants to be able to at least carry on the way it is at the moment. For instance, our Dutch environmental policy plan says they want to achieve sustainability in the year 2010 by having reduced emissions to about 20-50% of what they are now. They think that if they have achieved that by then, they will be in safe minimum standards of ecological requirements to maintain the ecological infrastructure. They will have reduced pollution levels safely within the margins compatible with that level of ecological infrastructure to allow for continued exploitation, as they are doing now in the Dutch economy. And many other countries have similar ideas. Basically, sustainable development says you want to continue with maybe welfare per capita or something on an ecological basis among other bases. And the welfare shouldn't go down, but go up or remain constant. That is sustainable development. The environmental utilisation space tries to make explicit what this means in ecological terms. It tries to make explicit that if you want to have a certain amount of environmental capital tomorrow, you are constrained in using environmental capital today. It is related, but it's not really the same. As a word, sustainable development is a pattern of economic development and activities that can be continued over time. What this means in terms of environmental constraints is defined by the environmental utilisation space. So they might be mirroring concepts in a way. Environmental space is more explicit, isn't it? It suggests the need to operationalise, to quantify how much space, and so on. Space where? Space for whom? That sort of thing.

SD: What I notice is that whereas in the Brundtland report the concept of what sustainable development means in the North is very vague and talks about economic growth and a different kind of growth, the idea of environmental space seems to involve the amount of consumption in material terms in the North.

Opschoor: That's right. It suggests that. Once you start thinking about what it means in practice, you still come up with all kinds of requirements in terms of benchmarks. This or that is not sustainable. If you visualise that, you are back basically at the same sort of battle. You still have to say how much nature do you wish to protect, and that defines how much acid you allow to fall on any

hectare of land for instance. You're back at the question of making estimates of things that are very imprecisely known. And then if they are, how to relate to the uncertainty. Do we make safe estimates, or do we make unsafe estimates? If you accept the minimum bare structural approach to the environmental utilisation space, you're not very far away from what weak sustainability actually means in the eyes of people like Solow. So it's a suggestion of precision and accuracy which is there, and which I like to hang on to. And it's also the implicit notion that antagonises a lot of people, that you have to dematerialise also, at least in the North. It's much more provocative in debates than sustainable development. I know plenty of people who hate the notion of environmental utilisation space, and they *all* go for sustainable development. But that's at a level of rhetorics rather than analytics. (Hans Opschoor, Free University of Amsterdam, 19.12.94)

Hans Opschoor disclaims any credit for the use of environmental space in the Third World's Earth Summit rhetoric. He told me that he presumed there was no connection between the development of the concept in Europe and the way it was used in Rio. Hans Opschoor told me that after the Earth Summit:

it became clear that a lot of countries in South-east Asia, particularly China, were going for rapid growth. And they were actually achieving that as well. So I think the North was getting a lot more concerned about another question. Not so much sharing with the South, but being capable of defending its own position vis-à-vis an emerging South that was claiming a large proportion of, in their view, a much larger environmental utilisation space than the North thought existed. (Hans Opschoor, Free University of Amsterdam, 19.12.94)

The Dutch and Norwegian governments are the only ones in the industrialised world that have shown any interest in environmental space. In both countries, a Norwegian Friends of the Earth activist told me, Friends of the Earth has a lot of influence on the Environment Ministry. Norway's prime minister, Gro Harlem Brundtland, also has a personal interest in both environmental and North-South issues.

In 1994, the Norwegian government hosted a symposium on 'sustainable consumption'. The keynote address was made by the prime minister herself. She said:

An average person in North America consumes almost 20 times as much as a person in India or China, and 60 to 70 times more than a person in Bangladesh. It is simply impossible for the world as a whole to sustain a Western level of consumption for all. In fact, if 7 billion people were to consume as much energy and resources as we do in the West today we would need 10 worlds, not one, to satisfy our needs.¹⁸

She went on to say that traditional economic growth has meant producing more and more goods using more and more natural resources, placing an increasing strain on the environment. She said that perpetuating that kind of economic growth was neither necessary for employment nor environmentally possible. She talked optimistically about decoupling economic growth from the consumption of resources.

Criticisms of the environmental space concept

Only one of the speakers at the symposium was critical of the idea of 'sustainable consumption'. That speaker was David Pearce, Professor of Environmental Economics at University College London and a former adviser to the British government. He claimed that the references to sustainable consumption in Agenda 21 are confused. In particular, he wanted to make clear a distinction between consumption in the sense of use of goods and services and the consumption of materials, energy and the assimilative capacity of the environment. He was implicitly criticising many of the other papers presented at the symposium, which dealt with strategies to tackle consumerism in the West. Pearce said that reducing consumption could only come about by either raising the fraction of income that was saved for investment, or by reducing incomes generally.

Governments can increase the rate of saving by changing the tax system or interest rates. But “[c]ontrol of the overall rate of change of income in the economy (‘economic growth’) is not by and large under the control of governments, although there is undoubted scope for lowering economic growth over the short term through sheer mismanagement”¹⁹

Pearce said that, if savings were increased, some of the increase could be diverted to foreign aid, a transfer of income from North to South. But reducing incomes in the North would do nothing for the South, and would be very likely to make it worse off. That was because the lost income in the North would not magically reappear in the South. Because some of the consumption in the North spills over into demand for products from the South, the South would be worse off, since it would lose a market. Sacrificing economic growth in the North would make both North and South worse off.

Reducing resource consumption would not automatically improve the well-being of the South. If the North reduces its ratio of energy use to consumption, this conserves energy reserves, but a ton of oil not consumed in the North does not become a ton of oil consumed in the South, Pearce said. The power to consume a resource only comes about through the generation of income. He went on:

Of course, if the North’s resource consumption falls significantly, resource prices could fall. This would benefit the South if the South imports the resources in question. But it will make the South worse off if they export the resource. Ironically, those who call for reductions in the North’s consumption are invariably those who complain about low commodity prices on world markets. The two goals may well be inconsistent. The only exception is if we believe that the future growth prospects of the South are going to be constrained by lack of resources. This is possible, but not very likely, at least as far as the supply of materials and energy is concerned.²⁰

Pearce agreed that there is a legitimate sense in which conservation of resources by the North could help the South. The really scarce resources are not materials and energy, but the assimilative capacities of the environment. They are damaged through the use of materials and energy. Since they are shared globally, damage is shared by everyone, both North and South. Pearce added that there was evidence the South suffered disproportionately more from some types of global environmental damage. Reducing resource consumption would also reduce environmental impacts on the North itself, so it would also make sense for the North to do it out of self-interest.

In Pearce's opinion, the thing to do was to move consumption patterns away from resource intensive products towards less resource intensive products. Pearce concluded that it was not desirable to reduce overall consumption or the overall increase of consumption in the North. That would only lead to unemployment and social unrest. The answer was to drive a 'policy wedge' between the consumption of goods and services and the consumption of materials and energy. Pearce would do that by using economic instruments, particularly ecotaxes.

There was a gap in David Pearce's argument. He explained why a reduction in Northern demand for material and energy resources from the South would damage Southern economies. In this way, his argument reveals a flaw in Milieudefensie's claim that Northern countries must reduce their consumption of resources to enable Southern countries to afford those resources. But he did not explain any way of avoiding similar economic problems for the South if his own policy prescriptions were followed.

Friends of the Earth has also become aware of the potential economic problems for the South if the North reduces its consumption of resources. Bertram Zagema is a Dutch Friends of the Earth employee who has worked on this problem. His solution is for the North to provide massive economic aid to resource exporting Southern countries as compensation.

These issues were raised at a public lecture by Ernst-Ulrich von Weizsäcker, the foremost German proponent of ecotaxes, which I attended as part of a fringe meeting to the 1995 Climate Conference in Berlin. Zagema was also present and presented von Weizsäcker with the problem during the question session. But von Weizsäcker was unperturbed. He rejected Zagema's idea that foreign aid was the answer. Not only was it unrealistic to expect large financial transfers from North to South, but it was also misconceived. Because an ecotax system would be phased in gradually, increasing at only 5% a year, he argued that resource exporting countries would be able to adapt. He said that countries like Brazil and Nigeria are cursed with natural resources which are appropriated by corrupt elites. Why should the North compensate these elites? He went on to say that it is only when the mistaken view that the way for such countries to get rich is through the unsustainable exploitation of natural resources has been overcome that it will be possible for them to develop in ways that benefit their people. His view is that the entire international division of labour is wrong, being a division between "winners and losers". In the modern world economy, wealth accrues to the countries with skills, not the countries that supply raw materials.

An interesting consequence of von Weizsäcker's argument is that it could also be used to challenge the sort of 'trickle-down' approaches that David Pearce advocates. I interviewed Pearce several weeks before I heard von Weizsäcker speak. At the time, though, I was already troubled by Pearce's idea that economic advancement in the South required increasing consumption in the North. I put to him the idea that the expanded environmental space which can be got out of technological improvements should be directed towards the poor in the South, rather than the North:

Pearce: This is an argument that says you want to distribute the future benefits of technology or for that matter of economic growth in a particular way. I don't have any particular argument with that. I think the idea that you would *justify* the trivial sums that we spend on foreign aid, I find it difficult to believe that you can put up a very *strong* justification. But I would urge those who do these back-of-the-envelope calculations on economic growth rates to do the same thing for redistributing the world's income. It really doesn't make a lot of difference. First of all, it isn't clear what redistribution means, or even what biasing the new benefits to the Third World means.

SD: I calculated, using the IMF figures for real incomes in countries balancing out the exchange rates, that it came out at \$5000 adjusted, which is rather higher than Hungary's.

Pearce: If you redistribute the existing world product? But what is the value of this calculation? Politically there is no *conceivable* way that anybody would ever redistribute the world income in that way. Secondly, to redistribute it that way even if we imagine some Joseph Stalin who orders that all of this should happen, it would actually amount to phenomenal social misery in the North; and you redistributed one lot of social misery in favour of some kind of what you think might be a gain somewhere else. But it's naive to be engaged in that kind of calculation.

If one's saying that of the incremental benefits for the future, that 0.3% of the UK's GNP is not a justifiable number for redistribution, then I would wholly support that. But it isn't 10%. And again I would say if anybody had any experience of seeing how monies can be spent in the developing world, as someone who has seen most of the world in 25 years, it is not possible to redistribute. It is not

only not possible, it is not desirable. If you seriously thought that a thousand dollars off my salary would reappear as a thousand dollars somewhere else, it wouldn't.

SD: Of course it wouldn't. Again, some people do say that, but the argument that I'm more interested in is the kind of argument that the continued growth in the North is squeezing out the environmental space-

Pearce: No it isn't! That's absolute garbage. I said that in Oslo. I'm absolutely bewildered that anybody could argue that. If I reduce my consumption of one ton of aluminium in the North, the ton doesn't become available to the South. Where does this idea come from? The ton doesn't magically get transported from England to somewhere else. The only way the ton reappears is if the incomes of the South grow in order to be able to buy that ton. Apart from anything else, we're not short of aluminium. If I consume a ton of coal, and if I stop consuming it for some policy reason, lack of growth or something, it doesn't become available to anybody else. In what sense does British coal become available to anybody else?

SD: The CO₂ absorptive capacity of the atmosphere.

Pearce: That's closer to that kind of argument, except that it produces the nonsense of a *permitted* level of CO₂ growth. Again, one wonders really whether anybody actually understands the global warming problem. *If* global warming is true, and I've no idea, but if it's true, it is too late. So you're not arguing about - (laughs) We're already beyond a point where you can do anything about global warming beyond shaving the rate at which it increases. Absolute nonsense to think you're doing anything else.

I think it's politically correct to talk about "shares" and "responsibilities". I don't have a great deal of problem with a lot of it. But we're back to the Norwegian birch twigs, aren't we? It's saying that I am where I am, and it's my fault because I shouldn't be where I am. Now if what I have to do is reduce my CO₂ emissions, then of course we all agree with that. If the argument is that I should resolve that problem by environmental taxes, I hope we all agree with carbon taxes and all the rest of it. And look at the problem you're having getting those in place, let alone talk about redistributing the world's income.

But if the argument is that if Norway suddenly grows at 2% next year instead of 4%, that it somehow benefits the Third World, then I have to say I'm completely lost as to how. It's silly, frankly. The whole overconsumption hypothesis is potentially very very dangerous. People have not bothered to make the distinction that

we just made earlier between materials consumption and income. That was clear in Norway. It was perfectly clear, when I stood up and said what I said, that it wasn't that anybody could think of anything to say with respect to what intellectually was wrong with this argument; it was that I'd said the wrong thing. In other words, I was politically incorrect.

Now it's never been my (chuckles) concern to be politically correct. And I'm not politically incorrect by looking for it. I just think you have to pursue a very straightforward argument. And I don't see in any sense in which making people poorer in the North does anything. In fact, I can think of lots of ways in which it makes things worse. (David Pearce, University College London, 9.2.95)

Pearce's position when I interviewed him was rather more 'politically incorrect' than the view he had expressed in Oslo. But there also seems to be a flaw in his logic. He cannot explain why Northern carbon dioxide emissions do not reduce the environmental space for the South (a point he had conceded in Oslo). Despite this, he goes on to say that he is unable to see why reduced consumption growth in the North could benefit the South. He sees the entire issue as being about altering the ratios of resource consumption to GDP. It seems obvious, however, that *both* the ratio of resource consumption to GDP and the absolute size of GDP influence the amount of environmental impact a country has.

The missing billions for Agenda 21 show that Pearce is quite right about the political naivety of calls for large-scale redistribution of wealth from North to South. Nor does it seem at all likely that Western countries will voluntarily forgo economic growth for the sake of the South.

Using Paul and Anne Ehrlich's formula $I=PCT$ (Environmental Impact = Population \times Consumption per head \times Technological efficiency),²¹ Paul Ekins calculated that, if the overall environmental impact of the human race was to halve over the next fifty years (optimistically assuming that

would be a sustainable impact), while population doubles, and average GNP per capita grows at 3% a year, the total required reduction in environmental impact per dollar of GNP would be 93%.²² If the rich Western countries did not grow, only a reduction of 79% would be required. He commented:

Any of these figures of reduction of environmental intensity represent an ambitious target. That of 93 per cent would be considered feasible only by technological optimists verging on the fanatic. The difference between these two figures (93 per cent and 79 per cent) is further evidence of the enormously skewed nature of current consumption patterns. If the Third World alone, with three-quarters of the world's population, doubles its population and quadruples its consumption over the next fifty years (when its per capita consumption would still be less than 20 per cent of that currently in rich countries), then the necessary cut in environmental intensity increases from the no-growth [in GNP per capita] figure of 75 per cent to only 79 per cent. Quadrupling the much larger consumption of First World countries as well raises this figure to 93 per cent.²³

When I interviewed Paul Ekins in 1994, he was now more optimistic than in this passage about the technological potential for reductions in environmental intensity by as much as ninety per cent. However, he was pessimistic about the existence of the political will to bring about the adoption of these technologies. What would be needed?

... a whole range of actions government will have to take place in order to systematically reduce environmental impacts. And I don't see them in practically any country in the world. There's a broad list of those that one can come out with. There's the planning elements, the accounting elements, the tax elements, various levels of regulation, environmental charges, tradeable permits. There's a lot more knowledge of the kind of portfolio of policy that is required, but it's not being pursued with anything like real commitment. Practically anywhere in the world. And it will need to be pursued with real commitment to come anywhere near the 90% reductions in environmental impacts that technologists say are possible. That's why I think there is still plenty of scope and justification for pessimism. (Paul Ekins, Birkbeck College, London, 14.3.94)

Scaling back

Further justification for pessimism can be drawn from the experience with the Dutch government's National Environmental Policy Plan of 1988.²⁴ The plan (NEPP) set itself ambitious environmental objectives to achieve sustainability by 2010. The way in which 'sustainability' was so narrowly defined in terms of pollution and environmental degradation in Dutch territory inspired Milieudefensie's much more radical *Sustainable Netherlands* plan, but in the real world the NEPP was in trouble in the recession of the early nineties.

The NEPP had aimed to reduce most forms of pollution in the Netherlands by 80% over twenty years, while GDP was to grow by 70% at the same time. It had been claimed that the ambitious environmental targets could be met at no net cost. The NEPP was controversial from the beginning, when the right-wing liberal party VVD had brought down the governing coalition over the removal of tax breaks for car commuters. The NEPP won that round, after the first European general election where the central issue was the environment.

The implementation of the NEPP went rather less well than had been hoped, though. The centrepiece of the strategy for reaching the targets set in the NEPP was to have contracts between the government and various industrial sectors. Backing up the government was the threat of direct regulation if agreement was not reached. But after five years only a handful of these contracts had been agreed. The whole process proved much more difficult than had been expected.

NEPP2 was put forward in 1993.²⁵ It accepted that the implementation of the original NEPP's targets had not been a success. Although the original

targets for 2010 were kept, the targets for earlier dates were scaled back to reflect the unexpectedly poor implementation. New instruments and implementation mechanisms were put forward. Behind the Environment Ministry's brave face, the targets set even in NEPP2 were under attack. The government's chief scientific advisory council recommended abandoning them as not well founded. Industry claimed they were hindering economic growth. The targets, ironically, were saved at the end of 1994 because economic growth had picked up to 2% and the recessionary crisis was no longer felt to be so severe.

When I interviewed civil servants in the Environment Ministry, they were unsurprisingly defensive about the poor performance of NEPP implementation. The official explanation for the failure to meet the carbon dioxide emission targets was that there had been an unexpected increase in trade because of the end of Eastern European communism. But if the implementation of the NEPP failed at a time of general recession, wouldn't it have been even worse if there had been the expected amount of economic growth? A more likely explanation for the failure is that the recession made it harder for the government to get industry to invest in environmental improvements. Hans Opschoor came to the ironic conclusion that "we will have to wait for some more economic growth to see a re-emergence for political thinking seriously about sustainable development. That is a rather diabolical statement, isn't it?" (Hans Opschoor, Free University of Amsterdam, 19.12.94)

Another message that has been taken from the NEPP's failure is that its regulation-based approach was misconceived. Reaching regulatory agreements with individual industries proved extremely difficult. An obvious alternative would have been the use of environmental taxes and

permits. Actually, it is quite difficult to use those approaches when dealing with pollution outputs, but civil servants squirmed when I asked them why taxes on certain inputs (like fossil fuels or gravel) had not been tried. Essentially, there were two answers. One was that it was contrary to the Dutch tradition of environmental regulation. The other was that there was a fear of raising costs and making Dutch industry uncompetitive with the Germans.

The biggest problem the Dutch have with a carbon tax is that their economy is based around being a transportation hub for Europe. To be fair, the Dutch have been prepared to regulate their petrochemicals industry more tightly than the Germans. The farmers have been confronted over the notorious 'manure problem' which is caused by keeping a very large number of pigs in a rather small country. Hans Opschoor said:

NEPP, as you say, was rather cheerful about the fact that, macroeconomically speaking, there were no costs to speak of. In the documents surrounding it there was frankly prepared evidence about the sectoral implications. For instance, tens of thousands of smallholders would have to give up farming, particularly in intensive pig-raising and the chicken industry. We would lose quite a lot of exports not only in agriculture, but also in petrochemicals. We're not losing a lot of employment there, because there is no employment, but we're losing financially.... And at the moment, when it comes to the way, for instance, the manure debate is developing, I would think that the population *at large*, including the ministry of agriculture, now accept that they can't solve the manure problem by technological alternatives. So they have to go for fewer animals in the medium term. (Hans Opschoor, Free University of Amsterdam, 19.12.94)

The problem with political will to implement environmental policies in the Netherlands arises when you start talking about transport. An economist in the Environment Ministry told me that the only big competitive advantage the Netherlands has in Europe is its location. The

special place transport has in the Dutch psyche is clear when you look at the issue of the expansion of Schipol airport. Increasing air travel is one of the most environmentally damaging ways of achieving economic growth. Environmentalists made that point, but they were over-ruled. The people who supported the expansion argued that because of technical improvements, even after a doubling in size the amount of pollution caused by Schipol would be the same as at present. Hans Opschoor said:

The fact that the entire economy is supposed to step backwards about 75% in terms of pollution, and that one should begin by asking Schipol to also step back about 75% is not at all brought into the public debate. Those environmentalists, including myself, who've tried have failed to do so successfully... It's rationalised away, more or less. And the arguments that would perhaps have made a difference are not allowed. Or if they come in, even ministers will say we will make sure other sectors of the economy will compensate for that. If you ask how, they start looking at the lamps and fall short of giving an answer. (Hans Opschoor, Free University of Amsterdam, 19.12.94)

Of course, because the environmental impact per guilder generated by air travel is so high, it would make much more sense environmentally to invest in something else. The problem for Dutch environmental policy is that *not* to invest in transport is politically unacceptable. When the environmentalists challenged building a high speed train line through nature reserves near Amsterdam, the transport minister said "That would turn us into another Jutland!" and immediately isolated them.

The Dutch experience suggests that it can be politically possible to have an environmental policy which involves cutting back some industries, so long as they are not perceived as central to the national economy. Pig farming and petrochemicals were so unpopular that, even in a recession, those industries lacked the political weight to effectively defend themselves. The Dutch felt differently about transport infrastructure,

regarding it as vital for economic health and more important than environmental considerations.

But increasing reliance on transport tends to *increase* the environmental intensity per unit of GDP, moving the Netherlands in an increasingly unsustainable direction. Dutch civil servants look uncomfortable when this is put to them, and say there is no alternative. One told me that, despite the Dutch image as environmental heroes trailblazing for sustainability, in fact the environmental efforts being made are about the same or slightly less than in Germany or Denmark. He said: "We are good at writing things, but in doing we are a normal country." (The Hague, 12.4.95)

Ecotaxation

Environmental economists always argue that regulation cannot be expected to bring about the kind of shift in economic activity needed to actually reduce total environmental impact. They claim that the best way to do that is by using economic instruments such as taxes and tradeable permits. The problem with attempting to reduce the environmental impact of an entire economy by regulation is that it would require something like full-scale central planning. Economic instruments harness market mechanisms instead. There is a remarkable degree of unanimity among people from Herman Daly to Wilfred Beckerman, who disagree on almost everything else, that environmental taxes are a good idea. Environmentalist opposition to ecotaxes has disappeared except among ultra-leftists, who still say it allows the rich to pay to pollute. The other remaining opposition comes from sectors of industry which see

ecotaxes as a threat to their future - particularly the oil, chemicals and car industries.

A steady shift in the tax burden from labour to energy and raw materials has come in recent years to be seen as the way to combine the political and economic imperative of growth with the ecological imperative of decreasing environmental impact. It is the 'big idea' in environmentalism today. This is despite the fact that attempts by the European Commission and the Clinton Administration to introduce modest carbon taxes failed. Low carbon taxes introduced in Scandinavia were reduced because of opposition from business.

Ecological tax reform

The green goal of 'ecological tax reform' is much more ambitious. Professor Ernst-Ulrich von Weizsäcker, the foremost proponent of ecological tax reform, argues that the failure of these schemes was because they were misconceived. They were formulated as means of raising revenue with a green gloss, not part of a reform programme. People will always resist extra taxes. Von Weizsäcker's ecological tax reform would instead reduce income taxes to compensate for the new energy taxes. Secondly, because von Weizsäcker is not interested in short-term revenue raising, but in transforming society, he proposes introducing the taxes at very low levels and ratcheting them up at 5% a year. This avoids the economic shock of sudden price increases. Because of the power of exponential growth, an increase in real terms of 5% a year would, over forty years, make energy prices rise nearly eightfold. By that point, renewable energy sources, which would be exempt from the tax, would easily be cheaper for most uses. Long before that point, ecological tax

reform would promote a dramatic shift in technological innovation. Currently, as since the beginning of the industrial revolution, much technological innovation in production processes is aimed primarily at increasing labour productivity. What that means is that fewer worker-hours are required per unit of output. This 'labour-saving bias' has always existed because employers want to save on labour costs. In today's Western societies, workers are both highly paid and highly taxed. Meanwhile, a major problem in these societies is that mass unemployment has become a structural feature. Yet most forms of energy and raw materials are much more lightly taxed than labour. There is a clear bias in the tax system, effectively promoting unemployment and pollution. Put in those terms, the case for ecological tax reform sounds unanswerable.

Almost all economists agree that energy is undertaxed nearly everywhere in the world. But that is not to say that they would support von Weizsäcker's ecological tax reform. They worry that the kind of drastic increases in energy prices that the ecological tax reformers talk about would introduce economic distortions of their own. Increasing energy prices eightfold would mean a tax on energy amounting to about 90% of the total price, which is very high. The World Bank's Andrew Steer is a fervent proponent of increasing energy prices. He argues that one of the main things that destroyed the economy of the Soviet Union was low energy prices, which prevented technological innovation. He thinks energy prices in the Third World and most Western countries, particularly America, are too low. But he told me: "I'm not sure, incidentally, that energy prices in Italy need to be raised any more to take account of global externalities. I think they're probably about right"

(Andrew Steer, Madrid, 5.10.94). Energy prices in Italy and Japan are about twice what they are in most Western European countries. Probably as a direct consequence, the energy consumption per person in those two countries is only about 60% what it is in most Western European countries, and little more than a third what it is in the United States.²⁶

As von Weizsäcker often points out, Japan overtook the United States and Italy overtook Britain in terms of GNP per capita with the highest energy prices in the world. By contrast, the economy of the Soviet Union collapsed under some of the lowest energy prices in the world. Low energy prices discourage investment in new technology and modern equipment. They also effectively subsidise pollution and wasteful use of resources. But it is obvious that it must be possible to have energy prices that are too high. Where is that point?

Evolving beyond the optimum

From the point of view of a neoclassical environmental economist, what you should do is calculate the 'optimum' price of energy. The aim is to internalise all the external costs to the rest of the economy in terms of things like pollution. This approach was pioneered by Pigou back in the 1920s. Once all the external costs have been internalised, you have the optimum price. David Pearce has done a lot of work along these lines in recent years.

However, doing just that takes no account of technology. Once you have internalised all the costs, you will, in terms of neoclassical theory, push the economy to a new equilibrium some distance away from the state it is in now. But technology will also adapt. New technologies will be developed which save energy more cheaply than would have been the

case without the policy intervention. That will create a new optimum price which is even higher. So you can raise the price of energy again, promoting the development of new technologies, raising the optimum price further. There is a law of diminishing returns at work, but this effect means that over time it is possible to raise prices of energy (or materials) substantially higher than the neoclassical optimum figure. The economic approach which deals with technology in this way is *evolutionary economics*.²⁷ The long-term effect of ecological tax reform would be to restructure the entire economy. A different course of economic and technological development would follow because of it. Such a thoroughly different path does not lend itself to neoclassical optimum price calculations. How can you calculate what the outcome of the future path of technological development will be?

An interesting objection to ecological tax reform is that it might become a victim of its own success. If governments end up dependent on revenues from taxes on energy and materials, they may be tempted to *encourage* their use in other ways. It is like the way that governments are often half-hearted about anti-smoking efforts because they make so much money from taxing cigarettes. A related danger is that rapid technological innovation could lead to sudden declines in income from ecological taxes, forcing other taxes to rise rapidly. The answer von Weizsäcker gives to this objection is that ecological taxes should not become too dominant a source of government income, so that they do not come to be dependent on large revenues.

The new realism

Ecological tax reform is an extremely important idea in the intellectual and political development of the green movement. Dennis Pirages told me: "You have to look at the social, economic and political sides of these things. I think that's one of the major problems within the environmental movement. It's often environmentally super-sophisticated, but socially and politically inept" (Dennis Pirages, College Park, Maryland, 22.6.94). Ecological tax reform, unlike 'no growth' economic strategies or the redistribution of environmental space, is not a message of enforced self-sacrifice to the populations of Western countries. It actually offers quite an attractive carrot: reduced unemployment, as well as less pollution. Wouldn't this be a good policy for Western Europe's social democratic parties to put forward to their electorates?

In Germany, the Green Party has taken up ecological tax reform as its central policy plank, meeting with success among voters who had shied away from their earlier eco-fundamentalism. Even so, the Social Democrats remain wary. They are closely tied to trade unions which are heavily committed to some very environmentally-intensive industries.

In Britain, the Liberal Democrats in 1996 adopted a policy of limited ecological tax reform, with the cost of energy increasing at 2% a year. At that rate it would take 35 years for energy prices to double, taking them to roughly their present price levels in Italy and Japan. Such a slow rate of introduction would not lead to the radical effects of von Weizsäcker's proposal. The leadership of the British Labour Party has not shown any interest at all in ecological tax reform.

Aside from the usual unpopularity of new taxes, a particular difficulty is that energy taxes proportionately fall most heavily on the poorest in society and least on the richest. When Britain's Conservative government put Value Added Tax on domestic fuel, the Labour Party and the Liberal Democrats opposed it on the grounds that it would make it harder for poor and elderly people to heat their homes adequately. Ecological tax reform can take that problem into account, by increasing taxes on the richest and redistributing them to the poorest in compensation. Although the distributional effects of reform are neutral, it is complicated in presentational terms. Opponents can talk about new energy taxes hitting the poor and new wealth taxes hitting the rich.

The appeal of ecological tax reform is only partly in terms of green credibility. A major appeal is that it should help to reduce unemployment and make industry more internationally competitive. That is because it stops taxing labour out of the market. It instead taxes energy and raw materials inputs, which do not vote, and plays to the strength of European economies - technological innovation, rather than their weakness - high labour costs.

Effects of ecological tax reform on economic growth

There is a subtle way in which ecological tax reform might reduce economic growth. Technological innovation increasing labour productivity is what currently drives growth in Western economies. The ever-increasing productivity of labour means that economies need to grow by about 2.5% a year to avoid increasing unemployment, leading to the problem of a recession. On the other hand, if the economy grows more than 4 or 5%, wage demands increase, causing an inflationary

overheating of the economy, followed by recession. Governments try to manage growth so that the economy doesn't overheat, and so that enough growth is allowed that unemployment doesn't spiral out of control. They are not very good at it. Politicians are often tempted to let a boom rip for short-term popularity, and worry about recession afterwards.

One effect of ecological tax reform could be to shift downwards both the minimum and maximum levels of growth to avoid recession. The minimum level of growth is lowered because the labour-saving bias of technological innovation is reduced, so labour productivity increases more slowly. The maximum level of growth without overheating is lowered too. The rate of growth where demand for labour leads to wage increases that cause inflation is lower because labour productivity is increasing more slowly than it would without ecological tax reform.

On the other hand, in terms of the efficiency of factors of production, because resources have been underpriced for so long, there are both large amounts of existing but unexploited opportunities for conservation and a lack of technological innovation in the field of resource efficiency, unlike in labour productivity. What that means is that improvements in resource efficiency could be large enough to compensate.

Community values

Greens traditionally have opposed economic growth. That is partly because they have thought that it inevitably required physical growth. Partly, it is also because of the idea that capitalist economic growth leads to a breakdown of community. Ecological tax reform gets round the first argument against growth, at least for a few decades. Does it get round the second one? This argument is well encapsulated in a remark by the green

thinker Hazel Henderson that much of present-day American economic growth consisted of Mom no longer cooking breakfast at home, but getting a job at McDonald's and charging her family \$2.99 each for it there.²⁸ The arguments have been around since Mishan wrote *The Costs of Economic Growth*. Before that, the claim that capitalism ruthlessly atomises society into selfish individuals goes back to Marx. He wrote that, as capitalism progresses, larger and larger areas of life are turned into commodities. The economist's counter-argument is that Mom is better off getting the minimum wage from McDonald's than being economically dependent on her husband. If she didn't think so, she'd have stayed cooking breakfast at home. And Mom is earning more than her family is paying for breakfast at McDonald's. "Yes," Greens respond, "there is more money circulating. But aren't the values of family and community worth anything?"

How does ecological tax reform relate to this argument? It is claimed that there is an indirect way in which ecological tax reform could reduce the breakdown of community. That is because ecological tax reform would increase the cost of transport. It would make local production more competitive and tend to counter economic centralisation.

In his 1994 book *Earth Politics*, von Weizsäcker puts ecological tax reform in the context of other green reforms.²⁹ He supports the Green idea of encouraging 'ownwork', or self-employment. Herman Daly and John Cobb went further in *For the Common Good*, and advocated a minimum income scheme.³⁰ This would pay all citizens a guaranteed minimum income whether or not they worked. The idea is that it would encourage people to work part-time, become self-employed, or take part in alternative economic arrangements like Local Economic Trading Systems

(LETS) to supplement their incomes. The minimum income scheme has been strongly criticised because it would allow a lazy minority to do no work if they wanted and live off the rest of society. Martin Ryle has argued that such a scheme is politically unviable because the people in the formal economy would object to subsidising other people's leisure.³¹ Looking at the current political pressure for cuts in the more generous European social security systems, he is very likely right. Ryle also argued that the minimum income scheme depends on the formal economy to finance it, so it is not such a transformative idea as its advocates think. It is a self-limiting reform.

In the final chapter of *Earth Politics*, von Weizsäcker describes his future vision. A trademark of von Weizsäcker is that, as the German newspaper *Süddeutsche Zeitung* has put it: "his solutions are free of fundamentalist zeal and strictly guided by the criterion of *Realpolitik*." In the long term, von Weizsäcker looks to new models of wealth. In his future, car and air travel, meat, plastics, metals and other energy-intensive goods will be more expensive. On the other side of the balance sheet, information, services, recreational and cultural activities would be cheaper. It is not a world of fundamentalist green self-sacrifice that he advocates. Rather, he talks of the danger of environmental considerations being used as the justification for dictatorship. What he hopes to do is use the price mechanism to nudge people's choices in a different, less environmentally destructive direction.

The thinking about environmental space from Friends of the Earth and von Weizsäcker's thinking about ecological tax reform are not inconsistent. In fact, the Wuppertal Institute, which von Weizsäcker directs, was given responsibility for research for Friends of the Earth's

ongoing *Sustainable Europe* report. The justification for ecological tax reform von Weizsäcker gives is in terms of environmental space. Ecological tax reform is a politically attractive device to free up environmental space. The argument von Weizsäcker gives in *Earth Politics* for the imperative of ecological tax reform is based around the argument that there is not enough environmental space in the world for the Third World to ever be able to live as people currently do in the West. He claims that if the entire world immediately adopted the present Western way of life, the resource demands would cause environmental collapse in five or ten years.

Arguments against economic growth

Von Weizsäcker states that he supports the arguments Robert Goodland and Herman Daly give for why Northern income growth is not a solution to Southern poverty.³² Robert Goodland is an environmental economist at the World Bank and, at the time the paper was written, Daly was too. In many ways the paper reflects the influence that working for the World Bank had on Daly's thinking and the softening to some extent of his anti-growth views. The rest of this chapter is devoted to a consideration of Daly's arguments against economic growth and the counter-arguments in favour that David Pearce put forward when I interviewed him.

Goodland and Daly gave ten reasons for their proposition that Northern income growth is not a solution to Southern poverty. They started with the point that GNP is a flawed measure of human well-being. Not only does actual welfare bear little relation to GNP, as has been documented in the annual UNDP Human Development Reports since 1992,³³ but the

economic sectors contributing most to GNP are those that are most environmentally damaging. Although environmental damage is good for GNP, they claim that in reality it is expensive and imprudent: much better to invest in human welfare than GNP growth.

They went on to point out that relative incomes mean that a 3% growth in per capita GNP means \$633 more in the United States, but only \$10 or less in China and India. Global income growth worsens income disparity between North and South. They move on to the difference in utility between needs and wants. In the North, self-evaluated happiness is more due to relative income than absolute income. So the marginal utility of across-the-board income growth in Northern countries is low³⁴ or even negative as people do things like buy more cars (increasing congestion) or eat more (damaging their health).

They claim that optimism about technology enabling poor countries to catch up with the rich is misplaced. With world population doubling in 40 years, and average incomes in Western countries 23 times the average for the rest of the world, the resource efficiency of technology must improve 46-fold in that time to maintain a stable environmental impact if Southern incomes were to rise to present Western levels (This calculation, however, ignores the effect of technological improvements in the North. If that is taken into account, the correct figure would be more like a 10-fold improvement).

Goodland and Daly go on to stress the value of economic self-reliance. Rather than what they characterise as the traditional model of Northern income growth and "trickle down" of wealth to the South, they support direct poverty alleviation in the South. This means increasing the value

added to goods in the South, rather than export of unprocessed raw materials to the North. They call for technology transfer to enable the South to do that.

Next, they deal with growth of material throughput as a source of both income growth and environmental damage. They quote statistics showing that the environmentally-burdening activities like industry and agriculture which provide about 25% of employment, generate about 65% of the increase in national income.³⁵ The increase in the income of service professions like barbers in Northern countries over the past century is due to the income from increases in these environmentally burdening activities, rather than improvements in the productivity of barbers.

They identify subsidised resource pricing as a major problem for Southern countries. Severe under-pricing of raw material exports mean the South is subsidising the North in terms of externalised environmental costs and government incentives to exploit natural resources. This relates to another problem - an inequitable trading system. They claim that much Northern growth is based on depleting Southern resources at a price far below the cost of sustainable exploitation. Dysfunctions of trade mean that countries which attempt to internalise environmental costs are at a competitive disadvantage against countries which do not. There is a conflict between the World Bank's "free trade" prescription and its "get the price right" prescription. They say that tariffs to protect a cost internalisation policy should not be considered protectionism. It is unpaid environmental costs which are subsidies. Finally, they consider the insecurity of inequality. They claim that the inequality in the North's use of global environmental commons and the

environmental resources of the South is a source of international instability.

David Pearce's arguments against a non-growing economy

How strong are these arguments? They are very powerful arguments against the current pattern of economic development in the world. But it is less clear that they show that Northern *income* growth is not the solution to Southern poverty. The paper does not consider the possibility of reducing the environmental impact of Northern consumption at the same time as Northern incomes grow. When David Pearce delivered his paper in Oslo, it was this kind of thinking he was attacking. Pearce proposed a gradual restructuring of Northern economies to be less environmentally intensive through the introduction of ecological taxation. He argued that reducing growth of consumption in the North would not only do nothing for the South, but by fostering unemployment and social unrest in the North, it would be less 'sustainable'. David Pearce regards the idea of redirecting growth from North to South as dangerously mistaken.

Pearce's 1989 *Blueprint for a Green Economy*³⁶ was an important book as it was the first significant attempt by a mainstream economist to bridge some of the gap between the economists and their environmentalist critics. Although the book has developed a reputation in Green circles as "virtually a paeon to economic growth", as Pratap Chatterjee described it to me in conversation, the position taken was really rather more measured than that. Pearce accepted that Gross National Product was not really a credible measure of well-being, as it aggregates together both the benefits and costs of increased economic activity as "growth" and does not

take account of the consumption of natural capital. In that sense, Pearce was not an unashamed enthusiast for economic growth. He favoured the goal of 'development', broadly an increase in human well-being. However, he wrote:

None the less, sustainable development and sustainable growth are interlinked. A society which does not maintain or improve its real income per capita is unlikely to be "developing". But if it achieves growth at the expense of other components of development it cannot be said to be developing either.³⁷

When I interviewed David Pearce in 1995, he gave five reasons for opposing an end to Northern economic growth, as Daly advocates. Pearce's critique of Daly is worth repeating in some detail. Pearce argued that ending economic growth is politically impractical, that lifestyle changes are unnecessary, that Daly has confused growth in the use of resources and economic growth, that economic growth is essential for a healthy economy, and that there is a danger of authoritarianism in Green ideas about growth.

Pearce's first allegation was that ending economic growth was *politically impractical*:

...what interests me are pragmatic solutions. What interest politicians are pragmatic solutions. It is not a pragmatic solution to go to a politician and say that the solution to our environmental problems is that everybody has to change their way of life. I would guarantee you will not find a politician who will buy that anywhere in the world.

.... I am totally at a loss to know who the people out there are who'll vote against economic growth. It really amounts to saying "I don't want a television. I don't want a car. I don't want an extra fiver in my pay packet at the end of the week." And I don't know who these people are. But I've never seen them in my lifetime. What you describe is a fanciful world. It's a world that arises from people who spend too long in armchairs talking in academic circles. I repeat, the answers you may not like. But the answer is that this is undesirable as an academic reflection. It doesn't have

anything to do with the real world of ordinary people. The world in which I was born and have never escaped from is a world in which people desire to be richer. In a very conventional sense. (David Pearce, University College London, 9.2.95)

Herman Daly had told me that his position is that:

....there are two kinds of impossibility. There's a political impossibility and a biophysical impossibility, and right now it's like the horns of a dilemma. I prefer to be impaled on the politically impossible horn because that's not as fundamentally impossible. Things which are presumably politically impossible frequently do change. The Berlin Wall fell. That was politically impossible. A few other things have happened that were politically impossible. But I don't think we're going to change the dimensions of the earth or reverse the laws of thermodynamics, those kind of things, which are the fundamental limits. (Herman Daly, University of Maryland, 22.6.94)

David Pearce's, second point, however, is that *changes in lifestyle aren't actually necessary*:

....do we really have to change our way of life? Answer, no. You can get there by a far less painful route. Again, on purely cost-efficient grounds, why do people have to suffer? I think a lot of this is puritanical. It's a bit like Norwegians beating themselves with birch twigs. Something is wrong. It is your fault it's wrong, so you must *suffer*. This has a long tradition, as you know. Both in religion and in anthropological science. People want to *hurt* themselves because they think that what they've done is wrong. "I have to be punished. I've done something wrong. I've offended God's will, I've offended Mother Nature, Gaia or whatever." (David Pearce, University College London, 9.2.95)

That remark is a dig at Herman Daly, whom Pearce had earlier in the interview accused of being a religious fundamentalist. He returned to his attack on Daly in his third argument, that there is a *confusion between growth in the use of resources and economic growth*:

I think it's also fundamentally irresponsible to do that [call for a transformation of lifestyle]. It's counter-productive because you can actually destroy the environment far faster by saying things like that than you can by adopting pragmatic solutions. But it also boils

down to a fundamental confusion. For example, if you look at Daly's work, it changes its nature quite neatly between the early seventies when he writes his anti-economic growth arguments. What he is challenging is economic growth, the concept of additional wealth. When he's challenged that to oppose economic growth is to oppose the aspirations of ordinary people, the man on the Clapham omnibus or the guy in the village in Nigeria, when he realised that in a sense he had been attacking the wrong thing, he changed it to say that what he was in favour of was economic development, and what he was against was the consumption of materials and energy. What *he* defines economic growth as is the increased consumption of energy and materials. *Nowhere* in economics literature can you find economic growth defined in that way. Nowhere. And it's perfectly possible to have economic growth, value added, without increasing the consumption of materials and energy.

So I think there's an element of duplicity here. I don't blame Herman for engaging in it. One might want to see that switch in time as an admission on his part that the early attack on economic growth was wrong. Unfortunately, because you get people who aren't as intelligent as Herman Daly, then follow him, and themselves can't distinguish between growth and growth of throughput and confuse the issue further. Call for an end to economic growth to my way of thinking is an offence really of the most fundamental kind. I think somebody advocating that should be made responsible for their decisions. And if you observe the failure of the system of economic growth in this country and its consequences for unemployment, I think those consequences need to be brought home to people who advocate this as direct policy. (David Pearce, University College London, 9.2.95)

How fair is David Pearce being to Herman Daly? Daly does in fact make a distinction between economic growth (growth in the value of goods and services) and what he calls throughput growth. But it is also true that his famous book *Steady-state Economics*³⁸ is an argument not just against growth in the throughput of energy and materials, but also against growth in the value of goods and services in the economy. Daly called, back in 1977, for the need to maximise resource efficiency. He wrote:

no doubt it is true that at "some finite cost" we could live on renewable resources, as mankind essentially did before the industrial revolution. But the finite cost is going to include a

reduction in population or per-capita consumption levels or, at the very least, a cessation of further growth.³⁹

He ridiculed the idea that improving materials and energy efficiency could be combined with economic growth:

The idea of economic growth overcoming physical limits by angelizing GNP is equivalent to overcoming physical limits to population growth by reducing the throughput intensity or metabolism of human beings. First pygmies, then Tom Thumbs, then big molecules, then pure spirits. Indeed, it would be necessary for us to become angels in order to subsist on angelized GNP.⁴⁰

David Pearce's allegation of duplicity is somewhat unfair, however, because Herman Daly allowed *Steady-state Economics* to be reprinted in a new edition in 1992, writing in a new preface that he stood by everything that he had said in the original 1977 edition. But it is true that Daly is more circumspect about the possibilities for improving resource efficiency in what he says and writes nowadays. When I interviewed Daly in 1994 and asked him about his ideas for controlling Northern consumption, he said:

I'm talking about a reduction in matter-energy throughput in the North. To the extent we're able to increase productivity of that matter-energy flow and satisfy our needs to a greater and greater extent with the same, then it isn't going to cost us very much. And to the people who are technological optimists, I would say "I hope you're right. If you are right, it'll be easier to deal with." I tend to think it'll not be quite so easy. We should certainly go as far in the direction of technological improvement we can, but that remains to be seen. (Herman Daly, University of Maryland, 22.6.94)

Both Daly's arguments against growth and Pearce's arguments for a continuation of growth depend on the empirical question of the extent to which it is possible to "angelize" the economy.

David Pearce's fourth argument is that *economic growth is an intrinsic part of a healthy economy*:

The final final comment I make is that they *also* are not very good at economic history. And that is because governments don't have control over long-term economic growth rates. Economies don't grow because governments say they're going to grow and economies don't slow down because governments say they're going to slow down. That's certainly what happens in the short run. Sure. If you look at the whole of economic history, the growth of the British economy from around 1801 to the present day, hovers around 2% in real terms per annum. What are we going to say? That in 1801 the government was responsible for a 2% growth rate? Gladstone? Asquith? It doesn't make sense. It's bad history as well as bad economics.

.... But even the language, "The economy has to grow". Economies just grow. Which economies do not grow? Where have we got any evidence that there's an economy that has not grown over a significant period of time? Over a period of ten years or so, you certainly could cite African countries that have negative growth rates over that time. That's very closely correlated with war, with natural disasters and tremendous corruption. (David Pearce, University College London, 9.2.95)

Daly wrote in *Steady-state Economics* that comparing a failed growth economy to a steady-state economy was like comparing an aircraft falling out of the sky to a helicopter: "The fact an airplane falls to the ground if it tries to remain stationary in the air simply reflects the fact that airplanes are designed for forward motion. It certainly does not imply that a helicopter cannot remain stationary."⁴¹

Some Green authors, such as Martin Ryle⁴² and Robyn Eckersley⁴³ have argued that capitalism is based on a "grow or die" dynamic, because profits depend on an expanding economy, implying that a non-growing Green economy would have to be socialist. Daly is not a socialist, so I put the argument to him that capitalism requires economic growth in order to be able to maintain profits:

Daly: Well, I don't think so. If it does, then it's in trouble and will have to change. Again, I'm using growth in my sense.

SD: I mean GNP growth, rather than necessarily growth in physical throughput.

Daly: The way GNP is currently measured, you *can* have growth in GNP without having growth in physical throughput. So to that extent if you can limit the physical throughput and then GNP grows because of greater quality or whatever, OK. Is that really required by capitalism? Does capitalism have to grow? I don't really think so.

SD: Where do profits come from in the long term if you don't have-

Daly: In the standard - Profits come from innovation, temporary monopolies. Profit really serves as an allocative mechanism, a signal of misallocations. If you have profits over here, that means more resources have to go over there. The market system at least -

SD: It's like the \$20 bill lying on the ground and the girl reaches to pick it up and her economist father says "Don't!"

Daly: Sure, you're never in a really equilibrium situation. There's always some opportunities somewhere that have been overlooked. If you end up with zero growth there's a sense in which that means there would be no net investment. All investment would be gross replacement investment replacing depreciation. So there would still be renewal.

SD: But how could anyone get a return on their capital?

Daly: Well, if capital is productive -

SD: Surely if your GNP growth is zero, then there as many people losing money as there are making money?

Daly: No. Let me ask "Why would anyone get a return on labor?" You think labor would be zero, or land rent?

SD: No. But investment would be surely -

Daly: I don't see why. You have capital. If capital is productive, if it allows you to produce more than you can produce without it, then it seems to me you would still get a rate of return. You have, let's say, a non-growing product which gets divided up among land, labor and capital. I don't think that because the product is non-growing, therefore capital would get a zero share. I think the competition would give capital a share. Now if the economy's growing, probably capital would get more.... If it's non-growing, by definition goods and services would be constant year on year. That

means you would not have a *surplus* for investment. All of your investment would be replacement investment of things as they wore out. But I don't see that would mean there would be no return to capital. Capital would still by virtue of its scarcity and productivity command a return....

SD: But where would profits come from? The argument is they could be obtained, but it would require ever-increasing exploitation of labour or land in order to get the profits for capital.

Daly: Maybe we're using profit in different senses here. There's a rate of return to capital, which is sort of like the interest rate, which is taken to be the normal rate of profit. Then there's excess profit, or pure economic profit, which is over and above the opportunity cost of capital, the interest rate. So you get excess profit usually as a result of something which is novel and commands a temporary monopoly. Those excess profits get competed away. Now, for there to be excess profits in one part of the economy, I don't think there has to be a growth of the whole system.

SD: No. The question is to do with the rate of return. Wouldn't the rate of return on investment in capital, labor or land fall naturally toward zero?

Daly: Let me just try. My hunch is it would fall towards equality with the kind of rate of development. A rate of qualitative improvement, which *would* be less than the current product of the rate of qualitative improvement times the quantitative expansion. You would have eliminated the quantitative expansion as one source of this surplus. And so therefore that surplus would be less. But I don't see that it would necessarily be zero. Or even if it were zero, that doesn't seem to me to be a terrible thing.

SD: The economy would be differently organised.

Daly: No, I don't think so, because the whole idea is that profits are supposed to be competed to zero anyway. That's pure economic profits. It doesn't mean the entrepreneur is not making any money. It just means he's not making any more than in his next best occupation. That situation could obtain with zero economic profit.

SD: That some people could make profits? Yes. But other people would be having to make basically losses, whereas they'd currently be making profits, even while they're making pure economic loss.

Daly: No. I think that's not the case.

SD: I don't know!

Daly: You can talk to some other economists and maybe you'll get a different view. (Herman Daly, University of Maryland, 22.6.94)

The exchange we had is worth repeating because something *very* interesting emerges from it - that Daly himself is hardly confident that it is possible to maintain profits in a non-growing economy. He did not appear to have thought very much about the question before I raised it with him, even though it is one of the most important objections that has been raised to his ideas. What is more, he ended up arguing that qualitative development in the economy (economic growth in its pure form) would be what would maintain the general level of profit. This does seem to support Pearce's contention that Daly has quietly shifted his ground on the issue of economic growth, without openly renouncing his previous opinions.

What, however, is remarkable is the pointlessness of the debate about economic growth. Both David Pearce and Herman Daly now seem to agree that GNP is not a measure of welfare or of environmental damage. But both men continue to defend or attack the idea of GNP growth as though it were a measure of one or other of those things. In some mysterious way GNP has become a symbol that orthodox economists and environmentalists can't stop fighting about, even though they have forgotten why they were originally fighting.

David Pearce's fifth argument is about *the authoritarianism of Green ideas about growth*. I had suggested that the building of the M25 orbital motorway round London had been socially undesirable despite the fact it had boosted GNP. Pearce responded by saying:

No. You see you're getting totally muddled up. What people demand is not the M25 - what they demand is personal transport. And you can provide personal transport in various ways. Now, so

long as you signal to people what the true costs are of their choices, and if they still choose the M25, then you should provide the M25. It is quite *wrong* for *anybody* to regard themselves as being superior to the hoi polloi out there, as it was put to me at the Foreign Office this morning, so that *we* sit back in the comfort of the academic world, funded by some public body and we say "You can't actually have what you want because what you want is socially undesirable." That is not just appalling arrogance, it is actually politically and morally indefensible. And it's very very close to exactly what Adolf Hitler said in the 1930s. We need to be very careful about this. Because what you have here is a subterranean fascist culture in a lot of this environmentalism. It's basically a bunch of people who *think* they know what the ideal society is, and they're then going to impose it or try to impose it on the rest of the world. At the end of the day, if you don't trust people to provide you with the just society, then you fail....

That world can only come about either by a programme of mass persuasion, the last occasion for which probably has to be the rise of Christianity, and maybe these people are arguing for that. If they are, then I don't have any great problem with it so long as the way it's done respects people's freedoms and rights. The difficulty I have with most of what I read that follows this kind of social transformation school of thought is that it isn't social transformation, it's actually social engineering. It's actually very very reminiscent of fascism and of communism. It's actually an attempt to say "I know better than you what is good for you, because I am an expert. I've studied these ratios of economic growth to material, and you can't have what you want. So I'm going to tell you you want something else, and if you don't agree with me (chuckles) I shall engineer the system so that in fact you don't have what you want." I have to say I find that *deeply* morally offensive. and politically, I think, totally unacceptable. And again, I would argue that I don't think the people who argue that are malicious. I think they haven't thought it through. I don't think they see it. And I think if they *did* see it, and if they had this sense of responsibility they would stop arguing that. So I have no sympathy whatsoever with these viewpoints. (David Pearce, University College London, 9.2.95)

The "fascism" Pearce saw in my remark was not truly a Hitlerian one, which would be something like wanting to round up all the car commuters in southern England and put them in concentration camps. What he calls "fascism" is rather different: a moral framework that does

not define liberty as consumer sovereignty and give primacy to economic values, as will be explained in the next chapter.

Conclusion

Attempting to define sustainability in terms of capital opens up a debate about the substitutability of technology for resources and environmental services. Beyond that, it begs the question of whether a decline in one aspect of the environment can be substituted for by an increase in another aspect. The problem which bedevils the whole idea of sustainability in terms of total capital or natural capital is deciding on the rules for acceptable substitutions or compensation. This is a general problem with any indicator which attempts to aggregate fundamentally dissimilar things into a single number.⁴⁴

The environmental space approach gets round that difficulty by dealing with each aspect of the environment by itself, rather than attempting to sum them into a global 'capital' figure. It instead raises the issue of the distribution of access to the Earth's environmental space and suggests an imperative for radical reductions in resource consumption by the industrialised countries. However, redistribution of environmental space would involve changes in lifestyles in these countries, and returns us to the question of economic growth, at least for rich Western countries.

The debate about economic growth continues to rumble on. It is widely recognised that GNP is not a measure either of welfare or of environmental destruction. It could grow without meaning either was increasing. However, it remains a symbol of the deeper dispute between economists and environmentalists about the value of money and the value of the Earth.

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CHAPTER 3.4

'PUTTING A PRICE ON THE PLANET'

Introduction

The mainstream economist's approach to environmental decision-making is based on cost-benefit analysis. It involves attempting to calculate what a set of environmental goods is worth to people in monetary terms; crudely, finding out what people would pay to preserve a feature of the environment as it is. The figure derived is compared with the monetary value of economic exploitation. Whichever alternative of preservation or exploitation that raises the greatest sum is held to have won the cost-benefit analysis.

Since environmental goods are not normally traded in the marketplace, traditional cost-benefit analyses tended to ignore the loss of the values derived from aspects of the environment when economic development takes place. In recent years, economists have put much more effort into attempting to identify the economic values associated with preservation. This has involved the construction of 'shadow prices' based on surveys

of what people would be prepared to pay for the preservation of an environmental good.

The economist's approach is controversial, though. Many environmentalists assert that nature has an intrinsic value beyond the value that people attach to it. The issue of whether nature has such intrinsic value is dealt with further in the chapter following this one. The present chapter instead concentrates on the social issues attached to the use of monetary valuation in environmental decision-making, particularly the example of estimates of the costs of climate change.

Cost-benefit analysis turns out to place value on the interests of different people in proportion to the wealth that they command. It assigns greater value to the interests of the rich than those of the poor. The use of money as a common measuring-rod for expressing people's values through cost-benefit analysis and the entire approach of 'welfare economics' does not appear to be compatible with the concern for intragenerational equity that is so important to the concept of sustainable development. The actual practice of cost-benefit analysis is not even philosophically coherent in itself.

Welfare economics is based on an individualist utilitarian framework with no room for considerations of intragenerational or intergenerational equity. Bringing these concerns into cost-benefit analysis would involve not only a revision of its techniques, but of the moral assumptions behind mainstream economic theory.

Putting a price on the planet

David Pearce doesn't understand why he has been so reviled by environmentalists. He was best known for saying in *Blueprint for a Green Economy* that he wanted to "put a price on the planet", but told me how annoyed he was when "people would say 'This man is out to put a price on everything.' I've never said that. It's a bit too much." Pearce went on to tell me that, however:

the idea that you *cannot* put a value on global warming damage is self-evidently wrong because it's been done. People may want to argue with the results, but it's been done in Bill Klein's work, by my colleague Sam Fankhauser. If we go through it, *why* can't you put a value on global warming? I don't understand why not. If I look at it very simply, if I have global warming and I have sea-level rise, then the relationship between warming and sea-level rise is a scientific issue. It has nothing to do with economics. The fact that the land has a number of economic sectors on it permits me to go on and say what would happen if those economic sectors were lost. So there's absolutely no reason why you shouldn't try to value these things.

If somebody says that the estimate that you get is uncertain then I would agree of course totally. But that's social science as you well know. To my knowledge, that's also science. The idea that any of this should be definite within 99% confidence limits is laughable. If people are saying you can't value global warming, I think I would have to say that the ball is in their court to say why not. (David Pearce, University College London, 9.2.95)

In *For the Common Good*, Herman Daly and John Cobb did argue that global warming was an example of the sort of pervasive externality that cannot be costed.¹ They wrote that, even if you assumed predictable physical changes from global warming, the economic losses would be subject to wide disagreement and uncertainty. Should costs be based on how much people would be willing to pay to avoid the change? Or on how much it would cost to put things back the way they were? They pointed out that, since these kind of changes are not the kind of things

that can be purchased piecemeal on markets, people would have to express their valuations in terms of answers to hypothetical questions. Are such answers meaningful? Even assuming that problem could be solved, they outlined the difficulty of tracing through all the consequences and costs of global warming, including all the relocation costs, disruption of food supplies, loss of species, and so on.

We submit that, while perhaps barely conceivable to a Laplacian demon, such a calculation involves so many guesstimates, uncertainties, and arbitrary assumptions that it is a will o' the wisp, an ignus fatuus, a red herring. The change is too nonmarginal, too systemic and pervasive for prices to mean anything. Yet that is what the logic of internalization demands. Is there not a more operational and less arbitrary procedure for approximating the Pigovian ideal of full-cost prices, and for recognizing at the same time that a change like the greenhouse effect is not something to be paid for, but something to be avoided?²

David Pearce can say that he has done these calculations, so it is not impossible. The real question is not whether such a calculation can be done at all, but whether the answer derived is in any way meaningful. Pearce led a team of economists whose chapter on the social costs of climate change for the second report of the Intergovernmental Panel on Climate Change (IPCC) was rejected by governments at an IPCC meeting held in Montreal in November 1995.

The equity question

The chapter on social costs was rejected because a number of Third World countries, including India, supported a critique of the assumptions it was based on that had been published by a small London-based lobby group, the Global Commons Institute (GCI). Pearce's group had calculated that following a "business as usual" scenario, global warming would cost 1.5-2% of Gross World Product annually by the second half of the next

century. They had calculated that action to limit global warming would itself lead to losses of 2% of Gross World Product annually. GCI argued that these calculations were based on flawed, indeed immoral, assumptions.

GCI contested several assumptions, but the crucial charges were that the economists had ignored scientific uncertainties in their calculations, and that they had used an approach to calculating costs that generally underestimated them and in particular discriminated against the Third World.³

The economists had made their calculations based on the assumption of 2.5°C warming, in the middle of the IPCC range of 1.5-3.5°C. However, this range is itself based on climate models which in fact contain much larger uncertainties, and which ignore the possibility of positive feedback effects that could aggravate global warming. Their assessments of damage costs were also based on uncertain calculations. Most significantly, the damage costs calculated were extremely sensitive to the surmised death rate, which was predicted largely on the basis of a single study into the effects of a 4°C rise on the inhabitants of fifteen US cities, and a series of extrapolations. The economists had only considered deaths due to heat stress and storms, not due to disease or malnutrition.

But GCI's most fundamental challenge to the economists was over the calculations of differential value between rich and poor countries. They valued the loss of land in Third World countries at one-tenth the rate of land in Western countries. Based on an assessment of 'willingness-to-pay', the IPCC economists had valued the cost of a lost life in Western countries at \$1.5 million for their calculations. They had valued a life at

\$100,000 for the rest of the world. Aubrey Meyer of GCI called this "the economics of genocide". Meyer was born in South Africa, and he told me in a telephone conversation that the kind of thinking behind such a differential valuation of life reminded him of apartheid. GCI also pointed out that "willingness to pay" is used normally in cost-benefit analysis to assess benefits. To assess costs, it is normal to use "willingness to accept compensation", which gives higher figures.

David Pearce said that his critics did not understand the methodology. "The report simply says that people value risks differently. That valuation is affected by the level of their incomes."⁴ The alternative proposed - to value everyone's life equally - would increase the amount spent on disaster aversion and foreign aid: "We would end up allocating all our national income to life-saving."

What the IPCC economists were doing was making explicit the fact that we live in a world where the rich count for much more than the poor. If we valued the lives of people in the Third World equally to those in the West, we would do something about facts like that ten million children a year die of malnutrition. But when Pearce told *New Scientist* "This is a matter of scientific correctness versus political correctness",⁵ he was attempting to use the status of science to justify what actually is a political judgement. Pearce does not believe it is sensible to attempt to redistribute the world's wealth. Remember this statement of his:

If one's saying that of the incremental benefits for the future, that 0.3% of the UK's GNP is not a justifiable number for redistribution, then I would wholly support that. But it isn't 10%. And again I would say if anybody had any experience of seeing how monies can be spent in the developing world, as someone who has seen most of the world in 25 years, it is not possible to redistribute. It is not only not possible, it is not desirable. If you seriously thought that a thousand dollars off my salary would reappear as a thousand

dollars somewhere else, it wouldn't. (David Pearce, University College London, 9.2.95)

Two of the IPCC economists, Samuel Fankhauser and Richard Tol,⁶ responded to GCI, claiming that the issue of differential valuation was a red herring. They said they had no problems with using a global average value of life to assess world damages. But it would be an average value, not the Western value. Using such an average value would not change the overall results of their work. They also pointed out that the difference between 'willingness to pay' and 'willingness to accept compensation' was irrelevant to the question of regionally different value estimates. 'Willingness to accept compensation' estimates might be higher, but they would still differ between regions. They added that the concept of uniform values at Western levels, as GCI had proposed, was flawed because the whole purpose of the regional damage analysis they had done was to capture the regional diversity and assess the differences in vulnerability.

The summary for policy-makers on social costs⁷ did not use the economists' figures, because of GCI's lobbying, but it emphasised that, while estimates for the damage to industrialised countries due to global warming were only one to a few percent of GNP, estimates of damage to agricultural Third World countries were several times higher. The irony is that the responsibility for global warming lies with the industrialised countries which have been responsible for the vast majority of greenhouse gas emissions. Global warming is an excellent example of an issue that involves questions of both intergenerational and international equity.

What really made the economists' work so controversial was that their analysis did not take account of the inequity of the situation. It is in the nature of economic analysis that it ignores questions of equity. Instead, it values the luxuries of the rich more highly than the necessities of the poor, because by definition the poor cannot pay as much for necessities as the rich can pay for luxuries. This problem was explored a few years ago by Kerry Turner in *Blueprint 2*, a book David Pearce edited.⁸ Cost-benefit analysis assumes that the losers will be compensated by the gainers. In this case, that would mean that the families of each Bangladeshi drowned because of rising sea levels would be compensated to the tune of \$100,000. But in practice, as Turner noted, those who gain in a cost-benefit analysis never have to compensate the losers.

David Pearce supports the "Polluter Pays Principle". That's why he said that if people knew what the M25 really cost and were still prepared to pay for it, they should have it. From a pragmatic viewpoint it is better that the costs the M25 imposes on people who do not or will not benefit from it are taken into account than that they are not. Is it "fascist" to think that it would have been better if those costs had never been imposed? Pearce's view depends on the belief that it *is* possible to internalise all externalities by pricing, and that to attempt to handle externalities through political process, rather than pricing, infringes individual liberty. However, relying on pricing discounts the welfare of people who are poor or not yet born. It is, as the old socialist jibe put it, the same as the liberty for the rich to stay at the Ritz and the liberty for the poor to sleep in the street.

An irony is that David Pearce was one of the people who in the late 1980s showed that environmental degradation tends to hurt the poor, who

cannot afford to protect themselves, more than the rich. Florida and the Netherlands can afford to protect their inhabitants from rising sea levels and storm damage in a way that Bangladesh cannot. Morally, it is impossible to justify the idea that Americans are worth fifteen times more than Bangladeshis. The reality of the world we live in is that the lives of Americans do count for much more than the lives of Bangladeshis. Should our assessment of the cost of climate change be based on morality or economic reality?

If we are talking about *Realpolitik*, the lives of people in the Third World count for almost nothing. Millions of children die each year from malnutrition. The cost of saving their lives would be a few billion dollars annually. Yet the rich choose to spend that money on countless luxuries for themselves, rather than on ending hunger in the world. The money raised by Britain's national lottery alone could make a significant impact, but the revenues raised for 'good causes' are spent entirely in Britain on things like opera houses and sport stadiums. British people in general value subsidies for recreation at home more highly than the lives of people in the Third World.

An assessment of global warming damage based on 'willingness to pay' values is utterly pragmatic. But the decision was not a matter of "scientific correctness versus political correctness". It was a political decision itself. Aubrey Meyer said:

This is another way of saying that people do not have an equal right to be here in the first place; your rights are proportional to your income. In terms of achieving sustainable development globally, this is nonsense. For practical as well as ethical purposes, each human being is - and must be recognised as - the fundamentally equal unit for measuring sustainability and this is the irreducible level of decision-taking.

At sub-global levels of 'economic' debate, this kind of wrangle is of familiar vintage. It is the substance of the traditional left/right arguments where those without money make "equity-for-equity's sake" (principle) arguments, whilst those with the money make "efficiency-for-efficiency's sake" (practicality) arguments. Whatever the rights and wrongs of this approach, equity and efficiency are seen as being traded off against each other between the left and the right. Much of the history of our political economy is a story about this false dichotomy.

At a global level this kind of economic discrimination is simply suicidal. It is discriminatory on a greater scale than before. But it is also dangerous and different in a manner which is without precedent. First there is nowhere else to go. There isn't a global carpet under which the waste, the pollution and the "poor" can be swept and then ignored. The causes and the influence of these things in the system needs to fundamentally inform that analysis undertaken. This is true because large numbers of people are not going to accept being made the discards of a system which values itself 10:1 over everyone else, let alone which hasn't demonstrated sustainable consumption patterns since industrialisation began.⁹

Meyer's argument is rather like the "greenmail" approach that the South attempted at UNCED. The problem that "greenmail" has is that essentially Third World countries have to threaten to destroy their own environments. They obviously suffer much more from doing this than people in the North will. In the case of the global commons, like carbon dioxide emissions, the North itself is already acting in an unsustainable fashion. And, again, the South is much more vulnerable to the negative consequences than the North is. This makes the North feel that "greenmail" is an implausible threat.

In a sense, it is irrelevant to Northern governments how much the people of Southern countries will suffer from global warming. The power to avert global warming lies with the North. All that the South can do is threaten to aggravate it. In cynical *Realpolitik*, Northern countries will only take action against global warming if they believe that their

countries will lose more if they do nothing to prevent it than if they take action. Actually, as Klaus Meyer-Abich has pointed out,¹⁰ because political decisions are almost invariably taken on the basis of short-term rather than long-term considerations, drastic action on climate change will very likely only be taken if there is a short-term threat, such as from migration.

This all sounds rather depressing for anyone who cares about the poor or the future. The experience of sanctions against the apartheid regime in South Africa is worth bearing in mind, though. It took decades, but eventually the strength of the moral argument for solidarity with black South Africans came to predominate over arguments of economic self-interest and disingenuous arguments about protecting the welfare of the black population. Similarly, the strength of moral arguments eventually made the outside world intervene forcefully in Bosnia. What these examples show is that morality doesn't really count for nothing in the world of international politics; but it only counts in rather exceptional circumstances.

Action to prevent global warming costs very little in the short run. Over the long run, cuts in greenhouse gas emissions in line with IPCC recommendations might cost a few percent of lost GNP over several decades. At no time, though, would sacrifice actually be felt. The 'sacrifice' is a purely notional one, because it amounts to an incremental loss of around 0.05% of GNP. An alternative way of looking at it is that it means that, at worst, people would only be as wealthy in 2050 as they otherwise would have been in 2049. People normally do not notice the effect of one year's economic growth in their lifestyle. On the other hand, the loss of several small island states and a sixth of Bangladesh would be noticed. So

would the millions of environmental refugees, the political disruption, the disaster aid, the lawsuits in the International Court of Justice, and so on. What prevents action against climate change is that moral pressure has not yet built up to a point where the short-term political pressures for action are greater than the short-term political pressures from fossil fuel industries that would be threatened by such action.

The value of natural resources

The fundamental difference between economists and environmentalists is about what they value. The way that the depletion of 'natural capital' has been counted as income in national accounts symbolises the way economists historically have treated the environment as valueless. Natural resources have been regarded by economists as free gifts. Wilfred Beckerman recently tried to defend this practice. He argued that, although for some small developing countries dependent on a limited natural resource base, it might be a worthwhile exercise to adjust GNP for changes in natural capital, for large industrial countries or the whole world, it is "a waste of time".¹¹ For Beckerman, nature only has value so long as it can be turned into something economically valuable. Technology can make many things which were once economically useless into valuable resources. He gives the example of unused land which can be made valuable by clearing it, or of minerals like bauxite that only became useful once techniques to turn it into aluminium were developed. He writes that "if we were to adjust GNP estimates to allow for new discoveries as well as for resources used up, the result might be an upward adjustment, not a downward adjustment as is claimed by the environmentalists who clamour for more money to be spent on making estimates of 'sustainable' GNP."¹²

The belief that underlies this view is that 'natural resources' are infinite or infinitely substitutable. Labour and capital are scarce, so valuable. Resources are not scarce, so they have no value beyond the cost of the labour and capital needed to obtain them. Beckerman claims that if we run out of anything, we will always be able to find a substitute because of technical progress. To what extent can we rely on technical progress? It depends on what it is for. Technical progress allows us to substitute for copper wire rather well. When Paul and Anne Ehrlich say that aluminium is an inferior substitute for copper as a conductor of electricity,¹³ they sound rather desperate. Fibre optic cable is a superior substitute for copper wire as a carrier of information. The trouble is that there are many natural assets for which there are no feasible substitutes, the things like the ozone layer, rainforests and wetlands which David Pearce called 'critical natural capital'. Beckerman does not directly address the idea of 'critical natural capital'. His discussion of the idea of natural capital, as mentioned earlier, ignores such subtleties.

Money as a measuring rod

David Pearce argued in *Blueprint for a Green Economy* that the best way to protect natural capital is by assigning it an economic value. Environmental services, in particular, are often not bought and sold in the marketplace. If the market is left alone, environmental services will be treated as free goods and over-used. Pearce proposed that the answer is to assign prices to these services based on what people would be willing to pay for them:

Very simply, given limited resources, the rational thing to do is to choose between our preferences in an effort to get the most satisfaction - or "welfare", to use the economist's term - we can. If we apply economics to environmental issues, then, we should

expect to obtain some insights into the desirability of improving the environment further, taking the social objective of increasing people's overall satisfaction (or welfare) as given. This assumption about the social objective used to derive measures of gains and losses is important.

To be clear, what is being said is that an improvement in environmental quality is also an economic improvement if it increases social satisfaction or welfare.¹⁴

Pearce admitted that there are a number of questions and problems about the approach. What if we can improve the welfare of the present generation only at the expense of future generations? Should we look generations, centuries or millennia into the future? Is it legitimate to only consider human welfare, and not the welfare of other living beings? He wrote that social objectives must be chosen so that short-term gains in welfare do not lead to policies which are ultimately inconsistent with human existence or some minimum quality of life.

Pearce went on to defend using money to measure the preferences that people have. He wrote that money was a good measuring rod because it expressed the strength of preferences well. What does it mean to put a money value on the Californian condor or the African rhinoceros? People could object that these animals were "beyond price". Pearce wrote that nothing could really have infinite value. Even human life has a finite value, because we are not prepared to spend infinite sums of money to save lives.

Why was David Pearce so annoyed by my claim that the building of the M25 had been "socially undesirable"? His view now seems to be that, as long as people are prepared to pay the "true costs" of what they want, they are morally entitled to have it, and it is "fascism" to deny them it. What that means is that people have rights in proportion to their wealth. The

interests that count are those that can be backed with money. So far from money being only a "measuring rod", as in 1989, by 1995 wealth had become the moral arbiter for Pearce. The combination of David Pearce's fierce opposition to redistribution of wealth and his advocacy of basing decision-making on people's ability to pay seems to lead to extremely inegalitarian politics.

Pearce's work shows quite well the way in which the application of cost-benefit analysis to global environmental issues works against the principles of intergenerational equity and intragenerational equity that lay at the core of the Brundtland Commission's definition of sustainable development. Because decisions are based on ability to pay, less weight is given to the interests of the poor and the future. Between people living at the same time and with similar incomes, money is a good indicator of strength of preferences. It is hard to see how it is a good measuring rod when comparing the preferences of Americans and Bangladeshis, or M25 drivers and the people a hundred years from now.

My point is that there are two quite different ideas of what morality is. One view of morality is David Hume's - mutual cooperation for common benefit. The other view of morality is Immanuel Kant's - the equal consideration of interests. The first view means that more weight is given to the more powerful. It is a pragmatic morality. The second view means that everybody's interests are regarded as equal. It is an idealistic morality.

Welfare economics

Welfare economics ostensibly attempts to square this circle. The theory of marginal utility states that an additional unit of consumption (say, a

dollar) is worth less in terms of welfare to a rich person than to a poor person. This means that, in determining which course of action leads to the greatest total welfare, it is important to consider not just what leads to the largest total wealth for society, but also the distribution of that wealth. It would seem like an impossibly difficult task to work out what that distribution would be.

According to orthodox economic theory, competitive markets will arrive at a *Pareto optimum distribution*, the largest total amount of wealth. Since it is the largest, it would be impossible to redistribute in such a way as to make one person better off without making another worse off. When economists refer to *optimality*, it is this situation they normally mean. Since very few projects will produce only gainers and no losers, in cost-benefit analysis, the *potential Pareto optimum* is instead used. The potential Pareto is the distribution where the losers from the proposed project are compensated for their losses by the gainers. Since a project is only deemed worthy by cost-benefit analysis if the economic benefits outweigh the economic costs, there will still be some money left over for the gainers to keep. However, in practice losers are not compensated. The entire logic behind cost-benefit analysis is lost.

Another problem is that even if a potential Pareto distribution was achieved (by gainers compensating losers), if the original distribution did not optimise welfare (rather than total wealth), the new distribution will not either, except by fortuitous accident. That is because the redistribution does not solve the problem of the sub-optimality of the earlier distribution. It only compensates the losers from the new distribution for the change.

Cost-benefit analysis is central to neoclassical welfare economics. Welfare economics, taking account of marginal utility theory, regards the best distribution as the most egalitarian one that still maximises the total income. Redistribution distorts the market and reduces total income, so most economists oppose it. However, a certain amount of redistribution would actually *increase* total welfare even when *reducing* total income, because it is redirecting income to those for whom the marginal utility of an additional dollar is greater. In principle, it is possible to try to adjust the results of cost-benefit analysis by weighting the effects on poorer groups more than on wealthier groups, but this is rarely done.

Cost-benefit analysis of nature preservation relies on *contingent valuation* surveys. In these surveys, ordinary people are asked how much they personally would be prepared to pay for some environmental benefit or to prevent some piece of environmental destruction. Based on the average amount of money people say they would be prepared to pay, economists calculate the total monetary value members of society place on that aspect of the environment. If the economic benefits of a development would exceed that sum, it is deemed to be of net benefit.

Many people have been doubtful about the validity of the conclusions of contingent valuation surveys as they make assumptions that can be challenged. Contingent valuation assumes that people perceive their environment as a set of discrete objects that could be bought and sold. It also assumes that value is essentially derived just from individual self-interest. Certainly, these are assumptions that are taken as correct by nearly all economists. But do ordinary citizens think that way? And do they feel the questions they are asked are meaningful?

It has been known for a long time that many people surveyed for contingent valuation refuse to answer the questions. But what do the people who do participate think? For the first time ever, people who had taken part in a contingent valuation exercise were recently asked what they thought about it by a separate team of researchers. It turned out that the people valued nature as a common good, not in terms of money. Many told the researchers that they felt they had been misled by the economists, who had not told them how their answers would be used. They thought that decisions about conservation should be based on open democratic debate, rather than the results of secret questionnaires.¹⁵ These findings cast very serious doubt on the validity of contingent valuation surveys.

Contingent valuation surveys were originally introduced as a way of attempting to reform cost-benefit analysis so as to account for environmental values. Traditional cost-benefit analysis ignores environmental values entirely, and effectively gives them zero weight. Even when separate environmental impact assessments are made as well, such as for road-building schemes in Britain, planners tend to pay them very little attention.¹⁶

Cost-benefit analysis attempts to use money as a common measuring rod to express people's values. When resources are scarce, we have to make decisions about how much to prioritise different choices. It is commonly said that human life is "priceless", but in reality we are not prepared to spend all our income on life-saving. Michael Jacobs asserts that no one actually thinks a life is "worth" a certain amount of money.¹⁷ Human lives are not saleable commodities. The use of money values for human lives reflect that decisions must be taken between alternative states of

affairs, and one must be regarded as more valuable than another. His point is that 'value' in this context is simply a relative term expressing a ranking between alternative states of affairs. It does not require any connection with money or any other external scale of measurement. Jacobs argues that irreversible environmental losses (like the extinction of a species) are regarded by people in a similar way. He does not think it is meaningful to say that the preservation of a particular species, say, is 'worth' less than a million dollars a year. It must be compared with the alternatives. People might think that it was less valuable than spending a million dollars to prevent a famine, but more valuable than spending a million dollars on nuclear weapons.

Cost-benefit analysis and sustainability

The fundamental weakness with cost-benefit analysis from the viewpoint of sustainability is that it is not really able to deal with the concept. In *Blueprint for a Green Economy*, David Pearce proposed that in addition to cost-benefit analysis, a sustainability constraint should exist as an additional criterion for decision making. To simply forbid any project which depleted natural capital would be stultifying, but part of the proceeds from any proposed project that depleted natural capital should be put into compensatory projects to maintain natural capital, such as reforestation schemes.

Kerry Turner identified four levels of environmentalism in terms of their attitude to cost-benefit analysis¹⁸ (probably inspired by Tim O'Riordan's four-fold division¹⁹). Conventional cost-benefit analysis has an 'exploitationist' world-view. It is based on a particular kind of Humean individualist utilitarian framework which has no interest in

considerations of equity. It views nature solely as a collection of goods and services of instrumental value to human beings. The future value of the environment is discounted and justified by the assumption that economic growth will allow human-made capital to substitute for natural capital.

The modified cost-benefit analysis proposed by environmental economists has a 'conservationist' world-view. It requires maintaining a constant stock of natural assets out of concern for future generations. Turner claims that this is incompatible with utilitarianism, as it involves conferring "rights" on members of future generations who do not yet exist. It implies a contractarian moral philosophy, perhaps based on the theories of John Rawls.

A 'conservationist' world-view protects nature only on the grounds that human beings can benefit from its existence. The interests of non-humans are not directly considered, although the conservation of natural capital would tend to conserve the habitats of non-human life forms.

The radically modified cost-benefit analysis proposed by many environmentalists puts environmental considerations before economic ones. Economic analysis would be used only to indicate the most cost-effective ways of achieving environmental goals. This 'moderate preservationist' world-view would allow for some exploitation of ecosystems as long as they remained 'healthy' and biologically diverse. Turner links it to Aldo Leopold's 'land ethic'.²⁰ Essentially, it gives value to biological diversity, but not to individuals.

According to Turner, deep ecologists abandon cost-benefit analysis in favour of granting intrinsic value to nature. Intrinsic value is

independent of any usefulness to human beings. The aim becomes to maximise the sum of intrinsic and instrumental values, or some variant of this rule. One possibility would be to place intrinsic value above instrumental value so that human society has to use the minimum of resources in order not to deplete intrinsic value more than absolutely necessary. Turner claims that such an approach might involve sacrificing basic human values, including "fundamental rights to exist at an acceptable standard of living."²¹

Turner argues that the incidental effect of maintaining constant natural capital is to protect the values that are of concern to believers in the intrinsic value of nature. Turner also claims (incorrectly, as I will explain in the next chapter) that deep ecologists would find this unacceptable because they believe that the moral ground lies with those who intend to behave morally, not with those who obtain moral outcomes by pursuing other rules of behaviour.

Conclusion

Conventional cost-benefit analysis appears unable to deal with the implications of thinking about sustainable development. A concern for intergenerational equity would at the very least require an additional sustainability constraint to safeguard the interests of future generations, as David Pearce proposed in 1989. In addition, the current practice of cost-benefit analysis takes an approach to questions of intragenerational distribution which is internally inconsistent.

The problems with cost-benefit analysis go beyond that, though. Basing ethical decisions on economic value seems by its nature to skew decisions so as to favour the interests of wealthy people in the present day. The

interests of the poor, future generations and other species are all discounted by the approach. The problem lies not simply in the practice of cost-benefit analysis, but is really a result of the utilitarian ethical framework of mainstream economics. The next chapter will argue that a reform of mainstream economic theory to incorporate the concerns of sustainability and sustainable development would involve replacing its version of utilitarianism with a different ethical framework.

¹Herman E. Daly and John B. Cobb (1989) *For the Common Good*, Boston: Beacon

²*ibid*, p. 142

³Aubrey Meyer and Tony Cooper (1995) 'A Recalculation of the Social Costs of Climate Change', Global Commons Institute, London

⁴Aisling Irwin (1995) 'Green economist faces picket', *Times Higher Education Supplement*, 24 November

⁵Fred Pearce (1995) 'Global row over value of human life', *New Scientist*, 19 August

⁶Samuel Fankhauser and Richard Tol (1995) Appendix D to Meyer and Cooper, *op cit*

⁷Intergovernmental Panel on Climate Change (1995) 'Summary for Policy-makers of the Report of Working Group III', World Meteorological Organisation: Geneva

⁸R. Kerry Turner (1991) 'Environment, economics and ethics' in *Blueprint 2: Greening the World Economy*, edited by David Pearce, London: Earthscan

⁹Global Commons Institute (1994) 'The Unequal Use of the Global Commons', paper for IPCC workshop, Nairobi, 18-23 July

¹⁰Klaus Meyer-Abich (1993) 'Winners and Losers in Climate Change' in *Global Ecology*, edited by Wolfgang Sachs, London: Zed

¹¹Wilfred Beckerman (1995) *Small Is Stupid*, Oxford: Duckworth, p.61

¹²*ibid*, p. 62

¹³Paul R. Ehrlich and Anne H. Ehrlich (1991) *The Population Explosion*, New York: Simon & Schuster

¹⁴David Pearce, Anil Markandya and Edward B. Barbier (1989) *Blueprint for a Green Economy*, London: Earthscan, p. 51-2

¹⁵Fred Pearce (1996) 'Pounds and pence view of nature provokes uprising', *New Scientist*, 3 February, p. 6

¹⁶Michael Jacobs (1991) *The Green Economy*, London: Pluto

¹⁷*ibid*

¹⁸R. Kerry Turner (1991) 'Environment, economics and ethics' in *Blueprint 2*, edited by David Pearce, London: Earthscan

¹⁹Tim O'Riordan (1983) OECD Discussion Paper, Paris: OECD

²⁰Aldo Leopold (1949) *A Sand County Almanac*, New York: Ballantine, 1970

²¹Turner (1991) op cit, p. 221

CHAPTER 3.5

MORAL PHILOSOPHY AND SUSTAINABILITY

Introduction

The ethical framework of economic utilitarianism may be unable to cope with the concerns of sustainability, but what should be put in its place? The issue is about what we regard as ethically acceptable in terms of the distribution of well-being, sacrifice and risks between rich and poor, the present and the future, and humans and non-humans. That is an enormous field of moral philosophy to consider. Fortunately for our purposes, much of the recent debate has centred around the influence of one work, John Rawls' *A Theory of Justice*.¹ Rawls concentrated on the issue of equity within generations in his work, putting forward a strong critique of the utilitarian approach. It is not always appreciated how well his approach can be extended to consider the issue of equity between generations. The first part of this chapter outlines Rawls' ethical framework for relations within and between generations, and goes on to suggest implications for a Rawlsian approach to the ethics of sustainability.

Discussions of the rights of other species have concentrated on consideration of Leopold's land ethic and more recently on deep ecology. Michael Jacobs argues that strong sustainability would be as effective as an ecocentric ethic in guaranteeing the preservation of species and their habitats.² The second part of this chapter examines such collectivist ecocentric ethics and compares them with approaches based on consideration of the interests of individuals. Collectivist ethical approaches to the rights of other species are shown to involve attempts to justify granting such rights in terms of human self-interest. I turn to Peter Singer's³ arguments for equal consideration of the interests of all sentient beings as a basis for an attempt to construct an ecocentric system of ethics which is truly non-anthropocentric.

Ethics has been explained in evolutionary terms arising out of *reciprocal altruism* of the kind also seen in other animals. From that perspective, our ethics is ultimately based on genetic self-interest. An ethic of sustainability can be justified in terms of evolutionarily-motivated concern for the interests of descendants. However, although genetic self-interest can explain much of human behaviour, it cannot explain everything. Both Leopold and Singer have argued that there has been a historical process of an 'expanding circle' of ethical concern from the tribe to the ethnic group to the entire human race. Can it be expanded to include the rest of the biosphere?

Utility or fairness?

There are basically two approaches to moral philosophy which have been popular in the West since the nineteenth century. One has been utilitarianism, the other has been contractarianism. The whole idea of

equity as a fundamental principle is alien to utilitarianism, which seeks primarily to maximise the total amount of happiness (utility). The very idea of intergenerational equity is therefore contrary to utilitarianism, which largely explains why mainstream economists, who are classical utilitarians through and through, have had such difficulty in coming to terms with it.

Contractarian moral philosophies, like Rousseau's and Kant's, had an enormous influence in the eighteenth century Enlightenment and continued to be highly influential in continental Europe. But in English-speaking countries, the utilitarian philosophies developed by Bentham, Mill and Sidgwick for a time became extremely influential among the intellectual elites. What is more, because of the interest the utilitarian philosophers had in economics, their moral assumptions were adopted by economists throughout the capitalist world as the only rational approach.

The aim of classical utilitarianism is to maximise total utility. Jeremy Bentham put it as "the greatest good for the greatest number." The idea utilitarians had was that it was possible to create a 'calculus of utility', working out what would be the gains and losses in happiness over time resulting from any particular action. The morally correct action would be the one that would lead to the greatest increase in total happiness.

One well known objection to classical utilitarianism was that it seemed to call for an increase in population until the point where the increase in total happiness (marginal utility) of each additional person was only slightly greater than zero. What that would mean was a world with an enormous, but overcrowded and impoverished, population. Surely,

critics said, there was something wrong here? One utilitarian who agreed was John Stuart Mill. He put forward an alternative conception of utilitarianism, where the aim was the greatest *average*, not total, utility.

Most philosophers, and many other people, continued to find utilitarianism morally obnoxious. Acts which, on balance, lead to an increase in average utility are regarded as moral, regardless of the suffering they may cause to innocent individuals. The dignity of the individual counts for nothing in utilitarianism. This was brilliantly satirised by Aldous Huxley in *Brave New World*.⁴

The weakness of the utilitarians' opponents was that, although they had good arguments against utilitarian morality, they could not put forward a similarly broad social theory, or one that did not seem to rely on highly subjective judgements. John Rawls countered utilitarianism by reviving Kant's tradition of contractarian moral theory in a modern form. He started by considering what kind of social arrangements free and rational people would agree to in an original position of equality. This hypothetical situation would take place behind a 'veil of ignorance'. They would not know their place in society, their class, their natural abilities, the society's level of economic development or what generation they lived in. They would not even know what their personal conception of the good life would be. The veil of ignorance would prevent individuals or groups from being able to engineer the structure of society on the basis of particular interests. A society based on principles that would be agreed in this original position could be seen as 'fair' for all.

Rawls argued that people in his original position would choose a society based on two principles. The first would be of the most extensive basic

liberties for each person consistent with a similar liberty for others. The second would be that social and economic inequalities of outcome, such as inequalities of wealth and authority, are just only if they result in compensating benefits for everyone, and in particular for the worst off. The principles rule out justifying institutions on the grounds that hardships for some are offset by greater good for others. Rawls claimed that it is unjust for some people to have less so that other people can be better off, but it is not unjust for some people to be better off than others provided that the situation of the less fortunate is improved by the inequality. The idea was that since everybody's well-being depends on cooperation, without which nobody could have a satisfactory life, the division of advantages should be of a kind that everyone, including the worst off, could accept. Greater natural ability or being born into a better social position are not deserved, he said, and inequality of outcome can only be justified to the worse off if they benefit in absolute terms from it.

Rawls' second principle is a maximin rule. He drew from game theory to support his claim that his original position is one where the rational strategy is maximin. A maximin strategy is best in situations of uncertainty where probabilities are difficult to predict, when it is not worthwhile to take a risk of a poor outcome for a particularly good one, and when some potential outcomes are particularly poor. All three conditions apply to the original position.

Rawls pointed to a paradox in utilitarianism: "when society is conceived as a system of cooperation designed to advance the good of its members, it seems quite incredible that some citizens should be expected, on the basis of political principles, to accept lower prospects of life for the sake of others."⁵ Rawls argued that utilitarianism requires self-sacrifice by the

most disadvantaged members of society for the benefit of the more fortunate. Would anyone who might actually find themselves in this situation be prepared to agree to it?

Rawls claimed that the fundamental problem with utilitarianism is that it does not take seriously the distinction between individuals. The principle of rational choice for one person - to maximise happiness - is taken as the principle of social choice as well. Utilitarianism sums all individuals into an infinitely sympathetic and impartial spectator. The spectator is one self who includes all desires and satisfactions within one experience while imaginatively identifying with all the members of society. Only a perfect altruist would be capable of doing this. To choose to live in a utilitarian society, you would have to be a perfect altruist. Utilitarianism may be the choice of an outside observer, but actual human beings would be incapable of living that way.

However, Rawls' claim that the difference principle is the most rational choice from behind the veil of ignorance has been widely criticised by other philosophers. The difference principle is the most inequality-averse choice of a range of distribution schemes that could be chosen. A utilitarian distribution would be the least inequality-averse choice. In between lie an infinite number of distributions offering different trade-offs between average welfare and equality.

Equity between generations

So much for Rawls' discussion of equity between individuals, but what about equity between generations? He saw this as being a particularly difficult problem for any ethical system. His discussion of intergenerational equity preceded current concerns about the global

environment, and was mostly concerned with the rate of savings. Even so, Rawls' ideas about intergenerational equity are still quite interesting.

Rawls' aim was to maximise the long-term prospects of the least favoured over future generations. Each generation should not only preserve the benefits of culture and civilization it inherited, but also set something aside for capital accumulation. Rawls argued that, although it might seem that the least-favoured first generation would have no obligation to save for later generations, actually justice between generations should not follow his difference principle in the same way as for justice within a generation. That was because there is no way for later generations to help or harm earlier generations: "We can do something for posterity, but it can do nothing for us. This situation is unalterable, and so the question of justice does not arise."⁶

He looked at the problem of the savings rate between generations from the standpoint of the original position: "The parties do not know to which generation they belong, or what comes to the same thing, the stage of civilization of their society."⁷ People in the original position would ask themselves what they would think would be a fair savings rate at each stage of civilization, without knowing what stage they would live in. Rawls thought that at times when people were poor and savings difficult, a low rate would be required. In a wealthier society, the real burden of a higher rate of saving would be lower. Once the society had become wealthy and developed enough to have acquired all the institutions of Rawlsian justice, the savings rate would fall to zero. He did not see the goal of society as great wealth, but liberty and justice for all. He felt that beyond a certain level wealth would become a distraction or even a temptation to indulgence.

Each generation would save in order to enable the next generation to enjoy a better life. Each generation, except the first, would benefit from previous capital accumulation. So the people in the original position, who might find themselves at any stage of civilization, would consider what would be a fair savings rate at any point in history. They could then apply the appropriate rate for their generation.

It seems to me that the biggest problem with Rawls' approach to intergenerational equity is the conceptual difficulty people have with it.

John Pezzey said to me:

I've heard *endless* arguments about the philosophy of intergenerational equity and they all come back to some sense of, well, if you were forced to choose between where you are now and some sort of future generation then might you think differently, and might that not be cause to consider what would be a fair thing to do. And the answer that I always come out with is that is *such* a hypothetical consideration that it would be meaningless to most people. I don't know whether you've studied Rawlsian philosophy at all. I have this fairly naive reaction that at least it is in some sense physically possible to *conceive* of taking you from your current economic and social position and swapping you with some bum on the streets or queen in her palace... We could. It would violate all sort of human rights or whatever, but we could physically conceive of it happening... Time travel doesn't exist. You *cannot* switch yourself with someone a hundred years ago or a hundred years in the future. That's a different hypothesis. You're being asked to hypothesise something that's *completely* infeasible. There is not going to be any kind of intergenerational contract. This notion of getting different generations to meet behind a veil of ignorance, it's *so* bizarre that I can't attach any great significance to it. (John Pezzey, University College London, 23.3.94)

Pezzey is surely right that trying to apply contract theory to intergenerational equity seems bizarre. The Kantian imperative to do to others as you would be done by makes some practical sense when others are in a position to retaliate. But there is no way to enforce any kind of intergenerational contract. Even so, Pezzey has written that it is very hard

to give a reason for caring about potential people in future centuries other than by appealing to basic intuitive notions of fairness.

In fact, there is a difference between Rawls' treatment of justice within generations and justice between generations. For justice within a generation Rawls' theory of 'justice as fairness' is to imagine a *procedurally* fair way for a group of people who did not care for each other's welfare to agree on a structure for society that defended everyone's interests. But Rawls' thought experiment could never be conducted in real life because the participants would know what their actual personal attributes were and would be influenced by that knowledge.

The difference in the case of justice between generations is not so much the impossibility of a meeting between generations, but the impossibility of enforcement of any intergenerational contract. Without a time machine, later generations are absolutely powerless to retaliate against a non-cooperative earlier generation. Rawls himself saw this fact preventing the inclusion of members of different generations in the original position. However, one of his students, David Richard, did not accept this view.⁸ He argued that a person's generational position is a morally arbitrary fact in the same way as their sex or race. It is a question of whether justice is a matter of mutual advantage or a matter of equal consideration.

There are difficulties in extending the original position to a meeting between generations, but it is interesting to consider the idea. As Brian Barry has pointed out,⁹ Rawls' treatment of justice between generations assumes that if each generation cares for its children, all will be well. He does not consider the possibility of doing things that might not have

negative effects for several generations. But Barry does not think through the implications of this comment. Rawls rejected the idea of applying the difference principle to justice between generations on the grounds that the poorest first generation would not save to allow later generations to become more prosperous.

We now know that the issue of justice between generations is much more complicated. There is no reason to suppose that the first generation is necessarily going to be the worst-off one. Wilfred Beckerman claims that the strict application of Rawlsian principles to justice between generations would either lead to all generations sharing the poverty of the first, or "if we can rely on technical progress without savings and capital accumulation, earlier generations would be justified in running down their initial endowment of natural capital."¹⁰ But Beckerman is assuming that "technical progress" can occur without any investment, and that natural capital can be expended without negative effects on future generations. The first assumption is impossible, the second merely extremely improbable, depending on an extremely high rate of technical progress capable of solving all problems indefinitely.

When you think about what Rawlsian principles would mean intergenerationally, it becomes clear that the choices of each generation influence which future generations, if any, exist. It is perfectly reasonable to stick to Rawls' idea that the people in the original position do not know which generation they belong to. Not knowing which generation they belong to, it is their job to draw up the principles they would be prepared to live by if all other generations lived by them too. However, we have to consider not only the generations which will actually exist, but all the *potential* generations which might exist. Beckerman objects

that temporally different generations cannot be represented because the choice in the original position will determine how many generations exist. This is an example of a literal-minded misunderstanding that many philosophers have also fallen into when discussing Rawls. The whole point of the original position is as a device to force the reader to consider what kind of structures they would agree to live under if they did not know where in those structures they would actually end up.

When you consider justice between generations, it turns out that just as the difference principle would imply no savings, utilitarianism would imply a very high savings rate of about fifty percent.¹¹ Rawls' idea was that the savings rate should start out very low in a poor society, rise as incomes rose, and then fall away to zero when a prosperous society had emerged. Rawls saw no value in an extremely affluent society, as it implied an emphasis on materialist and consumerist values. If you imagine yourself in the original position, not knowing which generation you would belong to, this slight deviation from the difference principle is not so unreasonable, because very large economic benefits accrue to later generations for the sake of a small sacrifice from the earliest generations, thanks to the power of exponential increase.

When you consider environmental risks, which Rawls ignored, the difference principle re-emerges as a sensible strategy under situations of uncertainty where the actual risks are unknown. In this case, it is the difference principle not between members of the same generation or between different generations. It is the difference principle between potential worlds. In other words, it seems to me that you would want your predecessors to have chosen the path of development with the best

worst-case outcome for your generation. The first rule to fall out of this would be the precautionary principle.

Genes for the future?

An alternative approach to sustainability, pioneered by John Pezzey,¹² is by appealing to genetically-based motivations. Human beings generally show a great deal of concern for their children's futures. But Dennis Meadows told me: "They *do* care about their children. They don't care about anybody else's children." This is a common sceptical response to the claim that people care about the future. The general point was dealt with by Herman Daly and John Cobb:

Your great-great grandchild will also be the great-great grandchild of fifteen other people in the current generation, many of their identities now unknown. Presumably your great-great grandchild's well being will be as much an inheritance from each of these fifteen others as from yourself. Therefore it does not make sense for you to worry too much about your particular descendant, or to take any particular action on his or her behalf. The farther in the future is the hypothetical descendant, the greater the number of co-progenitors in the present generation, and consequently more in the nature of a public good is any provision made for the distant future. To the extent that you are concerned about the welfare of your descendant, you should also be concerned about the welfare of all those in the present generation from whom, for good or ill, your descendant will inherit. Thus a concern for future generations should reinforce rather than weaken the concern for present justice - contrary to what is often supposed.¹³

Daly and Cobb argue that the consequence of sexual reproduction is towards community concern and away from individualism. John Pezzey makes the rather different point that it is sexual reproduction which makes concern for the future a public good, rather than something to be left to individuals.¹⁴ He speculated that we discount the future to reflect the dilution of our genes over the generations. Pezzey developed a mathematical model which shows that the 'mating externalities' of

sexual reproduction would tend to lead individuals to reduce their bequests to their children below the 'socially optimal' rate that would be calculated in traditional economic models which assume asexual reproduction. Pezzey showed that even when considering the welfare of the next generation or two, sexual reproduction introduces externalities that can lead to the future being treated in a sub-optimal (let alone unsustainable) way. Sexual reproduction makes sustainability and the welfare of your descendants a public good. The nature of the situation means that individuals' concern for their children is not enough; sustainability is a public good which requires public policies to influence behaviour.

It seems that the genetic dilution caused by sexual reproduction may make it a rational strategy for individuals to discount the welfare of future generations in personal decisions, but also makes it rational for individuals who care about the long-term success of their genes to support the collective welfare of the group their descendants will breed within. Such arguments have been used by evolutionary psychologists to explain the evolution of morality.

The distinction between private and public choices, between situations where free-riding is easy and where it is hard, is the difference between being a consumer and being a citizen. Michael Jacobs has argued that while it is rational to discount the future as a consumer, it is not rational to do so as a citizen.¹⁵

The idea of genetic dilution makes things more complicated, though. When people think about the situation of their descendants, they tend to think of people in a similar relative social position to themselves. But in

industrialised societies, class structures are not so rigid between generations. New Right thinkers like Hayek have used this point to support the idea that large inequalities of wealth reflect differences in individual effort and ability, rather than social oppression. So they call for us to leave the distribution of wealth to the invisible hand of the market, as classical utilitarianism does. However, the New Right elevates the freedom of bequest to the status of a basic human right, which undermines economic efficiency (and social justice) by creating a class system. The choice of rich people who want genetic success would be a rigid class system. People at the bottom of the social scale would want a socialist revolution tomorrow to increase their immediate genetic success. The bulk of people between the two extremes would want a social minimum to protect their less fortunate descendants. But they would not want such an inequality-averse society as the Rawlsian one, as that would not serve the interests of their more fortunate descendants.

In a society with reasonably open breeding patterns, the long-term genetic interests of the individual converge over several generations with the interests of the entire future society. It would be highly irrational to favour any policy which might conceivably threaten the long-term survival of the genetic group, still less the species. In fact, the rational strategy to support would be a maximin one which chose the approach to the economy and the environment where the best of the worst conceivable outcomes was chosen. Mainstream economists, such as Partha Dasgupta, would consider this strategy highly 'risk-averse', but that is only because, just as economic utilitarianism fails to take seriously the difference between the individual and society, it fails to take seriously the difference between the individual and the species.

No matter how seriously you take arguments from genetic self-interest, it should be clear that there is something very irrational about risking the extinction of our species for potential economic advantage. When Partha Dasgupta suggested discounting the benefit of economic developments by the percentage of the risk of their making the human race extinct, he unwittingly showed how unreal mainstream economics is. Such a view comes from the economic approach of summing all possible futures from any set of policies and then looking to see which set of policies gives the highest average income across different futures. The extinction of the human race counts as an outcome leading to zero income.

It might be objected that taking such extreme risks is not unknown. We took the risk of extinction in the Cold War nuclear arms race. It was a strategy satirised as saying "better dead than red." It wasn't a situation that was freely chosen, though. It arose by historical accident. The approach mainstream economics takes to environmental issues is to *choose* the risk of extinction rather than give up the possibility of a higher income. It seems to miss the point that the extinction of the human race is quite a serious thing to risk for the possibility of greater economic gain: "better dead than green" could be the motto.

Survivability is the approach which sets as its first priority the avoidance of human extinction. It will not accept a 'zeromin' strategy, to risk evolutionary suicide. A maximin strategy leads not to sustainability directly, though. It leads to the precautionary principle. The precautionary principle avoids taking any environmental risks which may be irreversible. It is tied to the idea of at least the absolute preservation of critical natural capital or the general preservation of natural capital. The precautionary principle is a radical departure from conventional practice.

Remarkably, it was adopted by the environment ministers of the North Sea countries at the Bergen Conference in 1988. The story of the decision to build the Öresund bridge between Denmark and Sweden is a clear example of how it has not been implemented. The loss of bird life and the risk to the long-term water flow in the Baltic were over-ridden for the perceived economic benefits of a road link.

Economists like Beckerman ridicule the precautionary principle. They ask why we should forgo certain economic benefits (for example, more trade between Central Europe and Scandinavia) because of a small risk of major environmental damage. Such a "risk-averse" approach is stupid, they say. And, although the Swedish environment minister resigned in protest at the Öresund bridge decision, that seems to have also been the view of the mainstream of even the Swedish government.

A supporter of the precautionary principle could draw an analogy with nuclear power. Risking environmental disasters on the scale of something like the Chernobyl accident is a stupid gamble, environmentalists say. The claimed benefits are outweighed by the risks involved. In situations of large but indeterminate risks, the prudent approach is to keep risk under control. If you take a large number of such risks, you can be sure some will rebound very badly - risks *accumulate*, so that taking a large number of small risks is equivalent to taking a big risk. Are the risks worth taking? The precautionary principle puts preventing irreversible environmental damage above potential economic benefits. It gives priority to the environment rather than the economy.

Many environmentalists go beyond the ethics of sustainability and the precautionary principle as an argument for environmental preservation.

They take up an ecocentric position, arguing that other species and the natural world as a whole have value in themselves well beyond the benefits that human beings derive from their existence. These arguments are often used in support of a moral framework like Leopold's land ethic or the philosophy of deep ecology.

Anthropocentrism and ecocentrism

Michael Jacobs argues that the anthropocentric goal of sustainability, to maintain the environment for the sake of future generations of human beings, would conserve the species, and to a large extent the ecosystems, that an ecocentric ethic would wish to see preserved.¹⁶ He emphasises that sustainability would in practice lead to a view of environmental protection that would have much more in common with an ecocentric standpoint than with an approach based on valuation. That is because sustainability (or at least 'strong' sustainability, which preserves natural capital) does not see the benefit of the environment in solely economic terms. Similarly, Kerry Turner argues that strong sustainability is similar to the Land Ethic.¹⁷

Jacobs is sympathetic to an ecocentric approach. He writes that the attitude of 'reverence for nature' which is the foundation for an ecocentric view is almost certainly essential psychologically and culturally for environmental protection. The problem he identifies is that so far no coherent ecocentric philosophy has been worked out. Jacobs points out that an environmental ethic based solely on protecting individuals (like animal rights philosophy or, Jacobs seems to think, deep ecology) would fail to preserve an endangered species whose members were in competition with members of another species. An environmental ethic

concerned only with ecosystems (like the Land Ethic) might be prepared to sacrifice human lives for the health of the ecology.

Jacobs is right that no satisfactory ecocentric ethic has yet been developed, but I will argue that it is not for the reasons he supposes. Deep ecology, although it is derived from the Land Ethic, does give value to both the individual and the collective. Its weakness is that its principle of 'biocentric egalitarianism in principle' seems to make moral choices impossible.

The Land Ethic

In his book *A Sand County Almanac*,¹⁸ Aldo Leopold argued that "we abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." The land ethic stated that "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."¹⁹ The Land Ethic restricts its concern to the healthy functioning of entire ecosystems. Its ethical concern is in a sense an extension of enlightened self-interest. It has no concern for the well-being of individual beings or species that do not play an important role in its functioning.

Leopold's position was somewhat ambiguous on this question. At times he appears to be arguing that belief in such an ethic on the part of land owners and users is necessary to maintain the land in the long term for human benefit. At other times Leopold appears to be arguing for the land ethic as a matter of species' rights as members of the "biotic community". A careful reading of Leopold's equivocations tends to support the view that Leopold valued the existence of species for their own sake rather

than for long-term human interests. At one point Leopold says: "When one of these non-economic categories is threatened, and if we happen to love it, we invent subterfuges to give it economic importance."²⁰ He gives the example that at the beginning of the century songbirds were supposed to be disappearing. Ornithologists put forward "distinctly shaky" evidence that the birds were necessary to control insects. He concludes: "It is painful to read these circumlocutions today. We have no land ethic yet, but we have at least drawn nearer the point of admitting that birds should continue as a matter of biotic right, regardless of the presence or absence of economic advantage to us."²¹

On almost the last page of *A Sand County Almanac*, Leopold reveals that he places what is now called 'existence value' on remote wilderness he will never see: "Is my share in Alaska worthless to me because I shall never go there?"²² The distinction Leopold has drawn between economic and non-economic interests is revealed as a cover for his biocentric ethic. Leopold uses it in an attempt to blur the more radical distinction between the interests of the human community and the interests of the rest of the biotic community.

It seems that Leopold was trying to smuggle out a biocentric ethic within anthropocentric justifications. J. Baird Callicott defended a prudential interpretation of the land ethic,²³ quoting Leopold's remark that "the path to social expediency is not discernible to the average individual."²⁴ Andrew McLaughlin puzzles over the reason why both Leopold and Callicott, "who both clearly have a deep love and respect for the land"²⁵ should assume that others are incapable of their sense of self-identification with the natural world and need prudential arguments.

A thought experiment

It seems to me that the key problem for attempts to promote a non-anthropocentric ethic is economic, rather than philosophical. I will attempt to explain why by use of a thought experiment. Imagine that it turns out that there really is life on Mars. What arguments exist to support an ethical relationship with such alien life forms? Certainly the kind of prudential arguments and appeals to membership of the "biotic team" put forward by Leopold would not work. It might be possible to argue that these life-forms were so scientifically valuable that they must be protected for that reason. But it seems very likely that most people would support the protection of Martians from development for the same reason that they have supported the protection of Antarctica, despite its remoteness and inaccessibility for them. Most people in contemporary Western societies value parts of nature for their own sake, regardless of utility to themselves personally.²⁶ It is only when its protection is strongly contrary to their own perceived interests that they do not. It is unlikely we would suffer any noticeable ecological effects globally if pandas or elephants disappeared. Chinese peasants and African poachers would notice their loss more directly. But they have short-term economic interests contrary to preservation.

The Martians would be entirely alien life forms that we could claim no evolutionary kinship with, and which we could exterminate with impunity. The arguments generally put forward for an ecocentric ethic would not apply to them. We would value the Martians enormously *because* they were so different from us. It is not simply the value to science, but a *spiritual* value, that would be felt. The discovery of life on Mars, ironically, would make us conscious of how valuable to people

biological diversity is for its own sake. What masks that fact presently is the strength of economic and other anthropocentric arguments put forward for interference with other life forms.

Leopold's arguments are subterfuges to give anthropocentric, if not economic, importance to the biological diversity he valued. It is hard to believe that he would have considered Martians outside the ethical circle, even though they clearly could not be part of our biotic community. It should be clear that the 'community' argument is also subtly anthropocentric. It still argues that it is because of their being part of something we ultimately need for our survival that we should value other species. The anthropocentric/ecocentric split in environmental ethics has strong parallels with the division between frameworks for inter-human morality based on mutual benefit and on equal consideration. What Leopold was trying to do was political: provide an anthropocentric justification for his biocentric ethic.

Deep ecology

Deep ecology holds that the well-being and flourishing of non-human life on Earth have value in themselves, independent of the usefulness of the non-human world for human purposes.²⁷ Much of the confusion about deep ecology comes from misinterpretations made by critics because of the tendency of its founder, Arne Naess²⁸ (and others since) to use the liberal individualist language of "rights" metaphorically in describing what is an extremely holistic philosophy. Warwick Fox explains the basis of deep ecology (or transpersonal ecology, as he prefers to call it) in terms of the unity of all phenomena.²⁹ Deep ecology has at its heart Gandhi's idea of "self-realisation". According to Gandhi, true self-realisation comes

in selfless action, in identification with others and the finding that your own individual self-realisation cannot be separated from the self-realisation of those around you. Gandhi was once asked if his aim in settling in a village and serving the villagers was purely humanitarian. Gandhi replied: "I am here to serve no one else but myself, to find my own self-realisation through the service of these village folk."³⁰ Gandhi drew on the tradition of Mahayana Buddhism, rather than traditional Hinduism, teaching that the further along the path to liberation a human being proceeds, the greater the identification and compassion for others and therefore the greater the effort to help others along the same path. Gandhi identified with all living beings and the Earth itself, and sought to minimise his exploitation of other beings as far as possible. Naess's deep ecology is inspired by Gandhi's practice of life.

The land ethic and deep ecology share the attribution of ethical value to non-human life. Both share the view that we cannot draw the sharp boundaries between human interests and the interests of non-humans that anthropocentric ethics do. Where deep ecology differs from the land ethic is that it takes the non-anthropocentric principle much further. The concern of the land ethic stops at the level of the whole ecosystem. It is concerned for the maintenance of healthy climax ecosystems. It is prepared to accept management for human ends, provided the ecosystem as a whole remains healthy. Deep ecology is concerned for all levels of the system.

One distinctive feature of deep ecology compared to other forms of ecocentrism is its emphasis on an approach to life, rather than an ethical system. Deep ecology has attracted a good deal of criticism, in particular for 'biocentric egalitarianism'. Many critics (for example, Redclift,³¹ Porritt

and Winner,³² Bookchin,³³ Daly and Cobb,³⁴ Jacobs³⁵) have argued that we cannot give, say, an earthworm or a dandelion or an AIDS virus equal rights to a human being. They claim that human beings are much more important and valuable than these entities. However, this argument against deep ecology is based on a misunderstanding. Deep ecology does not really grant equal "rights" to all beings, but rather gives equal consideration to the interests of all entities. One way to understand the distinction is by drawing on the writings of the animal liberationist Peter Singer. Deep ecologists and animal liberationists are well known for their mutual dislike. But the bitterness of their dispute is reminiscent in some ways of the struggles between small leftist groups. The bitterness is because they share so many beliefs that the disagreements that remain are all the more deeply felt.

Speciesism

Singer³⁶ puts forward the idea that it is "speciesist", by analogy with sexism and racism, to deny certain rights to members of other species solely on the grounds that they are not human beings. Species, like sex and race, is not a morally relevant criterion alone. The criteria commonly proposed by defenders of our treatment of animals like rationality, self-awareness, language, the capacity to enter into contracts, the capacity to understand one's own mortality, are too restrictive for the purpose of justifying the exclusion of animals from moral considerability. We grant rights to many human beings - infants, the severely mentally handicapped and the senile - who are no more capable of these supposedly unique human attributes. We do not perform painful experiments on them, or hunt them for sport, or eat them. Singer goes on to argue that the morally relevant criterion for the treatment of other

animals is awareness and hence the capacity to suffer. To be logically consistent, we must grant equal consideration to the suffering of other animals. Not to do so is speciesist. Equal consideration is not the same as equal rights. It would be absurd to grant a dog the right to vote or to freedom of speech. That is no different from the way that it would be absurd to grant men the right to have an abortion.

The individual versus the collective

Deep ecologists accept much of the animal liberationist argument in principle. They challenge two aspects - the insistence that sentience is the sole basis for moral consideration, and the limitations of what they see as merely an attempt to extend liberal principles to individual animals.

Why should sentience be the basis of moral considerability? Singer argues that an entity must be aware of its interests to have them. Deep ecologists counter that plants and animals like jellyfish may not be aware that they have interests, but they behave as though they have them. They internally regulate their homeostasis, actively avoid noxious stimuli and seek positive stimuli. Sentience is merely the capacity to mentally express interests. The crucial characteristic seen as the basis of moral considerability in this approach is the capacity for *autopoiesis* (self-production). Living entities are primarily and continuously concerned with the regeneration of their own organisational activity and structure. They act as Kantian 'ends in themselves'. What better basis is there for thinking that something matters for itself?³⁷

Deep ecologists also object to animal liberationists' emphasis on the individual. They consider the possibility of animal liberationist logic of minimising suffering leading to human beings attempting to make

carnivores herbivorous, or at least killing their prey in a humane fashion before feeding it to them. Singer actually does not take his argument that far. He does not believe that it is viable for human beings to attempt to control nature like that.

Deep ecologists consider that response to be an evasion on Singer's part. Their argument is that predators and prey have co-evolved. Lions and antelopes would not be lions and antelopes if they were not engaged in their ecological relationships. The relationship has evolved over millions of years and been "flattened" into their genes. It determines the kind of beings they are physically and behaviourally. Although individual antelopes might not feel about it this way, the relationship of the two species is essential to their existence. Deep ecologists give priority to ecological relationships (above the interests of individuals) and the view that what an entity *is* cannot be divorced from those ecological relationships.

Warwick Fox³⁸ responded to criticisms from the animal rights philosopher Tom Regan³⁹ that a land or biospheric ethic amounts to "environmental fascism", sacrificing individual organisms for the good of the whole. Warwick Fox counters that a biospheric ethic logically necessitates concern for individual organisms as well.

Leopold's land ethic is based on an intuitive grasp of the organismic nature of ecosystems and the Earth as a whole. He saw ethics as self-imposed limitations on freedom of action deriving from the recognition that the individual is a member of a community of interdependent parts. Leopold stated in an early essay that the Earth was alive, "vastly less alive than ourselves in degree, but vastly greater than ourselves in time and

space" and "a moral being respects a living thing."⁴⁰ Leopold concentrated at the level of individual ecosystems, while James Lovelock more recently has concentrated at the level of the biosphere, or Gaia.⁴¹ Gaia is a vast autopoietic system, or a superorganism. Fox argues:

If "wholes" such as ecosystems and the ecosphere are considered to be worthy of moral consideration by virtue of the fact that they have interests of an intrinsic kind (namely, autopoietic interests or interests in their own self-regeneration) then the moral considerability of individual biological organisms is *guaranteed* since the fact that these kinds of entities have interests of this kind is even easier to establish. Thus, whatever their emphasis may appear to be, proponents of ecosystem ethics and ecosphere ethics are essentially engaged in making the point that it is not *only* individual biological organisms that have interests and so are worthy of moral consideration.⁴²

The trouble that Fox places himself in here is that by giving logical priority to the interests of individual organisms as 'autopoietic systems', he would seem to be required to put the interests of individuals before the rather abstract 'autopoietic system' that is an ecosystem. In other words, he is not showing why we should leave predator-prey relationships alone.

The confusion in deep ecology

What deep ecologists claim to value is 'Self-realization' - the well-being and flourishing of all life (in its broadest sense) on Earth, and the richness and diversity of that life. Therefore, value is placed on maintaining the maximum degree of biological diversity, but also on the well-being and flourishing of individual organisms. That includes the well-being and flourishing of human beings. In his original 1973 essay, Arne Naess wrote that human beings are as entitled to live and blossom as other species,

and this inevitably necessitates some killing of, suffering by, and interference with, the lives and habitats of other species.⁴³

Deep ecologists have generally shied away from the fact that this requires taking ethical decisions about which organisms are to be killed, suffer, or be interfered with. Robyn Eckersley is a former student of Warwick Fox who saw that this was a real problem for deep ecology as a practical philosophy. She wrote:

In this respect, the degree of sentience of an organism and its degree of self-consciousness and capacity for richness of experience are relevant factors (as distinct from exclusive criteria) in any ethical choice situation alongside other factors, such as whether a particular species is endangered or whether a particular population is crucial to the maintenance of a particular ecosystem.⁴⁴

Eckersley is in a sense bringing back hierarchy to replace 'biocentric egalitarianism'. But it seems undeniable that sentient beings have interests that non-sentient beings do not. Their 'well-being and flourishing' requires that these are taken into account. In taking decisions, some entities will have interests that must be given priority over the interests of others. Deep ecologists can object to that, but to ignore it makes a nonsense of the idea that entities have interests. A sensible ecocentrism would only require that equal consideration is given to the interests of different entities, and that entities are not discriminated against on irrelevant criteria.

Eckersley rejects criticisms that deep ecology is insensitive to the needs of poor and oppressed human beings by collectively blaming the human species as a whole for the ecological crisis, rather than specific nations, groups or classes. She argues that since deep ecologists want human

beings to achieve self-realisation (within ecological bounds), they *necessarily* support social justice in the human community.

However, the sort of arguments deep ecologists give for why we should not interfere with natural predation also suggest that human beings should go back to live in our original ecological niche, as hunter-gatherers. Attempts to 'better' our lives by growing crops, eliminating diseases and generally using technology place us outside the natural ecological relationships and boundaries we genetically evolved within. In reality, of course, it would be completely impossible for several billion human beings to live in that way. It is this kind of thinking that underlies deep ecologists' calls for dramatic reductions in human population. Most deep ecologists are not really 'neo-primitivists'⁴⁵ and want to hang on to many of the benefits technology has brought the human race. Doing so, however, puts deep ecologists in an inconsistent position because they are effectively renouncing biocentric egalitarianism by allowing human beings to escape from the brutality of nature.

A further problem for deep ecology is that the claim that self-realisation becomes 'Self-realization' through total identification with the rest of the biosphere is implausible. A human being seeking self-realisation only needs to pursue a policy of enlightened self-interest. It is very difficult to imagine what it would mean psychologically to identify one's own interests as identical with those of the entire biosphere. The idea that identification avoids the need to develop an ethical system is surely false. It would still be necessary to have some set of rules to decide which interests in the biosphere to prioritise. How could an individual be able to identify all the interests in the biosphere and then simply intuit the 'right' course of action? The claim itself seems an attempt to blur the

difference between morality as enlightened self-interest and morality as equal consideration of all interests.

Ecocentric ethics and the status of animals

Is it possible to construct an ecocentric ethic of equal consideration? More importantly, must a morality based on equal consideration of interests be non-anthropocentric? Peter Singer's arguments for equal consideration of the interests of animals have made an enormous impact. Before he wrote, philosophers had not critically considered conventional views on the status of animals. They had tended to repeat traditional justifications for the treatment animals receive from humans. Since Singer's contribution, a great deal of discussion has gone on about the question of whether or not animals have 'rights'. It is important to understand, though, that Singer is a utilitarian, so he does not believe that either animals or humans have 'rights', merely interests. Singer's ideas flow from a famous statement by Jeremy Bentham, the founder of utilitarian philosophy, on the moral status of animals: "The question is not, Can they *reason*? nor Can they *talk*? but, Can they *suffer*?"⁴⁶

Unlike Singer, Bentham did not object to humans killing animals to eat, on the grounds that animals did not dread death in the way that humans do, and that death at human hands was speedier and less painful than a natural one. Singer, as is well known, advocates vegetarianism because of the suffering to animals in farming and slaughter. He rejects Bentham's argument here as not based on reality. Singer had originally argued further that, even if animals could be reared for food in a way that gave them good lives and slaughtered without fear or pain, the practice would still be morally wrong, because it required the belief that bringing a being

into existence confers a benefit on that being - and to think that, we have to believe that it is possible to benefit a non-existent being. Singer believed that was nonsense. Fifteen years later, in a new second edition, he had changed his mind. He now thought that the killing of a sentient being that lacked a sense of its own existence in the future might not be inherently wrong if it was replaced by another being which would lead an equally pleasant life, although he thought the idea had an "air of peculiarity".⁴⁷

Singer's ideas about the status of animals have been challenged by more radical 'animal rights' philosophers, such as Tom Regan,⁴⁸ who think that he does not go far enough. But even as they stand, Singer's arguments suggest a quite revolutionary change in our treatment of both captive and wild animals. That is because the way humans treat animals at present takes virtually no account of their interests. Few people today accept Descartes' idea that animals are incapable of suffering because they are merely unconscious automata (only humans having souls). The Cartesians thought that the screams of a dog being cut open were merely "the ghost in the machine". The notion goes against both logic and all that we know about physiology.

Michael Leahy is one of the three or four philosophers who has attempted to refute Singer and Regan, defending our present treatment of animals.⁴⁹ He has argued that animals may be conscious, but they cannot think - they lack beliefs or desires. The evidence for this is taken to be that animals lack language, and it is claimed that Ludwig Wittgenstein had showed that language is necessary for thought. A little reflection should make it clear that although human thoughts are normally expressed in a language and there are certain kinds of thoughts that require language or

symbols, there is no reason why language is necessary in order to have beliefs or desires. Observation of animals shows that although they lack language, many species act in ways that can only be explained if they have beliefs.⁵⁰ Leahy accuses the psychologists and ethologists who have drawn such conclusions of anthropomorphism. They are wrong to think that animals have beliefs, apparently, because they have not realised that Wittgenstein showed it was impossible. Leahy's position is that the only kind of suffering animals can experience is physical pain - although they suffer that less than we usually think, he asserts. Animals cannot experience fear, for instance, because that would imply a degree of self-consciousness he claims they cannot have.

In terms of environmental ethics, it is really quite easy to show a very strong case for believing that animals have interests in their own welfare and that their existence is a good thing in itself (in other words, that the lives of animals have intrinsic value). It is clear that consideration for the interests of animals flows directly from the philosophy of utilitarianism. An anthropocentric utilitarianism that ignores the interests of animals, the kind normally practised by economists, simply contradicts its own philosophical basis.

Contractual theories of ethics have more difficulty incorporating animals because animals are incapable of negotiating moral contracts, or acting as *moral agents*. Tom Regan⁵¹ takes up Singer's arguments about the similarity between the moral status of animals and of human beings who are incapable of acting as moral agents, such as the mentally handicapped or young children. Regan uses the idea of *moral patients*, beings who are not moral agents, but still are capable of desires and suffering. He attacks Immanuel Kant's idea that we can regard animals as means not ends, and

cannot wrong them directly. Maltreating animals is only wrong because it may lead people to maltreat other people. Kant's argument for why human beings are ends in themselves depends on the status of human beings as moral agents. The result is that Kant either (a) thought that young children and mentally handicapped people could be sadistically tortured without doing them wrong directly, or (b) that their status as human beings meant they could not be tortured without doing them wrong. Kant seems to have thought (b), but was clearly being logically inconsistent, because his theory of justice included only moral agents. If he thought (a), he would have not been inconsistent, but morally arbitrary. The arbitrariness is because there seems no good reason for supposing that the reason it is wrong to torture small children is since it may lead to torturing older people.

Kant's argument has been recycled by Michael Leahy⁵² in his attempt to refute animals rights philosophy. Leahy argues that only moral agents can have rights, so animals cannot have rights. He gets round the problem of the status of human beings who lack moral agency by arguing that human beings as moral agents are free to include other human beings who are not moral agents in their circle of ethical concern. Leahy's position grants rights to human moral patients by arbitrary *fiat*. Leahy simply ignores Regan's refutation of Kant (although he disputes other points Regan made in the same book) and in this way manages to avoid tackling the central argument of animal rights philosophy. Leahy conveniently concludes that we can use animals for any purpose we want, as long as human society accepts it.

John Rawls excluded animals from his theory of justice. He considered the question of whether it is necessary to be a moral agent in order to be

entitled to justice. He concluded at one point that it was not necessary for a being to have a sense of justice in order to be entitled to justice. At another point on the same page he wrote that because creatures without a sense of justice would be unable to take part in the original position "we are not required to give strict justice to creatures lacking this capacity."⁵³ If we are not required to give them strict justice, what is required? Rawls thinks that we have a duty not to be cruel to animals. But since animals have been excluded from the original position, it is not clear why rational self-interested people would agree to this. However, Rawls includes within the scope of justice human beings who lack a sense of justice because they have not yet developed it, or have temporarily lost it. Rawls thinks that this "seems necessary to match our considered judgements" about the rights of children, and also that "regarding the potentiality as sufficient accords with the hypothetical nature of the original position, and with the idea that as far as possible the choice of principles should not be influenced by arbitrary contingencies. Therefore it is reasonable to say that those who could take part in the initial agreement, were it not for fortuitous circumstances, are assured equal justice."⁵⁴ This is a move away from a strict commitment to the idea that only beings with a sense of justice are entitled to justice. Brian Barry comments "if a day-old infant can be represented in the original position, why not a monkey or a dog?"⁵⁵ Barry points out that, even so, Rawls' belief in direct duties to animals puts them in a better position than future generations of human beings, to which duties are "parasitic" on justice among contemporaries.

This may seem strange, but it is not really so surprising. It is much easier philosophically to support the idea that we have moral duties towards animals alive at present than the idea that we have moral duties towards

potential human beings who may never even exist. Since it seems a morality which is neither incoherent nor arbitrary must attribute intrinsic value to the lives of animals as well as humans, this provides a powerful argument for the protection of the natural world. It is very interesting to ask why the strong philosophical case for consideration of the interests of animals is generally ignored. The reason, of course, is the prevalence of prejudice in favour of human beings (even ones who don't exist!) and against non-humans.

This turns on its head Michael Jacobs' argument that we can protect the natural world indirectly by protecting the interests of future generations through a sustainability ethic.⁵⁶ We can instead protect future generations of humans by protecting animals from damage or destruction of their habitats. What is most intriguing about this way of looking at things is what it shows about ideas of morality. Morality can be seen either in terms of enlightened self-interest or in terms of equal consideration. John Rawls tried to walk a tightrope between these two conceptions in his theory of justice. It is in his discussion of the treatment of animals that the tension becomes most apparent.

Sustainability is usually justified in terms of an ethic of equal consideration of interests. The interests that are considered under the slogan of sustainability are only those of human beings (existing or potential). A non-arbitrary ethic of equal consideration would spread its concern wider to include the interests of other sentient beings.

Selfish genes

But sustainability can instead be justified, as John Pezzey has argued, in terms of genetic self-interest - "selfish genes". Human behaviour actually

appears much more strongly motivated by this self-interest than by ideas of equal consideration. Much concern about the environment and the future is self-interested. It is quite "natural" for human beings to be concerned about what happens to their descendants, even though it is not as high-minded a concern as sustainability is often presented.

Peter Singer has considered the implications of "selfish gene" ideas for the development of morality.⁵⁷ Sociobiology⁵⁸ explains altruistic behaviour in terms of genetic advantage. Individuals (of whatever species) may be prepared to sacrifice their immediately apparent self-interest to help close relations. They may also be prepared to help non-relatives if there is a reasonable expectation that the help will later be reciprocated (this is called 'reciprocal altruism'). They also tend to favour members of their own group over others. All these behaviours can be explained as ways of trying to improve the transmission of shared genes into the future. The sacrifice of individual self-interest in that way can be seen as the expression of "selfish genes" - they are not genes for selfishness, but genes that 'selfishly' try to propagate themselves.

Many of the ideas about ethics observed across human cultures seem to bear a strong resemblance to the reciprocal altruism that is observed in other species of animals. It is easy to show that the cooperative behaviour of reciprocal altruists is likely to be much more evolutionarily successful than pure self-interest. Acting purely self-interestedly only works in situations where 'defection' can be kept secret and avoid later sanctions.

Singer argued that the claims by sociobiologists to be able to explain all human behaviour in terms of genetic self-interest were overstated. Indeed, Edward Wilson, the founder of sociobiology, later drew back from

his more determinist conclusions about human nature. One example that Singer points to is the difference between the extent of people's desire for sex and their desire to have children. Thanks to the use of birth control, people in modern industrialised societies mostly have significantly fewer children than they would be able to support. If people really put maximum reproductive success at the top of their priorities then they would give up cars and foreign holidays to afford more children. Yet even very rich people who could easily afford to raise ten children usually choose to only have one or two. The transition from a norm of large families to small families only took a few generations. Modern birth control has allowed people to give much fuller reign to their basic sexual desires without fear of unwanted children. It seems that evolution has given people a strong biological desire for lots of sex, but not one for lots of children.

Singer argues that our reason has trumped our evolutionary heritage with the invention of birth control technologies. Evolution gave us a desire for lots of sex as a means to its end of making us have lots of children. Although people continue to strongly desire to have children, they rarely have much desire for several (or at least to give birth to or raise several) and have used their powers of reason to frustrate the natural consequences of their sexual desires. Reason is a product of evolution, but it is an autonomous force.

An 'expanding circle'?

Ethical obligations were originally restricted to members of the tribe. Then they were broadened to members of the same ethnic group. Only in the past couple of hundred years has the idea that ethical obligations

should extend to all human beings become widespread. Singer claims that this 'expanding circle' of moral concern is due to the exercise of reason leading to the doctrine of impartiality. Singer thinks that the same process of moral reasoning will eventually lead to the inclusion of non-human animals in the ethical circle. Aldo Leopold had made a similar point about the widening circle of concern in *A Sand County Almanac*. Leopold recounted the example that when Odysseus returned home he hanged a dozen slave-girls from his household whom he suspected of misbehaviour during his absence:

This hanging involved no question of propriety. The girls were property. The disposal of property was then, as now, a matter of expediency, not of right or wrong.

Concepts of right and wrong were not lacking from Odysseus' Greece; witness the fidelity of his wife through the long years before at last his black-prowed galleys clove the wine-dark seas for home. The ethical structure of the day covered wives, but had not yet been extended to human chattels. During the three thousand years which have since elapsed, ethical criteria have been extended to many fields of conduct, with corresponding shrinkages in those judged by expediency only...

There is as yet no ethic dealing with man's relation to land and to the animals and plants which grow upon it. Land, like Odysseus' slave girls, is still property. The land-relation is still strictly economic, entailing privileges, but not obligations.⁵⁹

The difference between Leopold and Singer is that Leopold was writing about extending ethical consideration to ecosystems, while Singer is writing about extending ethical consideration to individual non-human animals. Singer holds that it is not meaningful to expand the circle of ethical concern to plants or land itself. That is because these things are not sentient and Singer cannot see how it means anything to imagine yourself in the position of a tree or a mountain. What he thinks is wrong about cutting down a tree or quarrying a mountain is that it deprives

animals of their habitats, but not that it is wrong *in itself*. Singer believes that the doctrine of equal consideration of interests does not mean anything for our treatment of non-sentient entities because they have no interests to consider.

Roderick Nash commented that Singer's version of the 'expanding circle' is a typically liberal one, combining rationalism and concern for the individual.⁶⁰ By contrast, Leopold's arguments for expanding the circle of ethical concern are pragmatic and holistic. Leopold wrote:

In human history, we have learned (I hope) that the conqueror role is eventually self-defeating. Why? Because it is implicit in such a role that the conqueror knows, *ex cathedra*, just what makes the community tick, and just what and who is valuable, and what and who is worthless, in community life. It always turns out that he knows neither, and this is why his conquests eventually defeat themselves.⁶¹

Leopold's argument is that "nature knows best" (as Barry Commoner⁶² would have put it). Singer's ethic is an almost manically interventionist one. Brian Barry writes that it would seem to call for us to run flying ambulance services for caribou.⁶³ Singer's utilitarianism is indifferent between acts of commission and acts of omission, requiring us not just to refrain from causing suffering, but also to do everything we can to prevent it. Singer himself admits that his ethics are too demanding for human beings ever to live up to. He sees them as a goal, rather than a minimum.⁶⁴

Ecocentrists criticise animal interests philosophies for placing all intrinsic value in the lives of individual sentient beings. They place the intrinsic value in the diversity of species. Tom Regan argues that this is wrong because it would lead to the view that, given the choice between killing a rare wildflower or a plentiful human being, we should kill the human

being as they contributed less to the “biotic team”.⁶⁵ Regan disagrees, not with the idea of giving rights to non-sentient entities, but with the propriety of deciding what should be done to individuals by aggregate considerations. He writes that the beauty of an undisturbed forest might have inherent value not reducible to any individual’s pleasure or satisfaction, or the sum of such good for a collection of individuals. What he does not see is how moral rights could be attributed to the *collection* of trees or the ecosystem. What is more, granting intrinsic rights to trees would prevent human beings from being able to cut them down except for survival. Regan sees this as a stronger protection for wilderness than something like Leopold’s land ethic.

At the present time, we are so far from a consensus on non-anthropocentric values that this discussion may seem pointless. Here is my exchange with Ismail Razali about the issue:

SD: Do you think that it makes any sense to talk of equity towards other species, treating other species fairly, or do you think it doesn’t make sense? Do you think that all values emanate from human beings, or that other things have value?

Razali: I don’t accept that view at all. As I told you I’m a rural person. I’m more aware of this. The countries that have the role for this must do their utmost to ensure that they do not contribute to the elimination of species. But in the course of doing that, it doesn’t mean that they become the world’s laboratory for all kinds of species to survive. In the course of doing that they mustn’t put a cap to the development of the human species. Because at the end of the day, if we protect the spotted owl but not prevent people dying of poverty I think we have got our bearings all screwed up.

SD: Now why do you think that? Why do you think that individual people matter more than entire species of other species, if you know what I mean?

Razali: In the first place, I’m a human being. I see terrible situations of the human person, which I find, a few years before the next millennium, completely unacceptable. In Europe for example you plough back excess things that you do not want to go into the

market because you guarantee prices for your farmers. While just the other side of the Mediterranean people starve. I think that is a horrible indictment of how screwed up we have become. I'm not just passing judgement on the industrialised countries. Us too, we've got all sorts of terrible things. Let us put right the human equity first. If you are able to make the human person understand that he's not living on an island, not responsible for what happens somewhere else, he will do something about this. I think that with that kind of understanding will also come a realisation that he has to do something to protect the other species. It comes naturally. But you cannot make the human person a sub-species while you maintain the standards among the other species. I don't see that. I'm not an environmentalist like that.

SD: Why do you think that's not right or not possible?

Razali: Because I'm a human being. I respond as a human being and I look at the lot of the human person. If you're in Europe perhaps it doesn't seem so bad. But if you see the serious contradictions in certain parts of the world, if you look at poverty in certain parts of Nepal, I promise you would be really worked up. (Ismail Razali, New York, 5.7.94)

Razali's point about poverty was echoed from a different perspective

Donella Meadows:

SD: Do you think sustainability requires the idea of rights for other species or not?

Meadows: Socially, do we have to get and respect that idea in order to get ourselves sustainable? No, my first reaction would probably be no, not at the deepest level. That if we just got the idea of not taking renewable resources faster than they were replaced. Even to view species just as resources, which is something the deep ecologists hate, that would take us one hell of a way along the way. And I'm willing to settle for that for the moment. Personally, I have no question. I'm as deep a deep ecologist as they come. I'd rather save the whales than homo sapiens.

... and it's not that I don't love people. It's just somehow I'm one of those people who's for the underdog, and homo sapiens is not the underdog at the moment. What I would love is a very beautiful balance with human beings celebrating other species and regarding them as jewels like stars in the sky, just blessings...

I would guess and hope that with a billion people there would be sufficient abundance of things that people need that there wouldn't

be the desperation. I think that is necessary to regard other species as a jewel or a blessing rather than a meal. (Donella Meadows, Dartmouth College, New Hampshire, 23.6.94)

The paradox is that the circle of ethical concern can only extend to other species when people themselves are not in desperate situations. Yet the creation of the abundance needed for that would seem to imply greater exploitation of nature than at present.

Conclusion

Sustainability and sustainable development are concepts based on ethical ideas about equity between and within generations of human beings. The concern with equity sits uneasily with economic utilitarianism. Sustainability seems to imply a Rawlsian intergenerational contract. Criticism of the use of a Rawlsian framework for an ethic of sustainability appears to be based on literalist interpretations of Rawls' original position. The device of the veil of ignorance can be used to examine considerations of equity between generations as well as within generations. If we imagine people in the original position meeting behind a veil of ignorance about which generation and potential future they collectively belonged to, as well as their individual places in society, then it becomes possible to construct a thought experiment about what kind of principles should bind each generation in its policies towards development and the environment. From such a perspective, strong adherence to the precautionary principle appears as a particularly important guiding rule.

Ethical principles about the treatment of other species are much more difficult to derive from the Rawlsian framework. Here, Rawls' philosophy suffers from the general weakness contractarian approaches

to ethics have in dealing with animals, infants and the mentally handicapped. However, Rawls' use of a contractarian approach as a literary device to provoke the reader's imagination means that the inclusion of such interests in a circle of ethical concern is not in any way ruled out.

The land ethic and deep ecology are the best-known attempts to create an ecocentric ethic. Both have serious defects, though. The land ethic's justification through subtly anthropocentric arguments is disingenuous, if well-intended. Its extreme collectivism leaves it vulnerable to charges of 'environmental fascism'. Deep ecology is less vulnerable to that accusation, but the principle of biocentric egalitarianism and the concept of Self-realization through total identification with the biosphere both suffer from deep implausibility when examined critically.

By far the strongest arguments that have been put forward against anthropocentrism come from Peter Singer's animal interests philosophy. The ethical conclusions of these arguments are hard to deny unless one is prepared to assert that non-human animals lack consciousness. Singer's case for equal consideration of interests has generally been seen as a critique of our present treatment of animals in captivity, but it also leads to the conclusion that there is a strong moral case for the preservation of habitats from development in order to protect the interests of the animals that inhabit them. The simplicity of the argument for consideration of the interests of animals contrasts with the philosophical complexity of arguments about the rights of future generations.

¹John Rawls (1971) *A Theory of Justice*, Cambridge, Massachusetts: Harvard University Press

²Michael Jacobs (1991) *The Green Economy*, London: Pluto

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- ³Peter Singer (1975) *Animal Liberation*, New York: Monthly Review Press
- ⁴Aldous Huxley (1932) *Brave New World*, London: Chatto & Windus
- ⁵Rawls (1971) op cit, p. 178
- ⁶ibid, p. 291
- ⁷ibid, p. 287
- ⁸David J. Richard (1971) *A Theory of Reasons for Action*, Oxford: Clarendon
- ⁹Brian Barry (1989) *Theories of Justice*, London: Harvester-Wheatsheaf
- ¹⁰Beckerman (1995) op cit, p.151
- ¹¹Rawls (1971) op cit
- ¹²John Pezzey (1994) 'Concern for Sustainability in a Sexual World', Centre for Social and Economic Research on the Global Environment, London
- ¹³Daly and Cobb (1989) op cit, p. 39
- ¹⁴Pezzey (1994) op cit
- ¹⁵Michael Jacobs (1991) *The Green Economy*, London: Pluto
- ¹⁶ibid
- ¹⁷R. Kerry Turner (1991) 'Environment, economics and ethics' in *Blueprint 2*, edited by David Pearce, London: Earthscan
- ¹⁸Aldo Leopold (1949) *A Sand County Almanac*, New York: Ballantine, 1970
- ¹⁹ibid, p. 262
- ²⁰ibid, p. 247
- ²¹ibid p. 247
- ²²ibid, p. 294
- ²³J. Baird Callicott (1989) *In Defense of A Land Ethic*, Albany: SUNY Press
- ²⁴Leopold (1949) op cit, p. 204
- ²⁵Andrew McLaughlin (1993) *Regarding Nature*, Albany: SUNY Press, p.163
- ²⁶David Pearce, Anil Markandya and Edward B. Barbier (1989) *Blueprint for a Green Economy*, London: Earthscan
- ²⁷Bill Devall and George Sessions (1985) *Deep Ecology*, Salt Lake City: Gibbs Smith
- ²⁸Arne Naess (1973) 'The shallow and the deep, long-range ecology movement: a survey' *Inquiry* 16: 95-100
- ²⁹Warwick Fox (1990) *Toward a Transpersonal Ecology*, Boston: Shambhala
- ³⁰Gandhi, quoted in Fox (1990) op cit, p. 112
- ³¹Michael Redclift (1987) *Sustainable Development: Exploring the Contradictions*, London: Methuen
- ³²Jonathon Porritt and David Winner (1988) *The Coming of the Greens*, London: Fontana
- ³³Murray Bookchin (1989) *Remaking Society*, Montreal: Black Rose
- ³⁴Herman E. Daly and John B. Cobb (1989) *For the Common Good*, Boston: Beacon

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- ³⁵Jacobs (1991) op cit
- ³⁶Peter Singer (1975) *Animal Liberation*, New York: Monthly Review Press
- ³⁷Fox (1990) op cit
- ³⁸ibid
- ³⁹Tom Regan (1983) *The Case for Animal Rights*, London: Routledge & Kegan Paul
- ⁴⁰Leopold, quoted in Roderick Nash (1989) *The Rights of Nature*, Madison: University of Wisconsin Press, p. 66
- ⁴¹James Lovelock (1979) *Gaia: A new look at life on Earth*, Oxford: Oxford University Press
- ⁴²Fox (1990) op cit, p. 178
- ⁴³Naess (1973) op cit
- ⁴⁴Robyn Eckersley (1992) *Environmentalism and Political Theory*, London: UCL Press, p. 57
- ⁴⁵Martin W. Lewis (1992) *Green Delusions*, Durham, North Carolina: Duke University Press
- ⁴⁶Jeremy Bentham (1789) *An Introduction to the Principles of Morals and Legislation*, London: Athlone, 1970, p. 283
- ⁴⁷Peter Singer (1990) *Animal Liberation*, Second Edition, New York: New York Review of Books, p. 229
- ⁴⁸Regan (1983) op cit
- ⁴⁹Michael P.T. Leahy (1991) *Against Liberation*, London: Faber & Faber
- ⁵⁰Donald R. Griffin (1992) *Animal Minds*, Chicago: University of Chicago Press
- ⁵¹Regan (1983) op cit
- ⁵²Leahy (1991) op cit
- ⁵³John Rawls (1971) *A Theory of Justice*, Cambridge, Massachusetts: Harvard University Press, p. 512
- ⁵⁴ibid, p. 509
- ⁵⁵Brian Barry (1989) *Theories of Justice*, London: Harvester-Wheatsheaf, p. 212
- ⁵⁶Jacobs (1991) op cit
- ⁵⁷Peter Singer (1981) *The Expanding Circle*, Oxford: Clarendon
- ⁵⁸Edward O. Wilson (1975) *Sociobiology: The New Synthesis*, Cambridge, Massachusetts: Harvard University Press
- ⁵⁹Leopold (1949) op cit, pp. 237-8
- ⁶⁰Roderick Nash (1989) *The Rights of Nature*, Madison: University of Wisconsin Press
- ⁶¹Leopold (1949) op cit, p. 240
- ⁶²Barry Commoner (1972) *The Closing Circle*, New York: Knopf
- ⁶³Brian Barry (1995) *Justice as Impartiality*, Oxford: Clarendon
- ⁶⁴Singer (1981) op cit
- ⁶⁵Regan (1983) op cit

CHAPTER 3.6

CONCLUSION

Sustainable development is a construct of political strategy and compromise, rather than one based solely on environmental or economic theories. Central to the Brundtland Commission's conception of sustainable development is an attempt to claim that environmental concern and economic growth are not incompatible, that in fact they can complement each other. As Joke Waller-Hunter made clear to me, that notion was crucial for the term sustainable development to have political acceptance. Many environmentalists were not very happy with that conclusion, but they had the compensation that the Brundtland report legitimated many of their concerns in the sphere of international politics.

Sustainable development presented the economics profession with a challenge. Although it allowed for economic growth, the concept was implicitly critical of traditional approaches to economic development. At a theoretical level, even the concept of natural capital as a separate category of capital has been difficult for many economists to accept. The attempt to make the environmental concept of sustainability fit into the economic category of capital has proved problematical for

environmentalists, leading them to the concept of environmental space instead.

Mainstream economics draws heavily on utilitarianism for its philosophical assumptions. The concept of sustainability is based on a precautionary approach to risk which is incompatible with the assumptions behind utilitarianism. Because utilitarianism is so central to economic theory, economists would have to be prepared to rethink the philosophical basis of their discipline to create 'sustainable economics'.

The fact that many green economists have been environmentalists who retrained as economists emphasises the extent to which environmentalists and economists have been in opposition to each other. One of the things which environmentalists have found frustrating in recent years is the degree of resistance the economics profession has shown to environmentalism.

This contrasts with the extent to which scientists have come round over the past thirty years to accepting claims of an environmental crisis. Although the environmental writers of the sixties were mostly scientists, the implication of the new environmentalism was initially seen as anti-science. To be more exact, the environmentalists claimed that there were serious limits to the use of science and technology to solve problems. They argued that science and technology may solve some problems, but create new ones instead. In the past few decades, scientific investigations have confirmed that the use of technology has created many environmental problems.

Although some radical environmentalists have argued that science and technology are part of the problem, not part of the solution, most

environmentalists have sought to reform the use of modern technology so that it is not so environmentally damaging, rather than do away with it entirely. To a very large extent, scientists and technologists have been prepared to accept that the consequences of the use of scientific and technical knowledge should be thought through more fully than it was in the past before being practically applied.

Some environmentalists still criticise science for being mechanistic and reductionist (for example, Jeremy Rifkin¹) However, as Richard Norgaard has pointed out, contemporary science has incorporated ideas such as chaos theory which are quite different from that image.² The problem lies not so much with the contemporary practice of science as with an ideology that emerged out of the Enlightenment, which he calls modernism.

Norgaard identifies three key tenets of modernism. The first is that Western science steadily advances, producing better technologies and ways of organising, making sure that future generations will always be better off than present generations. It would do this by extending human control over nature. This belief in material progress excused people from thinking about the consequences of their choices on the opportunities for the next generation. He claims that the widespread acceptance in recent years that the present path of development is not sustainable marks the beginning of the rejection of modernism. The second tenet of modernism that Norgaard identifies is the belief that all problems are amenable to a technical solution and can be left to experts to solve. The third tenet is that cultural differences will fade away as people discover the effectiveness of Western rationality. Europeans came to accept the modernist view of the world. They then expected other people to follow

them in adopting it. Norgaard deliberately identifies those aspects of modernism which were shared by liberalism and Marxism. An additional feature of liberalism which he criticises is its commitment to individualism.

To a much greater extent than the natural sciences, economics is an ideological discipline. Modernism is not so deeply embedded in science as in economics. Donella Meadows told me:

...I think only economists don't believe there are limits to growth. And I think they've lost. They don't know it yet, but nobody in physical science has any trouble with that argument. In fact many people read *Limits to Growth* and said "ho hum, what else is new?" Not because, as the economists said, "this is Malthusian, this has been wrong for 200 years and it's still wrong." They're the only people who think that. And we were all physical scientists. So this was all obvious stuff to us. In our community it's obvious stuff. (Donella Meadows, Dartmouth College, New Hampshire, 23.6.94)

Environmentalism and the idea of sustainability have emerged in the last few decades as Western societies have lost their faith in modernism and Progress based on ever-increasing domination of nature. Sustainability is a rather different idea from Progress; rather than assuming continual improvement, it aims for things not to get worse. The idea of sustainable development retains Progress' desire for things to get better, but implies the view that it is not assured.

¹Jeremy Rifkin (1985) *Declaration of a Heretic*, London: Routledge & Kegan Paul

²Richard B. Norgaard (1994) *Development Betrayed*, London: Routledge

PART FOUR:

SUSTAINABILITY AND THE END OF MODERNITY

Introduction

The environmental movement that has developed since the 1960s has emerged as a critical political force in parallel to the decline of socialism. In the 1990s, radical critiques of Western society are mostly expressed in terms of Green, rather than Marxist, analysis. From the middle of the nineteenth century until the late twentieth century, criticism of industrial society was an extremely marginal force. After Marx, socialism was even more ideologically committed to modernity than capitalism was. The disillusionment with modernity in the last few decades has origins both in the rise of environmental concern and the loss of faith in socialism. These two phenomena have been largely separate, but they have coincided historically.

Although the environmental movement has been extremely critical of modernity, it has a more ambiguous relationship with the broader Enlightenment tradition. In many ways, the Green movement has hoped to revitalise leftism by disowning modernity and returning to the pre-Marxist radical Enlightenment tradition.

The concept of sustainability has historically emerged out of a critique of modernity and the trajectory environmentalists see it taking us on towards disaster. Yet, at the same time, the concept of sustainability is

rooted in faith in human perfectibility, the possibility of reform and, perhaps most tellingly, the values of equality and solidarity.

The concept of sustainable development is even more split in its loyalties, torn between environmentalist criticism of industrial society and support for 'development', the more politically correct post-1945 term for Progress.

Sustainability is an idea which combines postmodernist pessimism about the domination of nature with almost Enlightenment optimism about the possibility to reform human institutions. With worldwide disillusionment in the last few years about attempts to engineer better societies in the wake of the collapse of socialist ideology, the goal of sustainability sounds increasingly ambitious in the pessimistic times we live in.

The Modern Age

The modern world has been shaped by the advance of science and the application of scientific techniques of reason. For over a hundred years, from the middle of the nineteenth century to the middle of the twentieth, people tended to see history as a march into a better future. It was believed that science and reason were forces for Progress. Today, people no longer assume that life is going to get better in the long run, but increasingly fear that it is going to get worse. Concern about the environment is an important embodiment of that fear, but the loss of faith in Progress itself has deeper historical roots.

The success of the use of scientific reason from the seventeenth century onwards led to the idea that reason could be applied in the social sphere

as well to create a better world. The French Revolution of 1789 was the first attempt to create a self-consciously rational political order. Feudalism and absolute monarchy were abolished, replaced by the doctrines of the rights of man and democratic government. The system of measurement was metricated and the calendar was reformed to be more rational. But the outcome of the French Revolution showed that even the best-intentioned attempts to better humanity could backfire. In a foreshadow of many twentieth century revolutions, fanatics took power and seized the opportunity to persecute their rivals. The Jacobin Terror consumed most of the original leaders of the revolution. They were despatched by a scientifically designed means of execution, the guillotine.

Despite its terrible outcome, the French Revolution inspired the idea of a progressive politics towards the goals of liberty, equality, fraternity. Its horrors supported the argument of conservatives such as Edmund Burke¹ that attempts to make things better would tend to make things worse. Revolutionaries believed in the perfectibility of mankind: that the bad in people, as Rousseau had claimed, came from society rather than human nature. Reason, they thought, was a force for good that would drive out the irrational bad in people. The conservatives still accepted the old Christian doctrine that man had been cursed with Original Sin after the expulsion from the Garden of Eden and were therefore imperfectible.

The French Revolution was followed by another with even more momentous consequences - the Industrial Revolution. More than the French Revolution, this was the application of scientific instrumental reason to change the world. The Industrial Revolution broke the emergent political Left into two camps. Liberals supported the changes because they were breaking the power of feudalism. Romantics and

socialists worried that what was happening was that the oppression of feudalism was being replaced by the oppression of capitalism and the factory system. Early socialists hoped that people could be educated to see that it was more rational to produce for the common good than for private profit.

Karl Marx and Friedrich Engels ridiculed these 'utopian socialists', and put forward their own doctrine of 'scientific socialism'. They saw capitalism as part of the progress of human history. It would be brought down, not by appeals to morality, but by its own internal contradictions. In many ways, Marx became the leading prophet of modernity even for non-socialists. He saw capitalism as a progressive force through its subjugation of nature to the human race:

The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of Nature's forces to man, machinery, application of chemistry to industry and agriculture, steam-navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalization of rivers, whole populations conjured out of the ground - what earlier century had even a presentiment that such productive forces slumbered in the lap of social labour?²

Marx also identified the central feature of modernity: the way that the new continuously replaces the old:

Constant revolutionizing of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation distinguish the bourgeois epoch from all earlier ones. All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air, all that is holy is profaned, and man is at last compelled to face with sober senses, his real conditions of life, and his relations with his kind.³

According to Marx, though, there were some features of capitalism which would not change and which would ensure its downfall. He thought that capitalism's tendency towards periodic and successively worse slumps, towards the immiseration of the working classes and towards monopoly (bringing former capitalists into the proletariat) would lead to its overthrow. It would be replaced with a socialist system of production based on rational planning, rather than the anarchy of the market.

In the end, things didn't turn out the way Marx had predicted. Capitalism proved capable of reforming itself when faced with the prospect of self-destruction at the time of the Great Depression. Indeed, during the twentieth century, Western capitalist countries introduced universal education, progressive income tax and restricted inheritance. They nationalised central banks, communications, railways and many other industries; in short, they enacted most of what was called for in *The Communist Manifesto*. What they failed to do was abolish capitalism entirely. As J.K. Galbraith wrote, Marx's mistake was to believe that capitalists were infinitely cunning except in the matter of ensuring their own ultimate survival.⁴

The darker side of modernity was apparent from the beginning. The guillotine was one example. The factory system was another. Adam Smith extolled the division of labour in a pin factory as the model of economic rationality. The horrors of life in the dark satanic mills of the early nineteenth century inspired Marx to become a socialist. But it was the confident belief of both liberals and socialists in their different ways that the modern age would work through its defects and ultimately allow people to achieve freedom.

The modern age saw the new possibility for freedom as being a consequence of the material power over nature that the use of scientific rationality had given. Most people thought it was rather glorious to 'tame' nature by doing things like damming rivers, clearing jungles and marshes, dynamiting roads and railways through mountain ranges. Scientific and technological progress would continue to increase mankind's power over nature. To be sure, not everyone thought this way. There were groups like the Sierra Club which valued the existence of wild nature for its own sake, but they were a fringe.

Another part of modernity's concept of Progress was the idea that scientific and technological advance would not only make life better, but that people in more advanced societies would become more rational and civilised - better people. This theory was one of the main justifications for colonialism. At the turn of the century, western Europeans were confident that they had become enlightened and civilised. Examples of this complacency are found in the 1911 edition of the *Encyclopædia Britannica*. The article on TORTURE said that "the whole subject is of only historical interest as far as Europe is concerned."⁵ The article on WAR, discussing the immunities of civilians under the Hague Convention, noted "This has all been done with the object of making the operations of war systematic, and enabling the private citizen to estimate his risks and take the necessary precautions to avoid capture, and of restricting acts of war to the purpose of bringing it to a speedy conclusion."⁶ The historian Eric Hobsbawm⁷ comments on how Russian pogroms of Jews at that time shocked European opinion, although the casualties were by our standards tiny - a few dozen. He also refers to the way that Friedrich Engels had been horrified when Irish Republicans planted a bomb in Westminster

Hall - he thought that the division between combatants and non-combatants should be honoured.

The first blow to the comfortable belief in inevitable progress was the First World War. After a century without large wars in Europe, it was the war with by far the most casualties up to that time. The slaughter of the Western Front largely destroyed belief in the inevitability of life continually getting better. A belief in social progress was able to survive because it was easy to blame much of the seemingly pointless slaughter on the stupidity and callousness of the ruling classes of the nations that had fought the war.⁸

The Second World War killed more people than all previous wars in recorded history put together, and the Holocaust made people doubt that *any* kind of moral progress had been made in the past few centuries. People asked how a civilised nation like the Germans could have committed such a terrible crime. What had happened could be blamed on Hitler and the Nazis, but Nazism itself was a puzzling phenomenon. Nazism as a political philosophy was based on irrational and paranoid beliefs about German racial superiority and a Jewish conspiracy against Germany. It rejected the values of the Enlightenment and hankered back to pagan Germanic myths. Yet despite its own irrationality, it had been very effective in the use of the rationality of twentieth century science and bureaucratic organisation. It appeared that pre-modern prejudices could go hand in hand with mastery of modern techniques.⁹

The invention of nuclear weapons gave human beings the capacity to destroy the modern civilisation that had enabled their creation. The Cold War's 'balance of terror' was based on mutual threats by the United States

and the Soviet Union to exterminate the populations of each other's countries. Stanley Kubrick's 1963 movie *Dr Strangelove* satirised the insanity of the theory of Mutually Assured Destruction. Nuclear weapons exercise a horrible fascination as pieces of technology. They represent the outcome of one of the greatest intellectual efforts ever made by scientists, but the incredible power they give is entirely destructive. To many people, the fact that we were clever enough to devise the means for our own destruction suggested that our technological progress had far outrun our moral progress.

Post-modernity

Around 1968, the intellectual mood in Western countries finally began to swing away from faith in the idea of Progress. Why did the loss of faith occur after 1968, not 1945? After 1945, the countries of Western Europe bounced back from the most devastating war in history, built prosperous societies, created welfare states, and abandoned their colonialist empires. In Western Europe and North America, the years after 1945 were the first where the majority of people lived lives free of material deprivation. Many of the social and economic goals that people had looked to modernity and Progress for had arrived. Throughout history, the majority of people had been poor and deprived. Now, in these societies, the majority was comfortably off.

The older generation, who remembered the deprivation of the thirties and the suffering of the war, were generally very satisfied with how things had turned out. The generation that came of age in the late sixties felt a sense of dissatisfaction. They wanted something else. Social scientists called their spiritual malaise "post-materialist values". The

social scientists explained it in terms of Abraham Maslow's theory of a hierarchy of needs.¹⁰ Now that people's material needs were met, spiritual needs were becoming more important.

Back at the beginning of the modern age, revolutionaries had been convinced that Christianity, by soothing people with the thought of something better in the afterlife, kept people from the struggle for a better life in the here and now. The idea of Progress was a challenge to religion because it claimed that people could make the world better themselves, simply by the application of rationality. The Communist movement in particular remade the Christian myth in its own image.¹¹ The Christian promise of the Kingdom of God was replaced with the prospect of the Communist future. Communists commonly claimed not only that they had seen the future, but that the actions of the Communist movement were right because they were bringing about the future. Shorn of its socialist overtones, the generally held idea that "you can't stand in the way of Progress" took the idea of inevitability as a justification for a particular course of action. By the 1960s, Christianity's influence was a shadow of what it had once been. Even the Catholic Church was forced to adapt a little to the modern world at the Second Vatican Council.

Critics of modernity since Rousseau and the Romantics had accused it of enslaving the human spirit. The pioneering sociologist Max Weber claimed that the instrumental reason of modernity would create an "iron cage" of bureaucracy. In the 1940s, the experiences of Nazism and Stalinism led two ex-Marxist German émigrés in America, Max Horkheimer and Theodor Adorno, to write the *Dialectic of Enlightenment*,¹² in which they asserted that the modernist project of Progress through the domination of nature using instrumental reason

inevitably rebounded on the human race in "the revenge of nature" - bureaucracy and totalitarianism. One of their colleagues from their days in Frankfurt before the war had been Herbert Marcuse, by the sixties a professor of philosophy at Berkeley, who popularised this version of post-Marxism called Critical Theory. The ideas of the Critical Theorists inspired the New Left in the 1960s and later influenced the Green movement.

An even more radical critique of modernity emerged from the end of the 1960s among disillusioned French intellectuals in Jacques Derrida's deconstructionism¹³ and Michel Foucault's post-structuralism.¹⁴ Over the next two decades postmodernist philosophy grew to become a major influence in the humanities and social sciences in academies around the world. The leading postmodernist philosopher Jean-François Lyotard has defined the condition of post-modernity in terms of a move away from faith in attempts at human-engineered progress and "an incredulity towards metanarratives,"¹⁵ overarching stories which claim to explain the purpose of human existence and history.

The environmental movement crystallised doubt in Progress. When the price of oil tripled in 1974 and the economic miracle the West had experienced after 1945 came to an end, it seemed reasonable to wonder if the warnings about 'Limits to Growth' might not be right. At about the same time, it became clear that the high modernist approach to city planning, where people were dominated by tower blocks and motorways, was a social disaster.

The death of socialism

The final blow to a certain kind of confident belief in Man's ability to rationally plan society came with the disillusionment in socialism worldwide after the economic disintegration of the Soviet system.¹⁶ Everybody knew for a long time that the system was unfree, undemocratic and unpopular. But from the 1920s to the 1960s, the Soviet Union was economically catching up with the United States. When Khrushchev told the Americans "We will bury you," he meant that his economy would one day surpass theirs. A planned economy certainly seemed to work, even though the lack of human rights made the Soviet system unpleasant to live under. In the 1970s, it became increasingly apparent that the Soviet Union and Eastern Europe were falling increasingly behind the West. But nobody expected it all to collapse. Why did it?

It is important to understand that the reason why the Communist system disappeared so quickly is because it had failed in its own terms - as an economic system that would prove its superiority to capitalism. When the economic failure became blindingly obvious even to the rulers, they lost faith in it themselves and in most cases abandoned power with little or no struggle.¹⁷

Eric Hobsbawm¹⁸ describes how after the 1960s, when the era of crash industrialisation came to an end, the socialist economies found themselves increasingly unable to keep up with Western technological innovation. When inventions were made, there was little incentive to exploit them (unless they were militarily useful). The consumer sector of the economy never matured and the products were of depressingly low

quality. There was no proper system of prices and no feedback about what consumers wanted. Additionally, the use of energy and natural resources was extremely inefficient. Apparently because of Marx's scepticism about the idea of 'natural limits', environmental considerations were not regarded as a priority, and so pollution was very severe. The use of human resources was extremely inefficient as well. There was a social contract based on the principle "we pretend to work and they pretend to pay us."¹⁹ All in all, the collapse of an economic system so lacking in any *dynamism* compared to capitalism seems in retrospect to have been over-determined.

These facts were all well known for a long time, and apparent to almost anyone who had the opportunity to compare Eastern and Western Europe. Socialists in the West had for a long time had little but criticism for the Soviet model, but its eventual collapse seemed to damage the credibility of socialist ideas in general. Eric Hobsbawm argues that central planning, which had been invented to industrialise a backward agricultural country, was extremely crude and incapable of running a sophisticated modern economy. He claims that it would be possible to have a socialist economy with decentralised planning and market pricing.²⁰ However, the failure of the Yugoslav socialist economy suggests that the economic problem was deeper than over-centralisation. In Yugoslavia, cooperatives were supposed to compete in a socialist market. In reality, though, cooperatives were not allowed to fail and the state would bail out loss-makers. The result was that there was no incentive to improve efficiency or innovate. Eventually, the cumulative losses bankrupted the country.²¹

If the experience of nationalisation and state planning in democratic countries had been very successful, the failure of Eastern European socialism would have been seen as due to the lack of democratic feedback and personal freedom needed for a dynamic modern society. However, the failure of the Soviet system was an extreme version of the problems with nationalised industries and economic planning that had been experienced in democratic countries. The response had been a shift in policy towards privatisation and markets. By the end of the 1980s, Western European social democracy had lost its reforming momentum.²² The end of the Soviet Union came as icing on the cake to Western right-wingers.

The "End of History"

The American foreign policy analyst Francis Fukuyama put forward the thesis that we had reached the "End of History" as Communism collapsed.²³ He argued that Marxism's ideological implosion saw off the last rival ideology to 'liberal democracy' that had the potential to appeal to people around the world. Hegel had written in 1806 that Napoleon's defeat of the Prussians at the Battle of Jena marked the end of history because the liberal political values of the French Revolution had triumphed over those of reactionary conservatism. Hegel accepted that there was still a long way before these liberal ideals were fully implemented in the world, but he saw Jena as the decisive turning point in ensuring that they were.

Fukuyama mischievously argued that the historical failure of Marxism's pretensions to bring about a more advanced society than bourgeois liberalism showed that Hegel had been right: the triumph of the liberal

ideals of the French and American Revolutions over the Marxism of the Russian Revolution meant that nothing better than liberalism had been invented since 1806 and that liberalism is indeed the final form of human society.

After the eclipse of the Soviet Union, Fukuyama extended his argument to consider the possibilities for any new rival to liberal democratic capitalism.²⁴ Fukuyama explains the current dissatisfaction with modernity in Western societies as the bored rage of 'the last man', the being at the end of history who has nothing significant left to struggle for. What Fukuyama calls the 'end of history' is the end of faith in progress towards human perfectibility. People no longer envisage a rational, planned, socialist future. We have seen the future and it didn't work.

Milan Kundera wrote in the early 1980s that since the French Revolution, Europe had been divided between the left and the right. What was it that unites the left? The dictatorship of the proletariat or democracy? Rejection of the consumer society or increased productivity? The guillotine or an end to the death penalty? Kundera identified what unites leftists as the fantasy of a Grand March through history.²⁵

The leftist fantasy of the Grand March was able to cope with setbacks and betrayals. Leftists had been able to decide that the Soviet Union stood in the way of the Grand March. When Communism collapsed, leftists cheered along with the right. Yet the failure of the socialist economies marked the end, not just of the Leninist tradition since 1917, but of the socialist tradition since 1848. Fukuyama is correct that the events of 1989-91 marked the ideological triumph of the liberalism of 1789. Eric Hobsbawm reluctantly comes to much the same conclusion.²⁶ He

considers the possibility that future generations will look back on the twentieth century dispute between capitalism and socialism as we now look back on seventeenth century wars of religion.

The discrediting of the idea that a rationally planned economy will function much better than one based on the market has been a blow to socialism of such intensity that it has now become hard to sustain its unconscious myth of the Grand March through history. Capitalism saw off both its predecessor feudalism and its supposed successor socialism. For Fukuyama, the future course of human history is the adoption by all the world of the values of liberal democracy.

Fukuyama accepts that the horrors of the twentieth century have made people doubt that history has any direction. He argues, however, that the progress of natural science gives directionality to history. It is the only important human activity that is generally agreed to be advancing, even if its consequences are not necessarily good. Modern science made possible not only the conquest of nature but, through technology, gave enormous capability for technologically advanced nations to militarily conquer other nations. Any state that wishes to remain independent must possess the technology to defend itself. Secondly, modern natural science gives enormous economic potential to countries that know how to use it. In order to be able to utilise that potential they have to go down the path called 'modernisation'. Countries that have modernised come increasingly to resemble each other as economic logic dictates the forms of society they must have, with features like a centralised state, urbanisation and universal education. According to Fukuyama, the lesson of the experience of Communism is that centrally-planned economies can reach the level of industrialisation found in Europe in the

1950s, but they are unable to succeed as technologically innovative 'post-industrial' economies. This failure within Communism's own terms of reference caused the leaders themselves to lose faith in the ideology. Fukuyama admits that his economic interpretation of history resembles Marx's, except that it concludes with capitalism rather than socialism as the final outcome.

Fukuyama uses the same argument to explain why it is impossible to abandon technology and go back to some imagined arcadian idyll. Those who do that will be abandoning the means to defend themselves against those who do not. Even if the infrastructure of science and technology was destroyed in some global catastrophe, if any human beings survived, the knowledge of the scientific approach would survive too. Eventually, some group would start to develop science again.

Fukuyama explains the appeal of democracy for people all around the world in terms of the "struggle for recognition". If people were purely self-interested rational calculators, they would not be prepared to put their lives on the line for abstract concepts like democracy. They would be content to live under authoritarian regimes, at least ones that were economically successful. Fukuyama here is borrowing from Hegel, who believed that the establishment of regimes in America and France which were based on the recognition of the individual was the beginning of the "end of History". However, the source of recognition need not be the rights and dignity of the individual, as it is in liberalism. It can be a religion or a national identity.

Fukuyama admits that it is possible that extreme nationalism or religious fanaticism will return as major forces in the world, but he regards it as

unlikely. The only part of the world that he believed was vulnerable to religious fundamentalism was the Middle East. In his opinion, however, the most serious future threat to liberal democracy globally comes from the success of paternalistic authoritarianism of the kind seen in Singapore. Even so, he doubted that such an authoritarianism of deference could be accepted by people outside East Asia. Liberal democracy is the only political system left with appeal to people all around the world.

Liberalism was invented in response to the devastating religious wars of seventeenth century Europe. The conclusion drawn by Enlightenment philosophers was that it was simply rational self-interest for people to be tolerant and allow members of other groups in society to determine their own lives. However, Fukuyama points out that a liberal society depends in the long run on people coming to believe in tolerance for its own sake. Like religion or nationalism, liberalism and democracy also depend on a kind of faith.

Fukuyama believes that in Western Europe nationalism is now being domesticated in the way that religion was a few centuries earlier. The nationalist seeks to assert his nationality by domination of others. As nationalism fades away, the irrational desire for domination is replaced by a rational desire for equal recognition. A world of liberal democracy, according to Fukuyama, would have much less incentive for war as all nations would recognise each other's legitimacy. Liberal democracies rarely have gone to war against each other. Fukuyama believes that a world of them would be largely peaceful.

Are there any new threats to liberal democracy? Fukuyama believes that communism has been so discredited that any new threat from the left would have to be quite different and wear the clothes of liberalism. He considers the possibility of a "superuniversalization" of rights, where the distinction between human and non-human is lost. In the days of Hegel and Kant, and in the original Christian tradition of European culture, human beings were superior to anything in nature because they were free and capable of moral choice. Modern science sees human behaviour in terms of the influence of genes and environment, not a matter of free moral choice. Since Darwin we have known that we are not separate from nature. It was our superior dignity that entitled us to the conquest of nature using the methods of natural science. Now natural science seems to have demonstrated that there is no essential difference between us and what Nietzsche called the "living slime".

Fukuyama is more seriously concerned by the appeal from the right of Nietzschean nihilism to the bored "last man" at the end of history. However, he believes that the terrible experiences of the two world wars have taught Europeans that the boredom of the last man is preferable to the excitement and horror of war. Fukuyama sees liberal democracy as a good balance. On the one hand is the desire for equality that is required by democracy, but that he admits cannot be achieved under capitalism. On the other hand is the desire by some individuals to be outstanding, which capitalism can tame and make compatible with civilisation. It helps defend liberalism against its authoritarian opponents.

What is striking about Fukuyama's argument is how negative its defence of modernity and capitalism is. He does not try to claim that capitalism best embodies the principles of democracy. He admits that some kind of

democratic socialism could do that better. Rather, he argues that socialism lacks the capability for technological innovation necessary for its survival. Fukuyama does not argue that technological modernity necessarily makes us any happier. Instead, he accepts that it fills our lives with useful but ugly things. Fukuyama's position could be put crudely, if more negatively than he does: *Modernity and capitalism are unavoidable. At least there is the compensation that it seems democracy suits them quite well as a system of government.*

The 'greenlash' defends modernity

It is rare these days to find an unabashed enthusiast for modernity. One remaining enthusiast is Richard North.²⁷ His book *Life on a Modern Planet* was published at the beginning of 1995, at almost exactly the same time as Wilfred Beckerman's *Small Is Stupid*.²⁸ The two books were identified as part of the 'greenlash' - a right-wing backlash against the environmentalism of the late eighties and early nineties. The most important example of the greenlash was the election of a Republican Congress in the United States at the end of 1994 which, among other right-wing policies, set about dismantling the nation's environmental legislation, which they regarded as a legacy of 1960s liberalism. In fact, the greenlash proved to be quite a short-lived phenomenon. The Republicans soon found that anti-environmentalism was deeply unpopular.

North's book is a good example of greenlash thinking. He was formerly *The Independent's* environment correspondent, but *Life on a Modern Planet* was sponsored by the chemicals company ICI. Although they had no editorial control, they must have been gratified to read North's

defence of the chemical industry. His most memorable claim is that the issues Rachel Carson raised in *Silent Spring* were already well in hand. He accuses environmentalists and the media of hysteria in their criticism of the chemicals industry. The nearest he comes to criticism of the industry itself is when he writes that in the case of CFCs "During the early part of the debate, ICI and most other chlorine producing firms (and ICI much longer than the leading US firm Du Pont) argued their corner with too little appreciation of the strengths of the case against the chemicals they were selling."²⁹ North is still less critical of the nuclear industry. He claims that cancer fears about Chernobyl emanate from "a small group of scientists from what was then the Soviet Union."³⁰ He instead cites approvingly two 1991 studies from "a small but authoritative British team and a much larger international team of specialists" that there were no deaths attributable to Chernobyl except the 31 admitted by the Soviet authorities in 1986. He does not mention that both these groups represented the nuclear industry. He covers himself by mentioning that it is to be expected that there will be thousands of additional cancers over the next decades in affected populations, but comfortingly adds that these cancers will probably not be so numerous as to be noticeable in the general rate of cancers. North is able to see positive sides to Chernobyl: it showed us how not to run a nuclear reactor, it revealed the prejudiced reporting of the media, and it has shown how advanced epidemiology now is.

North's consistent theme is that environmentalists and the media exaggerate environmental problems. As may be gathered, North is supremely confident in industry and technology. In the introduction he writes:

It will surprise some readers perhaps that I am so keen on industry. This is simply because I have come to accept that, while we need to regulate the entrepreneurial and innovative human spirit, it has benefitted [sic] society enormously. I am, I suppose, a post-socialist and post-Luddite. I hope no one will think me a gung-ho boomster, but I am tolerably relaxed that western industry does its work within democratic controls, which we can tighten if we want.³¹

The central message of North's book is that we should trust industry and western governments to handle the environment properly. North also claims that it is unfair to sue companies which cause health damage to those who live near their plants as the fault lies with society for allowing the activity in the first place. Rather peculiarly, North claims in the introduction to his book that western governments are ahead of their populations in terms of environmental concern, while in later chapters he condemns the public for being so credulous of environmentalist scares and disbelieving of government reassurances.

Like all anti-environmentalist authors, North claims that nature is in pretty good shape. Half the world's rainforest has been lost this century, but he points out that the half that remains is still rather a lot. North quotes a single study which estimated that 80% of what remained could be lost while only losing 10% of the species. North tells us:

Besides, I suspect that if we are clever we will be able to preserve 90 per cent of the biologically-useful diversity on a well chosen 10 per cent of forest, and be kept very busy looking at that - still vast - amount of territory and biological potential. Granted that a fig leaf has 20,000 chemicals in it, we seem to have quite a job cut out for us as we begin the assay of our biogenetic inheritance. This sort of thinking, far from heretical, is the essence of modern realistic conservation.³²

Besides the fact that there is still a lot of it left, North also tells us that "very few people have much of a use for it as it stands... large areas of it

could be perfectly well used for other purposes... its rich biological diversity does not make a very strong case for preserving much of it."³³

North makes much of the way that reverence for nature in western culture has emerged since the nineteenth century as a product of urbanisation. Since it is a product of modernity, one might have thought North would think it a good thing, but actually it is one aspect of modernity he has little time for. North states that "modern people feel alienated from nature",³⁴ but he regards this feeling of alienation as childish:

We want what industry brings us and we want the loveliness which was there before industry came. When man faces irreconcilable opposites, he has to accept compromises. Yet this issue is hard to compromise on because it has elements of the religious about it. And because we have become childish, we find it easier to sulk and stamp our feet and pout and complain, than we do to accept that adults take a balanced view, accept compromises and above all do not expect perfection.³⁵

North claims to want compromise, but the reality is that he always sides with development rather than the environment. There is something quite interesting going on. The defender of modernity ends up claiming that the people of the West who live in modernity are childish to regret what they have lost. He instead writes approvingly the people of the Third World who want progress and modernity. The population of Western countries have apparently developed irrational fears about technology and a romanticism about nature that North seems to find quite disturbing. Rather than extolling the West, as he claims in the introduction, he ends up criticising its people for their loss of faith in modernity. Progress has not made them rational, but turned them into children.

Green Delusions

A superficially similar, but much more interesting and thoughtful defence of aspects of modernity is the environmental scientist Martin Lewis' *Green Delusions*.³⁶ His polemical attack on Green ideology raises some novel questions. Lewis subtitled his book "an environmentalist critique of radical environmentalism." Although it has been seen in some quarters as part of the anti-environmentalist greenlash, Lewis' thinking accepts the ultimate objective of Green ideas, to protect nature from human destruction, and he criticises the anti-environmentalists for their anthropocentrism. He writes that the work of the anti-environmentalists makes it clear that they do not care at all about nature, only about human beings.

Lewis takes issue with the very idea that there must be a choice between 'technocentric' and 'ecocentric' approaches. He argues that the "back to nature" views of eco-radicals are counter-productive and would themselves be environmentally destructive if implemented. Schumacherian neo-Luddite low technology would be much less efficient in its use of resources than environmentally-conscious high technology. Rather than living closer to nature, society should be "decoupled" from nature, so that nature can continue in existence with the minimum of human interference. Lewis accuses eco-radicals of romanticising the pre-industrial past, which was much worse to live in and also had many environmental problems. He argues that only the use of high technology solutions can enable the present billions to live on the Earth without destroying their environment.

Lewis claims that while the widely held dichotomy between technocentrism and ecocentrism in the environmental movement may accurately depict approaches in the past, it is unhelpful for devising a truly effective environmental movement:

It incorrectly assumes that those who adopt an anti-anthropocentric view (that is one that accords intrinsic worth to nonhuman beings) will also embrace the larger political programs of radical environmentalism. Similarly, it portrays those who favor reforms within the political and economic structures of representative democracies as thereby excluding all nonhumans from the realm of moral consideration. Yet no convincing reasons are ever provided to show why these beliefs should necessarily be aligned in such a manner.³⁷

Lewis wants to separate human activities from nature in order both to protect nature from humans and to allow humans to lead better lives. This is the opposite of the radical green view that the separation between humans and nature lies at the root of the environmental crisis.

Lewis tries to overturn a wide variety of Green shibboleths. Some of the opinions he criticises are in fact held by few Greens. Herman Daly, in a generally hostile review of *Green Delusions*, wrote that "eco-freaks really should thank Lewis for taking them seriously enough to try to correct their errors, especially since nobody else does, at least outside Santa Cruz".³⁸ Certainly, technophobia is no longer as fashionable among environmentalists as it was in the 1970s. Lewis claims, however, that "Ultimately, green extremism is rooted in a single, powerful conviction: that continued economic growth is absolutely impossible, given the limits of a finite planet. Only if this notion is discredited can the edifice of eco-radical philosophy be shaken."³⁹ Lewis argues that, although unlimited *physical* growth is impossible, technological progress can decouple economic growth from growth in the use of resources. Without

economic growth, there will be technological stagnation of the kind that occurred in Eastern Europe in the 1980s.

Lewis supports the industrialisation of the Third World. He argues that industrialisation is necessary to raise living standards in those countries to Western levels. He dismisses the alternative of lowering Western living standards as impractical. Lewis wants to deal with the habitat pressures of a rapidly growing Third World population by urbanisation, physically separating people from nature. People living rurally use up much more land than in urban environments, he argues. Lewis agrees that environmental conditions in Third World cities are generally terrible, but argues that conditions will improve with economic development, as has happened in the West. He points out that urbanisation also makes family sizes rapidly decrease, curbing population growth.

Lewis points to the Asian tiger economies as models of successful development, although he admits that it has been achieved at a heavy environmental price. These countries have prospered by exporting goods to the outside world. By contrast, countries like Burma that tried to develop in isolation have remained poor. Anti-capitalists have responded to the economic success of South Korea, Taiwan, Hong Kong and Singapore by arguing that the first two were given enormous aid by the United States and the second two are really trading cities, rather than countries. Lewis replies to this objection with the observation that Malaysia and Thailand are now doing well.

An objection to Lewis that could come from a Green perspective is that, although he is disarmingly frank about the terrible pollution that has

followed industrialisation in Taiwan and South Korea, he does not provide any evidence that it would be possible for other countries to industrialise without great damage to the environment. He seems to rest his argument on the way that levels of pollution peak as a country industrialises and then diminish as it becomes affluent. However, although local pollution was much worse in cities like Manchester in the nineteenth century than it is now, it is not the case that the overall environmental impact of the inhabitants of Manchester was greater than it is now. Quite the opposite is the case. If the Third World is going to industrialise without creating even more environmental degradation, then it is going to have to be a quite different kind of industrialisation from what we have seen so far. Lewis, aware of the environmental costs of East Asian industrialisation so far, places his hopes in the idea that industrialising Third World countries will be able to technologically leapfrog the West. Some support that this is possible can be found from Singapore. Japan and South Korea industrialised in the traditional way with an early emphasis on steel, shipyards and car manufacture. Singapore instead specialised in electronics, which is not an environmentally benign industry, but is at least much less energy and materials intensive than the traditional route to industrialisation.

Lewis criticises Green ideas about ecodevelopment because "no program committed to small-scale technology and economic autarky can ever foster genuine development."⁴⁰ He supports sustainable development, as it allows for quite rapid economic growth in Third World countries. Lewis believes that from an environmental perspective it is self-defeating to try to avoid urbanisation and industrialisation. Urbanisation removes the growing population of peasants from the vicinity of sensitive

habitats. By urbanising them it will promote a shift in values away from purely utilitarian attitudes towards nature. Most importantly, urbanisation is usually accompanied by falling fertility rates; this is not so with even successful programmes of rural development.

Lewis draws on the failure of literally dozens of attempts at what could be called 'development in one country' as an argument against the Green idea of self-sufficient development. He believes that it is only through capitalism and world trade that Third World countries can develop. Lewis takes the failure of these isolationist approaches as evidence of how wrong Marxism was, although Marx himself would not have been surprised. Marx believed that socialism would come from the most advanced countries, and that attempts to prevent capitalist development elsewhere were futile:

The bourgeoisie, by the rapid improvement of all instruments of production, by the immensely facilitated means of communication, draws all, even the most barbarian, nations into civilization. The cheap prices of its commodities are the heavy artillery with which it batters down all Chinese walls, with which it forces the barbarians' intensely obstinate hatred of foreigners to capitulate. It compels all nations, on pain of extinction, to adopt the bourgeois mode of production; it compels them to introduce what it calls civilization into their midst, i.e., to become bourgeois themselves. In one word, it creates a world after its own image.⁴¹

The "End of Progress"

Richard Norgaard, from the Green camp, has drawn quite a different conclusion from Lewis about the lessons to be drawn from the demise of Communism.⁴² Norgaard sees the failure of the Soviet Union as significant because it was the first major power to collapse while diligently pursuing modernity. Its version of progress ended up destroying people's creativity and initiative in bureaucracy, wasted soil in

an effort to modernise agriculture, and polluted water and air to accelerate industrial development. In the end its efforts stretched everything beyond breaking point. Norgaard claims that democratic capitalist nations are wrong to interpret its failure as a victory for their version of modernity, "not realizing that the differences in versions only amount to how quickly the breaking point is reached."⁴³ For Greens, as Jonathon Porritt memorably put it in 1984, "the debate between the protagonists of capitalism and communism is about as uplifting as the dialogue between Tweedledum and Tweedledee".⁴⁴ Capitalism and communism both were forms of 'industrialism', differing only as how best to divide the proceeds from exploiting the Earth.

Norgaard believes that the call for sustainability is a recognition that something has gone wrong with progress, but that "sustainable development", as commonly understood, requires more data, more sophisticated use of science, more controls on technology, better institutional design and appeals to existing values. The logic seems to be that modernity has gone wrong because people have not been fully in control:

In this schema, development might become unsustainable if technology and social order do not advance sufficiently quickly to uncover new resources and to make enough poor quality resources available. The solution to unsustainability is to accelerate technological change and adapt society to these changes. Ironically, indeed irrationally, in this view of environmental history, if development is unsustainable, the driving forces of development - technology and social change - should be accelerated. The idea that changing ever faster is the path to sustainability underlines the contradiction in combining the terms "sustainable" and "development" in the first place.⁴⁵

Norgaard argues that the crisis of modernity lies in its false understanding of science. Society accepts particular scientific ways of

understanding and tries to act rationally on these understandings to the exclusion of other ways of understanding: "The particular scientific ways of knowing by themselves are neither bad nor good, but the beliefs which makes these ways dominant create both an overdependence on particular ways of understanding and blindspots through the exclusion of other ways of knowing."⁴⁶ Norgaard thinks that the problem lies in the belief that all problems can be solved in a deterministic fashion. It has become clear that instrumental reason can be highly effective, but its use has not created the Utopia that was expected. Norgaard writes: "We have become so effective at dividing and conquering that problems that can be treated in this manner are no longer problems."⁴⁷ Norgaard's solution is a 'coevolutionary' approach. Conventional approaches to development seek to 'humanise' nature. Norgaard's approach takes as the starting point that nature and society co-evolve. He gives the example of the co-evolution of pests and pesticides. It is proof of the old maxim that "when a man invents a better mousetrap, nature invents a better mouse." Norgaard argues that both social and environmental determinism ignore the two-way flow between nature and society. He criticises both the social determinism of the economics profession (of which he is an estranged member) and the environmental determinism of many in the environmental movement (in which he is an activist). Norgaard sees the period since the Industrial Revolution as an era where for a long time it was possible for societies to develop with relatively few environmental constraints thanks to the use of fossil fuels.

What would Norgaard's coevolutionary approach be like in practice? It would involve smaller political units, a flattening of bureaucratic hierarchies and more public participation - the standard Green ways to

ensure that information about specific local circumstances is used in decision-making. It would also involve moves towards greater regional self-sufficiency and less global trade because Norgaard sees the global market and cultural homogenisation as ultimately risk-increasing by reducing the diversity of local strategies. When I interviewed him, Norgaard told me that he was concerned by the way that free trade and deregulation mean that increasingly decisions are taken not at a regional or national level, but at an individual level or global levels, a "juxtaposition of extremes that I think are very strange." (Richard Norgaard, University of California, Berkeley, 21.7.94)

Norgaard would like to divide the world into a large number of self-governing units. In my interview, he told me he was envisaging units of a few million people. Rather ironically, Norgaard and other Greens propose this kind of division essentially because they see sustainability as easier to deal with if you divide the problem up. Norgaard explains the problem of operationalising sustainability in terms of scale. We can start at the local level and ask whether a region's agricultural and industrial practices can continue indefinitely or whether they will destroy the local resource base and environment. This first level ignores whether there might be net material or energy inputs to the region being supplied from outside. The second issue Norgaard identifies is how to weigh the degradation of some aspects of the environment against investment in environmental improvements and investment in capital. Thirdly, if a region is dependent on external non-renewable resources, there are a number of questions to answer. How long might they last before being exhausted? Are there renewable substitutes? If the region is dependent on external renewable resources, are these being managed sustainably?

Norgaard states that, from an environmental science perspective, keeping track of material and energy flows would be necessary to put sustainable development into practice. He claims that keeping track of the flows, particularly for a number of regions with complex economies, would be nearly impossible. He writes that one of the challenges of sustainable development, at least with the data requirements of Western scientific environmental management, would be to keep track of the flows without tying up the entire labour force.

Norgaard is raising the spectre of the notorious *information problem*. Friedrich Hayek argued that the fundamental fallacy underlying attempts at economic planning was the belief that all it was necessary to do was to work out the best way to allocate the given resources.⁴⁸ The problem he identified was that the information about the preferences of individual consumers was unknown, and that collecting enough information centrally would be impossibly difficult. In a market economy, a vast number of different products are available. Central planners are unable to obtain enough information to devise a plan of that complexity, so the result is a massively simplified economy. Attempting to devise a plan as complicated as a market economy would require an enormous amount of labour.

Norgaard's solution to the complexity of the present world is to drastically decentralise decision-making. When I interviewed him, he told me that he did not want to come up with a single global definition for sustainability: "I'm looking for a lot of local definitions. And setting up technologies and economies that don't have as much interaction. So things we do in Berkeley don't impact what's going on in Edinburgh." (Richard Norgaard, University of California, Berkeley, 21.7.94)

However, the consequence of that kind of decoupling would be rather like the effect of central planning: to drastically simplify the economy. The complexity of modern economies depends on the complex flows of resources around the world. Without such flows, it would be easier to keep track of the sustainability of each region. But without trade, the people of many regions would be unable to support themselves. Should sustainability start at the local level or at the global level? The regions of the world are so interdependent that it seems utterly impractical to attempt to disentangle them now. The fact of this interdependence makes the current practice of local authorities establishing "sustainability indicators" as part of their commitment to Agenda 21 rather meaningless. These indicators cannot really be measures of sustainability. They are just local environmental indicators.

Norgaard himself recognises that regions are affected by the actions of other regions. Issues like climate change and ozone depletion obviously require global coordination. Norgaard argues that more emphasis on the local should not mean less emphasis on the global. Frustratingly, he does not describe how to bring about this trick of simultaneous decentralisation and globalism.

In order to establish sustainability at the global level, it is not really necessary to track resource flows in the way that Norgaard claims. It is only necessary to know about all the resource inputs and all the waste outputs. Even this task, however, would be huge. It would also be necessary to assess how much of each kind of waste ecosystems could assimilate without 'unacceptable' damage, for pollutants ranging from the most short-term and short-range to the most long-term and long-range. In addition, the sustainability of the supply of each resource input

would have to be considered. For non-renewable resources and unsustainably harvested renewable resources, it would be necessary to consider the technical possibilities for substitution with resources that could be obtained sustainably.

The difficulties of trying to predict the future development of technology are well known. A less obvious problem, which Norgaard highlights, is that our systems of knowledge co-evolve with the world. For example, how we understand agricultural systems affects our decisions about agriculture. The decisions taken affect the agroecosystem and also the ideas about agriculture that we have. Because what we know is both within the system we are trying to understand and affects what we are trying to understand, our knowledge co-evolves with its environment. Norgaard claims that this means that there is no absolute knowledge, because knowledge only has meaning relative to how well it explains the state, dynamics and evolution of a system; there is no meaning to the idea that knowledge accumulates. Norgaard's argument does not really sustain this view, because there are areas of knowledge like chemistry where our ideas about how something works do not affect how it actually works. But in areas like economics, it is apparent that there is a reflexive loop between the understanding and the "object" of study. Norgaard seems correct to say that "This view of the nature of knowledge and our interactions with systems helps explain why there are always new problems needing new solutions. It is not the case, as is often argued, that we are constantly generating new problems [just] because we cannot foresee all of the consequences of our actions."⁴⁹

Sustainability and the limits to control

When planners and regulators fail it is not just because they are unable to foresee some of the consequences of their policies. Attempts to push the path of society in a particular direction are faced with the more fundamental problem that they are dealing with a target that is not merely difficult to predict, like the weather, but which responds intelligently to predictions in such a way as to be able to make them self-fulfilling or self-confounding. Peter Medawar used this argument to explain why economic prediction is so unsuccessful.⁵⁰ It is widely believed that Keynesianism eventually failed as an economic policy because investors became able to predict the behaviour of governments in such a way as to frustrate their intentions. Could policies to bring about sustainability be successful in the long term? Sustainability policies would have to be capable of making long-term predictions about the behaviour of human society as well as of the physical environment.

Another fundamental problem with any kind of long-term historical prediction which Karl Popper identified is the impossibility of predicting the future course of science.⁵¹ If we could predict its course, we would also know the contents of future science. Future scientific knowledge will make possible new technologies, which we do not know of, and which will have unpredictable social and environmental consequences. (Incidentally, the same basic argument easily refutes Fukuyama's claim that liberal democracy is the final form of human society.) Economists have used Popper's argument to criticise environmentalists for failing to allow for scientific progress in their view of the future. Environmentalists have responded that scientific progress is unpredictable: we cannot simply assume that scientific advances will

come along to get us out of environmental problems. The difference between weak and strong sustainability was about the extent to which technology can substitute for natural capital. But future social evolution is even more unpredictable than future technology. Attempting to achieve sustainability sounds like a goal at least as difficult to achieve as socialism.

Politics after socialism

One of the tremendous ironies of present times is the way that, since Marxism went into decline, leftists have taken up arguments that once belonged to conservatives. At the beginning of the modern age, Malthus' claim of natural limits was conservative and Engels' argument that there were no limits was progressive. Today, Greens attack economic growth with an analysis derived from Malthus, and free market economists defend it with an argument they have borrowed from Engels. Why have the arguments changed sides? The doctrine of Progress once gave leftists self-confidence. They were the party of progress, on the side of the future. Conservatives were the party of reaction, seeking to defend the past. By the late twentieth century, progress had been so successful that it had swept away almost all vestiges of the feudal past from Europe. After the First World War, socialists had firmly established themselves as the leading progressive element. With time, many of their ideas about state planning had become the orthodoxy. One of the major appeals of socialism was that it seemed a more rational approach to economics than the market. Socialism embodied the progressive values of the Enlightenment.

The outcome of both capitalist and socialist modernity was the increasing destruction of nature. By the late 1980s, almost nobody was able to deny that the scale of the destruction that had resulted was a cause for concern. By the late 1980s, it was also apparent that attempts to rationally plan society had not worked out as expected. The result of these experiences has been that both the belief in large-scale planning and the belief that progress lay through the domination of nature seem discredited. Modernism is now an old-fashioned idea.

The role of the Left has traditionally been to criticise the present society and suggest a better one. The role of the Right has been to defend present social arrangements and argue against change. In recent years, the Left has increasingly been defending its historical achievements, and the Right has increasingly been seeking to do away with them. The Left has stopped being progressive and the Right has stopped being conservative in the earlier senses of those words. The future vision of the Left is increasingly informed not so much by the socialist vision of the future, but by the Green one. The Right finds itself, as the proponent of capitalism, cast as the defender of what faith in Progress remains in western societies.

There is something very odd about all this. The Right has eventually come to terms with the way that capitalism demands "All that is solid melts into air", as Marx put it. The Right has ceased to be conservative. Instead, it seeks to remake society in the interests of capitalism. The Green position is odder still. It recycles the traditional conservative and Romantic scepticism of progress. However, in some ways Green ideology returns to the pre-Marxist roots of socialism. Green ideology retains certain elements of progressive Enlightenment thinking - the support for liberty, equality and fraternity. It lacks the faith in human rationality that

was the driving force of the Enlightenment. Instead, it considers the rationalism that drove modernism to have been a disaster. Without faith in the ability of science or the state to transform society for the better, it instead puts its faith, like anarchism, in bringing about the transformation of society from the bottom up. Like anarchism, it is unable to propose a mechanism for bringing about the world it desires.

Green thought rejects the myth of Progress, but in other ways it is not so different from other Western belief systems. Trevor Blackwell and Jeremy Seabrook explored the structural parallels between the Christian, Marxist and Green myths.⁵² In the beginning there was harmony on Earth (the Garden of Eden, a classless society, human beings living in harmony with nature). Then that harmony was lost (The Fall, the invention of private property, the domination of nature). The story involves suffering (Christ's death on the Cross, the sufferings of the proletariat, the ruin of the planet), followed by redemption (the Resurrection, the development of class consciousness, the renunciation of the industrialist way of life), a moment of truth (the Day of Judgement, the revolution, the *avoidance* of apocalypse) and finally a resolution (Heavenly after-life, communism, survival). The green myth differs from the others in that it is more modest, offering not the end of history after the struggle, but the continuation of existence. It also offers no clear redemptive agency. Nonetheless, its structure is largely that of the standard Western myth.

Blackwell and Seabrook claim that originally capitalism borrowed from the Christian myth, adding only the idea that the soul could be saved through work that created wealth. They claim that in recent times it has turned itself into a religion too. It has abandoned the Christian elements

of its story and claims that paradise lies in the rich societies here and now. Francis Fukuyama's claim that contemporary liberal democracy marks "the End of History"⁵³ seems to fit their interpretation of the new capitalist myth.

Blackwell and Seabrook argue that the Green myth has a great deal of potential as a new myth to appeal to the entire human race. It is surely quite telling that Fukuyama did not directly respond to the Green challenge. He was able to argue against the feasibility of abandoning technology, but he had no answer to the challenge to anthropocentrism. The change in attitudes towards Nature and Progress that has taken place in Western societies in the last three decades is so great that it seems likely that we really are witnessing a complete shift in attitudes similar in scale to the changes that the Enlightenment brought to European consciousness.

Sustainable development was ostensibly invented as a term that could allow for the concerns of both environmentalists and developers. Richard Norgaard described it to me as "a neat bridging trick" to get environmental ideas into the mainstream. He has pointed out that it is impossible to publicly advocate unsustainable development and maintain rhetorical credibility.⁵⁴ The rhetorical power of the word cannot be the entire explanation for the success of the idea, though. E.F. Schumacher recounted how someone once asked him if he really believed in 'appropriate technology'. He replied that he certainly didn't believe in inappropriate technology.⁵⁵ Schumacher's ideas ran into the problem that people could not agree what was 'appropriate' or 'inappropriate' technology. The concept of sustainability has perhaps been

more successful because many activities taking place in the world today are pretty undeniably unsustainable.

The road to sustainability

Environmentalists are increasingly using the measuring stick of sustainability. It is very hard to defend an activity once it has been condemned as 'unsustainable'. Attempts to bring about 'sustainability' are faced with several serious problems, however. Most immediately, there are powerful vested interests that favour unsustainability. Socialists had to fight the vested interests of capitalists. For environmentalists, the present generation has a vested interest in putting itself before the claims of future generations. Those who live in particularly unsustainable ways - the affluent consumers - have a particular vested interest in resisting change immediately. What is more, the poor of the Third World want wealth quickly and are tempted to ignore the long term consequences.

The second stage to face in attempting to achieve sustainability is defining what we mean by sustainability. It has not been particularly difficult to come up with definitions. The difficult bit is getting agreement on any given definition. It is even harder to find a definition that can readily be operationalised. Any operational definition of sustainability is ultimately based on more or less arbitrary decisions about the extent to which new knowledge and technology will be able to substitute for various natural resources. Yet it is fundamentally impossible to predict with any accuracy what future technologies will be available.

The decision about whether a particular activity is sustainable depends further on knowledge about how many other similar examples of the activity are taking place. A million cars in the world might have been

sustainable, a billion cars are not. This means that it is also necessary to agree on a distribution key for the use of the environmental space available. Attempting to achieve sustainability in one country is almost useless if other countries continue to act unsustainably. Sustainability seems to demand global agreements about the use of the environmental space.

The logic of competition and free trade will tend to oppose considerations of sustainability, so there would be a need for global enforcement mechanisms as well as national policies towards sustainability. The radical Green idea of decentralisation of decision-making to almost a village level is a fantasy. On the other hand, the pursuit of sustainability could turn into a latter-day version of central planning if everything was decided at a global level. Some kind of a division of labour between different scales of decision making would have to be worked out.

Even so, it would never be possible to be sure that sustainability had been achieved. Proving that something is sustainable is impossible. There is always the possibility that there is something that has been overlooked. The effects of DDT on bird life is a good example of something that only became apparent after it had happened and would have been difficult to predict with the available knowledge. Today, environmental science is much further advanced, but there still remains the possibility that some apparently harmless activity will turn out to be highly unsustainable. We can eliminate or bring under control all activities that are known to be unsustainable. It is much more difficult to deal with activities that are only suspected of being unsustainable. It is impossible to prevent all potential sources of unsustainability.

The central idea of Progress was that rationality could be used to master nature and to build a better society. Sustainability is a rather similar idea in that its implementation also requires the use of rationality and science. The main difference is that it is less optimistic about our capacity to 'master' nature. But the belief that we will actually be able to achieve something like sustainability seems to be based on optimism that it is possible to predict the future with any accuracy and furthermore that it will prove possible to persuade people to act not just rationally, but with altruism towards future generations. It could be said that the search for sustainability is the continuation of modernity by other means.

The need for metanarratives

A different approach may prove more fruitful. It would be to promote a kind of religious love of nature rather like Leopold's land ethic. The development of environmentalism as a religious faith would be likely to indirectly lead to sustainability. It is easier to imagine a successful nature religion than a successful religion of 'descendant worship'. This approach short-circuits rational argument in favour of an appeal to spirituality or superstition, depending on your way of looking at it. The obvious danger with such an approach is that, like earlier religions, it could lead to fanaticism and persecution.

The ecocentric green religion seeks to derive its legitimacy from science. What is new about the green myth is that it uses Darwinism as the basis for its cosmology. Humanism to a large extent derived its cosmology from Christianity, but put Man in the place of God. The long-term problem humanism is going to be faced with, as a religion for intellectuals in competition with the green myth, is that the creation

story humanism accepts as true does not fit with its morality as well as with the green myth's morality.

Today many intellectuals are influenced by postmodernism and its suspicion of 'metanarratives', myths to explain the world. Morality requires such myths, however. Postmodernism takes up Nietzsche's nihilist arguments, but draws back from his amoral conclusions, preferring radical relativism to his exultation of the power of the strong over the weak. But Nietzsche was right that we need myths to live, even if his myth was distasteful to most of us.

The humanist myth that Man could be God is in serious trouble. It appears that there are reasons in principle why modern people cannot develop the God-like powers of control over their destiny that they sought. The ideal of sustainability is the last attempt to keep that myth going. Beyond sustainability lies the green myth which puts Nature in the centre of the frame. Clearly there are dangers for human welfare in such a myth. People have an unfortunate tendency to lurch from one extreme of belief to another. The cultural shift is really quite slow, though. It has been underway for a generation and if it continues will probably take a few more generations to complete even in Western countries.

The idea of sustainability was invented to make it difficult for even hardline anthropocentrists to oppose the environmentalist agenda. It is a kind of bridge to enable them to begin the shift. Currently, sustainable development is the slogan of the centrists in the debate and sustainability is more radical. The people who reject sustainability as anthropocentric are the extreme radicals in the debate. What really motivates most

environmentalists, however, is not love of their great-grandchildren, but love of the natural world. As environmental destruction proceeds and the natural world is being lost, this love of nature increases among the population. The gut instinct in favour of preservation is likely to become increasingly powerful. The talk of sustainability is a way to put opposition to environmentalism on the defensive. In the long run, though, environmentalism is likely to become increasingly open about its ecocentric basis in the love of nature. The World Council of Churches, which helped to get the ball rolling in the seventies, has moved on from talking about the environment in terms of sustainability, and now talks in near-ecocentric terms about "the integrity of Creation".

Does that mean that talk about sustainability will eventually fade away? Perhaps not, because the slogan of sustainability, although perhaps over-ambitious, creates space for a way of talking about issues of social justice as well as environmental concern. In particular, the concept of "sustainable consumption" mentioned in Agenda 21 implies the equal division of environmental space. Sustainability is increasingly being used in the sense that something is only sustainable if it can be done by everyone into the indefinite future. This version of sustainability is much the same as Immanuel Kant's famous categorical imperative: "Act only according to the maxim by which you can at the same time will that it should become a universal law." It draws on the argument Kant used that any moral rule that can be accepted by rational beings must be one which all can follow. In the context of consumption patterns, the Kantian categorical imperative is a powerful moral argument for the value of equality. However, its adoption in practice would depend on a sense of

solidarity between nations and generations. 'Solidarity' is the present-day name for the French revolutionary value of 'fraternity'.

The idea of sustainability now provides an environmental argument for social justice. It chooses a line of argument for equality that Marx and Engels considered, but rejected for faith in material abundance. The environmental space argument for equality is a kind of global ecological version of the inevitable rise of the proletariat in Marxist theory. The flaw in Marxism was that it underestimated the capacity of capitalism to reform itself for survival against the threat of revolutionary socialism. Will the threat from the limits to the Earth's environmental space lead to reform?

Limits of scale and limits to control

Pressure for reform was visible at the Earth Summit. It is possible that the current climate negotiations that came out of Rio will eventually lead to a treaty which will try to address the issue of sharing access to the Earth's environmental space in terms of greenhouse gas emissions. John Pezzey pointed out to me that if such a treaty was to be enforced, it would be a significant step towards a world super-state. For more than a century, utopians have hoped for a world state to solve the problem of war. There were many hopes for the League of Nations after the First World War and for the United Nations after the Second World War. After the end of the Cold War, there were hopes among some people that the global environmental crisis would lead to the creation of such a power.

The collective approach to social organisation in the Modern Age was at the level of the nation-state. In recent years, international capital has been

able to transcend the power of individual states and reveal their weakness in the new world order.

Sustainability would require a kind of world super-state to enforce standards and prevent cheating on agreements. The new world economy that is finally emerging calls out for a world super-state to effectively regulate it. Sustainability, a combination of concern for the integrity of the global environment with concern for the distribution of the Earth's environmental space, would be perhaps the most important issue for it to address. We are a very long way politically, though, from a world super-state being established. Even in western Europe, nationalism is far from dead.

It is not just that our present political structures are incapable of dealing with the problems, and that new ones will take time to develop. We can have no certainty that Hegel's 'universal state' would actually be able to solve these problems either. The problems of modernity may have no rational solution. Although we no longer have faith in modernity's earlier promise, Fukuyama may be right that we are stuck in its logic for the foreseeable future. Perhaps ours is a civilization heading towards an ecological abyss with unstoppable momentum.

Conclusion

Sustainability has been a valuable slogan for environmentalists as it has helped them to put their concerns about the global environment on the international political agenda. The adoption of the phrase "sustainable development" at the official level marks recognition of these concerns. Its official acceptance has enabled environmentalists to take the concept into the heart of the enemy - the economics profession. The language of

sustainability now also provides space for discussion of matters of international equity through the concept of environmental space. However, there is not really much sign that the talk about sustainability and sustainable development has yet led to much change in practice, beyond the rhetoric. As Paul Ekins put it to me: "there is still plenty of scope and justification for pessimism."

This brings us back to the paradox at the heart of the concept of sustainability. It has come to prominence as the spirit of post-Enlightenment optimism about human progress has faded, to be replaced with concern about the environment and its consequences for future human generations. Upon reflection, it turns out that achieving sustainability is a goal that would require an enormous capacity to predict the future and handle uncertainty. The idea of sustainability itself has arisen out of increasing pessimism about the capacity of human institutions to handle even much less challenging problems. The slogan is rhetorically easy, but begs more questions than it answers.

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⁷Eric Hobsbawm (1994) *Age of Extremes: The Short Twentieth Century 1914-1991*, London: Michael Joseph

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- ³⁰ibid, p. 82
- ³¹ibid, p. 9
- ³²ibid, p. 236
- ³³ibid, p. 234
- ³⁴ibid, p. 189
- ³⁵ibid, p. 197-8
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- ³⁸Herman Daly (1994) Review of *Green Delusions*, *Ecological Economics* 9, 179
- ³⁹Lewis (1992) op cit, pp. 9-10
- ⁴⁰ibid, p. 201
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