

John Blewitt

Understanding
Sustainable
Development



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John Blewitt



publishing for a sustainable future

London • Sterling, VA

First published by Earthscan in the UK and USA in 2008

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ISBN: 978-1-84407-455-6 hardback
978-1-84407-454-9 paperback

Typeset by MapSet Ltd, Gateshead, UK
Printed and bound in the UK by TJ International, Padstow
Cover design by Yvonne Booth

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22883 Quicksilver Drive, Sterling, VA 20166-2012, USA

Earthscan publishes in association with the International Institute for Environment and Development

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Blewitt, John, 1957-
Understanding sustainable development / John Blewitt.
p. cm.

ISBN 978-1-84407-455-6 (hbk.) — ISBN 978-1-84407-454-9 (pbk.) 1. Sustainable development. I. Title.
HC79.E5B58 2008
338.9'27—dc22

2008016057

The paper used for this book is FSC-certified.
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international network to promote responsible
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Introduction

There is a word for it: *Zeitgeist*. A German word meaning something like climate or spirit of the times. Today, the *Zeitgeist* is one that embraces a growing recognition that human actions have impacted seriously and negatively on our planet's ecosystems. Debates over climate change are now focusing on mitigation and adaptation rather than whether it is happening or what is causing it. The answer to this last question is fairly simple and generally agreed. Human action is the predominant cause of the massive and rapid acceleration of greenhouse gasses, global warming and climate turbulence. Our ways of doing business, of producing goods and services, have used the Earth's resources as if they were inexhaustible. The Earth itself has been treated simultaneously as a factory, pleasure park, garbage dump, larder, marketplace and war zone. It is self-evident that we, as a species, cannot continue as we are doing. Obscene poverty and fabulous wealth live side by side, and the natural world, for many, can not be accessed at all. Things are not what they used to be, although poverty, inequality, injustice, environmental degradation and war are not exactly modern phenomena. But now we cannot simply continue in the same old way without putting the future at risk of not happening at all. Hence the imperative of sustainable development – our evolving spirit of the times. It has been a long time coming and there have been many resistances and refusals along the way. For instance, we have

known about climate change for many years but refused to acknowledge that we were mainly responsible for it. Too big a responsibility for us to handle? Or just an inconvenient truth? It is as ridiculous to be a climate change denier as it is to believe the Earth is flat. Attitudinal and political change is happening slowly, too slowly perhaps; but it is happening.

Sustainable development is simple. It is the idea that the future should be a better, healthier, place than the present. The idea is not new, but the way it is understood, reflected upon, cultivated and implemented possibly is. Neither modern nor postmodern, sustainable development requires an understanding of the natural world and the human social world as being not so much 'connected' as one and the same. Sustainable development is a process that requires us to view our lives as elements of a larger entity. It requires a holistic way of looking at the world and human life. It requires a recognition that other people may not see things like this at all and will have different perceptions, values, philosophies, aims and ambitions. It requires an understanding that the world is multi-faceted, fragmented and complete. This may not be easy to grasp at first, but it is a way of looking at the world and one which increasingly makes sense. That, in any case, is my view.

There are other views. Sustainable development is the product of many stories, worldviews, values, actions and perspectives

which to be fully appreciated require a readiness to listen to others, respect differences, suspend established opinions, and see with others' eyes while allowing other voices to resonate and be heard. Sustainable development both requires dialogue and is a dialogue of values. That is the underpinning rationale of this book in offering a series of guides and signposts to a range of contributions to this dialogue. Of course, this view is both contestable and not particularly original, but if elements within the text motivate further thought, reflection and dialogue, then hopefully our understanding of sustainable development will have been advanced just a little bit further.

Many people are coming to sustainable development with little understanding of the key issues and debates. They may have a deep and detailed knowledge of one specific area, but only the vaguest of inklings of anything beyond. Others may have a general but confused understanding of the theories and perspectives because they are immersed in its practice. Some people see sustainable development as essentially about the environment, and indeed sustainable development has its

roots in ensuring that the planet's ecosystems are protected from the ravages of human civilization. Maybe the best way to view sustainable development is as a collage or a kaleidoscope of shapes, colours and patterns that change constantly as we ourselves change. It is for us, therefore, to make sense of the world in all its complexity. We must avoid imposing convenient conceptual frameworks which the world just does not fit but which we find comfortable or accessible. There is a need to acknowledge that we do not, and maybe cannot, understand everything, however hard we might try. Uncertainty and the incomplete nature of our knowledge do not require us to apply simple, or simplistic, solutions to problems. Complex problems require complex solutions. Sustainable development warrants an attitude of mind that welcomes change, difference, creativity, risk, uncertainty, a sense of wonder, and a desire and capacity to learn. It is a heuristic – a way of learning about life and through life. The importance of learning should never be forgotten. We can only grow, flourish and be sustainable if we learn.

Speaking Personally

Having just written about values, perspectives and sustainable development, it is perhaps only right to say a little about my own understanding of sustainable development and my own learning and journey towards it. Like so many other things, my values have evolved, taken on different hues, as I have learned more about the world, other people and myself. Having been a teacher in adult, further and higher education for about 25 years, learning is actually my business as well as my

passion. I have noticed my social, political and ethical values becoming slowly greener with the years. I have a strong commitment to social and environmental justice, and a number of writers and practitioners have been significant influences on my learning journey. I have been particularly open to the social ecology of Murray Bookchin, the bioregionalism and humanism of Lewis Mumford, and increasingly the ancient wisdom and spiritual engagement of indigenous peoples. The work

of Greg Buckman, Wolfgang Sachs and Vandana Shiva has been extremely important for me too. Finally, I have always been most at ease with an interdisciplinary or trans-disciplinary approach to understanding the world around us. No one discipline can generate a holistic understanding of human beings and their relationship to the planet or each other. Having said this, I have nonetheless tried to be even handed in my selection and account of ideas, values, issues and actions discussed in this book. I have used a variety of sources and have learned a great deal from many people – friends, family, students and

colleagues. Teaching is the corollary of learning, but our learning must not simply be confined to abstract academic exercises or a playing with words. Learning must be married to change, and words to action. As the American philosopher Ralph Waldo Emerson (Ziff, 1982, p61) wrote in his famous 1836 essay *Nature*:

Words are finite organs of the infinite mind. They cannot cover the dimensions of what is in truth. They break, chop and impoverish it. An action is the perfection and publication of thought. A right action seems to fill the eye, and be related to all nature.

Outline of the Book

The chapters of this book are relatively self-contained, but together make for an understanding of sustainable development that celebrates complexity and diversity. The various sections hopefully demonstrate why sustainable development is such a necessity. Theoretical discussions are interspersed with empirical case studies, and at the end of each chapter are some 'thinking questions' that may serve as guides for future and continuing reflection.

Chapter One focuses on issues of globalization and sustainable development by exploring four specific worldviews and then moving on to examine how the language of economics has shaped much of the discourse. The human experience of economic growth and development offers many salutary lessons – poverty, sweatshops, debt, slums and crime. The work of renowned economists Jeffrey Sachs and Joseph Stiglitz and the more radical critiques of globalization articulated by Greg Buckman and George Monbiot are also discussed. Frequently, the story of sustainable

development is told through the establishment and work of major institutions, and this chapter does that too with sections on the World Bank, the United Nations, the World Trade Organization, and the major international milestones that encompass Stockholm, Rio, Kyoto, Johannesburg, Seattle and other iconic place names. Towards the end of the chapter the focus narrows to show how sustainable development policy has been articulated in a national context, and, using the example of the ongoing struggles to conserve the ancient temperate forests of British Columbia in Clayoquot Sound, the relationship between the local and the global is analysed. Finally, the idea of sustainable development constituting a 'dialogue of values' is outlined.

Chapter Two explores some of the major philosophical, theoretical and ethical contributions to the evolving process of sustainable development. Each section is connected so that the reader may detect similarities and differences between the various perspectives

and may gain the opportunity to learn new things or perhaps revisit previously discounted points of view. From 'deep ecology' to 'actor network theory' to 'environmental modernization', this chapter maps sustainable development's intellectual terrain. Chapter Three extends these earlier excursions by reviewing some of the major controversies, disputes and conflicts which sustainable development has stimulated. The ideas and priorities of the Danish statistician Bjørn Lomborg, whose view on climate change and much else is hotly contested, shows how energetic the debate can be and how a certain contrariness can motivate others to develop, refine and rearticulate their own views. The role and meaning of 'sound science' is also explored using genetic modification as an example. Some space is also dedicated to outlining the concept of the risk society and its relevance to understanding the idea that ultimately sustainability is a political act.

Chapter Four moves towards the social and environmental spheres by discussing the growing significance of the environmental justice movement. The reality of the poor, the disadvantaged and the exploited always seeming to be the victims of corporate greed, government corruption or history demonstrates that at the core of sustainable development is a moral imperative. Given the unavoidable and mesmerizing advances of new media technologies throughout the globe, the significance of information and communication technology (ICT) is also explored as a means towards fashioning a more just and healthy world. Chapter Five shifts the focus onto the political, looking at human agency, ecological democratization, environmental campaigning, civic action, the politics of place and community empowerment. The idea that sustainable development

is not just environmentalism is reinforced throughout by demonstrating the complexity and interconnectedness of the issues, actions, challenges and hopes of many sustainability practitioners. Human beings have the capacity, and the capability, to right the wrongs and repair the damage they have done if they have the collective will to do so. Chapter Six examines the central importance of economics and business, which have been frequently viewed as a major cause of the problem but are now increasingly seen as a necessary part of the solution. How could it be otherwise, given their overwhelming importance in fashioning everyone's ways of life, material wellbeing and life opportunities? Views of course differ, ranging from the revolutionary dismantling of the global economic system to its restructuring and reshaping through processes of localization, eco-efficiency and corporate responsibility as exemplified by such companies as Interface and such practices as fair trade. A discussion of economic growth and the hegemony of gross domestic product (GDP) frames these explorations.

Now to the future. Chapter Seven looks at how the future has been and is being conceived, by addressing the value of utopian thinking and some practical attempts to establish prefigurative ecovillages. What humans can dream, they can also create in their physical lives on Earth. Much attention is devoted to urban development and environmental design, because today over half the world's population live in urban settlements and because the origins of our present crises can often be traced back to problems with urban design and planning. Techniques and examples of backcasting and scenario analysis are also discussed. Chapter Eight moves the focus on to the resolutely practical by exploring the connectivity between means and ends,

tools and practices, indices and the nature of human wellbeing and human flourishing. Ecological footprinting and environmental space, the Natural Step Framework and the Global Reporting Initiative, and eco-labelling and consumption have as their aim to enable us to live on the only planet we have. Chapter Nine links communication, marketing, new media, education and learning as both vehicles for, and integral aspects of, sustainable development. This immensely important field is central to fashioning a sustainable world, although here, as with so much else, there are debates and disputes as well as dialogue. Combined with action, communication and learning are ways through which many peoples, groups and communities can find their true voice and if necessary invite themselves to the high table of policy formulation and practical action. The final chapter, Chapter Ten, explores leadership and management, with practical case-study examples and by rooting the idea and need for leadership in some of the key values and philosophies informing the dialogue on sustainability and sustainable development. The management system Project SIGMA is rooted in the idea of environmental modernization, and the maverick businessman Ricardo Semler's leadership achievements are rooted in corporate creativity, knowledge innovation and self-organization. The practicalities of dialogue, the significance of emotional intelligence, and the capacity for understanding, being and working with others are presented as key

ingredients for community development and personal engagement. The chapter ends with a reference to the culture of aboriginal peoples, suggesting that leaders are less important than developing wisdom and respect for nature and, by implication, each other.

Sustainable development encompasses far more than can be covered in one book, so accompanying *Understanding Sustainable Development* is a website providing illustrative and complementary material, resources and links which will enable the reader to further explore subjects, ideas and actions – see www.people.ex.ac.uk/jdblewit/. But beware, there are no magic bullets. No one way of squaring the circle. Sustainable development is, and probably always will be, work in progress. What we do and how we understand what we do is key to making fewer mistakes, to learning better ways and to nurturing the hope that our future will be a better place than the past for the Earth and all that lives and relies upon it.

Some brief acknowledgements are now in order. My thanks go to Donna Ladkin, John Merefield, Alan Dyer and Stewart Barr, whose comments on a very scruffy early draft were immensely valuable, to Rob West of Earthscan for commissioning the book and appreciating the need for a dialogic approach, to my many students over the years, particularly on the MSc Sustainable Development course at the University of Exeter, and to my wife Lorna, who is an inspiration and without whom I could not have written this at all.

List of Acronyms and Abbreviations

ABCD	awareness, baseline, clear and compelling, down to action	EVH	electronic village hall
ALS	amyotrophic lateral sclerosis	FTO	fair trade organization
AMOEBa	Dutch acronym meaning 'general method for ecosystem description and assessment'	GBM	Green Belt Movement (Kenya)
ANT	actor network theory	GCAR	Grupo Cultural AfroReggae (Brazil)
ASA	Advertising Standards Authority (UK)	GDP	gross domestic product
BAU	business as usual	GHG	greenhouse gas
BSE	bovine spongiform encephalopathy (mad cow disease)	GIS	geographic information system
CAT	Centre for Alternative Technology (Wales)	GM	genetic modification; genetically modified
CBD	Convention on Biological Diversity	GMO	genetically modified organism
CEO	chief executive officer	GNP	gross national product
CFC	chlorofluorocarbon	GPI	genuine progress indicator
CJD	Creutzfeldt-Jacob disease	GRI	Global Reporting Initiative
CMC	computer-mediated communications	HDI	human development index (UN)
CSR	corporate social responsibility	HDR	Human Development Report (UNDP)
DCSD	Danish Committees on Scientific Dishonesty	HPI	happy planet index
Defra	Department for Environment, Food and Rural Affairs (UK)	IA	integrated assessment
DFID	Department for International Development (UK)	ICT	information and communication technology
EM	ecological modernization	IMC	Independent Media Center
ENGO	environmental non-governmental organization	IMF	International Monetary Fund
EPA	US Environmental Protection Agency	IPCC	Intergovernmental Panel on Climate Change
ESD	education for sustainable development	IPPR	Institute for Public Policy Research (UK)
		ISEW	index of sustainable economic welfare
		IUCN	World Conservation Union
		LSX	London Sustainability Exchange
		MEA	Millennium Ecosystem Assessment
		NCWK	National Council of Women in Kenya
		NGO	non-governmental organization

NIMBY	not in my backyard	UN	United Nations
OECD	Organisation for Economic Co-operation and Development	UNDP	United Nations Development Programme
PR	public relations	UNEP	United Nations Environment Programme
R&D	research and development	UNESCO	United Nations Educational, Scientific and Cultural Organization
SIBART	'Seeing Is Believing As a Replication Tool' project (EU)	UNFCCC	United Nations Framework Convention on Climate Change
SIGMA	Sustainability – Integrated Guidelines for Management project	WCED	World Commission on Environment and Deveelopment
SOFI	state of the future index	WEDO	Women's Environment and Development Organization
SPARC	Society for the Promotion of Area Resource Centres	WMO	World Meteorological Organization
SVTC	Silicon Valley Toxics Coalition	WSF	World Social Forum
TEK	traditional ecological knowledge	WTO	World Trade Organization
TNC	trans-national company	WWF	World Wide Fund for Nature
TNS	The Natural Step		
TRIPS	Trade-Related Intellectual Property Rights Agreement		
TVE	Television for the Environment		

Globalization and Sustainable Development

Aims

The aim of this chapter is to introduce the concepts of *globalization* and *sustainable development*, indicating the complex and contested nature of various debates, actions and practices. The significance and critiques of some key international agreements will be discussed. Sustainable development has developed through political and environmental struggles, through an engagement with the

complexity of contemporary ecological and other problems, and through a vast array of differing perspectives, values and interests. The chapter ends with the suggestion that sustainable development is perhaps best understood as a 'dialogue of values' – a way of encouraging people to learn, to discover and to evaluate.

Globalization

Like so many other concepts, *globalization* has been subject to a considerable amount of debate in academic and policy circles. Although a few people dispute either whether globalization is actually occurring, or whether it is a useful way of making sense of current trends and processes, there is a general consensus that globalization is real and that it characterizes the nature of our times. There are a number of definitions on offer, including notions of space–time compression and accelerating interdependence, but for Held et al (1999, p2):

Globalization may be thought of initially as the widening, deepening and speeding up of

worldwide interconnectedness in all aspects of contemporary social life, from the cultural to the criminal, the financial to the spiritual.

Held et al recognize the importance of various spatial attributes suggesting globalization can be located on a continuum that includes the local, national and regional understood as functioning clusters of states, economic relations, networks and societies. The authors continue (1999, p15):

Globalization can be taken to refer to those spatio-temporal processes of change which underpin a transformation in the organization

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of human affairs by linking together and expanding human activity across regions and continents.

Without reference to these spatial connections there can be no meaningful articulation of globalization. This approach implies:

- 1 a *stretching* (extensity) of socio-political and economic activities across frontiers such that events, decisions and activities in one region of the world have significance for individuals and communities in others;
- 2 connections across frontiers are regularized, rather than occasional or random, making for an *intensification*, or growth in magnitude, of interconnectedness, patterns of interactions and flows, which transcend the various societies and states making up our world;
- 3 the growing *extensity*, *intensity* and *velocity* of global interconnectedness relates to a speeding up of global interactions, due to the development of worldwide systems of transport and communications, which increase the speed of the global diffusion of ideas, goods, information, capital and people; and
- 4 the local and global are often deeply interrelated, so distant events may have profound local impacts in other parts of the world and very local developments may eventually have enormous global consequences. *The boundaries between domestic and global affairs are therefore likely to become blurred.*

Many globalization theorists, including most notably Manuel Castells (1996), frequently refer to:

- *flows* – the movements of physical artefacts, people, symbols, tokens and information across space and time; and
- *networks* – regularized or patterned interactions between independent agents, nodes of activity or sites of power.

To understand globalization it is probably useful to consider issues such as climate change or trans-boundary pollution, for example acid rain or the fallout from nuclear disasters like Chernobyl. Such phenomena do not respect national boundaries. Desertification, environmental degradation, resource depletion, world trade, global communication, new media, population movements, refugee crises, crime, war and security issues also rarely stay confined within states or even regional jurisdictions (Homer-Dixon, 1999; Barnett, 2001). Economic growth, industrial development and consumerism in countries such as India and China are currently having massive global impacts influencing the wider ecological and economic environment and the everyday life experiences of citizens throughout the world. Geographer Doreen Massey (1993, p66), who has reconceptualized the specificity of place as 'a constellation of relations, articulated together at a particular locus' comprised of many experiences and understandings of its links to the wider world, argues today that social relations of domination and subordination are stretched over time, over the whole planet, so that child labour on one continent supports consumer materialism in another, or environmental degradation or conflict in one region subsidizes politics and energy use elsewhere.

Held et al (1999, p377) posit an anthropocentric conception of *environmental degradation* which refers to 'the transformation of entire ecosystems or components of

those ecosystems ... whose consequences, whether acknowledged by human actors or not, have an adverse impact on the economic or demographic conditions of life and/or the health of human beings.' This conception recognizes the importance of the interaction between the natural and human-social worlds, together with the problems and opportunities that human activity generates. Resource depletion, water shortages and, of course, climate change are again key issues. Given this, the globalization of environmental degradation may take various forms:

- the exploitation and destruction of the *global commons* – the atmosphere, marine environment and hydrological cycles;
- *demographic expansion* and exponential economic growth that leads to increases in pollution and consumption of global raw materials, for example oil and timber; and
- *trans-boundary pollution* involving the transmission of pollutants through the air, soil and water across political borders, so their environmentally degrading impact occurs in many other countries.

Perspectives and Worldviews

Public debates, discussions and discourses on globalization and the environment reveal a wide range of perspectives and worldviews. Clapp and Dauvergne (2005) offer a fourfold categorization, while recognizing that their categories are *ideal types* and that many organizations, groups and individuals share elements drawn from two or more. Complexity and interconnectedness frequently characterize both our world and our attempts to make sense of it. The four categories are identified in the following sections.

Market liberals

- The main causes of global environmental problems are poverty and poor economic growth brought on by market failures and bad government policies that lead to market distortions (for example subsidies or unclear property rights).
- Globalization is largely positive because it fosters economic growth and, combined with the application of modern science and technology and human ingenuity, will

in the long run improve the environment and people's material wellbeing.

Institutionalists

- The primary causes of global environmental problems are weak institutions and inadequate global cooperation, which has failed to correct environmental failures, promote development or counteract the self-interested nature of some states' actions.
- The main opportunity of globalization is to enhance opportunities for cooperation, capacity-building and innovative eco-efficient technologies which will generally enhance human wellbeing. The *precautionary principle* should inform the evaluation of new developments.

Bio-environmentalists

- The main causes of the environmental crisis are excessive economic growth, over-population, over-consumption and

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rampant materialism.

- Globalization is driving unsustainable growth, trade, investment and debt while accelerating the depletion of natural resources and filling waste sinks. The way forward is to create a new global economy operating within the Earth's ecological limits.

Social Greens

- The main causes of the global environmental crisis are large-scale industrialization and economic growth. The main impact of globalization is that it

has led to the acceleration of exploitation, inequality and ecological injustice, leading to the erosion of local-community autonomy and the increase of drug-related global crime, human trafficking and the re-emergence of slavery (Nordstrom, 2007).

- The way forward is to reject industrialism (or capitalism) and reverse or at least take democratic control of economic globalization, restore local community autonomy, empower those whose voices have been marginalized, and promote ecological justice and local indigenous knowledge systems.

The 'Capitalization' of Sustainable Development

The discipline of economics has had a profound influence on the conceptualization of sustainability and development, and much of this is due to the application and extension of the notion of 'capital' beyond the spheres of economics, business and finance. In the 18th century the Scottish economist Adam Smith recognized that the accumulation of fixed and reproducible capital, understood largely as productive machinery, combined with the increasing division or specialization of labour, was key to economic growth and development. Since Smith's time, economists and other theorists have extended the capital metaphor to include *human capital* (education and skills), *social capital* (social relationships and networks) and *natural capital* (natural resources and ecosystem services), which in turn may be divided into renewable resource capital and non-renewable resource capital. A further concept, *critical natural capital*, has also been developed. This refers to those aspects of the global ecosystem upon which our lives and cultures

ultimately depend. Human activity consumes this natural capital, relying on the ecosystem services to support our standard and quality of life. Apart from consuming this natural capital – oil, timber, fish and so forth – our productive activities have frequently impaired the functioning of environmental services. We have polluted rivers, destroyed natural habitats, rendered land toxic or air unbreathable, released greenhouse gases into the atmosphere, and consumed mineral and energy resources that cannot be renewed or regenerated.

To compensate for the loss, or contamination, of this critical natural capital, substitutes may be sought in the form of new renewable energy technologies, human ingenuity and future technological advances (man-made capital). A Micawber-like optimism occasionally characterizes such an approach – something will always turn up in the end. Arguments focus on the extent to which one capital stock may be substituted for another in order to maintain a constant stock of global

wealth, ensuring future generations do not have a depleted inheritance. In the words of Pearce et al (1989), sustainable development refers to 'non-declining natural wealth' and the maintenance of a constant stock of (natural) capital. Problems then arise over:

- Non-substitutability – what can fill the holes in the ozone layer?
- Uncertainty – what can replace the oceans' role as a climate regulator?
- Irreversibility – human-made capital cannot (yet?) replace an extinct species; and
- Equity – the poor are often disproportionately affected by environmental degradation in comparison to the wealthy.

Related to these concerns and the critical unease with conceiving of the biosphere as another form of capital and one that logically can carry a price tag, the sub-discipline of ecological economics has explored the relationship between the scale of human productive activity and the natural environment, biosphere and 'services' the ecosystem provides. If the human productive economy grows too big, with the biosphere being unable to support it, then development is literally unsustainable. The ideal condition for development is therefore 'sustainable development' – a relational concept referring to a series of practices and processes that ensure 'development' does not exceed the ecological 'carrying capacity' of the planet. Sometimes known as the 'strong sustainability condition', this idea insists that over time there should be no decline in natural capital, that future generations must inherit the same amount of natural resource stocks as previous ones. As with so much else, policymakers, academics,

sustainability practitioners and others throughout the world rarely seem to agree – at least fully. Consequently, alternative sustainability conditions have been conceptualized, namely the 'weak' (no reduction in critical natural capital) and the 'very weak' (the loss of natural capital must not be more than the increase in human capital and man-made capital).

The substitution of natural capital with man-made capital can be quite expensive. Heal (2000) discusses how the Catskill watershed provided New York City residents with natural high-quality water for many years. Then, in the 1990s, the Environmental Protection Agency (EPA) suggested that a filtration plant would soon be needed because of uncontrolled land development and intensive water consumption, costing the City up to \$8 billion, with annual operating costs around \$300 million. This prompted the City to restore the watershed by improving sewage treatment and purchasing land to head off further development. Although still costly, for this course of action estimates were less than \$1.5 billion. There are frequently other issues too. For Norton (2005), the real problem arises when communities and professionals of various descriptions speak different languages of sustainability. He argues for the need for a radical shift in attitudes, that environmental policies should be derived from long-term adaptive plans, based on the values embedded in each community or locale. Too often, environmental management disputes and policy conflicts arise between those who wish to place a financial price on the value of nature and those who fervently do see nature as being intrinsically valuable. An approach that reconciles these positions needs to encompass short-term goals, which may be primarily economic or employment-related,

medium-term goals, which may need to encompass local and regional imperatives like water or land conservation, and the more long-term goals, which must encompass planetary survival, the health and wellbeing of future generations, and the regulation of population increase. For Norton, adaptive management means human intellect and practice working as an integral part *of nature*

rather than simply *on nature* – human beings are part of the wider ecosystem and sustainable development projects need to articulate that fact. For Norton, there is not just scarcity in the economic sense, but also scarcity of good ideas and effective action. In the words of Homer-Dixon (2002), there is ‘an ingenuity gap’.

The ‘Humanization’ of Sustainable Development: The Millennium Development Goals

In September 2000, at the United Nations Millennium Summit, world leaders agreed on eight measurable Millennium Development Goals (MDGs), to be achieved by 2015, in addition to outlining broad commitments to human rights, good governance and democracy. Official United Nations figures indicated the existence of vast inequalities in an increasingly affluent world – 113 million children do not go to school, over a billion people earn less than \$1 a day, 11 million children die before they are five and preventable diseases devastate many populations. Inequality and injustice clearly go hand in hand, but the Millennium Declaration, as with so many international agreements, was the product of extended dialogue, detailed negotiation and frustrating compromise (UN, 2000).

The Millennium Development Goals are:

- halving extreme poverty and hunger;
- achieving universal primary education;
- empowering women and achieving gender equality;
- reducing mortality for the under fives by two-thirds;
- reducing maternal mortality by three-quarters;

- reversing the spread of major diseases – especially HIV/AIDS and malaria;
- ensuring environmental sustainability; and
- creating global partnerships for development with targets for trade, aid and debt relief.

By 2006, it was also clear that progress towards meeting these goals was slow and uneven (UN, 2006), with Asia seeing the greatest reduction in poverty but chronic hunger still widespread in sub-Saharan Africa. There were significant increases in universal primary education, particularly in India, although urban and gender inequalities remained serious problems. Women’s position in the labour market and child and maternal mortality rates had improved slightly, although reproductive healthcare services were still very poor in many regions. The incidence of HIV/AIDS, tuberculosis and malaria was still high. The rate of deforestation had slowed down, but forest loss continued. Half of all developing nations still lacked basic sanitation systems, and although development assistance from the more affluent nations had increased, it was still below the targets set a few years earlier. Fourteen per cent of the global population had internet

access, but a digital divide was perceived as separating the developing from developed nations, with over 50 per cent of the population in developed regions using the World Wide Web, as opposed to 7 per cent in developing regions (less than 1 per cent in the least developed nations). Two years earlier, the Human Development Report for 2004 had also noted uneven progress, stating soberly that:

at the current pace Sub-Saharan Africa will not meet the goal for universal primary education until 2129 or the goal for reducing child mortality by two-thirds until 2106 – 100 years away, rather than the 11 called for by the goals. In three of the goals – hunger, income poverty and access to sanitation – no date can be set because the situation in the region is worsening, not improving.

(Fukuda-Parr, 2004, p132)

Despite all this, the economist Jeffrey Sachs (2005) sees no real reason why the MDGs cannot be realized in full, as they are eminently achievable, requiring relatively modest amounts of aid from developed countries and alterations to trading regulations. He gives five major reasons for this thinking:

- 1 The number of the world's extreme poor has declined to become a relatively small proportion of the global population – less than 20 per cent.
- 2 The MDGs aim to end extreme poverty, not all poverty or to equalize incomes.
- 3 Low-cost interventions to improve energy generation, water, sanitation, disease control and so on can significantly improve living standards and enhance economic development.
- 4 The rich parts of the world are now extremely rich and the aim of increasing the overseas aid from developed countries

to 0.7 per cent of gross national product (GNP) is fairly small. 'The point is that the MDGs can be financed within the bounds of the official development assistance that the donor countries have already promised' (Sachs, 2005, p299).

- 5 Tools and information technologies can be extremely powerful and effective – enhancing communication and information dissemination, advancing agronomic practices such as 'science-based management of soil nutrients', aiding the development of new medicines and innovation in biotechnology, etc.

Sachs calls for, and has faith in the idea of, an enlightened globalization of democracies, of science and technology, market economies and multilateralism, with progressive public policies at national and international levels leading the way. He believes that the big trans-national corporations have not caused the global crisis, although their past behaviour is not unblemished. The anti-globalization movement's hostility to capitalism is consequently not especially well founded. He writes (2005, p357):

Too many protestors do not know that it is possible to combine faith in the power of trade and markets with understanding of their limitations as well. The movement is too pessimistic about the possibilities of capitalism with a human face, in which the remarkable power of trade and investment can be harnessed while acknowledging and addressing limitations through compensatory collective actions.

Less sanguine is Aswani Saith (2006), who notes that the MDGs owe too much to the United Nations Development Programme and for some represent a narrowing of the (sustainable) development agenda to just a

few issues in what used to be called the 'Third World'. Various points are made: poverty and deprivation exist in Japan, the UK and the US too; people with disability, who make up around 10 per cent of the global population, receive no mention, and neither do the elderly, who increasingly constitute a significant percentage of the global poor; and there are no goals and targets for secondary education. The identification of the goals and their accompanying indicators and metrics also offer concern. For instance, feminist critics find it difficult to see how gender empowerment can be reduced to a single target or goal, as this issue cuts across so many other areas. For example, universal primary education is an important vehicle for the achievement of gender equality and should therefore not be separable in either policy development or implementation. Setting targets may also easily distort social and cultural behaviour, inducing governments to divert funds to meet reportable targeted areas to the exclusion of others arguably as important but not incorporated in the MDGs. Problems with data, particularly regarding malaria, tuberculosis and maternal mortality, make accurate assessment and evaluation a most important issue. There is little point in setting targets if it is uncertain which actions will produce what outcomes. The MDGs require that initiatives are costed, but Saith (2006, p1178) suggests that:

This immediately reveals the futility of such exercises. One might ask: what would it cost to overcome violence against women? What might it cost to address the issue of son preference and the appalling and falling sex ratio at birth? What would it cost to get the parents to agree to send the girl child to school? How much would have to be spent to change the laws on property rights?

The global neo-liberal economic agenda, structural inequality, and the gap between the rhetoric and reality on human rights and environmental protection seem to go largely unchallenged and unexamined. Veteran neo-Marxist critic Samir Amin (2006) sees the MDGs as clearly designed to shore up the North's global economic and political dominance of the South. The rhetoric of 'partnership' and the notion of 'good governance' is really about opening up commercial markets for the major economic powers. He asks cynically what else can be expected from an initiative emanating from Japan, the US and Europe and co-sponsored by the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development and the World Bank, which for Amin is little more than 'the G8's Ministry of Propaganda'.

The World Bank's emphasis is largely on the economic aspects of sustainable development, suggesting, in language reminiscent of corporate business strategies, that if human wellbeing is to be enhanced, then society has to carefully manage its 'portfolio of assets', and recognizing that this mix of 'assets' necessary to support improvements is likely to change over time. Economic growth at the expense of social and personal wellbeing or the natural environment, however, is not a feasible option for the future. Unchecked industrial development has led to horrifying environmental damage in some areas, which, like the devastation of the Aral Sea in the former Soviet Union, has led to massive human, environmental and economic costs – disease, pollution, and loss of livelihoods and ecological habitats. Given this, in theory, then, global societies are confronted with three options (World Bank, 2003, p24):

- 1 simultaneously addressing environmental concerns along with economic growth, even in the short run;
- 2 placing higher priority on economic growth, while addressing environmental concerns that can be dealt with at relatively low cost in the short run; and
- 3 placing higher priority on maintaining or restoring the environment in the short run.

Joseph Stiglitz and Globalization

Former Chief Economist at the World Bank and Chair of President Clinton's Council of Economic Advisers, Joseph Stiglitz (2002) has been an eloquent and constructive critic of economic globalization, suggesting that the experience of the 1980s and 1990s has been at best uneven and at worst disastrous for many developing countries. As a result of IMF and World Bank policies, many saw their debts increase, their economies weaken, their environments degraded, and social injustice and economic inequality spiral downwards. Globalization has not brought the economic benefits to poorer countries which advocates of liberalization in the West promised. The developed world did not open up their markets to goods coming from the developing world; the developed world did not abolish subsidies to their own farmers while frequently benefiting from the loosening of controls on capital flows that enabled money to easily move in and out of countries irrespective of the social consequences. Conditions attached to IMF loans undermined the sovereignty and social infrastructure of developing nations, with governments forced to privatize their assets, abandon plans for public investment in health, training and education, and lower or abolish trade tariffs. There is very little for unskilled workers to do in lesser developed countries in a globalized economy apart from live in slums and join the informal sector of beggars and casual labour-

ers. These 'structural adjustments' have had profoundly adverse effects on many urban dwellers, increasing poverty and hardship to such an extent that researchers have wondered how the poor actually survive (Rakodi, 1997; Potts, 1997). And it is not just the urban areas that have suffered – as Potts and Mutambirwa (1998) have shown, the strength of rural–urban economic interaction means the destiny of the countryside is often tied to that of the town or city. The idea that economic growth, driven by the free market, would ultimately benefit everyone via the magical notion of 'trickle down' economics has been a fiction. The hegemonic dominance of the 'Washington Consensus', forged between the IMF (on 19th Street), the World Bank (on 18th Street) and the US Treasury (on 15th Street), focused on a one-size-fits-all strategy, emphasizing downscaling government intervention in the economy, deregulation, rapid liberalization and privatization. In most cases, this strategy did not work (for example in Africa and Latin America), but where it was tempered or ignored (in East Asia), economic resilience and development was able to emerge from the global economic turbulence of the 1990s. The Asian Development Bank argued for alternatives, for a 'competitive pluralism' in which governments in developing countries, although basically relying on markets, were active in shaping and guiding these markets

through promoting new technologies and by insisting private businesses seriously consider the social welfare of their employees and the wider society in which they live. Stiglitz, however, is not opposed to globalization as such, as he believes that with appropriate regulation, equitable trade laws, and good nation-state and corporate governance it can be a genuine force for global good. There are alternatives to the Washington Consensus, which he develops in both *Fair Trade for All* (Stiglitz and Charlton, 2005) and *Making Globalization Work* (Stiglitz, 2006).

Acknowledging that making globalization work 'will not be easy', Stiglitz (2006, p13) suggests a number of general actions that can, and should, be initiated to produce a more comprehensive approach to global development. These include:

- increasing foreign assistance from the rich countries to the poor to the value of at least 0.7 per cent of their GDP;
- cancellation or relief of foreign debt of which the decision by the G8 at Gleneagles in 2005, when the debts owed by the 18 poorest developing nations to the IMF and World Bank was written off is an example;
- genuine fair, rather than free trade, recognizing the limitations of economic liberalization and iniquities produced by global corporate monopolies and cartels;
- protection of the global environment on which all economies ultimately depend through a sensible and workable public management of global natural resources and regulations on their usage and on actions giving rise to 'externalities' and costs; and
- good, democratic government, including enhanced possibilities for democratic

regulation of the economy and participation in decision-making processes at all levels.

The voice of the developing nations ought to be listened to more frequently. The fictional trial of international financial institutions that took place in Sissako's 2006 film *Bamako* is taking place in many other forums within global civil society. The US ought to recognize, and act on, its moral obligations to emit less greenhouse gases, particularly CO₂, offer more aid and negotiate better trading arrangements. Developing countries frequently do not have sufficient resources to avoid illegal logging, so they should be paid to stop further deforestation by, according to the Rainforest Coalition led by Papua New Guinea, being allowed to sell carbon offsets for new forest planting. Stiglitz (2006) also believes that, although global corporations frequently facilitate technology transfers, raise skill standards and develop markets which do help developing countries, their primary purpose to make money is clearly articulated by their fiduciary relationship to their stockholders. Consequently, to counteract the harmful effects of corporate actions, Stiglitz feels it necessary to reshape private incentives with social costs and benefits to avoid environmental destruction and labour exploitation. This can be achieved through:

- a combination of corporate social responsibility and stronger regulations to prevent unfair competition;
- limitation of corporate power through the implementation of effective global anti-trust laws;
- better corporate governance, whereby companies are held accountable to all stakeholders – employees and communi-

ties as well as shareholders – making environmental destruction a crime just like fraud and embezzlement;

- international laws being enacted against price fixing and labour exploitation; and
- reducing the scope for corruption, with bribery being viewed as an unfair competitive practice and bank secrecy eradicated so as to prevent the incentive to, or possibility of, enhancing after-tax profits garnered from questionable business practices.

Stiglitz's time at the World Bank did see some changes, with development priorities being refocused on poverty reduction, partnership and the creation of 'good policy environments' rather than simply economic growth. Despite these changes, however, limiting conditions on development loans remain, constraining the possibilities of developing nations to 'own' the preferred development policy (Pender, 2001).

Anti-globalization Critiques

Activists and campaigners like Greg Buckman (2004), Vandana Shiva (2000), Walden Bello (2002) and George Monbiot (2004) criticize existing global institutions and international trading systems. Their views have informed some of the more radical approaches to sustainability and sustainable development. They advocate alternatives that have a different value base, offering different sets of prescriptions and types of knowledge than those currently characterizing the dominant neo-liberal discourse of economic growth, development and globalization. For Wolfgang Sachs (1999), of the Wuppertal Institute for Climate, Environment and Energy, the costs and benefits of economic globalization have not been equitably globalized, and nature has itself been colonized through the 1994 TRIPS (Trade-Related Intellectual Property Rights) Agreement, which gives corporations the right to patent genetic materials such as micro-organisms, seeds and even cells. This has helped 'modernize' agriculture, reinforcing the commercial advantages of growing cash crops in the developing world for markets in developed countries, and has effectively stolen the

harvests and livelihoods of many local farmers in India and other nations (Shiva, 2000). For Bello (2002), founding director of Focus on the Global South, the IMF and the World Bank have been 'unmitigated disasters', with oligarchic decision-making defining the World Trade Organization (WTO), and the centralizing tendencies of all three organizations, combined with the inordinate power of big corporations, has militated against popular struggles for decentralization and democracy in many developing nations. At the very least, corporate power needs to be checked and regulated more effectively. In *Deglobalization: Ideas for a New World Economy* (Bello, 2004), he states that continuing anti-globalization action must be married to concrete proposals for an alternative system re-empowering local and national economies and re-embedding the economy in society, rather than having society driven by imperatives such as profit maximization, cost-efficiency and other market verities. This may be accomplished by:

- allowing countries to use their own internal financial resources to promote

development rather than becoming dependent on foreign investment and foreign financial markets;

- redistributing land and incomes to create a vibrant internal market that would secure economic prosperity and free up financial resources for internal investment;
- lessening the salience accorded to economic growth in favour of emphasizing equity in order to fundamentally reduce 'environmental disequilibrium';
- strategic economic decisions being made subject to democratic debate and decision-making processes and not left to the guiding invisible hand of the market; and
- civil society organizations constantly monitoring both the private sector and the state.

New approaches to production, distribution and exchange should be developed that enable the emergence of a system that includes community co-operatives and private and public enterprises and excludes transnational corporations.

For environmental activist George Monbiot, globalization refers to, first, the removal of controls on the movement of what has become known as 'footloose' capital; second, the removal of trade barriers and the 'harmonization' of trading rules; and third, the growth of multinational corporations, which displace local and national businesses. However, the problem is not globalization as such, but the inability of people, civil society and governments to control and restrain it. He writes that 'our task is not to overthrow globalization, but to capture it, and to use it as a vehicle for humanity's first global democratic revolution' (Monbiot, 2004, p23).

His prescription or manifesto includes the establishment of a world parliament, modelled in part on the World Social Forum, and the establishment of an 'international clearing union', which would replace much of the undesirable work of the International Monetary Fund, many commercial banks and the World Bank, whose policies and actions have increased the financial debts of the developing world. More economically sensitive and benign policies, including debt reduction and/or abandonment, will replace them. Between 1980 and 1996, nations in sub-Saharan Africa paid out twice the sum of their debt in interest, owing three times as much in 1996 as they did 16 years earlier. Finally, Monbiot (2003) advocates the creation of a 'fair trade organization' (FTO) to replace the iniquitous World Trade Organization, whose operations seem to consistently benefit the rich nations at the expense of the poor. This would lead to greater global political and economic equality as well as a social and cultural equity only currently dreamed of.

Economic development for poorer countries can only take place through a combination of trade and aid together with a degree of protection. Free trade rules benefit strong mature economies and not weak developing ones, which require a degree of government intervention to maintain social standards, business and economic security. For Monbiot, contemporary free trade rules are similar in effect and purpose to the imperial relationships and treaties imposed on weaker nations – Brazil, Persia, China, Japan and the Ottoman Empire – in the first half of the 19th century. Poor nations are forced to grow cash crops and export raw materials to the affluent developed nations, who then 'add value' through production processes and refinement, while externalizing any environmental costs to

the country of origin. 'Footloose capital' would be fettered. Multinationals would not be allowed to move from country to country seeking lower labour and environmental standards in order to boost or maintain profitability. Instead, corporations would be obliged, through incentives, to set high standards and would be punished if they did not. Producers and consumers should carry their own costs and not dump them on other people. Monbiot writes (2003):

The FTO would, in this respect, function as a licensing body: a company would not be permitted to trade between nations unless it could demonstrate that, at every stage of

production, manufacture and distribution, its own operations and those of its suppliers and sub-contractors met the necessary standards. If, for example, a food-processing company based in Switzerland wished to import cocoa from the Ivory Coast, it would need to demonstrate that the plantations it bought from were not employing slaves, using banned pesticides, expanding into protected forests or failing to conform to whatever other standards the FTO set. The firm's performance would be assessed, at its own expense, by a monitoring company accredited to the organization. There would be, in other words, no difference between this operation and the activities of the voluntary fair trade movement today.

Sustainable Development and the Question of Spatial Scale

Sustainable development is about protecting and conserving the planet's natural environment and promoting social equity and a degree of economic equality within and between nations. This can be conceptualized as a process of convergence, so the question of spatial scale is a necessary element in any serious thinking, and action, designed to make our world a better place. It is possible to conceive of scale in ecological and socio-political terms (Table 1.1).

Institutions and organizations operate at many different levels. The United Nations and the World Bank are large international bodies operating on the global scale, and through their various projects they shape the lives of people in specific communities and households. These bodies may develop and implement policies, treaties and actions that affect all ecological scales. The European Union operates at a supra-national level and the Environmental Protection Agency in the

US operates at a national level, but its effects may be experienced far wider. And there are countless numbers of community groups, businesses, and formally or informally structured activist organizations that operate at the very smallest scales. National or neighbourhood campaigns to reduce, recycle or reuse will ultimately rely on individual house-

Table 1.1 *Ecological and socio-political scales*

Ecological Scale	Socio-political Scale
Biosphere	World
Biome type	Supra-national regions
Biome	State
Landscape	Region
Ecosystem	Locality 1: city, town
Community	Locality 2: village, community, neighbourhood
Population	Household
Organism	

Source: Grainger (2004).

holds and citizens wanting to conduct themselves in a more sustainable manner. Complementing, and perhaps complicating, this further are the various 'capitals' dispersed across the planet on a variety of spatial scales. When we consider also the possible 'conditions' – strong, weak or very weak – it may become very difficult to see some capitals applying to more than one spatial scale. Grainger suggests that under the very weak condition, critical natural capital is meaningful at a global scale but becomes less so at lower ones. There are implications too with regard to practical action and communication. As a consequence of natural and other endowments, it may not be possible for a small town or village to be sustainable if sustainability is understood in isolation from the wider ecological or political processes, or if it is isolated from other towns, villages and surrounding rural hinterlands. Although an individual town may strive towards being

carbon neutral, this may be practically impossible. However, the actions of 'transition towns' may contribute to overall sustainability at higher levels and, most importantly, inspire, communicate or model sustainable action for people in other localities. As towns and cities are intensive resource users, often having huge environmental footprints, any improvement will impact positively on global sustainability. Actions at the local level, if multiplied, may influence policy and practice at higher levels. We can act locally and think globally. We can also act globally and nationally too, as Pontin and Roderick (2007) demonstrate in their call for a 'converging world' of equitable resource use across the planet, initiated by grass roots, community-based action incorporating carbon offsetting, civic dialogue, fair trade business development, one planet living, localization and the emergence of broader solidarity movements linking North and South.

Policy and Progress: The Long Road to Sustainable Development

The 1960s and 1970s witnessed a growing concern that economic growth, development and lifestyle demands in industrial nations were undermining the ecological balance, economic stability and security of the planet. World famous pressure groups were formed, like Friends of the Earth and Greenpeace. A number of ecologically minded writers came to prominence, key texts including Rachel Carson's *Silent Spring* (2000, first published 1962), Charles A. Reich's *The Greening of America* (1970), Theodore Roszak's *Making of a Counter Culture* (1969) and *Where the Wasteland Ends* (1972), and E. F. Schumacher's *Small is Beautiful* (1973). In 1966 Kenneth E.

Boulding wrote 'The economics of the coming Spaceship Earth', in which there were no unlimited reservoirs of anything, with humanity having to find its place in a cyclical ecological system capable of continuous reproduction while continually needing inputs of energy. In 1970 the first environmental event to have any real social and cultural impact was held in the US, following an earlier discussion in the United Nations that there should be a global holiday, an Earth Day, to draw attention to environmental degradation. In 1972 the editors of *The Ecologist* issued a call to action, writing, in *A Blueprint for Survival* (Goldsmith et al, 1972, p15):

The principal defect of the industrial way of life with its ethos of expansion is that it is not sustainable. Its termination within the lifetime of someone born today is inevitable – unless it continues to be sustained for a while longer by an entrenched minority at the cost of imposing great suffering on the rest of mankind.

1972 also saw the publication of *Limits to Growth* by a global think-tank known as the Club of Rome and the first serious international discussion of global environmental issues at the United Nations Conference on the Human Environment in Stockholm.

The Club of Rome (Meadows et al, 1972) report attempted to combine optimism concerning human potential to innovate and transcend environmental and demographic problems with a warning that if contemporary trends continued there would be dire consequences. Their global model was built specifically to investigate five major trends – accelerating industrialization, rapid population growth, widespread malnutrition, depletion of non-renewable resources and a deteriorating environment. The authors posed a key question: What do we want our world to be like? Achieving a self-imposed limitation to growth would require considerable effort. It would involve learning to do many things in new ways. It would tax the ingenuity, the flexibility and the self-discipline of the human race. Bringing a deliberate, controlled end to growth would be a tremendous challenge, not easily met. Would the final result be worth it? What would humanity gain by such a transition, and what would it lose? Thirty years later, three of the authors published an update (Meadows et al, 2005) indicating how their theory of limits to growth remained vital and significant.

In 1980 the Brandt Commission published its *North-South: A Programme for Survival*,

placing the responsibility for human survival firmly in the political arena at a time when leaders seemed more concerned with Cold War ideological posturing than addressing issues of global poverty, social inequality, justice, self-determination, human rights and the depletion of natural resources. The Commission did not redefine development, but noted:

One must avoid the persistent confusion of growth with development, and we strongly emphasize that the prime objective of development is to lead to self-fulfilment and creative partnership in the use of a nation's productive forces and its full human potential. (Brandt, 1980, p23)

In 1983 work started on a major study by the World Commission on Environment and Development that would firmly establish sustainable development as the most significant concept and practice of our time. In 1987 the results were published as *Our Common Future* (the Brundtland Report). More than half of the Commission were representatives from developing countries, ensuring that global environmental concerns would not overwhelm the desire to eradicate problems of human need and poverty. Unlike Brandt, Brundtland did offer a definition of *sustainable development* (WCED, 1987, p43):

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

This definition is still commonly used, despite its attracting serious criticisms for suggesting that economic growth, industrial modernization and market imperatives should be key drivers and goals for all nations. Whereas the industrialized North seemed to be, and in many ways still is, concerned with environ-

mental impacts, the issues confronting the majority South included poverty, health, income, agricultural sustainability, food security, educational opportunity and achievement, shelter, sanitation, desertification and armed conflict. Nevertheless, the Brundtland Report did tacitly recognize the internal contradictions within the concept when it stated (WCED, 1987, p43):

[Sustainable development] contains within it two key concepts:

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

Although acknowledging its analysis and recommendations to be specifically rooted in the 1980s, *Our Common Future* concluded its outline of sustainable development by stating that its realization requires (WCED, 1987, p65):

- A political system that secures effective citizen participation in decision-making;
- An economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis;
- A social system that provides for solutions for the tensions arising from disharmonious development;
- A production system that respects the obligations to preserve the ecological base for development;
- A technological system that can search continuously for new solutions;
- An international system that fosters sustainable patterns of trade and finance; and
- An administrative system that is flexible and has the capacity for self-correction.

Five years later, in 1992, the UN Conference on Environment and Development, the follow-up to Stockholm, was held in Rio de Janeiro. This meeting, known as the Earth Summit, produced a number of agreements, including the Rio Declaration on Environment and Development, the Framework Convention on Climate Change, the Convention on Biological Diversity, a non-binding Statement on Forest Principles, and the hugely cumbersome but nonetheless important agreement known as Agenda 21 (Grubb et al, 1993).

The Convention on Biological Diversity (CBD) and the negotiations before and after the Kyoto Protocol on climate mitigation are two important examples of multilateral environmental agreements (MEAs). Maintaining biological diversity is key to maintaining the planet's overall health. Healthy ecosystems replenish natural resources, offering all creatures the dynamic equilibrium upon which life depends. If plant and animal species disappear, as they are doing at an unprecedented rate, then monocultures will emerge that are highly susceptible to disease, global warming and other ecological changes. Industrialized systems of agricultural production and other commercial activities are creating monocultures, and both governments and corporations officially recognize that such impacts must be mitigated and managed – biological diversity must be conserved, resources must be used more sustainably and the benefits from the planet's genetic resources shared (more) equitably. Following Rio, many national strategies have been based on these broad international agreements, although indigenous peoples and local communities have not always found their inputs accepted when the actual implementation processes are closely scrutinized. Trade and commercial imperatives

have tended to lead to rather weak attachments to sustainable development. Probably most depressing have been the limited, tortuous and hesitant agreements leading to and from Kyoto – so far the only international, legally binding agreement on climate change. The agreed 5.2 per cent reduction by 2012 of greenhouse gas emissions relative to 1990 (8 per cent for the EU) was seen by many, even in 1997, as painfully inadequate, not least because developing nations like China were not included. The conversion of pollution sources into tradable commodities through emissions trading was allowed, with the biggest entitlements going to the worst polluters. The biggest per capita emitter of all, the US, refused to accept even this. Ten years later, at the G8 summit in Germany, the American administration of George W. Bush finally recognized the reality of human-induced climate change, but still refused to endorse international action to significantly curb emissions. Towards the end of 2007, the US hosted its own international conference on climate mitigation, and reluctantly agreed to support as yet unspecified climate reduction targets at the United Nations-sponsored climate conference in Bali.

Issues of climate change, global poverty, economic inequality and water shortage also highlight the significance of gender in sustainable development. Although much attention has focused inevitably on the appalling inequalities and hardships many women experience, gender issues cannot be separated from wider social, cultural or environmental concerns. The Women's Environment and Development Organization (WEDO) has campaigned vigorously to combat the inter-governmental blindness to the gender implications of environmental policy and actions. Global climate change negotiations,

including the Kyoto Protocol and the reports of the United Nations' Intergovernmental Panel on Climate Change (IPCC), concentrate almost exclusively on reducing greenhouse gas emissions, largely ignoring the wider social and gender impacts. By 2007, only:

four out of the fourteen National Adaptation Plans of Action that have been submitted to the global climate change convention specifically mention the importance of gender equality. The MDGs set out global benchmarks on gender equality, poverty eradication and environmental sustainability, although national reports have so far neglected to seriously address the linkages between these areas.

(WEDO, 2007, p3)

A United Nations Environment Programme (UNEP, 2006) survey, 'Gender mainstreaming among environment ministries', discovered that just two countries involved in climate change activities had incorporated a gender perspective. However, as well as arguing that women often suffer disproportionately from unsustainable development, the organization promotes women as important agents for community empowerment, social leadership and positive change. As the World Conservation Union has shown (IUCN, 2007), communities often cope more effectively during natural disasters when women play a leadership role in early warning systems and post-disaster reconstruction than when they do not. The report also notes that women's local knowledge and skills may offer tangible benefits, for example the Inuit women of Northern Canada have a deep understanding of weather conditions, being traditionally responsible for evaluating hunting conditions. When a drought occurred in the small islands of Micronesia, local women who had a sound knowledge of island hydrology found potable

water by digging a new well. WEDO (2007, p3) adds that 'women tend to share information related to community wellbeing, choose less polluting energy sources and adapt more easily to environmental changes when their families' survival is at stake.'

The 40 chapters of Agenda 21 offer an action plan for sustainable development, integrating environmental with social and economic concerns, and articulating a participatory, community-based approach to a variety of issues, including population control, transparency, partnership working, equity and justice, and placing market principles within a regulatory framework. Local Agenda 21 (LA21), its local realization, was and remains not legally binding, although by the end of 2000 many countries, including the UK, had policies and frameworks for sustainable development at local and regional levels, with municipal governments in many countries taking a strong lead. In those, particularly Scandinavian, countries where local government has a considerable degree of autonomy to raise income locally and regulate environmental matters, LA21 has been most successful. However, throughout the world, even though local government priorities and powers may differ, global structures of economic, financial and political power which include support for the neo-liberal free trade system have compromised attempts to fashion sustainable development from the bottom up. The local cannot be disassociated or disconnected from the global, conceptually or practically. Nonetheless, the LA21 process continued with, from 2002, Local Agenda 21 turning into Local Action 21. In 2004 the 'Aalborg Commitments' (CEMR/ICLEI, 2004) was published, showing many local authorities within the European Union to be firmly embracing the need for urban sustainability

and good governance.

Rio was, despite all the compromises and shortfalls, a significant achievement which over the years has gained in stature and authority, not least, and somewhat paradoxically, because of the reluctance of the US to accept sustainable development policies, its frequent refusal to recognize the importance of the precautionary principle as a guide to environmental law, the necessity of reaching global agreements on cutting greenhouse gas emissions and its continuing support for neo-liberal economic globalization. Also, again somewhat paradoxically, the fact that the Rio Declaration was seriously criticized by many radical green groups made its achievement all the more valuable and iconic. For instance, *The Ecologist* magazine published a sharp critique, *Whose Common Future?* (*The Ecologist*, 1993), in which the editor Edward Goldsmith noted the real question is not how the environment should be managed, but *who*, and in *whose* interest? We may share one planet, but we do so in an unequal and frequently unjust way. In addition, poverty is not the absence of a Western lifestyle and neither is it the cause of environmental degradation, rather it is a consequence. Globalized neo-liberal economics and free trade will destroy cultural and biological diversity, not conserve it. Pollution and other externalities are caused, not cured, by modernization and development, and global environmental management, technology transfer and World Bank-financed infrastructure projects (for example US\$50 billion for 500 dams in 92 developing countries) reinforce the economic and political hegemony of the developed nations, particularly the US (Baker, 2006), while leading to further environmental and social problems. There is much evidence to support these assertions. After serious protests and much

adverse publicity, in part due to the relentless campaigning of the Booker Prize-winning novelist Arundhati Roy, the World Bank reviewed its commitment to the Narmada Dams project in Gujarat and Madhya Pradesh in India, admitting that it was likely that one million people would be adversely affected through displacement and/or loss of livelihood by the project. The Bank withdrew its support.

In 2002, the Johannesburg Summit reviewed progress. The tensions apparent in 1992 remained, with the ideas and values of market liberals and institutionalists still dominating, though the final Declaration noted that global disparities in wealth and environmental degradation now risk becoming entrenched and that, unless the world acts in a manner that fundamentally changes the lives of the poor, these people may lose confidence in democratic systems of government, 'seeing their representatives as nothing more than sounding brass or tinkling cymbals', as stated in Paragraph 15 of the 2002 Johannesburg Declaration on Sustainable Development (UN, 2002a). Little was said about financing international development, though in the same year, at an International Conference on Finance for Development in Monterrey, northeast Mexico, a consensus was reached on financing sustainable develop-

ment, fostering health and education, providing shelter, eradicating poverty, and sustaining economic growth. The role of trade and overseas development aid, the importance of debt reduction and good governance in the developing world, and the mobilization of national economic resources and external investment were directly addressed. Economic crises underscore the importance of effective social safety nets (UN, 2002b).

For many anti-globalization protestors who had earlier demonstrated against the extension of the free trade rules of the WTO in Seattle, the Johannesburg Summit was also a disappointment, despite some positive advances. Economic insecurity was recognized as affecting human wellbeing, and globalization itself was recognized as a new challenge for those advocating sustainable development. And despite all the criticisms, disappointments and missed opportunities, the intense diplomatic activities did achieve a number of important things, not least a recognition that sustainable development at a global level has led to, and requires, policies, procedures and principles supporting inter-governmental cooperation and a global civil society that will check, monitor, promote and campaign for change in the face of official reluctance, indifference or denial.

National Policy Context: Sustainable Development in the UK

In the UK, following growing public interest in environmental issues throughout the 1980s, with Prime Minister Thatcher making a speech on global environmental issues to the Royal Society in 1988, sustainable development emerged as a national and regional policy issue. The Conservative Government published a comprehensive White Paper on the environ-

ment in 1990, entitled 'This common inheritance', and responded directly to the 1992 Rio Summit by producing the UK's first national strategy on sustainable development in 1994, 'Sustainable development: The UK strategy'. This was prompted by continuing debates relating to world trade, development, pollution control, and various anxieties derived

from economic and consumer growth, and, more specifically, the Treasury's application of monetary values to ecosystem services. This rationalist cost-benefit approach to sustainability has continued to tend to characterize the policies of both Conservative and Labour Governments.

In 1999 the 'New Labour' Government openly addressed sustainable development in a series of policy statements and public speeches, though action came slower than words. In the UK Government's 1999 statement on sustainable development, 'A better quality of life', the tension between social and environmental equity and economic growth remained evident. A Sustainable Development Commission was established in 2001, with former Director of Friends of the Earth and co-founder of the charity Forum for the Future Jonathan Porritt in the chair. Despite its insider status, the Commission issued a critical report on the Government's record on sustainability in 2004. This led to a reworking of UK policy, resulting in a more refined understanding of sustainable development, which

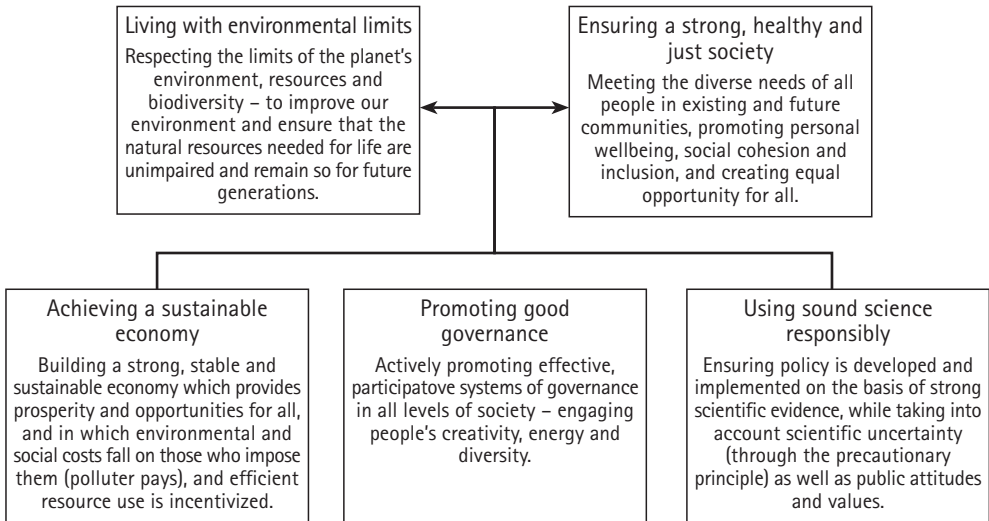
explicitly acknowledged the significance of ecological limits to economic growth. The five guiding principles discussed in *Securing the Future* (Defra, 2005a) are:

- 1 living within environmental limits;
- 2 ensuring a strong, healthy and just society;
- 3 achieving a sustainable economy;
- 4 promoting good governance; and
- 5 using sound science responsibly.

The Government also identified four clear priorities for action:

- 1 sustainable consumption and production;
- 2 climate change and energy;
- 3 natural resource protection environmental enhancement; and
- 4 sustainable communities.

Cross-disciplinary research and the design of sustainability indicators that consistently measure human wellbeing were also identified as key priorities.



Source: Defra (2005a, p16).

Figure 1.1 The guiding principles of *Securing the Future*

Sustainable Development as a 'Dialogue of Values'

There has been no shortage of academic critiques of sustainable development. Banerjee (2003) offers a trenchant analysis of the sustainable discourse, powerfully arguing that the concept of sustainable development is subsumed under, and largely defined by, the dominant economic paradigm, and is informed by colonial thought which has resulted in the disempowerment of a majority of the rural populations in the developing world. Banerjee acknowledges that the sustainable development discourse encompasses notions of plurality, and even genuine dialogue, but asserts through his analysis of biotechnology, Western science, biodiversity and intellectual property rights that there remains a very real danger of marginalizing or co-opting the traditional ecological knowledge of indigenous peoples and others who depend on their land for their livelihood. A great deal of the discussion around green business focuses on technicist solutions and eco-efficiency, with green marketing ultimately reduced to the economic bottom line at the organizational level, obscuring macro-economic factors and likely ecological impacts. Conventional rationalizations of competitive advantage still pervade governmental and corporate literature:

Current development patterns (even those touted as 'sustainable') disrupt social system and ecosystem relations rather than ensuring that natural resource use by local communities meets their basic needs at a level of comfort that is satisfactory as assessed by those same communities. What is needed is not a common future but the future as commons.

(Banerjee, 2003, p174)

Much of this is echoed in Adams (2001, p381), who in his analysis of environment and sustainability in the Third World argues there is 'no magic formula for sustainable development', no easy reformist solution to poverty and that, contrary to dominant practice, development 'ought to be what human communities do to themselves' rather than what is done to them by states, bankers, experts, agencies, centralizing planners and others. A 'green development' is required, for which there can be no clear blueprints or managerial strategies, because of the overwhelming need to be open-ended, open-minded and democratic. Green development is about who has the power and how it is managed. It is about empowerment and self-determination.

Ignacy Sachs's (1999) concern with social sustainability is a reaction to the dominance of the economic discourse in many international organizations' approach to sustainable development. Social sustainability encompasses the absence of war, serious civic violence and state oppression of citizens which destroys community and undermines a people's sense of hope and meaning. For Amartya Sen (1999), realizing human capabilities in a sustainable society means equity, democracy, human and civil rights, and a continuing enhancement of people's ability to do what they have good reason to value. It means being able to conceive of alternatives, being able to act and think differently, and having the capacity and opportunity to do so. It means protecting biodiversity, because society is closely interwoven in a coevolutionary relationship with the biosphere. It means conceiving and practising development

holistically and systemically, not one-dimensionally, not simply economically or socially, politically or anthropocentrically. Development must be synonymous with substantive and instrumental freedoms, including those relating to:

- political expression, dialogue and organization;
- economics and income sufficiency;
- social opportunity such as health and education;
- transparency and openness in government and social interaction; and
- security, understood in terms of welfare, food sufficiency and employment.

For Norgaard (1994), Western science, the environment and material resources are connected within mutually interactive coevolving systems, where one does not control any of the others. In 19th century Europe, the application of scientific knowledge facilitated the use of coal and hydrocarbons, which in turn directed and intensified scientific activity, agricultural, technological and industrial development, and the emergence of a new social, moral and political order. Urbanization, class division, multinational business, global trade and bureaucratic management systems helped concentrate economic and political power and the strategy of imposing this Western practice and ideology of development on non-Western others. Consequently:

correcting the unsustainability of development is not simply a matter of choosing different technologies for intervening in the environment. The mechanisms of perceiving, choosing and using technologies are embedded in social structures which are themselves products of modern technologies.

(Norgaard, 1994, p29)

This coevolutionary approach to historical explanation offers tremendous insights but does not lend itself to predicting the future, as in this theory there are no simple cause and effect relationships and so prediction becomes rather dangerous. However, Norgaard identifies five lessons from this understanding:

- 1 Experimentation should always be undertaken cautiously and on a small scale.
- 2 Experiments whose effects might be long lasting, for example disposal of nuclear waste, should be avoided.
- 3 Without cultural and biological diversity, coevolution is prone to stagnate.
- 4 All things are interconnected, so change tends to be evolutionary rather than abrupt or revolutionary.
- 5 The significant exploitation of hydrocarbons has disconnected cultural evolution from ecosystems, so the main priority of sustainable development must be to restore this connective relationship.

Working from a similar perspective, Cairns (2003 and 2004) sees sustainability as being too complex to allow scientific uncertainties to be reduced to a level that many decision-makers and managers would prefer. Strategies for sustainability need to be both top-down and bottom-up, ethically grounded in a language and literacy comprehensible to whatever the organizational level or geographical locality people find themselves living and working in. This will enable effective communication, social learning and leadership to emerge, hopefully effecting the paradigm shift in thought and action required. As Cairns (2004, p2) writes:

The complex interactions of biology/ecology, economics, and technological and social factors must be understood and coped with in

an ethical, sustainable way to save both natural systems and humankind. Ethical views must not alienate humankind from the natural world. Science has documented much of what is at risk and some of the actions needed to reduce risk. Instead of denigrating the knowledge (for example of global warming) and placing undue emphasis on the uncertainties (which always exist in science), leaders and citizens should give attention to those areas upon which mainstream science has reached a consensus. Unsustainable practices can be halted, but, even though remedies are known, they are not acted upon. It is not too late for a paradigm shift to occur.

For Ignacy Sachs, development is akin to liberation and transformation, particularly if understood as a self-organizing and intentional process freeing people from poverty and exploitation. Sachs, like the World Bank, recognizes that tradeoffs will occur, but argues that some are totally ethically unacceptable:

Thus, for example, whole development is incompatible with economic growth achieved through increased social inequality and/or violation of democracy, even if its environmental impacts are kept under control. Environmental prudence, commendable as it is, cannot act as a substitute for social equity. Concern for the environment should not become a diversion from the paramount imperatives of social justice and full democracy, the two basic values of whole development.

(Sachs 1999, p33)

Sustainable development is therefore multidimensional, encompassing social, ecological and economic goals and perspectives, and this breadth has led some critics to view the concept as vague, self-contradictory and incoherent, incapable of being put into practice. Consequently, Johnston et al (2007, p61) want to 'reclaim' the concept, rooting it in a theory and set of principles enabling development to be separated from 'the

current exploitative economic paradigm' of economic growth. All that is required, suggest Johnston et al, is to articulate sustainability in terms of a robust set of principles and a practical operational framework relevant to both personal and organizations' actions.

Perhaps it is sociologist Blake Ratner's notion of sustainability as a 'dialogue of values' which constitutes the most fruitful way of engaging with, and understanding, the theories, values, perspectives and practices of sustainable development. Ratner identifies three basic tendencies in sustainable development practice, namely the technical, ethical and the dialogic:

The sustainability concept is meaningful, therefore, not because it provides an encompassing solution to different notions of what is good, but for the way it brings such differences into a common field of dispute, dialogue and potential agreement as the basis of collective action.

(Ratner 2004, p62)

Sustainable development and sustainability are dynamic concepts and processes. Meanings and practices change as the world changes, as our skills, knowledge and capabilities develop, and as communication and dialogue improves. At every spatial scale, from the neighbourhood to the global level, different interests will come together and sometimes collide, but it is only through discussion, debate, critical reflection, learning and dialogue that agreement and action can and will emerge. The achievement of the Rio and Johannesburg summits, and particularly the composition of the genuinely remarkable document known as *The Earth Charter* (Gorbachev, 2006), could only have been reached by people listening, talking and learning from one another – and being willing to do so. Thus for Baker (2006), it is probably better to talk about 'promoting' rather than

achieving sustainable development, as this enables us to attune ourselves to differing and emerging understandings, timescales and pathways across the world. The concept, then, is multifaceted because the issues, challenges and problems we confront are complex, complicated and various. Different countries exhibit different levels of development, have different values, cultures and traditions, are endowed with differing amounts of natural resources, and so have, certainly according to Brundtland, differentiating responsibilities in

promoting and realizing sustainable development goals. Thus, despite all the criticisms of global summits and partnership projects as being muddled compromises or lost opportunities, this very heterogeneity has allowed a coming together and an identification of some common ground on which to build further action and agreement. In this way, sustainable development is similar to 'democracy' and 'justice' in being a concept which can be easily contested or dismissed as rather woolly. But who would really want to throw these out?

Case Study: Global Meets Local at Clayoquot Sound

Despite the slogans, banners and protests, it is sometimes difficult to see how the global meets the local, how abstract forces of supply and demand, of conflicts between the old and the new and the cultural and economic, have broader effects. The fierce struggles, conflicts, debates and dialogues surrounding the logging of the old growth forests on Vancouver Island in western Canada from the mid 1980s onwards shows how sustainable development frequently engages the local and global simultaneously, how ultimately the process is unavoidably political and unavoidably personal. At Clayoquot the interests of local businesses, the provincial government, native peoples and environmental activists combined with regional and global economic forces, with the needs and wants of individual and corporate consumers, and with the growing global concerns with wilderness preservation, environmental protection and the maintenance of community. The issues were (and are) far from simple, but through political action, global media debate and engaged dialogue, the concept of sustainable development was refined, applied and revised.

Consequently, Clayoquot Sound is more than the active protests and the 800 or so arrests of 1993, the clear-cut logging practices of big corporations and the degrading of one of the most beautiful natural environments on the planet. 'Clayoquot Sound' involves whole networks of actors, values, spaces and places, compromises and power plays.

Although the physical action occurred in a remote rural locality, the conflict was also quite urban. The major logging company had its headquarters in Vancouver, profits and products went to Toronto and Los Angeles, the Ministry of Forests was located in Victoria, and the environmentalists pitched their media messages to audiences in New York and London. It demonstrated that if rural and urban areas are to be sustainable, then linear production processes relying on a one-way extraction of natural resources and the extensive waste of unused material, have to be replaced by a more circular model, where waste is reused and recycled – a resource for further productive activity. Clayoquot activists launched a global campaign to save other temperate rainforests. Ecotourism was identi-

fied as the economic saviour of the area, enabling business to become aligned with the environmentalists, but the indigenous people of the locality, the Nuu-chah-nulth, feared their place-based cultural heritage would be overrun by more outsiders. As Warren Magnussen and Karena Shaw (2002, pp7–8) argue in *A Political Space: Reading the Global through Clayoquot Sound*, Clayoquot is a site where many phenomena converge:

- the globalization of political struggle through the mass media, cultural exchanges and international trade relations;
- the shift from an industrial (logging jobs) to post-industrial economy (tourism jobs), dependent on information technology and orientated towards the consumption of signs, of the aesthetic natural beauty of the Sound, in the global cultural marketplace to attract tourists and their dollars;
- ethno-nationalist resistance to the homogenizing impact of the capitalist economy and Western culture;
- the global challenge to patriarchal gender relations, as well as the norms of sexual and personal identity, for example female corporate spokespeople feminizing the image of an international logging company;
- the rise of indigenous peoples as credible claimants to sovereignty under international law (British Columbia was not colonized through treaty negotiations);
- the threat of environmental calamity and the concomitant rise of a globalized environmental movement;
- the continuing critique of state institutions for their political/democratic inadequacy as a result of their actions, for example closed meetings and exclusion of

elected representatives; and

- the problematization of science as a contested and highly politicized way of knowing the world (Whose science?, In whose interests?, incorporation of traditional ecological knowledge in scientific deliberations, and so on), through its differing and competing methodologies and truth claims.

Sandilands (2002) suggests the experience of Clayoquot offers lessons in the delicate move towards *dialogue* and the recognition of pragmatic *hybridity*. In seeing a future for the locality in tourism, both extractive industry and wilderness were rejected, as a *multiplicity* of interests, interpretations, perspectives, actions and goals became entwined in the unending politics of sustainable development. A Memorandum of Understanding between the major conflicting parties was signed in 1999, and the United Nations designated the area a Biosphere Reserve in 2000. This settled some of the issues, but not all. In March 2007, the Friends of Clayoquot Sound announced that environmental groups and the Tla-o-qui-aht First Nation people had won a five-year moratorium on logging in Clayoquot Sound's intact Upper Kennedy Valley (around 4000 hectares), despite the provincial government's 2006 logging plan, which had included this area and where 75 per cent of the original forest had already been clear-cut. At the time of writing, this deferral allows time for the Tla-o-qui-aht to develop their own land-use plan for the entire Kennedy watershed, even though the logging of 7000 hectares further downstream is still scheduled to start in 2008.

The dialogue and the struggle continue. But the rainforests in the developed and developing worlds remain threatened by economic globalization.

Thinking Questions

- 1 Examine your own everyday activities, purchases, enjoyments, work, travel, holidays and so on. In what ways is globalization part of our everyday life experience? Note down examples from your own work and life experience.
- 2 How would you characterize your own view on globalization and sustainability?
- 3 What is the lasting value of the big international conferences on sustainable development?
- 4 What is the significance of the Millennium Development Goals?
- 5 What are the advantages and disadvantages of conceiving sustainable development as a dialogue of values?

2

Worldviews and Ethical Values – Towards an Ecological Paradigm

Aims

This chapter examines a wide range of academic and policy writing on sustainable development, attempting in the process to offer a critical evaluation of the significance and implications of the many worldviews, values and perspectives on offer. Consequently, a number of philosophical and ideological contributions to understanding the

concepts of sustainability and sustainable development as constituting elements of a global dialogue will be explored. Each *world-view* or perspective has its own attendant literatures and an array of subtle, and not so subtle, implications for practice. Many offer an array of action-orientated normative prescriptions and proscriptions.

On Sustainability and Sustainable Development

As noted in Chapter One, Blake Ratner has suggested that the most appropriate way to understand the concepts of sustainability and sustainable development is as a 'dialogue of values'. Different individuals, communities, pressure groups, institutions and governments are likely to view sustainability and sustainable development from different perspectives. They will share some understandings while contesting others. For some people, sustainability will be seen as a goal and sustainable development as a process, with an underlying assumption that any equilibrium will always be dynamic and changeable rather than static and secure. For Ratner, given the complexities

and debates involved, it is necessary to distinguish between trivial or populist conceptualizations and more meaningful ones:

When advocates use the term [sustainable development] to mean 'sustained growth', 'sustained change' or simply 'successful' development, then it has little meaning, especially when development is considered as growth in material consumption. More meaningful interpretations are multidimensional, often distinguishing among social goals (including justice, participation, equality, empowerment, institutional sustainability and cultural integrity), ecological goals (including biodiversity preservation, ecosystem resilience and resource conservation) and economic goals

(including growth, efficiency and material welfare). Such a multidimensional notion represents the mainstream in analysis and advocacy of sustainable development. ... It recognizes ecosystem integrity as fundamental to the productive activities on which human society and economy depend, acknowledges ecological limits to growth in the consumption of resources, and assumes that the distinct goals of sustainability sometimes converge in practice and other times require difficult tradeoffs.

(Ratner 2004, pp53–54)

Ratner is not the only one seeking clarity and a way forward. Ben-Eli (2007) writes that if we are serious about fashioning a sustainable future, we need rigorous concepts and key principles focusing on self-restraint, balance, and a spiritual dimension that honours the Earth and fosters compassion for non-human others by reintroducing a sense of sacredness and reverence for all interactions making up the planet's intricate ecology. For Pezzoli, it is the concept of political ecology that best links ecological themes with social struggles and will help to build a radically different and better world. These struggles may be difficult and not always successful, as demonstrated in his study of communities of poor people who had built their own homes, 'irregular' human settlements, resisting urban encroachment, development and ecological deterioration in Mexico City (Pezzoli, 2000):

From the perspective of political ecology, each sphere ... gives rise to a set of challenges. These include the challenge to engender: (1) *holism* (an integrated, coevolutionary understanding of social, economic and ecological interlinkages); (2) *empowerment and community building*; (3) *social justice and equity*; and (4) *sustainable production and reproduction*.

(Pezzoli, 1997, p556)

There are many other approaches to understanding sustainable development, offering

subtle but sometimes slightly dissonant variations on well-known themes. As Robinson and Tinker (1997) note, one of the main obstacles to developing a common conceptual framework incorporating social, economic and ecological problems is the lack of genuine consensus among experts in *each discipline* as to how ecological, economic and social systems relate to one another. The resulting 'trifocal' vision makes understanding the world, international and national policy development, and effective action a major challenge. This is sometimes exacerbated by occasional tendencies for one group of experts to see their approach as being more fundamental than any other. When this happens, dialogue can become extremely difficult. Intellectual and cultural space is needed to allow differences to be aired and discussion to flourish. In addition, political and practical strategies, policies and actions that facilitate the emergence of conditions allowing for possible reconciliation between perspectives are also required. Only if this is possible can there be an effective and sustainable engagement with the overlapping and interconnected systems making up the biosphere, the economy and human society. For Robinson and Tinker, the intellectual basis for this engagement lies in the processes of 'dematerialization' and 'resocialization', which uncouple economic activity from ecological impact, substituting notions of wellbeing and quality of life for the economic and quantifying measurement of progress, development and improved standards of living encapsulated in such indices as gross national product (see Chapter Eight).

In *State of the Future* (Glenn and Gordon, 2007, p5) the necessity of cultural change is explicitly stated:

Although many people criticize globalization's potential cultural impacts, it is increasingly clear that cultural change is necessary to address global challenges. The development of genuine democracy requires cultural change, preventing AIDS requires cultural change, sustainable development requires cultural change, ending violence against women requires cultural change and ending ethnic violence requires cultural change. The tools of globalization, such as the internet, global trade, international trade treaties and international outsourcing, should be used to help cultures adapt in a way that preserves their unique contributions to humanity while improving the human condition.

Without cultural change, without dialogue on sustainability and sustainable development, values and policies, political decision-making is liable to remain blinkered and uninformed. As Robinson notes, sustainability is a political act, but what informs that act? The rest of this chapter explores various perspectives informing this dialogue, but it should be remembered that only human action that is at once political and ethical will ultimately fashion a more sustainable world.

Deep and Shallow Ecology

'Deep ecologists' have the principles of ecological limits and the need for human life to harmonize with nature as their central tenet. In 1973 the Norwegian philosopher Arne Naess published in *Inquiry* a short article titled 'The shallow and the deep', which outlined the foundation of 'deep ecology', essentially an *ecocentric* value position. He later elaborated these views in a number of papers, speeches and books, and the ideas soon took root among radical activists throughout the world, particularly in the US (Ingalsbee, 1996). In many ways, largely because of its strong moral compass, deep ecology is the touchstone of the environmental movement and the conscience of sustainable development practitioners. Importantly, Naess made the distinction between *shallow* and *deep* ecology, clearly articulating the centrality of system interactions and complexity to this worldview. He writes that the differences between them can be seen by contrasting their approaches to the following (Naess, 1995: adapted from pp71–74):

Pollution

Shallow approach: Technology seeks to purify the air and water and to spread pollution more evenly. Laws limit permissible pollution. Polluting industries are preferably exported to developing countries.

Deep approach: Pollution is evaluated from a biospheric perspective, not exclusively focusing on the effects on human health, but rather on life as a whole, including the life conditions of every species and system.

Resources

Shallow approach: Emphasis is on resources for humans and particularly those living in affluent countries. The Earth's resources belong to those with the technology to exploit them.

Deep approach: Emphasis is on resources and habitats for all life-forms for their own sake. No natural object is conceived purely as a resource.

Population

Shallow approach: Human 'over-population' is mainly a problem for developing countries. The issue of an 'optimum' population for humans is discussed without reference to the question of an 'optimum' population for other life-forms.

Deep approach: Excessive pressures on planetary life stem from the human population explosion. Pressures stemming from industrial societies are a major factor and population reduction must have high priority in these areas.

Cultural diversity and appropriate technology

Shallow approach: Industrialization on the Western model is held to be the goal for developing countries.

Deep approach: Industrialization and modern technologies should not be allowed to destroy the cultural identity, diversity and values of non-industrial societies. Cultural diversity is the human analogue of biodiversity.

Land and sea ethics

Shallow approach: Landscapes, ecosystems, rivers and so forth are conceptually fragmented and regarded as the properties and resources of individuals, organizations and states. Conservation is argued in terms of 'costs' and 'benefits'.

Deep approach: The Earth does not belong to humans; we only inhabit the lands and must only use resources to satisfy vital needs. If the non-vital needs of humans conflict with the vital needs of non-humans, then humans should defer to the latter.

Education and scientific enterprise

Shallow approach: The degradation of the environment and resource depletion require the training of more experts who can advise on technologies and policies designed to maintain economic growth while maintaining a healthy environment.

Deep approach: If sane ecological policies are adopted, education should concentrate on increasing human awareness and sensitivity to the natural world and combating the growth of consumer materialism.

Naess's views on deep ecology have been developed by Bill Devall and George Sessions (1985), leading to the identification of a series of ethico-political principles. They stressed that deep ecology sees humans as part of nature, rather than separate or superior to it. The idea of humanity's *dominance* over nature was one they believed the modern technocratic-industrial society had elevated to a matter of principle – humans dominating nature, men dominating women, the West over non-Western cultures, the rich over the poor, and so on – which needed to be challenged and overturned. In developing their argument, they suggested there was no firm ontological divide between human and non-human realms and that this *biocentric* equality was intimately related to human *self-realization*. When we harm nature, we harm ourselves. There are no boundaries and everything is related. Thus, for Naess, when viewed systematically rather than individually, maximum self-realization means the maximum realization of all manifestations of life.

The basic principles of deep ecology include (Naess, 1995, p68):

- The wellbeing and flourishing of human and non-human life on Earth have value in themselves ('intrinsic value' or 'inherent value'). These values are independent of the usefulness of the non-human world for human purposes.
- Richness and diversity of life-forms contribute to the realizations of these values and are also values in themselves.
- Humans have no right to reduce this richness and diversity except to satisfy vital human needs.
- The flourishing of human life and cultures is compatible with a substantial decrease of human population. The flourishing of non-human life requires such a decrease.
- Present human interference with the non-human world is excessive, and the situation is rapidly worsening.
- Policies must therefore be changed. These policies affect basic economic, technological and ideological structures. The resulting state of affairs will be deeply different from the present.
- The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value), rather than adhering to an increasingly high standard of living. There will be a profound awareness of the difference between big and great.
- Those who subscribe to the foregoing points have an obligation to directly or indirectly try to implement the necessary changes.

Naess himself is reluctant to apply the label 'deep' or 'shallow' ecologist to anyone specifically, as the former seemed to be rather conceited and the latter too disparaging, almost offensive. Instead, applying a *Ghandian* perspective, he prefers the word

'supporter', believing that groups and individuals may adhere to deep ecology principles from a number of different positions and from a range of differing life experiences, cultures, technologies and practices. He therefore sees his own deep 'ecosophy' as being both didactic and dialectic, encouraging people to recognize and state their own general philosophies. Like Socrates, Naess writes, he wants to use his ecosophy to provoke questioning about basic matters of ecology, life and death, and from there to outline implications for practical situations, real-world actions and concrete issues of lifestyle:

I believe that multifaceted, high-level self-realization is more easily reached through a lifestyle which is 'simple in means but rich in ends' rather than through the material standard of living of the average citizens of industrial states.

(Naess, 1995, p82)

Ramachandra Guha (1989) is less certain. Writing from the vantage point of a developing nation, India, he suggests that deep ecology, particularly in its commitment to biocentrism and wilderness preservation, is unwelcome, as it diminishes the needs of humans. The real problems are cultural and economic – over-consumption by the West and by Third World elites, growing militarization, and so on. Western conservationists, influenced by deep ecology and including organizations like World Wide Fund for Nature (WWF) and World Conservation Union (IUCN), have frequently, certainly in the past, failed to appreciate how the effects of environmental problems seriously impact upon the poor, in the forms of, for example, water shortages, soil erosion and air pollution. The annexation of Eastern religion and mysticism to the deep ecology philosophy is also rather disingenuous, as it often serves to position the East as

pre-scientific, romantic and passive, failing to recognize the active role traditional ecological knowledge has had in stable and effective environmental management. Guha's stringent critique continues by noting how the National Park Movement is intricately tied to the growing expansion of capitalism and consumerism, with wilderness areas, practically and ideologically, becoming aesthetic antidotes to the pressures of modern life while simultaneously functioning as emerging business opportunities for tourist operators,

now frequently commandeering the prefix 'sustainable'. More recently, a conscientious sustainable tourism has emerged as a significant economic opportunity for many developing nations, but Guha's fundamental point about ecological concerns needing a fuller integration with people's livelihoods and work throughout the world remains pertinent. Deep ecology must not become yet another veiled form of cultural and economic imperialism.

Eco-feminism

Deep ecology has been gender blind, and a great deal of eco-feminist thought has been developed in a critique of the philosophy, which for many remains wedded to the rationalist problematic of Western thought, which in turn, as Guha notes, fails to conceptualize human beings as sufficiently social and connected. The idea that the best way to eradicate the division between humanity and nature is through a 'unifying process' is too extreme. As Val Plumwood (1996, p165) remarks, in its over generality, deep ecology:

fails to provide a genuine basis for an environmental ethics of the kind sought, for the view of humans as metaphysically unified with the cosmic whole will be equally true whatever relation humans stand in with nature – the situation of exploitation of nature exemplifies such unity equally as well as a conserver situation, and the human self is just as indistinguishable from the bulldozer and Coco-Cola bottle as the rocks or the rain forest.

What is really necessary is to rethink the human side of this dualism, to understand and rearticulate the qualities that 'inferior'

humans have in abundance and to see the natural world in a non-mechanistic way. For Plumwood, much of this has to do with various continuities of reproductivity, sensuousness, relationships and emotionality, rather than abstract planning and calculation. It is our relationships that make us human. Karen Warren (1996 and 2004) sums up the various eco-feminist perspectives when she writes of environmental degradation and exploitation being feminist issues because they are fundamentally to do with relations of oppression and as such are pertinent to the experience of women in the developing and developed worlds, where they often seem to bear the brunt of social and ecological hardships. For Warren, any conceptual framework that articulates a hierarchy of values, constructs dualisms rather than complementarities or logically leads to the justification of domination, are in themselves oppressive. She identifies eight major boundary conditions for a feminist ethic that has profound implications for understanding and engagement with nature and the environment. These conditions include:

- No 'ism' that promotes social domination is acceptable (for example classism, racism or sexism).
- Ethical discourse and practice must be *contextual*, in other words must emerge from the voices of people sited in different historical circumstances.
- A feminist ethic must incorporate a range of women's voices from different cultures and traditions, in other words be *pluralistic*.
- Ethics are always *in process*, changing over time.
- Inclusiveness is a guiding evaluative principle of a feminist ethics.
- Feminist ethics are not value neutral but offer inclusivity, a 'better bias'.
- A feminist ethics offers a central place for values that have been conventionally downplayed or misrepresented (for example care, love, trust and friendship).
- A feminist ethic reconceptualizes what it is to be human – there can be no such thing as a gender-free or gender-neutral 'mankind', no abstract individualism.

Eco-feminism therefore should be anti-naturist, refusing to perceive non-human nature in a hierarchical or superordinate manner, with its contextual ethics based not on rights and principles but on relationships that actually define who we are. In this way, eco-feminism should deny the nature-culture divide but retain the capacity to recognize difference between peoples, and between

humans and the non-human world, while maintaining a respectful attitude to both. It should refocus environmental ethics by clarifying what nature could morally mean *for* human beings.

Although there are many areas of agreement within eco-feminism, there is also considerable unease too. The linguistic and philosophical feminization of nature, such as the 'Mother Earth' metaphor, culturally seems to reproduce and legitimize a range of exploitative relationships when women perform the roles of carer, life-giver, nurturer and so on. Empirically there is considerable evidence showing vast socio-economic inequalities and iniquities stemming from this ideological position and the way society and the economy are organized (K. Warren, 1996 and 2004). It should also be remembered, as Cuomo (1992) recognizes, that women, particularly in the industrialized and developed nations, have contributed to the exploitation of the non-human world. This means that with eco-feminism there seems to be little support for a biological essentialism that goes beyond offering a feminist standpoint based on a shared understanding of cultural oppression. For Cuomo, it is not possible to talk about caring abstractly. There has to be an object for this care and a context in which it takes place. If care and caring is situation dependent, rather than a matter of principle, then what will decide the issue, what will effect equitable and sustainable change, is acute political analysis and intelligent political action.

Social Ecology

Deep ecology has also been criticized by social ecologists, most notably by the anarchist writer and activist Murray Bookchin, who sees

deep ecology as 'vague, formless, often self-contradictory and predominantly missing the point'. His essentialist critique of the deep

greens leaves little opportunity for dialogue. In *What is Social Ecology?*, Bookchin (1993) states firmly:

Indeed, to separate ecological problems from social problems – or even to play down or give token recognition to this crucial relationship – would be to grossly misconstrue the sources of the growing environmental crisis. The way human beings deal with each other as social beings is crucial to addressing the ecological crisis. Unless we clearly recognize this, we will surely fail to see that the hierarchical mentality and class relationships that so thoroughly permeate society give rise to the very idea of dominating the natural world. Unless we realize that the present market society, structured around the brutally competitive imperative of 'grow or die', is a thoroughly impersonal, self-operating mechanism, we will falsely tend to blame technology as such or population growth as such for environmental problems. We will ignore their root causes, such as trade for profit, industrial expansion and the identification of 'progress' with corporate self-interest. In short, we will tend to focus on the symptoms of a grim social pathology rather than on the pathology itself, and our efforts will be directed towards limited goals, whose attainment is more cosmetic than curative.

In *Toward an Ecological Society* (1980), *From Urbanization to Cities* (1995) and *The Ecology of Freedom* (2005), Bookchin develops his eco-anarchist ideas, arguing that the future is dependent on how humankind steers its relationship with the natural world. He looks in part to the experience of indigenous peoples, as well as to classic anarchist writers such as Peter Kropotkin, for guidance as to how we should 'live with' nature rather than dominate or exploit it. For Bookchin, the underlying human problem is hierarchy and

inequality. So long as human beings exploit each other in terms of class, race or gender, humanity will exploit and degrade the natural world. Ecological harmony is dependent on social harmony, and the practical prescription for this entails a reversal and transcendence of contemporary capitalist arrangements – the ending of the detailed division of labour, the concentration of people and resources in massive corporations and urban developments, bureaucracy, class hierarchy, the separation of town and country, and the objectification, alienation and commoditization of nature and humankind. Cities must be decentralized in accordance with the ecosystems in which they are located, in order to establish a human-scale direct and participatory civic democracy. New kinds of flexible, versatile and productive eco-technologies must be applied to ensure waste is recycled, reused and reduced. The leading industrialized nations must create an alternative path of development which will both address global environmental problems and eradicate the poverty blighting the developing world which the current model for 'progress' has largely caused. However, Best (1998) notes that it is sometimes difficult to comprehend the practical viability of Bookchin's anarchist politics in advanced technological societies, since he fails to address the significant role the media and education play in socializing and acculturating people to the practices of unsustainable development. Only by fashioning a 'third nature' will the full potential for freedom, rationality and subjectivity be realized, and the media and education have an important role to play in this.

Bioregionalism

It is the nurturing of this third nature that appears in the highly engaging social philosophy of bioregional urbanist Lewis Mumford. In his early essays for the *Sociological Review* in the 1920s, and especially in the seminal texts *Technics and Civilization* (1962, first published 1934) and *The Culture of Cities* (1966a, first published 1938), Mumford clearly articulates the intricate and inextricable relationship between human social organization, economic production and ecology, stating that through sensitive regional planning an appropriate balance could be achieved between human institutions and natural, regional, resources. He saw the modern age as offering great hope in that new environmentally benign technologies could emerge to rectify the destruction wrought on the Earth through the desire to increasingly accumulate material wealth and financial profit. For this change to happen, though, a fundamental shift in human values and the human personality was needed. There could be no ecological balance without human balance, no one-sided or indefinite progress. What should emerge is a 'dynamic equilibrium', with a conservation ethic replacing the all too apparent 'reckless pillage'. For Mumford, this dynamic equilibrium would entail the building of *eutopias* (good places), similar to the decentralized garden cities envisaged by Ebenezer Howard (1902) in our modern world. This would encompass:

- **Equilibrium in the environment:** Conservation and restoration of soils; reliance upon kinetic energy (sun, falling water, wind); the larger use of scrap metals; and 'the conservation of the environment itself as a resource, the

fitting of human needs into the pattern formed by the region as a whole' (Mumford, 1962, p430).

- **Equilibrium in industry and agriculture:** A balanced industrial life in every region of the Earth; the decentralization of population into new centres; the widening of market gardening and mixed farming, with specialized farming intended for world export reduced to the essential. The *raison d'être* of capitalism will diminish as human and environmental exploitation is replaced by alternative modes of living and working.
- **Equilibrium in population:** The balancing of the birth rate and death rate and of rural and urban environments and the wiping out of 'blighted industrial areas' in favour of 'a rational resettlement of the entire planet into the regions more favourable to human habitation' (Mumford, 1962, p432).

Visionary, practical, optimistic and frustrated in turn, Mumford is a neglected thinker, whose insights and prescience warrant greater recognition (Sale, 1991; Guha, 2006); like other bioregionalists such as Wendell Berry, Kirkpatrick Sale and Peter Berg, he emphasized the need to 'reinhabit' the places we live in but have abused ecologically and become socially alienated from. We need to recover what it means to be 'native' to a place, to refresh our relationship with the non-human environment, nurturing an ecological identity and literacy and feeding the world upon which we depend. The sensuous world of place is more interactive, immediate and local than the world of inanimate machines. For

McGinnis (1999, p75), we must embrace 'home place', through sharing our abilities to unwrap and draw on the inner expressions and experiences that expressively make up our cognitive maps of place. Returning home requires a restoration of the self. For Berry (1990), it is about listening to the stories of the land. For Sale (1991), it is replacing the globalized abstracts and intangibles with the seen and felt, which can only be properly apprehended on a human scale. And for Peter Berg, founder of the bioregionalist organization Planet Drum Foundation and lead author of *Green City Program for San Francisco Bay Area Cities and Towns* (Berg et al, 1989), it is about putting regional and urban design on a natural foundation, creating and enhancing a firm sense of place, local ecology, community, culture and history through engagement, dialogue and participation. In 1986 representatives from a wide variety of green groups met to develop proposals for an overarching programme of changes that would have general appeal and which could stop and reverse the increasing ecological deterioration

of the Bay region. For bioregionalists, our biggest challenge is to make cities sustainable, for city dwellers to become nature seekers and creative urban pioneers. As Berg (1992) writes:

The first step towards reconceptualizing urban areas is to recognize that they are all situated in local bioregions within which they can be made self-reliant and sustainable. The unique soils, watersheds, native plants and animals, climate, seasonal variations, and other natural characteristics that are present in the geographical life-place where a city is located constitute the basic context for securing essential resources of food, water, energy and materials. For this to happen in a sustainable way, cities must identify with and put themselves in balanced reciprocity with natural systems. Not only do they have to find nearby sources to satisfy basic human needs, but also to adapt those needs to local conditions. They must maintain the natural features that still remain, and restore as many of those that have been disrupted as possible. For example, restoring polluted bays, lakes or rivers, so that they will once more be healthy habitats for aquatic life, can also help make urban areas more self-reliant in producing food.

Traditional Ecological Knowledge: The Wisdom of the Elders

Increasingly, the cultures, spirituality and ways of knowing of aboriginal peoples throughout the world are offering models showing that alternative ways of living and being, more in tune with the Earth, are possible. For some, this appreciation is a romantic longing for a world which the Western way of life has not so much lost but wilfully destroyed. For others in affluent post-industrial, postmodern societies, there is a rightful sense of guilt and shame. Many of those who take a more ecocentric view are therefore becoming increasingly interested in traditional ecological knowledge (TEK). The

lives, cultures and wellbeing of many indigenous peoples have been destroyed by the relentless search for raw materials, markets, power and dominance. Part of the Western civilizing mission was aimed at deliberately disconnecting aboriginal peoples from their land, their history, their religion and their beliefs, and therefore from themselves. But in this process of development, the modernizers themselves lost their own sense of connectedness, value and belonging. Environmental philosopher Jim Cheney (1989) argues that aboriginal peoples use language and knowl-

edge to bind the individual and community together by virtue of their roots being deeply embedded in a sense of place. (Westerners should learn from this.) Social relationships are reproduced through stories that reside in the land, in the geography of particular bioregions, but which in some (urban) areas are likely to be further dislocated and marred by political power and the physical manifestations of class, gender and race. Individual human and community identity, understanding and health will consequently require continual recontextualizing to achieve, or retrieve, a bioregional grounding. For Cheney, nature needs to speak to us, a complex set of images and myths of the human–land community needs to instruct us, and only when the necessary model of individual and community health has been fashioned will peoples in the ‘developed’ societies be able to acquire the images needed to mediate relationships with one another and to the land. A cultural language needs to grow out of and articulate this experience so that both human action and nature are jointly responsible for constructing the world, constructing the reality of bioregional, local and authentic selves and communities. It is this dual process that will produce genuine knowledge, ‘the result of deep and continuous communication between humans and the more-than-human world of which they are citizens’ (Hester and Cheney, 2001, p325). Western science simply offers a monologue and a knowledge based on epistemologies of domination and control. Writing about the belief systems of Native Americans, Vine Deloria Jr et al (1999, p13) suggests, disarmingly:

It is difficult to understand why Western peoples believe they are so clever. Any damn fool can treat a living thing as if it were a machine and establish conditions under which

it is required to perform certain functions – all that is required is a sufficient application of brute force. The result of brute force is slavery.

Native peoples in the Amazon have seen their bioregions, communities and selves destroyed by logging and global capitalism. The virtual genocide of Native Americans in the US and the attempted cultural annihilation of First Nation Peoples in Canada enable common stories to be told that resonate throughout the world. The lack of respect, perhaps due to fear, has led to inequalities and inequities persisting well into the 21st century. A damning report on the health of aboriginal peoples in Australia and New Zealand presented to the World Health Organization in 2007 reveals one small instance of unequal or unsustainable development and the reason why the wisdom of the elders should be retrieved (Marks, 2007). Some facts, then, which show that, compared to white Australians, the health of many Aborigines is appalling: there is a significant incidence of leprosy, rheumatic heart disease and tuberculosis among the Aborigines and Torres Strait Islanders; these peoples have a life expectancy 17 years less than other Australians; and the average life expectancy for Aboriginal men in some parts of New South Wales is just 33. Apart from crude economics and political oppression, the loss of a connecting culture and belief has something to do with this. Aboriginal peoples are not the only ones out of joint with their times. From their perspective we all are. Bob Randall, a mixed race Aboriginal elder and member of the ‘stolen generation’ who in the 1930s were taken from their families to be educated and raised as white people, has spent many years retrieving his lost culture, belief and heritage. With his remarkable book *Songman* (Randall, 2001) and documentary film *Kanyini*, he has become an educator of immense importance –

a significant contributor to the dialogue on sustainable development. Through songs, paintings, dances, ceremony and stories, Randall has shown how Australian Aboriginal culture sees everything as being essentially connected, with no distinction between inner and outer worlds, material and creative forces, mind and body. *Tjukurrpa*, 'the Dreaming', is the Aboriginal knowledge of creation, of past, present and of future. Sand paintings communicate this Dreaming within ceremonies performed to pass on the deepest of knowledge. After the ceremonies, the paintings are dispersed, but the knowledge remains within the people, continuing to inform their ideas and ways of living and connecting. The Earth is the progenitor of everyone and everything, and as such all living creatures are part of one family. There is no 'I', just a multiplicity of 'we's. Unlike the white man and his notion of property and property rights, says Randall, the Aborigine cannot own the land, cannot own the Earth, for we all belong to the land. Everything in nature is part of the family. No one is, or can be, a stranger, for *kanyini* (connectedness) keeps the spirit alive through an unconditional love and sense of responsibility for all things.

Aboriginal people practise *kanyini* by learning to restrict 'mine-ness' and by developing 'our-ness'. Bill Neidjie (1986), another Aboriginal elder, like Bob Randall, whose poetry and wisdom has helped recover this cultural heritage, offers everyone the opportunity to share and embrace this alternative, indigenous worldview. He writes of the land, of life (Neidjie, 1986, p51):

All my uncle gone,
But this story I got him.
They told me ...
They taught me ...
And I can feel it.

I feel it with my body,
With my blood.
Feeling all these trees,
All this country
When this wind blow you can feel it.
Same for country ...
You feel it.

You can look,
But feeling ...
That make you.

Feeling make you,
Out there in open space.
He coming through your body.
Look while he blow and feel with your body ...
Because tree just about your brother or
father ...
And tree is watching you.

Earth...
Like your father or brother or mother,
Because you born from earth.
You got to come back to earth.
When you dead ...
You'll come back to earth.
Maybe little while yet ...
Then you'll come to earth.
That's your bone,
Your blood.
It's in this earth,
Same for tree.

Gregory Cajete, a Native American educator and academic, offers a similar story. His concern is with education as the vehicle for rearticulating the intimate relationship of the American Indian to the environment, to cultural and physical survival, and to cultural identity and purpose. He writes that thinking, acting and working were traditionally played out through nature, expressed in art and through work, in hunting and respect for those animals who give their lives so human persons can live. Forests and ravens should be respected because they sustain human culture and spirituality (Nelson, 1986). Respect is again the key to life and creation. 'Indigenous

people', Cajete writes (1999, p11), 'felt responsibility not only for themselves, but also for the entire world around them. The world renewal ceremonies conducted by all indigenous people are reflections of this deep ecological sensibility and responsibility.' Traditional, invariably local, ecological knowledge maintained physical as well as spiritual health through knowledge of foods, plants and medicinal herbs. Ill health grew when indigenous peoples took to eating the highly processed and refined Western foods, when their own gardens, like their culture, ceased to be nurtured, causing their nutritional and medical knowledge to wither and almost die. Gardens are important particularly to the Pueblos of New Mexico. Cajete continues (1999, p93):

The garden becomes not only a place to watch plants grow, but a direct way for young people to participate in the greater circle of life. As young people work the soil, plant seeds, nurture seedlings and harvest crops, they experience the fuller development of their natural connections and participate in the age-old Pueblo way of connecting to place and living a healthy life.

One logical extension of this worldview is the philosophy and practice of permaculture, where nothing is wasted, everything is used and all life is respected. This thinking has influenced a great deal of environmental education in the developed world (see Chapter Nine).

TEK is therefore neither quaint nor antiquated. It is being increasingly exploited commercially by pharmaceutical and other big corporations, whose patent applications frequently conjure up property rights from life itself as well as the culture and environment that fostered it (Shiva, 2000). However,

governments have slowly recognized the significance of TEK in other ways. In Indonesia, since the late 1970s, there has been a revival of interest in traditional medicine and particularly herbal remedies as part of a larger campaign to promote the prevention of illness, to foster self-reliance and improve the health status of the population. Indigenous knowledge and wisdom has consequently been re-evaluated in its partial integration into primary healthcare programmes, resulting in a widening recognition and acceptance of indigenous cosmologies 'in which an equilibrium between the natural and supernatural forces is reflected in the balanced interrelationship between health and disease' (Slikkerveer and Slikkerveer, 1995). Culture, religion, wisdom and spirituality enables many aboriginal peoples to have a direct, emotional, ethical and often personal involvement in the reasonable use and sustainable management of a variety of natural resources (Lansing and Kremer, 1995; Anderson, 1996). It also offers Western environmental philosophers an opportunity to re-evaluate the epistemological basis of Western ethical systems. Cheney, for example, argues that being able to apprehend the sacred in the Earth, as indigenous peoples do, may enable Westerners to understand existence as something more-than-human. Assuming those in the West are sufficiently mindful of such a consideration, the enduring presence of rocks will become our most important teachers:

Once we give up epistemologies of domination and control, nature's complexity, generosity and communicative abilities, its kinship and reciprocity, come to mark our epistemological relationship with the Earth matrix.

(Cheney, 1998, p274)

Latour: Relations and Networks

Connectedness is increasingly influencing political thought and policymaking. In *Politics of Nature*, Bruno Latour (2004a) wishes to move beyond a concept of nature that sees nature as an asocial objective source of truth. For Latour, the essentially political division between this nature and the social is both subjective and contestable. 'Being' is conceived as external, with non-human actors unable to speak. Nature has been a silent partner in the development of human civilizations. It has been scientists, politicians, academics and others located in the political sphere who have consequently spoken for nature. For Latour, political ecology means critiquing, or destroying, this notion of nature, while rendering political all those practices that 'naturalize' this way of thinking, doing and being. Another aspect of Latour's project is to recognize the complexity of all those socio-natural actors, instruments and practices that address common matters of concern. Science has an important role to play here, but it is not alone. Reality is assembled more or less experimentally from the practices of both human and non-human actors. It 'grows' as new coalitions of fact, value, being and recognition are created, and this has profound ethical implications for how we conceive of politics, act politically and communicate democratically. Latour also believes (2004b) that critique has gone too far, that social constructivism has gone too far. The world should not just be understood and valued in human terms. Global warming is fact – admit it, say it, stop disputing it or asking 'What do we mean by?! There have been too many instances where objective fact has been viewed, or represented, as ideological preju-

dice resulting from 'greenwashing' or the naked exercise of power by those interests who are, or feel, threatened. So if critique, dialogue and deliberation is to be renewed, critical analysis must direct itself to 'matters of concern' rather than to 'matters of fact', which are always partial, rarely revealing themselves in full to our understanding and experience. Matters of concern and matters of fact are not necessarily distinct or separate, but the former are things we care about, which are important to us, which we value, in which our past, present and future is engaged – which, in other words, matter. Like climate change, poverty, injustice, the future ...

Latour has been influential in developing and promoting what has become known as 'actor network theory' (ANT). Not only subjects (people) are active, and not only objects are passive, in relations between (social) agents and (natural) conditions or (science-based) technologies. At least initially, all three should be considered as equal participants in a range of heterogeneously complex networks constituting the world we have shaped, know and relate to. As such, ANT is concerned with both desocialization and denaturalization, thereby either bridging, or eradicating, such conceptual divides as human vs. environment or local vs. global. Things can only be defined in relation to other things, and they become what they are, and what they mean, through those social and ecological relations and networks. Latour uses the term *performativity* to describe this process. This network approach to understanding the world has some profound implications for sustainable development and for environmental politics. From an ANT perspective, opposing genetic

modification (GM) or nanotechnology on the grounds of their not being 'natural' is neither feasible nor logically conceivable. Everything human beings help shape may be seen as 'unnatural'. Art and architecture are unnatural. So, given this, the problem really boils down to what 'unnatural' meaningfully signifies in our everyday speech and academic specialized discourse and how we understand the implications of such understandings. There are some key questions about how decisions are made, what are they, who benefits and who suffers. These questions, like the process of sustainable development itself, are themselves political, and this is probably why Latour's (2004a) intellectual journey has taken him from science to social science and specifically to the politics of nature. We often have a

choice. We can think. We can act. We can say 'no'. The philosopher Kate Soper (2005, pp133–134), taking a complementary approach, articulates the political imbrications of GM, and by extension sustainable development, in this way:

History is a transitory affair from which there is no going back, and in and through which the fate of first nature is always at any moment being decided. New technical developments, such as GM, are always arresting because of the way in which we discern in them the irreversibility of our economic and political decisions and practices. To commit to GM, for example, is to know that the pre-GM moment will not come again, and that in that sense it will create a certain fatedness, becoming part of 'second nature'. But we also know there is nothing fated about the commitment itself.

Systems Thinking and Complexity

Many phenomena do not easily lend themselves to a linear, reductionist or classically scientific method of analysis and explanation. Climate change, population, global ecology, the economy and organizational management offer so many variables, uncertainties and possibilities that confident predictions of future trends and tendencies are not always easy, or even possible, to make. Many promoters of sustainable development have been influenced by the study of ecology, recognizing systems thinking as being particularly relevant to their ongoing work. Indeed, systems thinking is not confined to the work of ecologists, as its influence is felt throughout the social, human and natural sciences. Sterling (2004) applies systems thinking to his work on sustainable education and Capra (1996 and 2002) has carefully rearticulated systems thinking and complexity theory to

produce a 'new scientific understanding of living systems' and a new 'science for sustainable living'. Complex adaptive systems identify problems and possibilities that are simultaneously multidimensional, dynamic and evolving.

A systems approach involves examining the connections and relationships between objects and events as much as the objects and events themselves. Changes in one component of the system will lead to changes in another, which in turn may lead to changes elsewhere. Interactions occur between system components that may cause both themselves and the system itself to change. Systems theorists write of negative and positive feedback loops, emergent properties, dynamic equilibrium, hierarchy, communication, evolution, system adaptation, and system breakdown. In general, the more complex a system and the more

interlocking its feedback loops, the more robust and better able they are to resist change. Emergence is a key concept in systems thinking equally applicable to the natural and social sciences. Mihata (1997) notes that it is frequently used when referring to the process by which global-level structures or patterns evolve from local-level interactions and from relatively simple rules. These 'complex adaptive systems' are:

characterized not only by a high degree of interaction among component parts, but also by the way that the particular nature of this interaction – the way the system is organized – generates outcomes not linearly related to initial conditions.

(Mihata, 1997, pp31–32)

Whereas linear organization is said to be in large part predictable, emergence is a property of non-linear systems whose mode of organization makes for non-obvious, and sometimes surprising, consequences. Relationships are important between levels of a system as well as between parts of the whole. It is therefore possible to view societal, group or organizational culture as each exhibiting emergent characteristics. Such an emergent culture is difficult to measure, operationalize or restrict to lower levels, since no emergent phenomenon can easily be linked in a simple manner to any one specific cause. Culture, that is the ways people make sense of their reality through their thoughts, actions, objects and values, may be conceptualized as emergent patterns occurring at multiple levels and environments affecting every individual person through their learning, experience, and social and other interactions.

The planet's ecology is very complex and will accommodate a significant amount of stress, but there are limits and thresholds. The very complexity of the global ecology often

makes human knowledge and understanding of it partial and scientific certainty improbable. Disputes over scientific findings frequently arise, and consensus occurs only after protracted debate and discussion, as the climate change issue bears witness. As Clayton and Radcliffe (1996, pp34–35) write:

It is clear that human actions are causing changes to ecosystems and other systems in the biosphere, the troposphere and the stratosphere. Some of these changes are relatively large, and some are occurring at rates that make adaptive and evolutionary response very difficult. It is possible that no combination of changes of this magnitude has occurred since the major extinction boundaries. If the levels of environmental impact, including the reduction in genetic diversity, continue at current rates, the likelihood of regional and possibly even global ecological instability must tend to increase.

Analysts frequently talk in terms of probabilities rather than certainties. With every predicted outcome there will be a margin of error that makes the calculation of risk both exceptionally important and quite difficult. This raises many challenges for policymakers, scientists, businesses, communities, peoples and nations. What are the risks associated with global warming? What are the costs and benefits? What policy options are available? Is it possible, indeed ethical, to place monetary value on such risks, particularly when lives and livelihoods are at stake? What will be the consequences and the risks involved in continuing a given pattern of behaviour, for example the burning of fossil fuels? Ordinary people's perceptions of risk may be at variance with the technical assessments of experts, and indeed may be disproportionate. Fear and perception of a risk, as with crime, is often higher than its recorded incidence. When children are exposed to risk, adults feel partic-

ularly anxious. So citizens and politicians demand clear and direct answers, actions and solutions, but life, and science, is not like that, and sometimes politicians prefer to ignore scientific evidence or political scenarios that may be electorally unpopular or which constitute, as Al Gore stated in his 2006 documentary, *An Inconvenient Truth*. Additionally, it should be remembered, as Carnap (1966), Durham (1992) and particularly Cairns (2003) have argued, that even in the 'hardest' sciences, like physics, frequently noted for their rigour and precision, uncertainty seems to be the rule. Thus in the project to fashion a sustainable planet, uncertainty will inevitably figure greatly as experimentation is difficult when there is only one planet. There can be no control, many disciplines are involved and an ethical reluctance to experiment with human cultures, combined with a political reluctance to see beyond the next election, simply adds to the challenge. Cairns (2003, pp3–4) writes that, because of continuing uncertainty, ethics and social learning will be necessarily an important part of any decision-making process. He continues:

Humankind is now moving from the age of reductionist science to an age of synthesis or integrative science. This transition does not mean that reductionist science is no longer appropriate, but rather that as levels of complexity in any system increase, new properties emerge that were not apparent at lower levels. Consequently, one means of reducing uncertainty in this age of synthesis is determining how congruent a particular hypothesis or body of evidence is with other related bodies of evidence within the particular system being studied.

Both systems and systems thinking continually evolve. For instance, from recent studies of natural hazards, systems thinkers write of the relationship between uncertainty, vulnera-

bility and resilience. An ecological, social or economic system may experience some disturbance, like an oil spill, crime rise or bank failure, but it is the resilience, or capacity of the system to absorb this disturbance and reorganize itself, while experiencing change and still maintaining essentially the same function, structure, identity and feedbacks, that is truly important (Folke et al, 2003; Berkes, 2007). Some disturbances, like climate change, will affect everything, and complexity theory and resilience thinking enables us to recognize that disturbances will have broad-based, non-linear consequences. A threshold point may arrive when one relatively stable state, or regime, flips into another. In social-ecological systems, like a local neighbourhood community, adaptability, resilience, will inevitably be the product of human agency, of individual and institutional leadership, of the capacity to learn from previous experience, of the strength of social and cultural networks and relationships, and of the capacity to remember past mistakes and not repeat them. As Jared Diamond (2005) has shown in his highly detailed examination of why some societies collapse, some people just simply do not learn, do not see, understand, remember or care. Our mechanistic conceptual frameworks have led us to underestimate or simply be blind to system effects even when they are upon us. As Diamond asks, 'What did that person think when he felled the last tree on Easter island?' Instead of hierarchy, of seeing one thing as more important than another, there is panarchy (Holling, 2001 and 2004), meaning a basic equality and connectedness between systems and subsystems. For Walker and Salt (2006) and Berkes (2007), resilience thinking offers important opportunities for fashioning new ways of coping with future surprises and unknowable risks through inten-

tionally building up resilience in social-ecological systems. This can be achieved by:

- learning to live with change and uncertainty;
- nurturing ecological, social, economic and cultural diversity;
- combining different types of knowledge (indigenous and scientific) for learning; and
- creating opportunity for self-organization through:
 - strengthening community-based management;
 - building cross-scale management capabilities;

- strengthening institutional memory; and
- nurturing learning organizations and adaptive co-management.

The logic of a systems analysis is that economic activity, environmental impact, social experience, political action and cultural attitudes are not discrete and containable. Another possible implication of this approach is a policy of precaution and prudence; with knowledge being limited, decision-making on sustainability issues becomes clearly both political and ethical.

Box 2.1 Resilience and systems thinking in practice

The Millennium Ecosystem Assessment (MEA) is a clear example of resilience thinking and sustainability science (Reid et al, 2006). The MEA is deeply complex, complicated and often difficult to follow in detail, particularly when one's long-held assumptions and established habits of mind and behaviour are overturned.

Strategies that have a high probability of enhancing resilience to future change

Strategies	Description
Foster ecological, economic, social and cultural diversity	Diversity provides the seeds for new opportunities and maximizes options for coping with change. By supporting and protecting diversity, countries or regions render themselves less vulnerable to adverse effects of future change.
Plan for changes that may possibly occur	By recognizing the directional nature, and drivers, of current changes, countries have the opportunity to design the institutional flexibility necessary to anticipate and adjust to change.
Foster learning	Countries, communities, non-governmental organizations (NGOs) and government agencies can learn by collaborating closely to examine patterns of response to hazards and learn which policy options show promise. Particularly effective are learning networks of public, private and civil society actors.
Communicate the societal consequences of recent changes	Societal consequences of hazards are felt at multiple levels. The communication of the consequences of perturbations is important in order to understand actual local impacts and adaptations. This communication enables a convincing case to be argued that the global nature of causes warrants global action.

Source: Adapted from Berkes (2007, p293).

From Gaia Hypothesis to Gaia Theory

The Gaia hypothesis was first formulated by James Lovelock and Lyn Margulis in the 1960s and 1970s and is a clear example of systems thinking. It has been both highly influential and quite controversial, not least in its practical implications for sustainable development. Basically, the idea is that the Earth acts as a self-organizing system, ensuring life, in its various forms, coevolves in tandem with changes to the physical configuration of the planet's animate and inanimate components. This self-regulation is dynamic. The Earth seeks accommodation and balance in the face of a large number of internal and external factors. Some proponents of Gaia see the Earth itself as an organism, with the Earth's systems manipulating climate to ensure life continues to emerge and exist. Lovelock (1979, p10) initially conceived Gaia as a *teleological* process consisting of:

The entire range of living matter on Earth, from whales to viruses and from oaks to algae, could be regarded as constituting a single living entity capable of maintaining the Earth's atmosphere to suit its overall needs and endowed with faculties and powers far beyond those of its constituent parts. [Gaia can be defined] as a complex entity involving the Earth's biosphere, atmosphere, oceans and soil, the totality constituting a feedback of *cybernetic systems* which seeks an optimal physical and chemical environment for life on this planet.

Following considerable criticism and debate within and beyond the scientific community, Lovelock refined his ideas, and by the turn of the century Gaia had become firmly established in the intellectual landscape of environmentalists, many scientists, sustainability practitioners and New Age travellers. In

the second edition of *The Ages of Gaia*, Lovelock wrote:

The name of the superorganism, Gaia, is not a synonym for the biosphere. The biosphere is defined as that part of the Earth where living things normally exist. Still less is Gaia the same as the biota, which is simply the collection of all individual living organisms. The biota and biosphere taken together form part but not all of Gaia. Just as the shell is part of a snail, so the rocks, the air, and the oceans are part of Gaia. Gaia, as we shall see, has continuity with the past back to the origins of life, and extends into the future as long as life persists. Gaia, as a planet sized entity, has properties that are not necessarily discernible by just knowing individual species or populations of organisms living together.

(Lovelock, 1995, p21)

Lovelock suggests that many people may find it hard to believe that anything as large and inanimate as the Earth is actually alive. After all, most of it is rock and the centre is extremely hot. However, he argues one way to understand Gaia is to think of a giant redwood tree. It is certainly alive, although about 99 per cent of it is quite possibly dead. The giant redwood is an ancient column of dead wood, composed of lignin and cellulose derived from layers and layers of cells built up over a long time. The tree is thus analogous to the Earth, particularly when we realize that many of the atoms of the rocks deep down in the magma were once part of the ancestral life from which we have all evolved. More recently, in *The Revenge of Gaia* (2006), Lovelock has continued to generate considerable controversy and debate by suggesting that climate change and disturbance is so severe that within a few decades the Arctic will be open sea and that the only way for human inter-

vention to be effective is for the developing world, particularly China and India, to forgo carbon-based economic development. In the developed world there needs to be a fundamental change in energy generation and policy. The world's optimum population is probably in the region of half to one billion people. This figure would allow humans to live in diverse ways without harming Gaia. If the population exceeds this, it is likely that 'in the end, as always, Gaia will do the culling and eliminate those that break her rules' (Lovelock, 2006, p141). Lovelock is also a firm advocate of clean nuclear power. Nothing else, he argues, is likely to do the job of powering the global economy.

The Schumacher College scholar Stephan Harding (2006) has further developed Gaia

theory, focusing on the need to develop a holistic understanding and practice of science and, through this, an empathic relationship with the Earth itself. Harding writes of one simple rule that has emerged from over 20 years of Gaian research: any organism destabilizing Gaia will experience feedbacks which will reduce its numbers. There are clear lessons for humans here. We cannot ultimately harm Gaia; we may destroy many species, including our own, but we cannot destroy Gaia. It will always return, re-emerge, but nonetheless, by promoting nature-destroying, climate-warming economic growth, we could initiate catastrophic Gaian feedbacks which will eliminate many future possibilities.

Ecological Modernization

Ecological modernization (EM) entered the policy discourse sometime in the 1980s, initially to describe technological developments with environmentally beneficial outcomes – chlorine-free bleaching of pulp for paper, more fuel-efficient cars, clean nuclear energy and so on – fully compatible with Lovelock's Gaia theory. A little later there emerged four ecological modernization strategies, two that were remedial (compensation and environmental restoration; technical pollution control) and two that were preventative or anticipatory (environmentally friendly technical innovation; structural change). EM became seen primarily as a way of reducing costs and improving business competitiveness rather than articulating any major changes in political, public or corporate values. In the 1990s EM took on a more radical ambience, with references to ecological

emancipation and the emergence of a new belief system, prefiguring systemic change and a broad transformation of social relations. However, there remain a few unresolved tensions, as Christoff (1996) identified. These include:

- Is EM economistic or ecological?
- National or international?
- Is there just one hegemonic path to modernization or are there multiple possibilities?
- Technocratic or democratic? (Should citizens participate in the planning process or should it be left simply to the 'experts'?)

Christoff (1996, p495) also identifies weak and strong versions of EM:

The strongest or most radically ecological notion of ecological modernization will often stand in opposition to industrial modernity's predominantly instrumental relationship to nature as exploitable resource. Recognition that overproduction – the use of material resources beyond regional and global ecological capacities – must cease because of the threat of imminent ecological collapse does not allow for the self-serving gradualism of the weak forms of ecological modernization.

The 'strong' ecological modernizers feel there has been a general decline in the value and probity of industrial progress and seek to develop new ecological modernities based on human and environmental rights, social learning, and a critical reflexivity that accords effectively with various, often weaker, notions of sustainable development that seek to provide a greener face to capitalist development without altering its fundamental trajectory. Thus one key issue of contention between weak and strong EM is whether capitalism is able to reform or reorganize itself and be sustainable. Mol and Spaargaren (2000, p23) suggest that:

mainstream modernization theorists interpret capitalism neither as an essential precondition for, nor as the key obstruction to, stringent or radical environmental reform. They focus instead on redirecting and transforming 'free market capitalism' in such a way that it less and less obstructs, and increasingly contributes to, the preservation of society's sustenance base in a fundamental/structural way.

Whatever the issues between the weak and the strong advocates, EM has succeeded in

placing the environment more firmly on government, business, community and industrial agendas. However, as Mol and Spaargaren (2000) also point out, EM differs from radical ecocentrists in two significant ways:

- 1 EM does not give environmental objectives an undisputed priority over other societal objectives.
- 2 Radical proposals for environmental improvement do not automatically entail radical societal change in the sense promoted by ecocentrists.

York and Rosa (2003, p274) are highly sceptical about whether current trends in institutional change and economic growth will enable societies to become more sustainable. EM theory needs to go beyond being largely reactive, to initiate processes leading to ecological transformation, harnessing green business models that impact lightly on the Earth, and energy and resource use that is efficient and effective:

EM theory suggests the possibility that inherent in the process of late modernization are self-referential mechanisms – such as the need to internalize environmental impacts in order to ensure future production inputs – that have the potential to lead to ecological sustainability. It argues for the potential of attaining sustainability from within – a greening of 'business as usual' – thereby avoiding such challenging alternatives as radical structural or value changes in society. The pivotal question, then, is the extent to which such expectations are justified.

The Promise of New Technology

Industrial ecologists are often associated with EM. They analyse flows of material and energy that connect business enterprise with the natural world in a continuous feedback loop operating in roughly three stages:

- 1 Natural materials are extracted from the Earth and converted into raw materials and energy.
- 2 These raw materials and energy flows are then worked up into useable and saleable products.
- 3 The resulting products are distributed, consumed or used, and disposed of by consumers.

All of these stages produce waste, which becomes pollution unless it is recycled or reused. The problem with much industrial ecology, as Hoffman (2003) notes, is that it takes an overly technical-engineering perspective that fails to accommodate the impact of individual cognition, organizational culture or social institutions on the direction of these material and energy flows. Hoffman writes of the value of analysing environmental issues from an 'open systems' perspective, recognizing that no organization operates in complete isolation, protected from external interaction and control. The application of methodological approaches from other disciplines, for example economics, sociology, law, ethics or systems dynamics, enables industrial ecologists to make links and ask questions they would not otherwise have done. There is a need to find ways of ensuring that 'organizations think and act systematically within their social ecologies', displacing the well-established assumption that environmental

protection inevitably means a loss of economic competitiveness.

Philosophers Albert Borgmann (1984), Langdon Winner (1997) and Aidan Davison (2001 and 2004) see technological development as a complex social, cultural and political phenomenon. Technical innovations such as the car, cell phone or solar panel inevitably involve a reshaping of society. Change is multifaceted, so technology should not be seen as its only cause. Nonetheless, it would be unwise to suggest that new technical devices such as the car or mobile phone do not change social practices, patterns of behaviour, individual and cultural identities, or the nature of work, learning and community. We do not always perceive the influence of technology, because devices quickly become embedded into the fabric of our lives and the overall wheel of consumption, acquisition and accumulation. We soon see these devices as desirable or meaningful ends in themselves, rather than as means to live lives in different or better ways. We may see technology as the means to combat pollution, climate change, global poverty, civic violence and alienation, world hunger, and disease without recognizing that the problems are not amenable to a simple technological fix and may in fact have been caused by technological innovation in the first place. For Davison (2001), ecological modernization privileges this technological fix. He suggests the Brundtland Report's conceptualization of sustainable development, the declarations of Rio and Johannesburg, and the many eco-efficiency arguments expressed by governments and the World Business Council for Sustainable Development bear witness to the resilience of this idea. The resurrection of

interest in nuclear power as a green energy source and as a means of arresting climate change is part of this discourse where faith in, or political adherence to, technology and (sound) science closes off questions and alternative possibilities. Moral and technological development and economic progress (if not growth) become aligned with instrumental policy frameworks, including measurements and quantifications which encode moral, managerial and political perspectives that deny the significance of other ways of seeing and doing things. In other words, our increasingly technological society has become integral to the way we understand and interpret the world, our proclivities and predispositions, and the structures of our thought and action, at times even shaping our tactile, sensory and aesthetic experiences of the world. Technology is not a neutral vehicle of human agency, but rather its essence. It must be fashioned to match who we are, who we want to become, and the type of world we need to build and sustain. Like sustainable development, technology is a political act. As Davison (2004, p94) writes:

The more we pursue goals of subjective choice, the more frantically we build a world in which means and ends are dislocated – a circular dynamic that only accelerates the processes of technological proliferation. And the more technology proliferates, the more our objective world is alien to us and opaque in our reflections. Moral inquiry is internalized into the task of self-understanding and self-expression, rather than that of world understanding and world-building. Self-expression becomes self-creation in a world meaningful only to the extent that human production creates and sustains it.

Biotechnology, nanotechnology, genetic engineering, nuclear power, hybrid cars and wind turbines are all themselves expressions of human practical reason, moral choices and indeed a cultural value system (or systems). There may be no easy or readily apparent answers, but we do need to see technology (and science) as being constitutive of the ends we wish to fashion, rather than as ends in themselves.

Case Study: Nuclear Power

In *The Revenge of Gaia* (2006), James Lovelock argues that if it had not been for the triumph of romantic idealism at Kyoto, we could all be enjoying the benign benefits of nuclear fusion technology. Nuclear power is easy to produce, creates little waste, most of which is completely harmless, and is free of CO₂ emissions, and its radioactivity has negligible effects on human health. In fact, previous nuclear disasters have been disasters in name only – few people have been killed (75 in the 20 years following Chernobyl), with contaminated areas turning into wildlife havens,

because they scare away hungry farmers and greedy developers. As a major element in a portfolio of energy resources, nuclear power will enable reasonable economic growth and lifestyle improvements to continue. The alternative is a Malthusian global depopulation, a serious undermining of everyone's standard of living and the ending of hope for the developing nations. This view has received support from Jesse Ausubel (2007), who, writing in the *International Journal of Nuclear Governance, Economy and Ecology*, refers to renewable energy resources as 'boutique fuels' that look

good in small quantities but that, compared with nuclear power and natural gas with carbon capture, are grossly inefficient and have serious implications for land-use planning. Do you want a wind farm spoiling your view? Furthermore, to produce energy equivalent to that generated by a 1000 megawatt nuclear power plant would require, from biofuels, 2500 square kilometres of good farmland or, from solar energy, 150 square kilometres of photovoltaic cells. The US would need to devote land the size of Texas if it met all its energy needs from wind power. But for Helen Caldicott (2006) and John Turner, from the US National Renewable Energy Laboratory (McKenna, 2007), these arguments are fallacious and misleading. Land used for turbines can still be used for grazing, and the amount already paved over for roads and car parks in all major countries is immense and growing. There is less than ten years' worth of accessible uranium in the mountains that can be used effectively to power new nuclear power plants, and large amounts of fossil fuels are

required to mine and refine the mineral. Additionally, the link between civil nuclear power and military use is undeniable, as US critiques of the nuclear power programmes in Iran and North Korea testify. Nuclear waste includes toxic contaminants that cause leukaemia and other cancers and genetic disease. Caldicott questions both the science and politics of nuclear energy and the implicit complacency in the expectation that this technology is the 'magic bullet'. Changes will have to occur to the way we think problems through, the way we apply reasoned and moral judgements that seek alternative practical pathways, ways of living and being. Renewable energy, she writes, 'is quick to build, abundant and cheap to harvest; it is safe, flexible, secure and climate-friendly' (2006, p164); and, married to a lifestyle respectful of natural resources, human and non-human others, renewable technology will help shape a world that is sustainable and worth sustaining.

Thinking Questions

- 1 How do politics and values inform policy choices, such as those relating to energy?
- 2 To what extent must sustainable development necessarily involve major cultural changes? What do you think they might be and how might they come about?
- 3 To what extent is dialogue the most appropriate way to promote sustainable development?
- 4 How might bioregionalism, deep ecology or the fundamental values of TEK influence either current Western business models or urban planning processes?
- 5 What worldview appeals to you the most? Why?

Cultural and Contested Understandings of Science and Sustainability

Aims

This chapter will explore the contested nature of science in the sustainable development process. Key illustrations will be drawn from the debates and controversies over climate change and genetic modification. The concept

of risk, the precautionary principle and the theory of reflexive modernization will also be examined. The idea that sustainability is not a scientific concept but in practice a political act will inform much of the discussion.

From Dialogue to Learning: 'Sustainability' as a Heuristic

Professor John Robinson's perceptive commentary on sustainable development is concerned with the inherent contradictions within the concept. There is a focus on *growth* and *development* on the one hand, much appreciated by governments and business, and ecological sustainability on the other, a position taken by many NGOs, academic environmentalists and activists. Many critics consequently view the concept as being inherently contradictory and incapable of being effectively operationalized. Others have noted in response that there is a resilient compatibility within the concept and practice of sustainable development which focuses on the ideas of freedom, of fulfilment, of being and securing what is truly valuable – the

freedom to achieve, to effect solidarity with others, to develop capabilities and alternatives, and to live justly and meaningfully (Verburg and Wiegel, 1997; Sen, 1999; Stefanovic, 2000). In 'Sustainable development: Exploring the ethics of *Our Common Future*', Langhelle (1999) argues that the importance of economic growth has been overemphasized at the expense of the broadly ethical concerns of human togetherness, social justice, respect for ecological limits, and the eradication of global poverty and inequality. Social justice has much to do with the satisfaction of human needs, of securing equal opportunity between and within generations, global partnership, and cooperation. It is this that defines the idea of development within sustainable develop-

ment. 'Sustainable development' does not endorse 'calculative thinking' or the common managerialist desire to obsessively devise quantitative outputs, performance indicators and actions, although none of this is completely excluded. Neither is the preference for the term 'sustainability' (goal) to be used more readily than 'sustainable development' (process). There is perhaps less confusion or dispute over the former. Indeed, Robinson (2004, p370) prefers the term sustainability to sustainable development, as it 'focuses attention where it should be placed, on the ability of humans to continue to live within environmental constraints'. Married to this, and coming from a phenomenological perspective, Stefanovic (2000) argues for more 'meditative thinking', that is to say more thoughts orientated towards investigating complexity and the relations between things, engaging with values, listening to the limits that our life-world brings forth, and recognizing that different cultures and histories have different rhythms of development and must therefore devise different policies. A human being, and indeed the planet, is far more than a resource. Indicators must, and will inevitably, reflect and articulate our values, enabling us to recognize that life is far more than being busy, accomplishing more and more concrete tasks, or securing more and more goods. The quality of life becomes more important than the commodities our economy produces and we consume. Human life and the environment are not two separate entities: we are on and of the world. We must think and act wisely.

By analysing many published definitions, institutional goals and established indicators, measures and values as expressed in the UN Millennium Declaration or in the actions and negotiated compromises of social movements, businesses and NGOs, Kates et al

(2005) show there are a number of ways in which sustainable development may be understood. Some of the successes of sustainable development are the grand but workable compromises that have emerged in Rio, Kyoto and Johannesburg between competing, and sometimes ideologically opposed, environmental, economic and social interest groups. This is why many agreements on sustainable development necessarily include dialogue and open, and hopefully transparent and democratic, decision-making. It is part of the practice. Much of the power, potential and resonance of sustainable development is therefore derived from a certain, perhaps intentional, 'creative ambiguity', allowing people to engage in a multitude of ways and at a multitude of levels, from the local to the truly global. The concept is therefore adaptable. It can be, and is, applied to the planning of cities, the fashioning of a new art of living, agriculture, architecture, construction, fishing, business, education – in fact, to every field. Sustainable development also has a set of core guiding principles that will adapt and change as time passes, as people discuss and as the world inevitably moves on. Dialogue and critique must be key to such a process although many people will inevitably find their own ideas, assumptions and ways of living being examined, challenged and contested. Having said that, Leiserowitz et al (2005), in their thorough multinational study of global attitudes towards the environment, poverty, science, technology, environmental protection, the human-nature relationship, development assistance, economic growth, income equity, consumerism and environmental value, concluded that in general the global public already basically supports the main tenets of sustainable development. However, the

authors certainly found many contradictions, not least in the differences between what people say, both as individuals and as groups, and what they actually do. For instance, science and technology generated positive attitudes, but the most technologically sophisticated individuals seemed to be the least certain about the ability of science and technology to solve global problems. Most people value the environment for both ecocentric and anthropocentric reasons, but ecosystems are in serious decline. The majority of people think something more should be done about it. Development assistance was also widely supported, but its extent was frequently overestimated, and many felt the poor were themselves to blame. Income inequalities were often accepted as being basic facts of life. The authors also noted the barriers to pro-sustainability action as being, first, this very contradictory nature of people's consciousness; second, people's own capabilities, in that they frequently lacked time, skills, knowledge and power; and third, inadequate laws, regulations and infrastructure, perverse subsidies, the inadequacy of available technology, and little political will. Explaining unsustainable behaviour seems as complex as explaining sustainable development itself, but bridging the gap between sustainable attitudes and unsustainable behaviour is essential for any transition to a fairer society. Long term, the key to this transition is probably rearticulating the meaning of human wellbeing, of the good life, even though socially pervasive materialist attitudes and consumerist values are often very difficult to change. In the short term, Leiserowitz et al (2005, p35) suggest that:

leveraging the values and attitudes already dominant in particular cultures may be more practical than asking people to adopt new

value orientations. For example, economic values clearly influence and motivate many human behaviours, especially in the market and cash economies of the developed countries. Incorporating environmental and social 'externalities' into prices or accounting for the monetary value of ecosystem services can thus encourage both individual and collective sustainable behaviour. Likewise, anthropocentric concerns about the impacts of environmental degradation and exploitative labour conditions on human health and social wellbeing remain strong motivators for action in both the developed and developing worlds. Additionally, religious values are vital sources of meaning, motivation and direction for much of the world, and many religions are actively re-evaluating and reinterpreting their traditions in support of sustainability.

Thus one of the main reasons why 'sustainable development' and 'sustainability' have generated so much discussion is because they tend to reflect the political and philosophical value base of those articulating a given definition or preferred perspective. For those who want an unambiguous scientific, technical, discipline-specific and/or operationable definition, this causes problems – but not for Robinson (2004, p374), who observes:

Diplomats are familiar with the need to leave key terms undefined in negotiation processes, and in much the same way the term sustainable development may profit from what might be called constructive ambiguity. Certainly the plethora of competing definitions in the literature suggests that any attempt to define the concept precisely, even if it were possible, would have the effect of excluding those whose views were not expressed in that definition.

What is needed, and what the creative ambiguity surrounding 'sustainability' can offer, is the possibility of integration, synthesis and synergy – of a social learning process that

bridges the divisions between the social and ecological, the scientific and spiritual, the economic and the political. In practice, technical fixes are necessary but not sufficient if ecological, economic and social imperatives are to be reconciled. For Robinson, this cannot be done scientifically, only politically – in dialogue and in partnership, making sustainability 'the emergent property of a conversation about what kind of world we collectively want to live in now and in the future'. Robinson concludes (2004, p382) that within the field of sustainability multiple conflicting views exist that cannot always be reconciled.

In other words, no single approach will, or indeed should be, seen as the correct one. This is not a matter of finding out what the truth of sustainability is by more sophisticated applications of expert understanding (the compass and ruler). Instead we are inescapably involved in a world in which there

exist multiple conflicting values, moral positions and belief systems that speak to the issue of sustainability. While it is crucial to identify points of empirical disagreement and to resolve those with better research and analysis, the ultimate questions are not susceptible to empirical confirmation or disconfirmation. What is needed, therefore, is a process by which these views can be expressed and evaluated, ultimately as a political act for any given community or jurisdiction.

In this way, 'sustainable development' and 'sustainability' may productively function as a heuristic, in other words a learning process by which people are enabled to find things out for themselves and to fully appreciate the contested nature of knowledge, the environment and sustainability (Macnaghten and Urry, 1998) and the impact human actions have upon the Earth (Marten, 2001). And to work out what to do about it.

The Sceptical Environmentalist – Lomborg's Challenge

Following on from Robinson's call for a recognition that sustainability often involves a conflict of values and ultimately political decision-making and action, the controversy over the publication of Bjørn Lomborg's (2001) *The Sceptical Environmentalist* raises a number of interesting issues. With a ringing endorsement on the back cover from the distinguished British scientist Lewis Wolpert – 'at last a book that gives the environment the scientific analysis it deserves' – the book is a direct reply to the Worldwatch Institute's State of the World reports. Lomborg questions that understanding of the environment which states that the planet is in bad shape, that resources are being exhausted, air and water

quality worsening, fish stocks collapsing, and the biosphere being destroyed and human life with it. These arguments were for a time amplified by the media, becoming a conventional wisdom that, for Lomborg, needs to be overturned. To this end, Lomborg attempts to demonstrate that in many respects things have actually got better in recent years – we are not running out of energy or natural resources, food production is increasing, fewer and fewer people are starving, literacy rates are increasing, average life expectancy has increased, we are losing only 0.7 per cent of the planet's species, air and water pollution is not worsening, acid rain does not kill forests, and the total impact of global warming will

not be as dire as many predict. We are not overexploiting our renewable resources – for example, global forest coverage has been more or less constant since 1945 and water is plentiful, although admittedly scarce in some places. There are not serious problems with non-renewables either, since, despite increases in consumption, supply has been increasing and many of these resources have reserves of 200 years or more. 'Consequently, there does not seem to be any foundation for the worried pessimism which claims that our society only survives by writing out ever larger checks without coverage' (Lomborg, 2001, pp159–160). Indeed, early cutbacks in fossil fuel consumption will actually make people's lives worse. Problems do exist, but they are usually smaller than many environmentalists suggest. Lomborg recognizes there is room for improvement, that although many more people now have access to clean drinking water, a billion more in the developing world need this too. But he argues that an improved environment will be the product of improved economic welfare, since, in general, higher income correlates with higher levels of environmental sustainability. Thus, when developing nations reach a certain level of economic development, as have countries in the North, then these nations will be able to afford cleaner production methods, pollution controls and so forth. When Bangladesh is as affluent as The Netherlands, it will be time for Bangladesh to deal with the effects of global warming and the rise in sea levels. Environmentalists, he goes on, tend to extrapolate their pessimistic scenarios from short-term rather than long-term trends, basing their views on inadequate economic analyses and relying more on faith than reasoned judgement. By contrast, Lomborg states that his own view is based firmly on

published statistics, often the official ones of the UN and its subsidiary organizations such as the Food and Agricultural Organization, the United Nations Development Programme, the World Health Organization and the United Nations Environment Programme. His book is also laden with 1800 references which the reader is invited to check.

Lomborg's argument continues that, by positing an ideal situation with which to compare the current state of affairs, environmentalists tend to make misguided political and moral judgements. A certain realism is required, he suggests. The Earth's resources are finite, we can't do everything and the world could be a better place, but this means we have to prioritize our policies and actions – dealing with global warming or global poverty but not necessarily both. Avoiding this prioritization means relinquishing the opportunity of doing the best for ourselves and for future generations. The problem is that policymakers, and certainly the general public wishing to protect the environment, also want to experience constant improvements in their material wellbeing. They want everything, and now. Additionally, people are reluctant to prioritize, because they do not fully understand the nature of the risks involved. Hunger is a greater cause of loss of life in this world than pollution. Chemical and pesticide pollution accounts for just 2 per cent of cancers. We shouldn't worry about risks without first properly weighing them up. The media are partly to blame for this, because they focus on sensational and dramatic incidents that cause accidents or death, rather than mundane and everyday activities. Consequently, we tend to overrate these statistically minor elements and underrate sizeable but more boring ones. This has led to an unwarranted hostility to genetically modified (GM) foods, despite the fact

that GM foods will positively contribute to increasing the world's food supply. GM promises so much. For Lomborg, the key argument from science and economics is not the abandonment of GM research and development, the risks of which have been exaggerated wildly, but the need to establish effective regulatory systems and management practices. Indeed, as most people are readily aware, global environmental sustainability policy and action is rife with past, present and undoubtedly future controversies.

Lomborg clearly exemplifies the position of a neo-liberal in his belief that the market, economic growth and development will enable rich and poor nations to improve their environmental performance in the long run. He also expresses some values shared with ecological modernizers, but Lomborg would probably describe himself as a practical realist, or as a pragmatist. Whatever the case, Lomborg does stimulate many people to think, argue and discuss the issues. It is important not to automatically dismiss views you disagree with, but to use them as a device to learn more and to understand better.

It is important to consider the context in which the debates around Lomborg take place and the use to which the arguments of the various parties are put – and by whom. Critical focus has not only been on the status of science and scientists, the value of academic refereed journals, the presentation of statistical evidence, and the role of the mass media and public communication, but also on processes of political decision-making and political influence and, ultimately, questions of what type of world we have and think we want. Therefore, by examining the Lomborg controversy, a number of issues emerge:

- the politicized nature of the debate over the environment and sustainability;
- the soundness or otherwise of scientific knowledge, research and evaluation;
- the role of 'sound science' and statistics in policy formulation and implementation particularly, as they pertain to issues such as risk assessment;
- the role of political and economic interests in the social construction of 'sound science' and its dissemination to and understanding by a wider public; and
- public trust and understanding of science and its contribution to the ethics of the sustainable development process.

The initial response to Lomborg's first book was furiously partisan and intense. In January 2003 the Danish Committees on Scientific Dishonesty (DCSD) found that Lomborg was 'systematically one-sided'. Later in the year, however, the Danish Ministry of Science, Technology and Innovation ruled that Lomborg had not been 'objectively dishonest', and in March 2004 the DCSD withdrew their allegations. A great deal was, and remains, at stake. The debate in *Prospect* magazine between Lomborg and environmentalist Tom Burke, the review in *Nature* by Stuart Pimms and Jeff Harvey, together with a short series of articles and a lengthy critique in *Scientific American* attacking many of Lomborg's judgements and claims, provide a clear outline of the issues. As Director of the largely US-funded Copenhagen Consensus Center, Bjørn Lomborg has more recently focused his attention on climate change, as this issue has increased in public prominence. He has applied cost-benefit analysis to the effects of climate change, prompting a withering response from Tom Burke who, writing in *The Guardian* (Burke, 2004), stated that he was

engaging in 'junk economics' and 'faith-based politics':

Cost-benefit analysis can help you choose different routes to a goal you have agreed, but it cannot help you choose goals. For that we have politics. People disagree about priorities and they do so on a huge variety of legitimate grounds. When they do so, they are not arguing about value for money, but about the kind of world they want to live in.

It is a vanity of economists to believe that all choices can be boiled down to calculations of monetary value. In the real world, outcomes are not so easily managed. A stable climate is something we might now call a system condition for civilization. That is, it is something without which civilization is impossible – though it is not, of course, itself a guarantee that there will be civilization.

Not deterred, and using the same approach that characterized *The Sceptical Environmentalist's* critique of the environmentalist's 'litany' of disasters, Lomborg published in the *Wall Street Journal* (Lomborg, 2006) his detailed criticism of the UK Treasury's Stern Review on the economic costs of climate change. Lomborg questions Stern's calculation that doing nothing about climate

change will cost 20 per cent of gross domestic product (GDP) while doing something will cost only one per cent, suggesting that the true cost of doing something would be nearer 3 per cent by 2100. He argues that most cost-benefit modelling shows that radical and early carbon reductions actually cost more than the good they do. What is more, it is highly unlikely that China and India will participate in any climate mitigation scheme, not least because, despite China's 2002 pledge to cut sulphur dioxide emissions by 10 per cent, they are presently 27 per cent higher and are a far more serious threat to human health and the environment than climate change. In *Cool It*, Lomborg (2007) pursues his argument that we need to find more intelligent ways of spending these billions of dollars that will genuinely enable humanity to adapt as well as mitigate the effects of climate change. Practical and pragmatic solutions are required, rather than feel-good policy statements that lead to very little.

Sustainable development is politically, economically, ethically, ideologically and scientifically charged. It will not be easy and the dialogue continues.

Science, Politics and Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change, in Article 1, as 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between 'climate change' attributable to human activities altering the atmospheric composition and 'climate variability' attributable to natural causes. (IPCC, 2004, p4)

Climate change seems to be hitting the headlines more frequently than ever. The scientific, political and ethical debates about the nature and causes of the climate crisis have always been intense and sometimes fraught. A number of highly accessible and well-respected books (Flannery, 2005; Lynas, 2005 and 2007; Monbiot, 2006; Pearce, 2006), together with some important and widely seen documentaries, such as Al Gore's Oscar-winning *An Inconvenient Truth*, and

Hollywood films such as *The Day After Tomorrow*, have helped foster general awareness and understanding. NGO campaigns like Friends of the Earth's *The Big Ask*, government-sponsored public communication strategies, and increased news and current affairs coverage of climate science and related issues, including in conservative journals like *The Economist*, which published a special report on business and climate change in June 2007, have had their impact too. The UK Treasury's 2006 Stern Review and everyday observations and comments by ordinary people that spring is getting earlier or the expected rains are not coming have made global warming and the environment move close to the top of many national political agendas. The Intergovernmental Panel on Climate Change (IPCC) has steadily become a very significant player in this. Established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), the IPCC's role, according to its governing principles approved in 1998, is as follows:

The IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socioeconomic factors relevant to the application of particular policies.

Review is an essential part of the IPCC process. Since the IPCC is an intergovernmental body, review of IPCC documents should involve both peer review by experts and review by governments.

The IPCC does not conduct research of its own but periodically synthesizes and evaluates the state of knowledge on climate change. It produces a range of synthesis, special, technical and methodology reports and, because of its scope and international status, its findings are critically scrutinized by NGOs, the media, businesses, lobby groups, governments and ordinary citizens. For example, the Global Climate Coalition founded in 1989, with early supporters including Amoco, the American Forest and Paper Association, the American Petroleum Institute, Chrysler, Exxon, Ford, General Motors, Shell and Texaco, organized advertising and public relations (PR) campaigns to cast doubt on scientific findings linking fossil fuel use to climate change and lobbied aggressively at international climate negotiations to prevent meaningful agreements. But by 2000, the Global Climate Coalition could no longer effectively deny the growing evidence of anthropogenic climate change. The IPCC published findings throughout the 1990s and 2000s and, although they have been debated vigorously, a scientific consensus has slowly emerged (though this has not stopped some governments from attempting to influence the language of its assessment reports to express a rather more cautious and conservative viewpoint). In 2002 Julian Borger of *The Guardian* reported that the US Bush Administration, with the oil company Exxon-Mobil, had secretly worked to remove the head of the IPCC Robert Watson to make way for another person less likely to call for radical mitigating action. Watson was replaced by the Indian railway engineer and environmentalist Dr Rajendra Pachauri. Fred Pearce (2002), writing in *New Scientist*, reported that the US may have threatened to withdraw funding from the IPCC if there had not been change at its head, causing fears

that the IPCC process had been compromised by this apparent politicization. The IPCC's conservatism was again highlighted in 2007, when Professor Stefan Rahmstorf and his team from the Potsdam Institute for Climate Impact Research in Germany suggested that the IPCC's Third Assessment Report, published in 2001, had underestimated sea-level rise by some 59 per cent. Rahmstorf used observational data, believing that computer models of the climate significantly underestimated the sea-level rises that had already taken place. The picture becomes increasingly detailed as additional reports finally reach the public sphere. According to Smith et al's (2007) climate modelling system, there may be a slowdown in global warming until about 2009, but then it will again increase, with 'at least half of the years after 2009 predicted to exceed the warmest year currently on record!'

Early in 2007 the IPCC issued the first of four major assessment reports. Significantly, its language and predictions were much stronger than six years earlier, with it concluding that it was at least 90 per cent certain that human-induced emissions of greenhouse gases (GHGs) rather than any natural variations are the cause of global warming. The IPCC projects that by the end of the 21st century:

- Probable temperature rise will be between 1.8°C and 4°C.
- Sea level is most likely to rise by 28–43cm.
- Arctic summer sea ice will disappear in the second half of century.
- Increase in heat waves is very likely.
- Increase in tropical storm intensity is likely.

Dr Rajendra Pachauri, the IPCC Chairman, was reported by the BBC (Black, 2007) as telling

IPCC delegates in Paris at the report's launch, 'If you see the extent to which human activities are influencing the climate system, the options for mitigating greenhouse gas emissions appear in a different light, because you can see what the costs of inaction are!'

There is still a great deal of uncertainty within the field of climate science and considerable discussion over measurements and models of change. Predictions and forecasts are always presented in terms of possibilities and probabilities, with recognition that findings are almost always likely to be provisional. Scientists are always learning more about the factors influencing atmospheric concentrations of greenhouse gases (primarily CO₂ and methane), the feedback effects of these gases on the climate system, the nature and extent of local and regional variations, the future use of fossil fuels (the major cause of CO₂ emissions), the rate of energy take-up by the oceans, likely global and regional temperature rise, and the rate of melting of the ice sheets in Greenland and Antarctica and their effect on sea levels. Also in 2007, the renowned climate scientist James Hansen and his team, after reviewing the most recent scientific findings, suggested that summer ice melt in West Antarctica (and Greenland) was far greater than earlier predicted and had not been included in the IPCC projections because the panel does 'not well account for the nonlinear physics of wet ice sheet disintegration, ice streams and eroding ice shelves' (Hansen et al, 2007, p1950). Referring to the palaeontologic records, Hansen et al's Royal Society paper concludes with an exceptionally bleak scenario:

The imminent peril is initiation of dynamical and thermodynamical processes on the West Antarctic and Greenland ice sheets that produce a situation out of humanity's control,

such that devastating sea-level rise will inevitably occur. Climate forcing of this century under BAU [business as usual] would dwarf natural forcings of the past million years; indeed it would probably exceed climate forcing of the middle Pliocene, when the planet was not more than 2–3°C warmer and sea level 10–25m higher. The climate sensitivities we have inferred from palaeoclimate data ensure that a BAU GHG emission scenario would produce global warming of several degrees Celsius this century, with amplification at high latitudes.

(Hansen et al, 2007, p1949)

Our knowledge is still limited, but the climate crisis is real and extremely serious. In 2000 Nobel chemist Paul Crutzen of the Max-Planck Institute in Germany coined a new term – the 'Anthropocene', designating an epoch of human influence on the planet. Global, national and regional policies and actions promoting extensive mitigation and necessary adaptation are essential. The IPCC, the UN, James Hansen and campaigners like George Monbiot agree that 'business as usual' is a recipe for inevitable catastrophe. For Hansen, it is important we find ways of taking greenhouse gases from the atmosphere. CO₂ needs to be captured at power plants, sequestered below ground, injected beneath the ocean floor; biomass needs to be developed without the excessive use of nitrogen-based fertilizers or taking out of production valuable agricultural land. The Worldwatch Institute (2007) has noted that, with the increase in world agricultural prices, biofuels could economically benefit a number of developing countries, which instead of using foreign currency to import oil could develop their own domestic biofuel industries and so purchase fuel from their own farmers. In *Heat*, George Monbiot (2006) notes a downside to this enthusiasm, stating that the growth of palm

oil plantations has displaced many indigenous peoples and destroyed much forest land in Indonesia and Malaysia. Greenpeace has campaigned for a total end to palm oil production for these reasons and because industry is basically 'cooking the planet' (Greenpeace International, 2007). Monbiot also argues for a number of other societal and individual actions that could reduce CO₂ emissions by 90 per cent in most sectors. These include less air and car travel, more internet shopping, building less, installing better home insulation, using less high-energy-consuming cement in construction, growing wood for heating and developing solar power. For Monbiot, civil nuclear power is not an option, because of its well-documented connection with military uses, the danger of proliferation, and unresolved problems regarding waste disposal and expense. For Monbiot, we have no choice but to act now, but unfortunately governments tend to commission reports but rarely act effectively on their findings and possibilities. Additionally, many individuals, certainly in the developed world, may be extremely reluctant to significantly alter aspects of their lifestyles, especially when it comes to cheap flights abroad. Where aviation is concerned, writes Monbiot (2006, p182), 'There is no technofix. The growth in aviation and the need to address climate change cannot be reconciled. ... A 90 per cent cut in emissions requires not only that growth stops, but that most of the planes which are flying today are grounded.' The IPCC (2007, p11) states there is a high level of agreement and much evidence from bottom-up and top-down studies to support the conclusion that 'there is substantial economic potential for the mitigation of global GHG emissions over the coming decades, which could offset the projected

growth of global emissions or reduce emissions below current levels'. These include (IPCC, 2007, p17):

- Changes in lifestyles and consumption patterns emphasizing resource conservation can contribute to developing an equitable and sustainable low-carbon economy.
- Education and training programmes can help overcome barriers to the market acceptance of energy efficiency.
- Changes in occupant behaviour, cultural patterns, consumer choice and use of technologies can result in considerable reduction in CO₂ emissions related to energy use in buildings.
- 'Transport demand management', which includes urban planning (which can reduce the demand for travel) and provision of information and educational techniques (which can reduce car usage

and lead to a more efficient driving style).

- In industry, management tools that include staff training, reward systems, regular feedback and documentation of existing practices can help overcome industrial organizational barriers, reducing energy use and emissions.

Climate change policies and the goals of sustainable development have clear synergies. Some relate to energy efficiency. Renewable energy can be economically beneficial, improve energy security, reduce local pollutant emissions, create jobs and improve health. (Re)forestation and bio-energy plantations can lead to restoration of degraded land, manage water runoff, retain soil carbon, reduce loss of natural habitats, enhance biodiversity, conserve soil and water, and benefit rural economies if properly designed and implemented.

Creative Policy Solutions: Contraction and Convergence

Aubrey Meyer, musician and composer, former member of the UK Green Party and co-founder of the Global Commons Institute in 1990, is an active promoter of climate mitigation through 'contraction and convergence' – a practical and equitable approach to combating climate change. He believes that those economists who argue that climate mitigation is too expensive a policy option effectively condone the murdering of many of the world's poor. He argues (Meyer, 2000) that although greenhouse gas emissions have been accumulating in the atmosphere as a result of industrialization for over 200 years, suggesting that in principle every citizen on the planet has an equal right to emit, there must

be an equitable individual allowance based on safe global emissions targets provided by the best scientific understanding available.

Contraction and convergence offers a simple model on which an international agreement on greenhouse gas emissions can be based. It can be achieved in three stages:

- 1 securing an agreement on a cap on CO₂ concentrations in the atmosphere;
- 2 calculating the speed at which emissions need to be reduced to reach that target; and
- 3 calculating the consequent total carbon budget and allocating a per capita allowance throughout the world.

The result will be that per capita emissions from each state will 'converge' at a fair level, while the global sum of emissions will 'contract'. Meyer believes that greenhouse gas concentrations should contract to 450ppm and that convergence to equal per capita emissions should be achieved by 2030. This process requires the creation of a carbon currency, which could finance clean technologies and eradicate Third World debts, combat global poverty, and minimize the economic differences between the developed and developing worlds. As Flannery (2005) notes, this 'strong medicine' could be the foundation for a new Kyoto that does away with 'free riders' but will mean definite political and economic costs for the developed nations.

Contraction and convergence is thus a vehicle for achieving global equity not only in CO₂ emissions but also in economic wealth, prosperity and human wellbeing. The rich nations of the North are by far the biggest emitters of greenhouse gasses. Even today, Africa's accumulated emissions are a small fraction of those produced by the UK. But contraction and convergence can only be realized if the participation, dialogue, debate and accommodation that is beginning to characterize global politics in major areas of environmental and sustainability policymaking develop further. NGO pressure groups,

independent think-tanks, scientific organizations, and corporate and government bodies, which form 'epistemic' or knowledge-based communities, must work with rather than against each other if agreement on climate change is to be secured. As Gough and Shackley (2001, p332) write:

The science-policy nexus represented by the IPCC, and supporters of the UNFCCC Kyoto Protocol, with its inclusion of government officials, international organizations, scientists, NGOs, business and so on, incorporates the key features of an epistemic community. A distinctive knowledge-based approach to climate assessment and policy has emerged within the IPCC, in which NGOs have been instrumental, both as expert advisors and in providing the legitimacy of inclusiveness needed for the epistemic coalition to have sufficient authority. The fact that environmental NGOs (ENGOs), intergovernmental and governmental actors, the scientific establishment, and even some business groups are in coalition can be a tremendously powerful influence. NGOs that have helped create the climate change epistemic community have needed to move their own terms of reference towards science and technical/policy measures and responses, and away from ethical and overtly political matters: such is the price of membership of that coalition. This shut the door on the use of a range of potentially useful concepts and devices such as global equity and North-South development.

Ulrich Beck and the Risk Society

Climate change brings with it significant risk, particularly for those living in low-lying areas. The risks associated with GM and new developments such as nanotechnology are also hotly debated. In many ways, we seem to be living in a risk society, so the concept of 'risk' has become of primary importance in the

sustainability debate. The work of the German sociologist Ulrich Beck (1992a, 1992b and 1996) has been extremely influential in this field. Although only one of many risk-society theorists, Beck has clearly identified significant issues that impact on environmental management, risk assessment, ecological

politics and policymaking, public communication, citizenship, intergenerational ethics, economics and finance, and scientific and technological innovation.

The key points of Beck's theory of risk include:

- Although risks are as old as human society itself, there are some associated with industrial society that are essentially new, such as nuclear power, chemical and biotechnical production, and genetic modification – all products of techno-industrial relations.
- 'People, firms, state agencies and politicians are responsible for risks' (Beck, 1992a, p98).
- Many new risks are not predictable or statistically describable; in many cases they are uninsurable.
- Since the middle of the 20th century, industrial society has confronted the 'historically unprecedented possibility of the destruction through decision-making of all life on this planet. This distinguishes our epoch not only from the early phase of the industrial revolution, but also from all other cultures and social forms, no matter how diverse and contradictory these may have been in detail' (Beck, 1992a, p101).
- A consequence is that political stability in risk societies comes from 'not thinking about things'. The incalculability of consequences leads to a lack of accountability.
- A lack of accountability leads in turn to 'organized irresponsibility', because mega-hazards, in particular, undermine the four principles of the risk calculus, namely:

- 1 Damage may not be limited or contained, so monetary compensation is inapplicable.
- 2 *Precautionary* after-care is excluded from the worst imaginable accident as the anticipation of effects is likely to be totally inadequate.
- 3 'Accidents' are not confined to time or place, and therefore lose meaning.
- 4 Standards of normality, measuring procedures and comparitors are no longer clear and distinct.

Beck's theory has profound consequences for the practice of science, its public understanding, and its political use and application. Scientific research often fails to allay fears, because certainty is so elusive. Acceptable risks become accepted risks, and new knowledge can turn normality into hazards overnight, as we have seen with nuclear power, holes in the ozone layer, GM contamination and so on. The incredible commercial gains that are likely to accrue from the development and exploitation of synthetic biology, that is the artificial construction of entirely new organisms from 'biobricks' (individual DNA elements), are matched only by the potential risk. New, artificially produced bacteria may be able to break down cellulose to produce ethanol or sequester carbon dioxide, thereby ameliorating global warming, as the J. Craig Venter Institute in the US has suggested (www.jcvi.org/research/); but what else could they conceivably do? Bacteria are notoriously difficult to destroy, and promises of salvation could become devastating threats to many life-forms (Bunting, 2007). Science and engineering have always operated on the basis of probable safety, but when society itself becomes a scientific laboratory, testing

out new technologies or theories, this type of cutting-edge activity becomes politically and ethically questionable. Given that scientific knowledge can always only be partial, always 'work in progress', complex risks need to be carefully assessed and evaluated. Political decisions will ultimately have to be made.

Unlike Lomborg, Beck believes further industrialization and wealth creation will increase global disparities in wealth and welfare and increase human misery and ecological risk. It often seems contrary to the business logic of the financial bottom line to

ignore commercial opportunities even if they may cause ecological problems:

If it is suddenly revealed and publicized in the mass media that certain products contain certain 'toxins' (information policy is receiving a key importance considering the fact that hazards are generally imperceptible in everyday life), then entire markets may collapse and invested capital and effort are instantly devalued.

(Beck, 1992b, pp111–112)

Risks are therefore not simply diagnosed, predicted and ameliorated on the basis of

Box 3.1 Global warming: The risks and impacts

Sea-level rise and loss of ice sheets

In the 20th century global sea level rose by 15–20cm. Currently sea level is rising at 3cm/decade, faster than projected in the scenarios of the IPCC Third Assessment Report. Future rise by 2100 is likely to be less than one metre, but even if warming is stopped at 3°C, sea level will probably keep rising, by several metres in subsequent centuries, in a delayed response. Coastal cities and low-lying islands are at risk. What is now a once-in-a-century extreme flood in New York City (with major damage, including flooded subway stations) would statistically occur about every three years if sea level were just one metre higher.

Loss of ecosystems and species

Global temperatures would reach a high not seen for millions of years, and the rise would be much too fast for many species to adapt. A large fraction of species – some studies suggest up to one-third – could be doomed for extinction by 2050. Life in the oceans is not only threatened by climate change but by the equally serious problem of the ongoing global ocean acidification, which is a direct chemical result of our CO₂ emissions.

Risk of extreme events

In a warmer climate, the risk of extreme flooding events will increase, as warmer air can hold more water (7 per cent more for each degree Celsius of warming). Droughts and forest fires are likely to increase in some regions, as is currently occurring in the Mediterranean region and in southern Africa. Hurricanes are expected to become more destructive. An increase in energy, not frequency, of hurricanes is suggested in response to rising sea surface temperatures by models and data. A number of recent studies have shown that the observed rise in sea surface temperatures in the relevant areas of the tropics is primarily due to global warming, not to a natural cycle.

Source: 'Climate change fact sheet', compiled by Stefan Rahmstorf, www.pik-potsdam.de/~stefan/warmingfacts.pdf.

'sound science'; there are other factors at work. Science becomes one element of the public discourse that socially constructs the meaning and acceptability of risk – whether meat is safe to eat, the sun safe to be exposed to, nuclear power safe to generate, climate change bad for the economy and so on. The mass media, court decisions, experts' debate, politicians' speeches, public fears, and trust in the major social institutions and big corporations will all play a part in balancing costs and benefits, risks and possibilities. As the IPCC (2007, p27) notes, there is high agreement and

much evidence to support the conclusion that:

Decision-making about the appropriate level of global mitigation over time involves an iterative risk-management process that includes mitigation and adaptation, taking into account actual and avoided climate change damages, co-benefits, sustainability, equity, and attitudes to risk. Choices about the scale and timing of GHG mitigation involve balancing the economic costs of more rapid emission reductions now against the corresponding medium-term and long-term climate risks of delay.

The Social Construction of Risk

For some sociologists, risk is never fully objective or knowable outside of our pre-existing knowledge and moral beliefs. All knowledge about risk is bound to the socio-cultural contexts from which it emerged. We can only know or perceive risk from a particular socio-cultural milieu or worldview. As Lupton (1999, p28) neatly summarizes:

Scientific knowledge, or any other knowledge, is never value-free, but rather is always the product of a way of seeing. A risk, therefore, is not a static objective phenomenon, but is constantly constructed and negotiated as part of the network of social interaction and the formation of meaning. 'Expert' judgements of risk, rather than being the 'objective' or 'neutral', and therefore 'unbiased', assessments they tend to be portrayed as in the techno-scientific literature, are regarded as being equally as constructed through implicit social and cultural processes as are lay people's judgements.

The 'weak' social constructionist will see risks as cultural mediations of real hazards, whereas the 'strong' social constructionist will see hazards and risks as existing only when people recog-

nize and label them as such. In this way, debates in the public sphere, political activism, local campaigning, social refusal and anti-corporate feeling lead to a more reflexive, questioning society, where the constitution and generation of understanding is an ongoing process, where knowledge becomes knowledges, and where uncertainty becomes a given in contemporary life. We need to critically reflect on both our understandings and on our actions. We need to reflect on how we change the world and how the world changes us.

In our modern globalized risk society, this reflexivity, which for Beck means 'self-confrontation rather than mere reflection', manifests itself in three ways:

- 1 Society becomes an issue and a problem for itself at a global level.
- 2 Awareness of the global nature of risk stimulates the growth of cooperative international institutions and programmes.
- 3 State and political boundaries become less significant, as global risks require

global action, for example on climate change.

For Beck (1996, p34), reflexivity offers both hope and danger:

This combination of reflex and reflections, as long as the catastrophe itself fails to material-

ize, can set industrial modernization on the path to self-criticism and self-transformation. Reflexive modernization contains both elements: the reflex-like threat to industrial society's own foundations through a successful further modernization which is blind to dangers and the growth of awareness, the reflection on this situation.

'Sound Science', Risk and GM

The science, business and politics of genetic modification (GM) has been a highly controversial field of activity for many years, with supporters arguing that genetic modification offers huge advances and advantages in terms of securing food supplies for the world's growing population and critics suggesting that the main driver of GM is fundamentally economic rather than ethical. The big biotechnology corporations have invested millions and expect to make millions more with terminator technology, that is GM seeds that do not germinate, requiring increased sales of specialized herbicides and pesticides and preventing farmers from saving seeds for next year's crop. Traditional farming methods could be destroyed and environmental damage could occur if artificially produced sterile genes transfer to wild plants and non-GM crops. A single-minded approach to patenting new developments even when they are effectively based on traditional ecological knowledge could effectively 'steal' the modest harvests of many local peoples in the developing world (Shiva, 2000). This 'biopiracy' and the corporate buyout of many small biotech companies is sometimes seen as a cynical attempt by the trans-national biotech corporations to secure control of the world's food industry, estimated to be worth in excess of \$2,000 billion a year (Godrej, 2002). For Pigem

(2002), 'barcoding life reduces it to a commodity', inevitably leading to a loss of respect for all life-forms, including our own. The issue of what constitutes 'sound science' in such a world has consequently been hotly contested, with few firm or broadly accepted conclusions. Environmental campaigners, including many scientists, such as Mae-Wan Ho (1998), argue fiercely that there are so many uncertainties, so many possible risks to the health of ecosystems and human beings through contamination from promiscuous genes, that a principle of precaution should be strictly applied to sensitive scientific research and development. In their submission of scientific evidence presented in the defence of 28 Greenpeace volunteers on trial for their non-violent removal of a GM maize crop in Norfolk in 1999, a number of scientists noted the likelihood of cross-contamination, the potential hazards of low-dose toxicity, horizontal gene transfer and genetic alteration, and possible effects on soil nutrient recycling and productivity (Greenpeace UK, 1999). In their GM Contamination Register Report for 2006, the tenth year of the commercial growing of genetically engineered crops, Greenpeace International recorded 24 incidents of GM contamination, particularly in rice and maize, making the total number 142 since 1996. The report notes that GM contam-

ination is a serious cause for concern with serious negative consequences for those areas of countries choosing to remain GM-free. Many countries do not have a system of liability for the costs of contamination that may result from trials or clean-ups, so they may become the responsibility of the contaminated party rather than the one contaminating.

Scientific knowledge on GM is in a constant state of development, but the problem for many biotech companies and for science as an institution is the loss of public trust, particularly in the UK, that has occurred as a result of the experience of mad cow disease (BSE or bovine spongiform encephalopathy) jumping the species barrier to produce the human variant CJD (Creutzfeldt-Jacob disease). Journalists (see, for example, Brown, 2005) have reported many instances of modified genes from crops being transferred to local wild plants, resulting in herbicide-resistant 'superweeds', and other examples of cross-fertilization occurring, the probability of which corporate and government scientists had previously discounted as being too low to worry about. In the UK, government regulation has been perceived as inadequate, because private profit is seemingly given precedence over food security and ecosystem safety. Consequently, much public trust has migrated to NGOs like Friends of the Earth and Greenpeace, whose own specific agendas are not viewed as being influenced by commercial interests (Pilnick, 2002). European consumers have frequently responded to NGO campaigns against the scientific evidence presented in support of GM by not purchasing foodstuffs containing GM ingredients. For some NGO critics, government and corporate scientists seem to deliberately come up with findings supportive of their employer or funder, rather than making the

impartial contributions to knowledge which Wolpert (1993) and Dunbar (1995) argue true science worth its name must do. They state the scientific method is predominantly a dialectical process, involving detailed hard work, the generation and testing of hypotheses, experimentation, observation, measurement, deduction and self-criticism. Science proceeds though very careful assessments of new ideas and findings, and only when thorough evaluations have been completed, which may take a long time given the complexity of the problems, will scientists confirm that their theories are well founded. Regarding GM, in a circumspect article Professor Howard Dalton (2004, p11), the Chief Scientific Adviser to the UK's Department for Environment, Food and Rural Affairs (Defra), wrote:

At present, there is no scientific case for ruling out all GM crops and their products. It would be short-sighted to decide the future of a powerful diverse new technology on the basis of its application – and in some cases violent opposition to that application – in only one area, and to ignore the analysis of risks and benefits in other areas.

There are a whole host of potentially beneficial prospects for GM already in our sights. On the other hand, there are risks in any new technology, and the lessons of history tell us that sometimes we have rushed forward to exploit new technologies, only subsequently to appreciate the medical, social and environmental impacts that these may bring (thalidomide, nuclear energy, pesticides, mobile phones and so on).

In 2007 the UK Government, despite 20 years of protests and continued public scepticism, decided to proceed with extensive commercial planting of GM crops, irrespective of the risks and the potential dire consequences for the future of organic agriculture.

Reflexivity and the Expert vs. Lay Knowledge Divide

Professor of science studies Brian Wynne (1996) suggests that it would be mistaken to assume that the lay public have always trusted expert opinion and that only recently has there been any ambivalence. Ordinary people's trust in expert opinion has often been 'virtual' or 'as-if', with the lay public forced into a relationship of dependency. Scientific thinking is officially and publicly presented by politicians and scientists as the most important, if not the sole reliable source, of knowledge and understanding. When proved wrong, modern expert institutions have focused on reconstructing history to communicate their own blamelessness, attributing catastrophes to acts of God or the public's own misunderstanding of the subtleties and indeterminacies of the scientific method. Furthermore, public trust is compromised, according to Wynne (1996, p27), by these institutions responding to dangers 'in the idiom of scientific risk management, tacitly and furtively' and imposing 'prescriptive models of the human and the social upon laypeople and these are implicitly found wanting in human terms'. The real world is treated as if it were a lab experiment and human and other living beings as simply among the many controllable variables.

In his analysis of the conflictual relationship between government scientific investigations into risks from radioactive fallout and the local knowledge of Cumbrian sheep farmers following the 1986 Chernobyl disaster, Wynne clearly shows how scientific investigation consistently ignored or discounted local expert knowledge and consequently failed to appreciate the full complexity of the issues they were addressing or the inadequacy of their own methods. Lab methods cannot be simply transposed to Lakeland hills. The attempt and

expectation of government scientists to predict and control failed to achieve any effective results and further succeeded in reinforcing public suspicion of the efficacy of official institutionalized knowledge processes. Wynne (1996, p67) writes:

After a few months, the scientists' experiments were abandoned, though the farmers' criticisms were never explicitly acknowledged. ... Much of this conflict between expert and lay epistemologies centred on the clash between the taken-for-granted scientific culture of prediction and control and the farmers' culture, in which lack of control was taken for granted over many environmental and surrounding social factors in farm management decisions. The farmers assumed predictability to be intrinsically unreliable as an assumption, and therefore valued adaptability and flexibility as a key part of their cultural identity and practical knowledge. The scientific experts ignored or misunderstood the multidimensional complexity of this lay public's problem domain, and thus made different assumptions about its controllability.

Wynne concludes that it is necessary for (indigenous) local knowledge to become part of a broader understanding of risk than has often been the case in the past. The trajectory of this line of thought appears to be that sustainable development is again perceived as a constructive consequence of a dialogue of values, methods and understandings. There needs to be a recognition of the public value of science and a concerted and genuine effort to engage the public in scientific debate and developments and to ask questions that scientists sometimes feel is not their job. This may mean the institution of science, including its established role and expectations in academia and big corporations, will need to change significantly.

Characterizing Global Environmental Risks

Risks manifest themselves on many spatial levels. Global environmental risks may be characterized in two ways:

- 1 risks, like climate change, that are essentially *systemic* – environmental change at any locale can affect the environment elsewhere and even the global system itself; and
- 2 risks that are essentially *cumulative* – for example degradation of ecosystems, continuing deforestation, water contamination and industrial toxic pollutants

Jeanne Kasperson and Roger Kasperson conceptualize both systemic and cumulative risk as induced by human action, arguing that many risks remain hidden from public view by ideology, competing societal priorities (for example economic development or poverty eradication), political marginality and cultural bias. Global environmental risk analysis calls into question current approaches to knowledge, knowledge management and knowledge generation. As Kasperson and Kasperson (2001, p7) write:

The idea that the future is negotiable, and that affected parties are now differentially involved (or not involved) in the negotiations, brings forward considerations of power, equity and social justice – and equitable outcomes and equitable processes for getting to those outcomes. The obstacles to broad public participation in creating global futures are many, ranging from lack of access to information and expertise all the way to brute exclusionary force. Equity and the future are linked not just through reference to 'responsibilities for future generations' but by questions of who controls access to the future and who chooses the trajectories of change. Those who

live in the present live, after all, in the layered remnants of a series of failed former utopias – concretized versions of earlier visions of how things might be.

Kasperson and Kasperson (2001, pp4–5) identify five important elements in understanding contemporary global environmental risks:

- 1 Global environmental risk is the ultimate threat.
- 2 Uncertainty is a persistent feature both of understanding process and causation and of predicting outcomes.
- 3 Global environmental risk manifests itself in different ways at different spatial scales.
- 4 Vulnerability is a function of variability and distribution in physical and socio-economic systems, the limited human ability to cope with additional and sometimes accumulating hazards, and the social and economic constraints that limit these abilities.
- 5 Futures are not given, they must be negotiated.

Kasperson and Kasperson schematically represent the processes involved in societal response to global environmental risk, identifying cyclical and iterative feedback loops. Their model attempts to show that failures to address environmental degradation may occur at various points in systems and may affect the driving forces by either mitigating or aggravating them. Although deliberately simplified, their model is an attempt to depict the integration and mutual interdependence of the social, political, economic and environ-

mental. Once society has recognized the signals denoting environmental changes, risks or threats, social institutions like the media and environmental groups, journalists and the lay public can, together with the experts, evaluate their nature and scope. The way this is done, the values and methods applied, and

the social and psychological assumptions exercised are likely to mean that these risk signals may be attenuated or amplified. Whatever the case, this social processing will influence the perception of risk and shape individual, group and institutional behaviour.

The Precautionary Principle

Principle 15 of the 1992 Rio Declaration on Environment and Development states:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

In other words, the precautionary principle suggests that it is wise to act prudently when there is sufficient scientific evidence, where action can be justified on reasonable judgements of cost-effectiveness, and where inaction could lead to potential irreversibility or demonstrable harm to people and the environment now and in the future. However, the precautionary principle takes on different hues depending on perspectives or world-views. For example:

- **Weak sustainability** – precaution has a place as a spur to innovation and managerial adaptation to make up for losses of environmental resources. Cost-benefit analysis is consequently very important; versus
- **Strong sustainability** – precaution defines an approach to living that is in harmony with the natural world.

Risk, complexity, uncertainty and the partial nature of knowledge have led to this important guiding principle becoming central to the sustainability debate. For O'Riordan and Cameron (1994), global environmental change means that the precautionary principle ought to be understood in three ways, as:

- 1 the requirement of collective action;
- 2 the requirement of burden sharing; and
- 3 the rise of global citizenship.

Three other factors are also important:

- 1 the need to go beyond scientific understandings;
- 2 the need to take proactive anticipatory action; and
- 3 the need to become more averse to risk possibilities.

For O'Riordan and Cameron (1994), the precautionary principle is most likely to be applied in the following circumstances:

- where new technologies are proposed in well-regulated regimes and where public opinion is instinctively or knowledgeably risk-averse;
- where the principles of regulation allow for judgement as to what is socially tolerable;

- where there is a national culture of care for the less fortunate and the defenceless; and
- where there is openness and accountability in policy formulation and decision-taking.

One major criticism of the precautionary principle is that it is vague and often open to various legal and operational interpretations. By reversing the burden of proof, such that any activity must prove that it will not cause harm, the precautionary principle is seen by some as potentially retarding development and innovation and consequently as unscientific. Those who take this view tend to favour narrow risk assessments based on probabilities derived from available but often imperfect evidence. It is these views that have informed the design of government regulatory approaches to genetically modified organisms (GMOs). A stronger version of the precautionary principle would suggest that GMO regulation should be based to a great extent on a potential to cause harm rather than on knowledge of actual harm. In other areas, such as emission regulations to combat climate change, devising a robust regulatory system may be even more difficult, because of the complexities of climate systems. Given this, Johnston and Santillo (2006, p6) suggest that the precautionary principle should 'be applied as a variety of precautionary approaches tailored for each issue area. Far from being unscientific or stifling progress, such approaches move towards the very highest, scientifically underpinned standards of environmental protection'. The debate will undoubtedly continue, and practice will evolve through ongoing dialogue and discussion; nonetheless, the precautionary principle is

already well established, with the Commission of the European Communities within the European Union firmly endorsing the necessity of its application. In a communication issued in 2000 (CEC, 2000) the Commission stated:

The dimension of the precautionary principle goes beyond the problems associated with a short- or medium-term approach to risks. It also concerns the longer run and the well-being of future generations.

Whether or not to invoke the precautionary principle is a decision exercised where scientific information is insufficient, inconclusive or uncertain and where there are indications that the possible effects on the environment or human, animal or plant health may be potentially dangerous and inconsistent with the chosen level of protection.

As Montague (2004) argues, the precautionary principle does not tell people what kinds of action to take. Rather, it assumes that the overriding aim is to prevent harm, and steadily policymakers are recognizing the importance of:

- setting goals;
- examining all reasonable alternatives for achieving those goals, with the expectation that the least harmful approach will be preferred;
- shifting the burden of proof to the proponents of new activities or technologies; and
- involving those who will be affected by the decision in the decision-making process.

Like sustainability, the precautionary principle too is 'a political act'.

Science, Knowledge and Sustainability

The interrelationship and tensions between industrial practices, business imperatives, public policy, political acceptability, social livelihoods, ways of life, cultural expectations, trust, scientific knowledge and capacity to predict are clearly apparent in many issues, whether we are talking of GM, nanotechnology or even fish farming. As Ihde (1997) notes, scientific truth often seems to be little more than scientific consensus, and the work of the Millennium Ecosystem Assessment and the Intergovernmental Panel on Climate Change demonstrates this. One problem for both scientists and non-scientists is how to acquire a perspective on scientific change that encompasses the idea of the whole Earth-as-planet. We sometimes become mesmerized by the truly amazing advances in scientific research and understanding, and we also, as Homer-Dixon (2002) reminds us, sometimes fail to realize how uneven these scientific advances are. Fast and fantastic in some areas, slow and uncertain in others. This often leads to 'ingenuity gaps' between the problems we have to deal with and the scientific tools we have at our disposal, because of:

- our own limited cognitive capacity to understand highly complex systems;
- the intrinsic difficulty of some scientific problems;
- the nature of scientific institutions, funding regimes and career trajectories, which tend to make interdisciplinary research and development difficult; and
- social and cultural values which are sceptical of the methods, ethical priorities and benefits of modern science and technology.

This is often compounded by a lack of resources, including, in some developing countries, a lack of highly trained scientists. Homer-Dixon (2002, p277) concludes that 'despite all our technological and scientific prowess, it's not at all clear that we really know what we are doing in this new world we've created for ourselves'. It is this anxiety that so troubles Bill McKibben (2003) in his thought-provoking book *Enough*, which dissects the meaning of being human in an engineered age.

Given so much uncertainty and complexity, sustainable development must be participatory, democratic and inclusive in probably every sphere – knowledge generation, political decision-making and policy implementation, risk assessment, environmental management, health, public communication and so on – if it is to be anything other than a large body of warm words. If society, social norms and expectations, and major institutions are part of the problem and of any solution, Beck's notion of reflexivity as self-confrontation is undoubtedly extremely relevant to the making of green knowledge (Jamison, 2001 and 2003). Contrasting forms of knowledge about nature and society derived from community, professional, militant activist and personal experiences are slowly combining to form new theories of and approaches to sustainable socio-ecological development. These forms of knowledge range from the empirically-based notions of bottom-up 'citizen science' to the professionalized top-down expertise of international NGOs, universities and think-tanks, the deep ecological action-orientated militancy of activist groups like Earth First!,

the meditative spiritualism of some religious people, and the knowledge management practices of business and government. There is certainly a need for a new extended approach to knowledge creation, what Funtowicz and Ravetz (2001, p178) term a 'post-normal science', where, instead of supporting what is too often presented as salvation, scientists deal mainly with managing uncertainties, so 'assuring the quality of the scientific information provided for policy decisions':

The new paradigm of post-normal science, involving extended peer communities as essential participants, is visible in the case of AIDS. Here the research scientists operate in the full glare of publicity, involving sufferers, care-givers, journalists, ethicists, activists and self-help groups, as well as traditional institutions for funding, regulation and commercial application of pharmaceuticals. The researchers' choices of problems and evaluations of solutions are equally subjected to critical scrutiny, and their priority disputes are similarly dragged in the public arena.

(Funtowicz and Ravetz, 2001, p192)

For German philosopher Martin Heidegger, tools and instruments, science and technology are the means by which human beings impact upon and perceive, model, and visually and imaginatively construct our view and understanding of the planet. Technology can allow us to see. Digital modelling, computer-enhanced imaging, and photographs taken by orbiting telescopes or in the lab by electronic microscopes all serve as extensions of ourselves. Science is embodied in technology, and scientific practice is embodied in much of our attitudes and behaviour, but sustainability practitioners have also highlighted the value of other more spiritual and/or sensual ways of seeing, in many ways reflecting the growing global influence of Buddhist thought and insight (Schumacher, 1974; Capra, 1991 and 1996; Kumar, 1992) and the growing value of traditional ecological knowledge, dreamtime and *kanyini* to us all.

Case Study: Biotech and the State of the Future

Nanotechnology has now superseded biotech as the new technological frontier, heralding amazing possibilities and potentially massive, unknowable, risks (Hunt and Mehta, 2006).

Phillip Bond, the US Undersecretary of Commerce for Technology, told the World Nano-Economic Congress held in Washington in 2003 that this miraculous technology had the power to make the blind see, the lame walk and the deaf hear, could cure AIDS, cancer and diabetes, and could enable the world to be waste-free, energy-efficient and clean (Shand and Wetter, 2006).

Nanotechnology is a 'platform technology'

offering possibilities for low-cost solar cells and sensors, faster computers, lighter and stronger materials, crack-resistant paint, self-cleaning windows and fish ponds, odour-eating socks, anti-bacterial bandages, 'smart cell' health treatments and so on. It also offers new toxicological risks operating at a nano-scale, with unpredictable consequences for human health, the global environment, and the economic and social wellbeing of developing nations, who are unable to afford or to generate nanotech research and development of their own. Whole industries and employment sectors

could disappear overnight. There have been many calls for caution and further evaluative research. Many companies have undertaken toxicological studies, but these rarely make it into the public domain. For many critics, it is the dominance of corporate commercial interests that has driven the nanotech revolution, with issues of social justice, government regulation and development needs being relegated in preference to the economic exploitation of the new technology. Shand and Wetter (2006, p94) write of the need for

serious and widespread public debate, a moratorium and global regulation:

With public confidence in both private and government science at an all-time low, full societal debate on nano-scale convergence is critical. It is not for scientists and governments to 'educate' the public, but for society to determine the goals and processes for the technologies they finance.

For many critics, the same still applies to the science and commercial exploitation of genetic modification.

Thinking Questions

- 1 How might sustainability be a political act?
- 2 What can be learned from the work of and controversy surrounding Bjørn Lomborg?
- 3 What role does science play in promoting sustainable development?
- 4 How can the layperson best make sense of the various scientific controversies and ethical issues?
- 5 How do we know whether a risk is real or imagined?
- 6 How should the precautionary principle be applied?

Connecting the Social with the Environmental: Social Capital and Environmental Justice

Aims

This chapter explores the social–environmental interface of sustainable development locally and globally by critically analysing the concepts and practices associated with social and environmental justice. The role of new

media, community development, social capital and environmental justice campaigns will be examined as key elements of the sustainable development process.

Human Society and the Environment

In many parts of the world, there is an intellectual and pragmatic transition underway that seeks a connective, holistic and essentially ecological approach to human development, recognizing the necessity of a trans-disciplinary approach to understanding and acting in the world. Following the 1992 Rio Summit, sustainable development was frequently represented graphically as three interlocking circles standing for the economy, society and the environment, and, although there has been much critical debate about economic growth, environmental limits and eco-efficiency, the language of economics still influences much of the sustainability debate. There is now frequent reference to various

'capitals' – *natural capital, economic capital, financial capital, human capital, cultural capital, symbolic capital and social capital* – by organizations as diverse as the World Bank and the charity Forum for the Future. For many, the environment (natural capital) means the natural world of forests, fields, animals, rivers, atmosphere, wilderness and so on. This relatively uncomplicated understanding leads to quite serious implications for individuals, social organizations and local-to-global political arrangements. The first thing to recognize is that the natural world has been shaped for literally thousands of years by the knowledge, capabilities and skills of human beings (human capital). Our fields and

woodlands are the result of agricultural transformations. Many of the world's deserts have been produced as a consequence of human activity. Our air quality, or lack of it, is often the result of changing modes and sites of industrial production, old and new technology (economic capital), and investment flows and processes (financial capital). Even the non-human animal world has literally altered shape as a result of selective breeding techniques and now genetic modification – practices inaugurated by human beings utilizing to the full their intellectual capital. Towns, cities and sprawling urban conurbations are obviously human constructs, and so is the quality of life within them, enhanced or otherwise by networks of trust and reciprocity and political arrangements (social capital). The look of the surrounding countryside is largely the product of our interactive social relationships with each other and the 'natural' world. Consequently, what many sustainability practitioners argue is that as citizens we must start taking responsibility for our actions as they impact on the wider environment, which will necessitate moderating our behaviour and altering our ideas, predispositions and preferences accordingly.

Human behaviour has had detrimental, and frequently dire, effects on our natural capital and the ecosystem services upon which our economies, livelihoods and lives depend:

- We are using up many finite resources – minerals and fuels – which cannot be replaced, and destroying renewable ones, like our forests and fisheries, upon which our economy, our standard of living and our quality of life depend.
- Many production processes create waste, much of it toxic, causing serious pollution

of rivers, land and the air we breathe. Increased CO₂ in the atmosphere, the consequence of burning fossil fuels like coal and oil, is a cause of global warming (the greenhouse effect), leading to unpredictable weather patterns, sea-level rises, floods, droughts, heat waves, freezes and so on.

- Modern methods of industrial production and technological innovation have given rise to a new range of risks, which affect people in their everyday lives but which cannot be fully known, understood or even anticipated. Thanks to the depletion of the ozone layer, sunbathing is now recognized as a direct cause of skin cancer. New 'more efficient' farming techniques have led to animal diseases which have jumped the species barrier and bring fears over food security.
- Species extinction and habitat destruction have relentlessly increased as economic development has meant more roads, more towns and more material consumption.
- Genetic modification of plants, animals and indeed of human beings exposes us to potential future harms (and benefits) which we have little understanding of and perhaps even less control over.

If we shift our focus on sustainability from the abstract or global to the local level, these implications and changes may be seen, and felt, more immediately. Many discussions of fashioning a 'sustainable society' or a 'sustainable world' are meaningless to most people if they require understanding abstract constructions not relevant in daily life or part of their practical consciousness. The locality, the village or the urban neighbourhood is the level of social organization where the consequences of environmental degradation are

most keenly experienced and where successful intervention is most noticeable, and there tends to be greater confidence in government action at the local level. The combination of these factors arguably creates a climate of understanding more conducive to the kind of long-term political mobilization implicit in the term 'sustainable development'. Moreover, as Yanarella and Levine (1992, p769) observe, sustainable community development may ultimately be the most effective means of demonstrating that sustainability can be achieved on a broader scale, precisely because it places the concept of sustainability 'in a context within which it may be validated as a process'. By moving to the local level, the potential for generating concrete examples of sustainable development are increased and, as these successes become a tangible aspect of daily life, the concept of sustainability will acquire the widespread legitimacy and acceptance that has thus far proved elusive (Bridger and Luloff 1999, p380). Many local communities have signalled their engagement by devising sustainability indicators, specifically incorporating action-related or environmental justice issues as ways of monitoring progress in ecological restoration and community participation and even of managing urban growth and regional development (Warner, 2002). For many writers and activists, community-inspired or -led ecological restoration projects offer a 'giving back to nature' of what human beings have unjustly and damagingly expropriated from it, in the process enabling significant learning experiences that widen

understanding of human society, of people's relationship to nature, to consumption and to production. Leigh (2005, p8) notes:

It offers the average citizen insight not only on how humans impact their immediate landscape, but on the larger biotic community as a whole, an insight that perhaps can be viewed as more valuable than the ecological restoration itself. The environmental crisis and its connections to pollution, overdevelopment, population, consumption and scarcity are strikingly realized by community volunteers when the parcel of their restored landscape is shown to be affected by these forces.

A clean and healthy environment is essential for human health and wellbeing. It is only just and is as such a human right as the many thousands of people harmed by the 1984 disaster in Bhopal know full well. About 500,000 people were exposed to toxic chemicals following a gas leak from Union Carbide's pesticide plant. More than 7000 people died within a few days and 15,000 died within the next few years. Some 120,000 people are still suffering from chronic and debilitating illnesses for which treatment is largely ineffective and for which adequate compensation from Indian and American courts has still to be granted (Amnesty International, 2004). The existence and effectiveness of community health monitoring, research and treatment has been due to the continuing participation and action of individuals in partnership with charitable bodies such as the Sambhavna Trust (Dinham and Sarangi, 2002).

The Importance of Social Capital: Beyond Self-interest

In the 1960s, ecologist Garrett Hardin illustrated the finite nature of our world and the disastrous consequences that would ensue if we all rationally pursued our own economic self-interest in the highly resonant modern parable 'The tragedy of the commons.' It offers a vivid picture of a pasture on which a number of herdsmen keep as many cattle as they can. As a rational being, each person inevitably attempts to maximize his return by adding one additional animal to his grazing herd. His gain is obvious but his loss is not, as the negative effect of grazing one extra beast will be shared by all the herdsmen. Rationally calculating the obvious benefits and gains, the rational herdsman concludes that the only sensible course to pursue is to add another animal to the herd. And then another, and another ... However, this same conclusion is reached by every rational herdsman sharing the common pasture land, and that is the basis of the tragedy. Each person is locked into a system that compels him to increase his herd without limit in a world that is inevitably and clearly limited. 'Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons,' writes Hardin (1968, p354). Freedom is the recognition of necessity and complexity, rights and responsibilities. It is also the key to understanding the importance of social capital in the sustainable development process: it is in the long-term interest of everyone to cooperate and work to care for 'the commons' and to share its benefits.

Extending this insight in his discussion of the sustainability framework The Natural Step, David Cook, in explaining the connection between human society and nature's systems,

reflects on the direct correlation and connections between the social and the ecological and the various consequences that may ensue:

On the one hand, social sustainability's dependence on wider ecological sustainability is becoming more evident. As we continue to undermine nature's capacity to provide humans with services (such as clean water and air) and resources (such as food and raw materials), both individuals and the social relations between them will be subjected to growing amounts of pressure. Conflict will grow and public health, personal safety and other negative social factors will increase in the face of ecological threats and decreased access to nature's services and resources.

On the other hand, overall ecological sustainability has become dependent on social sustainability. If a growing number of people are living within a social system that systematically constrains their capacity to meet their needs, then participation and investment in that system will break down. The end result of such socially unsustainable development is rising violence, alienation and anger. People will place no trust at all in nature once social trust collapses and various modes of barbarism develop. Conflict, poverty and other forms of social stress will result in more environmental degradation.

(D. Cook, 2004, p45)

'Social capital' is a term we can use to denote those relationships by which groups and individuals communicate, network, build trust, enter into dialogue, resolve conflicts, identify and solve problems, and realize collective and individual potential as agents of sustainable development. Just as we talk about ecological carrying capacity, perhaps there is a need, as Roseland (1998) suggests, to speak about, and nurture, our 'social caring capacity'. Social

networking is part of this and is a key element in effective sustainable community development (Gilchrist, 2004). Although locality and a sense of place remain important in fostering community identity and belonging, social networks invariably extend well beyond one specific geographical location. The formation of communities based on interest is a means of collectively empowering oppressed or powerless groups, particularly those associated with gender, disability, ethnicity, age and/or sexual orientation. Additionally, people who experience relatively high degrees of social interaction with others often exhibit higher degrees of contentment than those who do not. The essence of community, then, is to be found in the nature and qualities of relationships as much as the qualities of a particular place. The nature of the built environment can, by turn, hinder or enable social interaction according to the existence or otherwise of places for people to meet and chat while shopping, walking, working or resting. Wide pavements, traffic calming devices, and open but well-viewed public or urban green spaces allow for occasional, chance or intentional encounters (Barton, 2000). Many classic studies have described community in exactly these ways (see, for example, Young and Willmott, 1957; Roberts, 1971), and for those whose intention is to build (sustainable) communities, networking has become a core competence, not least because one of the most important functions of networks is their capacity to share ideas and values and develop trusting relationships and methods of cooperation and collaboration. Networks also frequently serve to facilitate reflexive and critical social dialogues, the sharing and accumulation of collective knowledge and understanding, and social and community learning, creating avenues in

which common ideas and purposes can be recognized and expressed. And because cultural diversity frequently challenges dogma and prejudice, community cohesion often emerges through complex social articulations that celebrate ethnic and other difference. For diversity to be celebrated there need to be trusted public and/or private spaces (and places) that create convivial, accessible and accommodative environments. Such spaces can be created or customized by community members themselves through project activity, community art work, social events and gatherings. The annual Notting Hill Carnival is one spectacular example of a civic and cultural celebration of difference. As Gilchrist suggests, a community's empowerment is usually achieved through both learning and collective action or organization:

Challenging powerful institutions and oppressive practices is a crucial aspect of community development, as is changing the flow of power through organizations and communities. Collective action is empowering in its own right, because it enables people without much power to assert their interests and influence decision-making. Networks contribute to empowerment on a psychological level, by enabling people to compare their experiences, learn from each other's successes, and develop greater awareness of the wider politics of inequality and oppression.

(Gilchrist, 2004, p44)

Empowerment doesn't simply appear as a result of a single action or event, although a transformative, life-changing experience is often a significant catalyst. Rather, as Shuftan (1996) writes, empowerment should be viewed as a continuous process that continuously enhances people's social understanding of anti-oppressive practice, developing their capacity to exercise some control over their individual and collective lives.

Building Social Networks

Throughout the post-war years, successive UK governments have recognized the need to reform local governance and encourage social and civic participation, devising spatial and other policies articulating many principles of sustainable development, notably social justice, social inclusion, citizenship, equity, and sustainable environmental and economic practices (Raco, 2007). Local Agenda 21 encouraged participatory democracy, particularly when local community members deliberated upon, chose and worked to meet meaningful sustainability indicators. Civic engagement has been nurtured and social capital generated (Barton, 2000), but this is not the full story. Contemporary failures to engage people are often seen as resulting from a decline in membership of voluntary associations that produce the relationships and networks of reciprocity, trustworthiness, obligation and perceived mutual benefit (in other words social capital) necessary for participation and engagement (Putnam, 2000). For James A. Coleman (1990), social capital influences the ability of people to participate in social and community affairs and is often a by-product of everyday leisure or hobby activities. There is a strong link between social activity and civic participation. Recently, Putnam (2007) has cited the US 'megachurch' phenomenon as an interesting exemplar of community-based social interactivity. Megachurches have very low barriers to entry and people can leave just as easily. Nonetheless, they generate intense commitment, often through the organization of a range of small social leisure groups – mountain bikers for God, volleyball players for God, cancer survivors for God and so on.

Despite appearances to the contrary, members' emotional commitments are directed to other people rather than to theology. Friends and helpers are sought and gained. So, Putnam asks, can what occurs within these organizations be replicated elsewhere?

An important distinction is sometimes made between *bonding* and *bridging* social capital (Putnam, 2000; Woolcock and Narayan, 2000). Bonding social capital tends to be characterized by dense, multifunctional ties and strong, generally localized, trust, whereas bridging social capital is characterized by weak ties. Woolcock and Narayan argue that bonding social capital is an effective defence against poverty but less valuable for economic and social development – the difference between 'getting by' and 'getting on'. But Portes (1998) also notes that strong ties and social norms may enforce a conformity that militates against working with others, leading to social exclusivity or the reproduction of such traits as ethnic prejudice, political marginalization, suspicion and xenophobia. The increasing numbers of gated communities in the US, Europe, South Africa and China is arguably one manifestation of this (Romig, 2005), since gated communities are protected and protective spaces with delineated and defensible boundaries and rules that geographically define the existence of a 'community'. As Low (2003) notes, residents in gated communities are interested in a particular type of community – one that protects children, that keeps out crime, that looks neat and tidy, and that enjoys quality services and good amenities. For some residents, the architecture and spatial design express an ideal, a practical utopia, separating the public from

private, the suburb from the city, thereby precluding a potentially rich experience of 'community' in the interests of an imagined peace of mind stemming from uniformity and familiarity. In Managua, Nicaragua, a complete layer of the city has become disembedded from the general urban fabric by a series of high speed roads, roundabouts and the privatization of security, which through a planned process of social and spatial segregation has produced a fortified network of gated communities for the city's elites (Rodgers, 2004).

More progressive social initiatives do exist, but many have only short instrumentalist lifespans, with problems compounded by differential levels, capacities and predispositions to participate. The educated and materially comfortable classes tend to gain disproportionate attention, time and resources to secure their needs and wants. They have political clout, economic significance, and the skills and contacts to be effective. Unfortunately, there is sometimes a failure to connect, a resistance to the emergence of what political philosopher John Rawls (1999) terms 'a moral personality', where self-interest overrides the common or public good, where seeking the rightful redress of a grievance achieves only partial success. For example, seeking redress for the problems of traffic congestion may not necessarily facilitate the consideration of wider issues – the development of an integrated public transport system, for example. Local environmental campaigns are often characterized as NIMBYism (not in my backyard). Concluding his historical survey of urban poverty initiatives in the US, Robert Halpern (1995, p229) writes somewhat despairingly of:

our reluctance to create a somewhat larger frame of mutual interest, if not mutual responsibility, leaving us with no ways to live

together as a people or to address societal problems. Our preoccupation with creating and defending boundaries tends constantly to narrow our sense of identity – as does the constant preoccupation with comparing, and with similarities and differences. ...

Community groups historically have proven incapable of sustaining coalitions that did not necessarily address immediate community needs but might change harmful policies and practices over time.

Social capital, civic engagement and democratic renewal cannot be based solely on utility. A value change is required, which in turn perhaps points to the inadequacy of Coleman and Putnam's concept of 'social capital' if viewed largely as an exchange relationship. If something is worth doing, it should be done for its own sake as well as for any external benefit. The principle and practice of civic and community participation needs to become part of what Bourdieu (1977) termed the *social habitus*, that is the production of systems of durable transposable dispositions, structuring structures, matrices of perceptions, appreciations, predispositions, tendencies, norms, values and actions. In her study of democratic participation in Brazil, Abers (1998, p63) suggests that a democratic habitus and collective moral personality can be constructed from virtually nothing. People learn about democratic practices through experiencing them. They gain confidence, as well as skills and habits of collective decision-making, through participating in actions that have an evidently good effect. They learn that selfishness can easily backfire while being concerned about the needs of others does not necessarily mean losing out oneself. Nonetheless, material poverty and educational deficits need to be addressed if people's potential for and sense of collective efficacy and personal agency is to be nurtured. Existing

predispositions to exclude or to conform need to be challenged. Existing structures, relations and processes of power, systems of administration and governance, and vested interests need to be contested and reformed, so that new sustainable habits, perspectives and values can emerge – from the bottom up and dialogically. Projects that involve both social and ecological concerns but deny the importance of either are likely to falter as the initiative to build the Huangbaiyu Sustainable Village in China demonstrates. This ecovillage

has houses designed and built to high ecological specifications, based on the guidance of the American green architect William McDonagh, but failed to attract local buyers, largely because local people, with their limited means, prioritized social, educational and employment issues over the benefits of living in environmentally sound, comfortable and attractive dwellings. There was a lack of understanding, a lack of dialogue, between the fundamental needs of people and those of the ecosystem (Sudjic, 2006).

Networks or Community in the New Media Age

The practice of community participation, democratic engagement, social communication and social relationships will undoubtedly be affected by the massive changes in information and communication technology (ICT) that are altering the nature of civic networks and networking, pressure group campaigning, education, urban management, leisure, politics, the labour process, and social inclusivity. The relationship between social capital and the internet is complex. Although this chapter has referred to community and social capital as being basically geographically located, rooted in actual space and place, recent attention has turned to virtual communities that are not limited spatially or indeed temporally. Bordiga et al (2002) notes that good existing levels of social capital in a real-world community tends to positively mediate the impact of internet access on individual volunteering and collective community action. Hampton and Wellman (2003) note that the internet effectively supports weak ties in suburbs, where residents are spatially dispersed, facilitating various forms of 'neighbouring' – chatting

about local issues and so on. Wellman et al (2001) and Wellman and Haythornthwaite (2002) suggest that it is now helpful to replace geographical notions of community with the concept of social networks. If we look at communities as networks of relationships, our picture of weakening social ties is replaced by a view of strong and weak friendships flourishing both within localities and between and across boundaries. People frequently have a much richer set of relationships than those associated with neighbourhoods. In the age of the internet, it may be that community informatics, that is to say computer-shaped social relations, are more important for stimulating and supporting cross-boundary relationships than (re)creating a model of community which may be flawed or may have never existed in the first place, as community informatics initiatives are often more concerned with creating spaces than maintaining places (Keeble and Loader, 2001). Rheingold (2000) warns against the 'commodification of community', but stresses the value of community networking via the internet, citing the

work of Virginia Tech and the Blacksburg Electronic Village project as a successful example of networked neighbourhoods and technologically enhanced community development. Pitkin (2006) discusses the role of ICT in building local capacity, suggesting that the quality of particular places may be improved if a reflexive and critical approach is adopted by community members/IT users. ICT and web tools such as geographic information systems (GIS) can provide a wealth of information for local communities to analyse, discuss and use in formulating local strategies, plans and actions. Local and regional governments frequently extol the virtues of ICT in improving services, stimulating local economic development and enhancing democratic participation, but, using his own experience with the Neighbourhood Knowledge Los Angeles project, and referring to a wide range of literature, Pitkin suggests enthusiasts and practitioners should:

- avoid being seduced by ICT into devaluing face-to-face interaction;
- not assume simple, straightforward linear effects in any application of new media and communication technologies to human social community; and
- not allow experts to usurp the role of community members in their design and application of information and communication systems.

Media and communication corporations have an interest in promoting new technology, frequently stressing in their marketing and promotion the socially connective functions

this technology affords. Cisco Computers launched their Human Network with a wave of attractive, intriguing and resonant images and ideas, including a group of Buddhist monks and their trainees avidly huddled round a laptop. There is undoubted truth in the hype, but it is important to remember that ICT is still in an emergent phase, that technologies can be applied in various ways according to the social, cultural and political contexts, and that, unless information remains free and readily accessible, democracy will suffer. As Harris (2003) notes, cell phones and the internet enhance their users' capacity to flexibly organize and control their lives, providing additional opportunities for professional contact, security, emotional bonding through informal chat, gathering information and entertainment. However, community identity and community life also depend on the nature and quality of social interaction, of how people do indeed connect. ICT may stimulate more connectivity between people who already know each other and may stimulate new connections between people who have something in common, for example an interest in the environment or sustainability, but Harris questions whether such individually orientated interactions reduce 'serendipitous connections' or devalue the weak ties that are so important in building social capital. Furthermore, people who lack the skills or confidence to use the new technologies may remain excluded, as will those whose interests and values simply do not fit. A sustainable community cannot be built if this occurs, since sustainability requires inclusivity, a learning culture, mutual respect and trust.

Box 4.1 Sunderland City Council's e-Neighbourhood Programme

Electronic village halls, better known as 'EVHs', in Sunderland, northeast England, are a critical component in the issue of accessibility to the Council's services and promoting social inclusion. They are neighbourhood-based facilities offering facilitated access to technology. They are free at the point of access, operate on flexible hours, and offer a range of services and support for local people to use ICT to meet their individual needs.

A key feature of the EVHs is that they offer a supportive, informal environment, with help on hand to use the technology and to explore how it might help individuals achieve their aims. Primarily, the user experience of an EVH is intended to be a 'social' experience, with technology as the enabler and not as the *raison d'être*, where decisions on provision are user-led. They are also a primary source of consultation and evaluation for the City Council website and the development of the council's e-services.

EVHs reflect the different types of communities in which they are located; they represent the place 'where people go'. The Community EVH Strategy reflects the theory that it is essential that the needs and requirements of the local communities and neighbourhoods are the priority.

Source: www.sunderland.gov.uk/public/editable/projects/e-neighbourhoods/default.asp.

ICT, Civic Intelligence and Green Culture

New emerging media technologies affect possibilities for community development, lifelong learning, social capital, civic engagement, political activism and support for localized actions (Van der Donk et al, 2004). Horton (2004) explores how the internet is influencing environmental politics and 'green culture' in Britain, which places great value on face-to-face interaction. The local community Horton studied in the northwest of England was not especially rooted or determined by locality, but rather by a sharing of tastes, values and practices that made members somewhat distinct from mainstream society. Despite a reluctance to embrace the car and the television, new computer technologies were quickly and readily incorporated into everyday life, because the computer's capacity to facilitate data management, writing and, most significantly, email communication served to 'lock in' a person's position and commitment to the green movement

networks. Emails took basically three forms:

- 1 **information emails** that served to reproduce and maintain existing weak ties among the sometimes quite dispersed activist fraternity;
- 2 **outreach emails** that sought to strengthen and development these weak ties through encouraging members to take action on a particular issue or campaign; and
- 3 **reinforcement emails** that built on, continued and consolidated strong ties and face-to-face meetings and sociality.

New media technologies enabled these green activists to connect easily on green issues such as the more sustainable use, reuse and recycling of what is actually a fairly environmentally unfriendly computer technology itself, through a computer 'swap shop'. Horton (2004, p749) concludes:

The main effect of the internet's arrival into the everyday lives of environmental activists has thus been not the eclipsing of embodied, local environmentalism by a virtual, dispersed environmentalism, but the invigoration of local green networks and an increase in face-to-face, as well as virtual, interaction between geographically proximate activists. Consequently, there is today a more complex interweaving of activists' virtual and corporeal socialities and geographies, but one that tends predominantly to result in the strengthening of activists' green identities. Overall, the new opportunities for virtual interaction provided by information and communication technologies promote a more intense sense of local dwelling among environmental activists.

Horton's study illustrates how ICT can be socially appropriated by a particular group or social movement within civil society and, as Day and Schuler (2006) argue, has the potential to facilitate the emergence of a counter-culture to the dominance and remoteness of the corporate-generated 'space of flows' in our networked society (Castells, 1996). Day and Schuler offer an alternative conception for community and civic practice, bringing together recent developments within civil society, potential and actual opportunities afforded by new media technologies, and particular issues, like environmental degradation, that confront the contemporary world. 'Civic intelligence' posits the notion that ordinary people can help fashion and define their future, as intelligence is something possessed by groups and individuals, basically describing the capacity to make sense of

information and so influencing responses to environmental and other challenges. Civic intelligence is a combination of community, civic and social networks requiring concerned people, ethical principles (inclusivity, justice and sustainability), and an enduring capacity to learn, develop and refine knowledge and understanding. New media and communication technology has an important role to play in breaching barriers that have previously maintained and reinforced social ignorance, disconnection and passivity. The technology lends itself to implementing environmental monitoring, supporting environmental justice campaigning, and enhancing communication and networking opportunities among civil society groups (Horton, 2004), and offers myriad possibilities for discovering and engaging with local-global issues such as global poverty and climate change. Day and Schuler suggest that the fundamental characteristic of the network society is the potential for people across the world to connect with each other. Whether active or passive, the world's various populations coexist and interrelate within both global natural ecosystems and the global media ecology. New 'communities' can develop around new shared interests, aims, values, worldviews and concerns, and apply, adapt and/or develop socio-technical platforms to support and animate these concerns, networks and relationships. These may be local or global – or both simultaneously. We will return to this topic in Chapter Nine.

Environmental Justice and Sustainable Development

Environmental justice is based on the principle that all people have a right to be protected from environmental pollution and to live in and enjoy a clean and healthy environment. Environmental justice is the equal protection and meaningful involvement of all people with respect to the development, implementation and enforcement of environmental laws, regulations and policies and the equitable distribution of environmental benefits.

(Commonwealth of Massachusetts, 2002, in Agyeman and Evans, 2004)

As the American environmental movement emerged in the 1970s, it was soon evident that few people of colour had participated in the various campaigns and actions of that period. It was also noted that, as some polluted areas were cleaned up, little action was taken to ensure the neighbourhoods of ethnic minorities were improved (Taylor, 1997). In response to this, the environmental justice movement emerged in the 1980s, comprising Latinos, Native Americans, Asians and African Americans. This changed the social and political complexion of the environmental movement, shifting its centre of gravity away from the primary white middle class concerns of wildlife, wilderness and the ecologies of the 'natural world'. 'Justice' became the defining principle and rationale for this new movement, which addressed linked issues of class, ethnicity, race, gender, socio-economic inequality, and the blatant discrimination clearly evident in the distribution of environmental impacts and their costs. Environmental justice campaigners are concerned with correctional and distributive actions, taking a system-wide view that asserts, for example, that toxic waste should not be dumped in my, or for that matter

anyone's, backyard. Such an approach has helped rearticulate the meaning of the term environmental, with homelessness, poverty, hazardous working conditions, health and safety at work and in the surrounding communities, gender inequality and so on being significant elements of the expanded 'environmental' worldview, bringing it closer to the notion of sustainability. Women of colour have played a prominent role in the development of the environmental justice movement, with eco-feminism helping to open up many environmental debates and dialogues, if not always in practice moving much beyond the iniquities of patriarchal relations, which for Taylor have preoccupied many, though not all, white eco-feminist writers:

[Women of colour] are dominated not only by white men but also by men of colour and by white women. In addition, they work closely with men of colour who are also dominated by white men. So while eco-feminists perceive a unidirectional form of domination (in which females do not dominate and in which their dominator is not dominated), women of colour perceive sexual domination differently. The domination is multidirectional.

(Taylor, 1997, p63)

The energetic and increasingly well-documented political struggles against pollution, dumping and health inequalities have required, maybe forced, an inclusivity and holistic consciousness that has so often eluded many environmentalist philosophies and worldviews in the past. The struggles of indigenous peoples over their ancient land rights, urban minorities fighting against prejudice and discrimination, and victims of natural

disasters perceiving institutional racism as a factor behind the slowness of Government relief have all contributed to this development. Many interviewees in Spike Lee's 2006 documentary about Hurricane Katrina, *When the Levees Broke*, were in no doubt about this. Environmental justice campaigns are therefore not confined to any one locality, country or region. They are truly global phenomena, as Agyeman et al's (2003) collection of empirical studies indicates, where the local and global are seen as being one and the same. For Dobson (1998), however, fundamental ethical questions regarding the general distribution of environmental goods and bads remain. Agyeman et al (2002, p78) argue:

Sustainability ... cannot be simply a 'green' or 'environmental' concern, important though 'environmental' aspects of sustainability are. A truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity, are integrally related to environmental limits imposed by supporting ecosystems.

Although the environmental justice movement emerged in the US in the 1980s and 1990s, examples of environmental justice campaigns can be found across the globe. The Chipko movement, for example, was a peasant movement in the Uttarakhand region of India aiming to prevent the logging of trees and to reclaim threatened traditional forest rights. The movement began in 1973 and Chipko activists extended their protests to include limestone mining in the Dehradun Hills and the Tehri Dam. They later founded the Save the Seeds movement in the face of the growing encroachment of biotech corporations in their cultures, lives and livelihoods. The Chipko protests were also significant because of the mass participation of women villagers, on whose work many local

economies depended. Their struggles and campaigns attracted significant attention from the international environmental movement because they successfully raised global awareness of ecological concerns. As Guha (2000) notes, the Chipko activists were seen by many academics and political commentators as being very different from environmental campaigners in the West, as they represented an 'environmentalism of the poor', seeking both justice and sustainability (Martinez-Alier, 2002). In Hindi, the word *chipko* means 'to hug' and Chipko activists would often hug trees to protect them. Indeed, the resistance to the environmental, social and economic exploitation of developing world nations by developed nations is viewed by some analysts (Agyeman, 2005; Escobar, 2006a) as primary examples of environmental justice action adamantly and articulately defending their places, environments and ecosystems. Environmental justice activists have long been dissatisfied with the narrow environmental focus of many traditional green groups, which tend also to be predominantly white, middle class and frequently anti-urban. Habitat conservation and ecological restoration are certainly important issues impacting upon the quality of people's lives, but environmental justice encompasses much more – transport and access, air quality, toxic pollution, poverty, poor housing, unemployment and all the other major concerns of disadvantaged people. This has meant that the environment is broadly interpreted as denoting where people live, learn, work and play. Given this, environmental justice campaigns are inevitably quite anthropocentric in orientation, but Agyeman (2005) passionately argues for a fusion of environmental and sustainability campaigns at local, regional and national

levels that clearly articulate justice and equity as central defining principles. With reference to Shutkin (2000), he notes that, although narrowly based civic environmentalism has a role, a more broadly focused civic environmentalism conceptualizing sustainability holistically through addressing gender, age and race is pivotal in fashioning a more proactive 'just sustainability'.

In Britain the Environment Agency (Mitchell and Walker, 2003) and Defra (Lucas et al, 2004) have identified environmental injustice and social deprivation as very real problems for many communities, making clear reference to transport, local services, housing, health, urban regeneration, waste, climate change, quality of life and related issues. Noting that research into environmental justice in the UK has not been as sophisticated or extensive as in the US, Lucas and her co-writers (2004, pvi) conclude that:

- Where a neighbourhood or area experiences one environmental problem, this is rarely in isolation.
- Ill health and reduced quality of life is usually the result of an accumulation of these problems (poor housing, inadequate local services, etc.) over an individual's lifetime or even over a number of generations.
- Some sectors of the population are consistently more adversely affected than others, and these are almost always those that are already recognized as the most vulnerable.
- Environmental ills may not only self-perpetuate, but also lead to other environmental, economic and social problems if left unaddressed.

Environmental justice is also about reconnecting. In an article in *Resurgence* (1997) and more fully in his book *Soil and Soul* (2004), the academic and activist Alistair McIntosh has written eloquently about the restoration, to the people living on the Hebridean island of Eigg, of their land, their community, their culture and their historical memory. For McIntosh, environmental justice means retrieving a spiritual connection to the land, to nature and through this to oneself. It refers to community members experiencing what the radical educator Paulo Freire (1996) once termed 'conscientization', a combination of conscience and consciousness, that reveals a community's and an individual's true place in the world and the effects of unequal relations of power and wealth on lives and livelihoods. For McIntosh, heritage is not a commodity to be bought, sold and consumed but is a living thing, and land rights are important to people across the world. On Eigg, the islanders campaigned to reclaim their heritage, raising £1.5 million to buy the island from its laird. McIntosh notes that, at 7400 acres, Eigg represented just 1 per cent of the Scottish Highlands under private ownership. Instead of private landlordism, McIntosh advocates the establishment of community land trusts, like the Eigg Trust, where rents support community self-management and where, as in the crofting community, tenancies may be inherited, thereby allowing for both individual enterprise and communal supervision. So, like the islanders of Eigg, community members in many areas of the world may, in order to control their futures, need to re-vision, reorganize, and work to re-empower themselves and reassert their rights.

Environmental Justice and Social Action

In London, the Mayor's Commission on the Environment noted early on in the life of the new Greater London Authority that social disadvantage and poor environmental quality should play a key role in the city's sustainable development policies and that sustainability should be central to many of London's key strategies. The capital city has over 7 million residents, over 300 languages are spoken, and although there is great wealth, there is also considerable poverty, with a disproportionate percentage of black and other minority ethnic groups experiencing the latter (Adebowale et al, 2004). Poor air quality, limited access to green space, noise pollution, poor housing, fuel poverty and respiratory problems are significant issues affecting many individuals and neighbourhoods. To combat such problems, the London Sustainability Exchange (LSX), a partnership body led by the charity Forum for the Future and including Groundwork, the Mayor of London, Business in the Community and many London Councils, has called for more effective leadership, more detailed mapping of inequalities and injustices, and better water and resource management, and has worked with many local neighbourhood communities to lobby for change. They have made significant improvements themselves. In the Marks Gate community in the London Borough of Barking and Dagenham and the Pepys Estate community in the London Borough of Lewisham, LSX is working with local residents to develop a local area map, using GIS to highlight 'trouble-spots', create an action plan to resolve environmental poverty issues, and empower 'community ambassadors' or local leaders to influence local decision-making and

social behaviour. This capacity-building exercise develops experiences of earlier projects aiming to foster green lifestyles that have worked with members of the Bangladeshi and Somali Muslim community in Tower Hamlets and with Hindu communities aiming to improve water conservation. In both areas, a cultural and particularly religious resonance was established through referencing Quranic or Hindu teachings and offering talks and workshops in Mosques and Temples on the sacred nature of the environment and the need to value and conserve natural resources.

In the US, Bullard and Johnson (2000), Lerner (2005) and Bullard (2005) show how toxic pollution, health, liveable neighbourhoods, racism, and land and human rights combine in many environmental justice campaigns involving African Americans, Native Americans, Hispanics, and other black and minority ethnic groups in the US. In what appears to be a deliberate understatement, Bullard (2005, p22) notes that 'making government respond to the needs of communities composed of the poor, working class and people of colour has not been easy'. Changes to the environmental protection paradigm have been due to the lobbying and campaigning activities of a loose alliance of grassroots and national environmental and civil rights activists, but, as many observers have argued, the real problems are deeply rooted in the institutionalized racism that has characterized the history of land-use policy. Zoning has enabled dirty industries to infiltrate established communities. Environmental regulations have been either evaded or weakly enforced. For Wright (2005), slavery

begat environmental racism and injustice, which can be seen in its purest form along Louisiana's Mississippi River 'cancer alley' or 'chemical corridor', which produces around 20 per cent of the petrochemicals in the US. Many communities have been destroyed, poisoned or relocated by this highly profitable, and, in Louisiana, subsidized industry. Wright (2005) and Lerner (2005) tell the story of the residents of Diamond, a small African American mixed-income community, located within in a manufacturing complex that in 1997 released 2 million pounds of toxic emissions into the atmosphere. The community subsequently lobbied Shell, whose refinery was a massive emitter of carcinogens, to buy them out and move them to an area where they would not experience the devastating health problems associated with the toxic pollution plaguing their neighbourhoods. In 2002 Shell finally agreed. The environmental justice campaigns in Diamond, and other similar communities, have an uncomfortable historical resonance, because some relocated communities were originally established by freed slaves following the Civil War. In another example, activist and academic David Pellow (2002) analyses the waste recycling industry in Chicago, developing a fourfold framework for evaluating environmental racism and injustice in the process: first, the environmental history of racism in a particular place; second, the role of multiple stakeholders in the environmental conflicts and disputes; third, the effects of social stratification – race and/or class; and fourth, the ability of the least powerful social groups to shape their struggles for environmental justice. Pellow (2002, p9) identifies a number of indicators of environmental inequality and/or racism, including:

- widespread unequal protection and enforcement against hazardous facility siting in poor neighbourhoods and communities of colour;
- disproportionate impact of occupational hazards on the poor and workers of colour;
- the abrogation of treaties with native populations, particularly with regard to mining, waste dumping and military weapons testing;
- unsafe and segregated housing;
- discriminatory transportation systems and zoning laws;
- the exclusion of the poor and people of colour from environmental decision-making; and
- the neglect of human health and social justice issues by the established environmental movement.

For Pellow, industrial production and consumption is a never-ending 'treadmill' fired by the ideology of economic growth and real conflict between groups whose interests frequently vary and are often opposed. He shows how, and why, construction demolition dumps were located in many African American communities in the 1980s, how an incinerator was sited in the African American community of Robbins and how a non-profit recycling initiative was replaced by a profit-based programme run by a big corporation. The least powerful had the least influence on policy decisions and suffered accordingly. Minority workers, including homeless and indigenous people from the poor areas where waste had been dumped, were employed as 'alley entrepreneurs' to collect contaminated recyclables to be exchanged for cash. The work was hard, of low status and hazardous to health, resulting in many workers struggling

for dignity and autonomy. Recycling work is not necessarily fulfilling and, as in Pellow's study, can become just like any other exploitative and degrading business activity if the social and labour implications are excluded from environmental goals. In *The Silicon Valley of Dreams*, Pellow and Park (2002) demonstrate how the hi-tech information society rooted in California's Silicon Valley rests on a production process that is toxic to both land and people. 80 per cent of the production workforce are new immigrants, women and people of colour. Wages are low and jobs are tedious and in some instances potentially injurious to health. Housing costs are high. Personal testimony bears witness to environmental injustices spreading over years, with people telling stories of chemical spillages, land and air pollution, miscarriages, birth defects, asthma, cancers, death, community resistance and labour protest. In reviewing the book, Stacey Warren (2004, p402) states the contradictions very clearly, calling for a politically engaged scholarship:

In short, it is almost inconceivable that this is the same Silicon Valley heralded by the media and in the popular press, or analysed as part of the growth of hi-tech industrial landscapes. What is treated parenthetically in otherwise sound treatments such as Castells and Hall's (1994) classic examination of 'Technopoles', is brought out into the light here. The same broad, global processes inform both, but by subtly shifting the focus to the production worker herself, Pellow and Park change forever the way we think about Silicon Valley. At the outset of the book, the authors describe themselves as engaged in 'advocacy research', which they define as 'the theory and practice of making the scholarly enterprise more application-oriented, more sustainable and more relevant to communities' (p21). Indeed, this seems the only responsible way to study Silicon Valley.

The Silicon Valley Toxics Coalition (SVTC) was formed in 1982, when groundwater contamination was discovered throughout Silicon Valley. Toxic chemicals had leaked from underground storage tanks formerly considered safe. Over 100,000 homes in the San Jose area were exposed to toxic chemicals emanating from the Fairchild computer chip factory. Workers and community members suffered a range of illnesses and started to campaign against this environmental injustice. The coalition of hi-tech workers, community residents, environmentalists and emergency workers campaigned successfully for state and federal legislation to monitor these types of tanks. The SVTC has also helped to mobilize and organize communities in successful campaigns to the Environmental Protection Agency (EPA) to secure a proper clean-up. The health effects of toxic contamination can be severe and long lasting, so the SVTC has developed a local and global profile for research and advocacy, publishing a number of reports, videos and guides on pollution and environmental injustice and how to combat them. Agyeman (2005) considers the coalition to be a clear example of a 'just sustainability' organization and Ted Smith, SVTC's senior strategist and co-editor of *Challenging the Chip* (Smith et al, 2006), argues forcefully that the industry's extremely harmful effects can be avoided if the will and appropriate schemes are in place. Computers quickly become obsolete, many 'old' models are simply dumped in landfills or sent to the developing world, and new chemicals incorporated into new machines have often been inadequately tested before use. However, as a result of various campaigns like 'Computer Take Back', large companies like Dell are taking back and recycling their products as well as offering free recycling of some non-Dell computers to customers who purchase a Dell.

Box 4.2 SVTC vision for sustainable communities in Silicon Valley

SVTC is located in Silicon Valley, the birthplace of the hi-tech revolution and location of many electronics manufacturing facilities. Hi-tech workers and the communities surrounding these facilities suffered from dramatic health problems from toxic exposure. The communities came together to hold the industry accountable, create more stringent environmental protections and move the EPA to create 29 priority Superfund sites, the highest concentration in the nation.

Since then, the industry has moved much of its manufacturing overseas, where labour is cheaper and environmental protection weaker. However, the industry still employs thousands of service sector workers such as janitors, gardeners and cafeteria workers. These low-wage jobs are held primarily by immigrants and people of colour, and, because of low pay, they are often forced to live in polluted areas, in substandard housing, far from grocery stores that sell fresh produce. SVTC works with people from those areas to create more sustainable communities that have quality air, affordable housing and access to healthcare and quality food.

Similar stories to that of Silicon Valley have arisen from all corners of the world about the dangers of hi-tech production and the dumping of e-waste. Rice paddies and groundwater supplies in China have been contaminated by hi-tech manufacturing, endangering community food and water systems. E-waste has been sent to places like India and Nigeria, where it is burned or buried. Electronics manufacturing and recycling workers often have miscarriages and develop cancer, reproductive problems and other illnesses. And wherever the hi-tech industry exists, it leaves a wake of unintended collateral damage. Unfortunately, it is often the most impoverished workers and communities of colour who are disproportionately affected. However, by working together, communities around the globe have held the industry accountable to consider public health and our environment, and shift towards greater sustainability for hi-tech communities.

Source: www.etoxics.org/site/PageServer?pagename=svtc_mission.

Righting Wrongs

A major achievement of the environmental justice movement, particularly at the policy level, has been a practice-based critique of expert-led processes of risk assessment, research and action. For Brulle (2000) and Agyeman (2005), local knowledge, perception and understanding of risks are often far richer in qualitative detail and more pertinent than expert perceptions, although this is not to deny the importance of rigorous professional and scientific analysis of environmental hazards and so on. Collin and Collin (2005) note that the consequences of bioaccumula-

tion and the cumulative risk suffered by many communities of colour have been invisible to environmental professionals and scientists, who are often seen as being representatives of political and economic power structures that have caused the injustice in the first place. In other words, sustainability can only be achieved if citizens, 'ordinary people', are able to work effectively with the experts in designing and implementing proper policies, policy tools and actions. Collin and Collin (2005, p219) call for effective reparations, the designation of environmental preservation districts,

insistence on clean production technologies and so on to start righting historical wrongs, restore ecosystems and revitalize communities, asserting that 'reparations to oppressed people in a ravaged land will help the nation become sustainable'. Although absolutely central to most environmental justice campaigns, health issues have not figured prominently in many debates on sustainable development, despite the adjective healthy often being used to characterize a sustainable community, society or economy. Socio-economic inequality, pollution, poverty, occupation, age, social exclusion, class and region all cause the inequitable social and spatial distribution of ill health and health risks. Wilkinson (1996 and 2005) shows that rich countries will remain dysfunctional, violent and sick if economic inequality increases beyond a certain level. Being poor and socially excluded is a cause of ill health, depression and premature death. More socially equal societies and regions have higher levels of trust and social capital than unequal ones, which have higher crime rates and poorer health. Above all, Wilkinson concludes that economic growth and material affluence may improve the material standard of life but does little or nothing for the quality of our lives. In this way, it is reasonable to equate social wellbeing and social welfare with sustainable economic and community development, but not necessarily, as we shall see, with economic growth. As Wilkinson (1996, pp5–6) writes:

The quality of social life of a society is one of the most powerful determinants of health and this, in turn, is very closely related to the degree of income inequality. ... The indications that the links are psychosocial make these relationships as important for the real subjective quality of life among populations as they are for their health. If the whole thing were a matter of eating too many chips or of not

taking enough exercise, that in itself would not necessarily mean that the quality of life which people experienced was so much less good. You can be happy eating chips. But sources of social stress, poor social networks, low self-esteem, high rates of depression, anxiety and insecurity, and the loss of a sense of control all have such a fundamental impact on our experience of life that it is reasonable to wonder whether the effects on the quality of life are not more important than the effects on the length of life.

A major task is finding the best way to right these wrongs. Agyeman (2005) identifies a number of valuable environmental justice policy tools, including the International Council for Local Environmental Initiatives' milestone process and the concept of 'environmental space' first developed by Friends of the Earth in Europe. Unlike the similar concept of ecological footprinting (see Chapter Eight), environmental space does not aggregate resources into a single land area-based index but allows the environmental space targets for specific countries to be calculated by dividing the global environmental space for a given resource by the world's total population. In this way, each individual is allocated a 'fair share' – if people do not have the basic means and capabilities to support themselves in a dignified manner, their fundamental rights as human beings are not being met. For many of the world's people, it is basic rights and capabilities for subsistence – health, housing and nourishment – that are of immediate and immanent importance. Without access to life-sustaining ecological resources and systems, many of which are threatened by urbanization, international trading regulations, climate change and extractive industries, human development cannot be sustainable or just. For Sachs (2004), local community rights over resources

Box 4.3 Environmental justice and environmental space

In *Sustainable Europe and Environmental Space – Achieving Sustainability through the Concept of ‘Environmental Space’: A Trans-European Project*, McLaren (2001) explains the concept and the targets required for Europe to enjoy its fair share:

Environmental space can be defined as the total amount of resources we can use (in a given time period), without compromising future generations’ access to the same amount. Alternatively, it can be interpreted as the ability and adaptability of the environment to provide the physical and non-physical resources humans need. These resources include the provision of energy and raw materials, the absorption of wastes, genetic diversity, and fundamental life-support services such as climatic regulation. The current rate of consumption of many of these resources can be measured and compared with the sustainable rate.

We start from the premise that natural and human systems can only sustain a finite level of *impact*. Impacts must be limited (both globally and more locally) to defined levels. These levels can be termed sustainability constraints. Over the longer term a range of measures, such as soil restoration and planting of new woodlands, can effectively increase total capacity. The environmental space concept allows for this. However, our ability to enhance the capacity of natural systems to sustain greater impacts (absorb more pollution, provide a greater sustainable harvest and so on), although developing, is currently limited, and for practical purposes environmental capacity is considered as fixed in the short term.

However, the environmental space methodology recognizes that improving technology may not be adequate to reduce or keep impact below the critical levels. It implies that the level of consumption may also need to be varied. The concept of ‘sufficiency’ is used where reductions in consumption provide an increase in sustainable wellbeing as a result of bringing us within environmental space limits, even if in the short term conventional monetary measures of income fall as a result.

Comparison of sustainable consumption for UK and Europe: Cuts necessary by 2050

	UK cut (%)	European cut (%)
Carbon dioxide	83	77
Timber	64	55
Cement	69	85
Pig-iron	83	87
Aluminium	84	90
Chlorine	100	100

Source: Friends of the Earth, www.foe.co.uk/resource/articles/sustain_europe_env_space.html.

must be recognized and strengthened rather than attacked or fought over. Intact ecosystems mean the poor are less vulnerable, but for this to occur people in the affluent countries must moderate their demands and expectations. As Sachs (2004, p48) writes:

Only if demand for oil falls will it no longer be worth launching drillings in the primeval forest. Only if the thirst for agriculture and industry abates will enough groundwater remain to supply village wells. Only if the burning of fossil fuels is restricted will insidious climate change no longer threaten the existential rights of the poor.

Environmental space therefore operationalizes the notion of environmental limits in measurable terms, articulating concepts of intergenerational and environmental justice and spatial equity. The environmental space framework provides a benchmark for addressing the historic environmental justice or ecological debt issues which campaigners in

the developing world see existing between the rich and poor nations of the world. As McLaren (2003) argues, the concept of ecological debt sharpens our understanding of sustainable development further by bringing sharply into focus power relations and decision-making processes determining global resource exploitation and consumption.

Ecological Debt and Human Development

As discussed in Chapter One, the activities of international financial and trading organizations like the International Monetary Fund, World Bank and World Trade Organization, together with the developed world as a whole, are often held responsible for the global inequities, economic distortions and social dislocations accompanying globalization. Financial loans have been offered to developing countries on conditions which mean their national economies are liberalized and privatized while public spending on health, education and other public services is reduced. The poverty and hardship of many Third World people has increased as debts and debt repayments to the creditor nations and organizations have mounted. Criticism from NGOs like Oxfam and from publications like *The Ecologist* have been scathing. Many campaigners at Seattle in 1999 and in Prague in 2000 interpreted the failure of First World governments to eradicate Third World poverty and debt as simply maintaining a contemporary form of imperialist exploitation. The rhetoric and policy statements of many governments may link human rights and human development with financial, technological and economic assistance, but the reality is often quite different. In 1960, the 20 per cent of the world's population living in the

richer countries were 30 times richer than the poorest 20 per cent. By 1997 they were 74 times richer. In 2006, the combined income of the 500 richest people in the world exceeded that of the poorest 416 million. About two-thirds of world trade is accounted for by just 500 companies. Many of these companies have a higher turnover than many nations making it difficult for governments in the developing world to resist their demands and invitations. Putative global trade agreements like the abandoned Multilateral Agreement on Investment even attempted to give transnational companies the power to override national and international environmental and labour laws if they interfered with corporate profitability. Action taken by NGOs, citizen groups and individuals in opposition to these developments grew throughout the 1990s, attracting media coverage that ranged from the overtly hostile to the broadly sympathetic.

'Human development indicators' were first introduced in 1990 in the first Human Development Report (HDR) produced by the United Nations Development Programme (UNDP). They assess the state of human development according to a variety of indicators, including life expectancy, adult literacy, enrolment at the primary, secondary and tertiary education levels, and income. Life expectancy

in sub-Saharan Africa is actually lower today than it was in the 1970s. 28 of the 31 countries towards the bottom of the list are in sub-Saharan Africa. There, a person's life expectancy is 46 years compared with 78 years in countries with more advanced human development, due largely to HIV/AIDS, which accounts for about 20 years of this discrepancy. Although the number of child deaths has declined since 1990, 10.8 million child deaths in 2004 still directly related to inequality and were often the consequence of simply living in the wrong country, town or even street.

Climate change will also significantly affect the world's poor. As dry areas get drier and wet areas wetter, the distribution of agricultural produce will worsen. Being linked to more frequent and extreme weather events, water flows will become increasingly unpredictable. The authors of the 2006 HDR suggest that:

- Agriculture and rural development will bear the brunt of climate risk – the rural sector accounts for about three-quarters of those living on less than \$1 a day.
- Extreme poverty and malnutrition will increase as water insecurity increases – climate change could increase global malnutrition by 15–26 per cent, that is from 75 million to 125 million people, by 2080.
- More extreme weather patterns will increase *risk* and *vulnerability*. Susceptibility to drought and flood will increase over time.
- Shrinking glaciers and rising sea levels will pose new risks for human security. The retreat of glaciers will threaten short-term flooding and long-term declines in water availability across Asia, Latin America and parts of East Africa.

The HDR concludes starkly (Watkins et al; 2006, p159):

For a large share of the world's people in developing countries, climate change projections point to less secure livelihoods, greater vulnerability to hunger and poverty, worsening social inequalities, and more environmental degradation.

The relationship between human rights and human development, corporate power and environmental justice, global poverty and citizen action, suggest that responsible *global citizenship* is an inescapable element of what may at first glance seem to be simply matters of personal consumer or moral choice. As Naomi Klein (2000) shows in *No Logo*, the many emotionally highly charged protests in the US against the big corporations are a direct result of people recognizing the interconnect-edness of the contemporary world. Research for her book enabled Klein to see women making clothes for Gap in sweatshops in a free-trade zone in the Philippines where rules existed preventing smiling and talking, where toilets were padlocked except for two 15-minute periods each day, where seamstresses had to urinate in plastic bags under their machines, where there was forced overtime but no job security, and where wages barely reached subsistence level. Indeed, environmental justice issues are simultaneously local and global – many low-lying communities will be affected by climate change and sea-level rise and a shortage of fresh water is expected to be a massive problem by the middle of the 21st century, as could be air pollution, toxic dumping and energy use. As a result, poor countries have recently argued that rich countries have accrued a large 'ecological debt' to the developing world for their over-appropriation of local and global resources in past centuries, with some claiming that this debt is

larger than the 'external debt' – the financial debt which poor countries are currently having to service. A financial estimate of the size of the 'carbon debt' – a small part of the total ecological debt – has been put at \$1500 billion. This is based on industrialized countries' historical contribution to the build-up of carbon dioxide in the atmosphere (ESRC, 2001).

Developed mainly in South America (Martinez-Alier, 2002), the concept of ecological debt includes such factors as:

- resource extraction during colonial periods;
- export of natural resources under unequal terms of trade, which do not take into account the social and environmental damage caused by their extraction;

- the historical and current intellectual appropriation of ancestral knowledge;
- the use of water, air, the best land and human energy to establish export crops, putting at risk the food, health and security of local and national communities;
- damage to the ozone layer and the appropriation of the carbon absorption capacity of the planet; and
- the export of toxic wastes and nuclear testing.

Sachs (2004, p24) asks the key question of environmental justice: 'Who has the advantages and who the disadvantages in the use of nature?' The answer is telling.

Thinking Questions

- 1 How might Hardin's logic be fruitfully applied to building on green-field sites, discharging waste into streams and rivers, fishing for endangered species, driving your car instead of taking the train, or throwing away rather than recycling or reusing?
- 2 How do you feel about the role and potential of ICT in developing socially and environmentally sustainable communities?
- 3 What is the importance of environmental justice to sustainable development?
- 4 How does environmental justice bridge the gap between the local and the global?

Sustainable Development, Politics and Governance

Aims

This chapter explores the connections between environmental sustainability, human agency and political participation. Some key theories, concepts and examples of practical action will illustrate both the political importance and political implications of sustainable

development. Issues relating to ecological citizenship, culture and democracy, and the relationship between particularly good governance, welfare and sustainability will be examined.

Human Agency and Perspective Transformation

Sociologists tend to think of human agency, that is the capacity of individuals to act independently and make their own free choices, in terms of external circumstances and structures. Giddens (1986) sees human beings as subject to forces beyond their control or understanding and able to actively work and reflect on them. In doing this, people change the world and, in the process, themselves. Institutions, social rules and cultural contexts influence the fabric of human social life, community, conduct and agency. People's lives are structured by ideas, values, social habits and routines, discourses, and technologies they experience, apply and alter. Hutchby (2001) writes of social technologies and physical artefacts producing

affordances, allowing certain behaviours and actions to flourish in preference to others. Just think what the cell phone enables people to do. By contrast, psychologists tend to think of human agency in terms of internal drivers or personality traits. Harre (1984) writes of people achieving *agency* through their intentions, their knowledge of social rules and their facility for 'activation', which he explains by suggesting there is within us an inner capacity to act or not to act. We tend to obey our own inner commands, just as we may obey those of others, particularly if influenced by the status or credibility of people we respect or perhaps fear, but Harre notes there is a difference between being stimulated to act and having a constraint removed, thereby enabling action

to occur. Sometimes a critical incident, a significant learning experience or a disorientating dilemma, such as a major change in one's life, may lead to a change of values, attitudes and predispositions. This may constitute either a release or a stimulus.

The educational psychologist Jack Mezirow (1991) writes about transformative learning whereby our *meaning schemes* (specific attitudes, beliefs and attitudes) and *meaning perspectives* (criteria for evaluating right and wrong, good and bad) may alter as a result of experience and self-reflection. *Perspective transformation* is the process whereby people become critically aware of how and why their assumptions constrain the way they perceive, understand and feel about the world. It may involve the transformation of habitual expectations, enabling a more inclusive or integrative perspective on the world together with an enhanced capability of deciding how to act. Perspective transformation can occur slowly, through gradual changes in attitudes and beliefs, or through a shattering experience that may be highly personal or be prompted by an eye-opening discussion, movie, book or article that seriously contradicts previously held assumptions. These changes often involve a questioning of beliefs, personal values, sense of self, political efficacy and cultural identity. Social movements such as feminism or environmentalism facilitate critical self-reflection and the formation of alternative meaning schemes and perspectives. They enable people to identify with causes larger than themselves, motivating them to learn and engage. People who have experienced such personal and/or wider perspective transformations frequently bring considerable energy, power and commitment to social movements. This was so for Lois Gibbs in her campaign with the residents of

Love Canal for justice and compensation after the toxic pollution caused by the Hooker Electrical Company had led to many community health problems, including cancer, epilepsy, asthma, birth defects, miscarriages and premature death (Livesey, 2003). Indeed, much policy development and political action focusing on the broader issues of sustainable development has emerged from environmental campaigning, conservation action, pollution control and environmental management practices operating at a variety of spatial levels (Doyle and McEachern, 1998; Connelly and Smith, 1999).

New digital technologies, including social networking sites, seem to be further enhancing processes of political engagement and awareness. Computer-mediated communications (CMC) has facilitated globalization through its coordination of dispersed economic and political networks, but these same CMC networks have also enabled relatively inexpensive and instantaneous communication, nurturing the growth of online activist virtual communities and the formation of new counter-public spheres. New media have attracted increasing numbers of people intent on using the internet to enhance the work of many global justice movements. The first new kind of (inter)network-based movement emerged with the anti-corporate struggles of the indigenous Mayan people, the Zapatistas, in Mexico in the early 1990s, and then, most effectively, in the Seattle, Montreal, Genoa, Miami and Cancun anti-globalization, anti-WTO protests. For Langman (2005), these new forms of activist organizations constitute fluid social movements united by a passionate commitment to social and environmental justice, freedom and democratic community in a networked world. Jeffrey Juris argues that

trans-national counter-publics have emerged as a result of grassroots anti-corporate globalization movements developing advanced forms of computer-mediated communication and networking. Activists have integrated the internet into their everyday routines through email lists and websites, 'building a new digital

media culture through the practice of informational utopics' (Juris, 2005, p205), producing alternative values, discourses and identities effectively serving as new social, cultural and political laboratories from which new forms of empowered political agency may arise.

Towards Ecological Democratization

For the political scientist John Dryzek (1996), democratization, or the enhancement of democratic values, involves increasing the number of people participating in the political process, increasing the quality of their contributions, and extending the range of issues subject to popular control and scrutiny, and the degree to which this control is actual (substantive) rather than purely formal or symbolic. Political greening, or 'ecologization', falls into two categories:

- 1 Politics becomes more biocentric and less anthropocentric, including recognizing the rights of nature and non-human others.
- 2 Politics becomes increasingly sensitive to human interests in the context of a clean, safe and pleasant environment.

Some international agreements, like the Montreal Protocol restricting the manufacture and use of chlorofluorocarbons (CFCs) in order to protect the ozone layer, represents political ecologization at the global level, but generally progress has been slow at all levels, despite the growth in our ecological knowledge and our understanding of humanity's impact on the planet. Dryzek identifies four potential strategies frequently cited as potential vehicles for ecological democratization. These are:

- 1 *Making the most of liberal democracy:* This can be seen as a neutral platform for political outcomes and/or something that can itself be enhanced by ecological values, although economic and business imperatives have always seemed to trump ecological concerns in securing the attention of decision-makers.
- 2 *Crisis and apocalypse:* A view that sees liberal democracy as a major part of our ecological malaise, given the silo mentality of governments and the consequent disaggregation of policymaking and policy implementation.
- 3 *Reflexive development:* Collective life is now largely organized around the production, distribution and management of risks, leading to a society in which science and technology has lost much of its authority, often because new opportunities for debate and intervention in decision-making from citizens, activists and social movements have emerged.
- 4 *Rejection:* Whereas the risk society envisages democracy extending beyond the state, a rejectionist strategy calls for vibrant para-governmental activity and an active global and national civil society offering alternative, separate and prefigurative forms of political action, values and organization.

Dryzek places his faith in a sustainable future in a combination of reflexive development and what he terms a 'rejectionist' civil society:

A happy future for ecological democratization would involve industrial society giving way to reflexive modernization in a risk society, and the acceptance of ecological modernization as both a discourse and a set of proven claims about 'tradeoffs' between economy and environment. ... Matters will look very different if ecology does not indeed prove good for business in general. Oppositional civil society becomes more critical in the latter case; but even in the happy scenario, such opposition is still necessary to prevent a risk-management technocracy.

(Dryzek, 1996, p122)

Like Torgenson (1999), Dryzek sees the promise of green politics and democracy as very much relying on the green public sphere to host various discourses on environmental and sustainability issues, public education, an environmentally aware media, and public debates and investigations that change political practice. Complementing Dryzek, O'Riordan (1996) and O'Riordan and Voisey (1998), having expressed some optimism about the reshaping possibilities of Agenda 21, outline four necessary implications for a democratic and institutional transition to sustainability:

- 1 the need for an ecological right to know and guarantees regarding freedom of information;
- 2 the sharing of power in an ecological corporatist fashion;
- 3 controls on the movement of capital to prevent movement that would wreck economies implementing necessary ecological controls and regulations; and
- 4 the imposition of limits on capital accumulation that would otherwise lead to

disfiguring and harmful social, economic and political inequalities (and inequities).

The adaptation of key institutions in any transition towards sustainability would need to articulate clear commitments to:

- reflect a clear understanding of ecological limits;
- respond to visions of a more ecologically protective and fair polity;
- create a sustainable society by negotiated consent, understanding or agreement;
- measure the effects of policy and actions within ecological and social parameters linked to agreed norms and targets; and
- implement policy according to agreed norms and rules located in markets, law, social values and governmental regulation.

The transition phase will necessarily encompass a wide critical political ecology that includes an understanding of and clear political engagement with the natural environment as constituting part of the human moral community. Geography or, more specifically, the complex intersections between nature, culture, space, place, landscape, human agency, identity, knowledge, politics, power and economy are integral components of such a political ecology. In *Places and Regions in the Age of Globality*, Arturo Escobar (2006b) writes of a spatially grounded understanding and expression of 'globality' – something which is place-based, enacted and negotiated at every site or region, and not something imposed through the invisible hand of global capitalism. Local and indigenous peoples, particularly in the Columbian Pacific region, have sophisticated ecological knowledges constituting their own notions of globality,

which frequently inform their struggles to secure their resources and livelihoods in the face of economic development, neo-colonialism and political intervention. For Escobar (2006b, p21):

people mobilize against the destructive aspects of globalization from the perspective of what they have historically been and what they are at present: historical subjects of particular cultures, economies and ecologies; particular knowledge producers; individuals and collectivities engaged in the play of living with landscapes, living and non-living beings, and each other in particular ways. ... In regions such as the Pacific, people engage in the defence of place from the perspective of the economic, ecological and cultural difference that their landscapes, cultures and economies embody in relation to those of more dominant sectors of society.

For Eckersley (2004 and 2005), ecological democratization will require revised national constitutional and multilateral arrangements and the emergence of a new 'green state'

operating as a facilitator of trans-boundary democratic processes and global ecological stewardship. The demand for social and environmental justice will be incorporated into the broad context of a dialogic communicative justice. It will also mean culturally embracing both human and non-human emancipatory politics, putting aside the language of prudence (economic, political and moral), even though this language may more easily travel across national cultural boundaries, in favour of realizing intrinsic non-anthropocentric values. In order to make this happen, democracy will need to be fundamentally radicalized. Not a small task, you might think, but one that is currently being played out between environmental pragmatists and ecocentrists in the world of real-world democracy, with the former often forgoing the 'big picture' so as to facilitate 'interest accommodation' and the latter frequently ignoring practical criticism in favour of realizing broader goals.

Roberto Unger and the Inspiring Politics of False Necessity

In an extensive series of writings and reflections, Roberto Unger, looking very much to the radicalized constitutional and democratic experiments in Brazil, offers not so much a blueprint for institutional and behavioural change but what he terms a 'music' – something that lives in sequence, that is sustained by a credible image of change, enabling the exploration of different pathways at different points, although still moving in the same direction. His argument is that institutional innovation is central to political transformation and the larger aims of radical democratic experimentation and emancipa-

tion. Attempting to avoid the pitfalls of socialism and capitalism, Unger asserts that, because everything is essentially 'just politics', human agency is paramount. The world is as it is, not as it either could or should be. 'It can always be refashioned. The result is not to deny the weight of the constraints upon transformative action,' Unger (2004, p30) writes, but to recognize there is a 'negative capability', that the formative contexts of social, political and economic life can be destabilized. It requires people to change, to bring under their control and vision their institutions, practices and assumptions. In

changing institutions, we change ourselves, and in doing so we reduce the distance between our ordinary everyday actions and the more exceptional ones that challenge and change them. To do this we need to understand society and ourselves; we need to develop new habits and methods of thought and marry them to action. Although Unger rarely refers to sustainability or sustainable development, his political project is an important element of the dialogue of values that informs the sustainable development idea and process. For Unger, imagination, 'the infinity of the mind', educates radical pragmatism by recognizing the multifaceted nature of human experience. There is always 'more in us' individually and collectively. Only when we realize this will we discover what may be possibly engendered through the interaction of general ideas with particular discoveries and real-world innovations. This means, he says, that we do not need to take established social and political arrangements as the inevitable frameworks within which we develop our ideals and fulfil our interests in reconciling empowerment with solidarity, greatness with love and the strengthening of the ways we can be responsible for each other.

Unger identifies strategies for a high-energy politics with high-energy civil engagement, a self-organizing civil society, the disaggregation of consolidated property rights, a progressive redistribution of assets, a renewed relationship between economic classes, a 'jumbling' of social roles, the development of a caring economy alongside the productive one, the lifting of the 'ordinary lives of ordinary people to a higher level of capacity and intensity' through new forms of human association, lifelong learning and the

revaluing of labour, cooperative activity organized between small and medium-sized producers, and a radicalization of competition and meritocracy. Democracy has alternative futures which, through combining insight with practice, will enable us to escape from assumptions of invulnerability. Empowerment means our opening up to others, which may cause a heightened vulnerability but will enable us to imagine, give, receive or refuse love. For Unger, empowerment and vulnerability are the guarantors of change, and the condition and possibilities for change at institutional and individual levels:

In everyday life, the chief expression of the practice of unprotection is the willingness to endure the risks that every innovation imposes on the established form of cooperation, and the determination to press for a higher form of cooperation: one that is more hospitable to repeated and accelerated innovation and to the narrowing of the gap between the activities that take the context for granted and the activities that challenge and change it. (Unger, 2004, p117)

As critics have noted, however, Unger fails to cover many things with his broad theoretical and rhetorical brush, including gender, poverty, race, militarization and the environment. He also lacks any notion of a critical or political adversary, which renders his approach to political agency, at least for Anderson (1992, p148), basically indeterminate: 'intimations of harmony discount considerations of strategy, in a reminder of the other side of the utopian tradition! Nonetheless, Anderson continues, with Unger 'something new has occurred: a philosophical mind out of the Third World turning the tables, to become synoptist and seer of the First.'

Box 5.1 Political action from the outside: Jose Bove and the Confederation Paysanne

Last summer, French farmer Jose Bove and four other leaders of the Confederation Paysanne bulldozed a new McDonald's being built in Millau, their little town in the south of France, the cradle of Roquefort cheese production. The French courts took a tough line. They jailed Bove and his comrades and set bail at £11,000. This summer a throng of supporters stopped the traffic in Millau, near where I'm staying, decorated walls with graffiti proclaiming 'End McDomination' and handed out free Roquefort cheese.

All this is part of their campaign to expose the tactics of the WTO as sponsors of big US producers. The WTO has imposed punitive taxes on Roquefort and other local products in response to the European Union's decision to ban imports of US beef impregnated with hormones. 90 per cent of US beef is hormone-treated.

Roquefort, the sharp, salty blue cheese produced only in this part of France, has a piquant place in the great debate. Philippe Folliot, mayor of St Pierre de Trivisy, a village in the heart of Roquefort country, explains that Roquefort represents the antithesis of globalization because it 'is made from the milk of only one breed of sheep, it is made in only one place in France and it is made in a special way' – unlike Big Macs or Coca-Cola, which are produced in stiff uniformity, in the manner of the Model T Ford, by corporations that lay waste to a landscape of local producers. It is not so much the uniformity that offends the French producers as the producers' loss of control over their own knowledge and skill and the quality of the product itself.

Source: Campbell (2000).

Working on the Inside: 'The Death of Environmentalism' and Third Generation Environmentalism

A significant amount of political lobbying, campaigning, publishing and research is undertaken by 'think-tanks'. Some are corporate-sponsored and others funded from a variety of sources, including public-sector grants and membership subscription. In Europe and the US, Forum for the Future, New Economics Foundation, the Green Alliance/E3G, The Natural Step and the Sierra Club critically engage with environmental and sustainability issues. In 2004 the Breakthrough Institute secured a significant degree of publicity and generated considerable debate when it published 'The death of environmentalism' by Shellberger and Nordhaus (2004). The thrust of this article was that the American

environmental movement had lost its edge by being increasingly obsessed with achieving incremental policy or technological changes and through constantly applying a very narrow understanding of the 'environmental'. Its importance lies in the debates it stimulated and the prescriptions it advocated. Environmentalists must act differently and forcefully. Its contribution to the sustainability project lies very much in the belief that agency must be allied with clear principles and values that go beyond pragmatism, weak sustainability or anthropocentric environmentalism. However, the fashioning of a green democracy, or ecological citizenship for individuals, community groups, business corporations and

government agencies, is dependent on the politics of the possible and realizing the imperatives of a sustainable society. This has been taken up by Tom Burke of the Green Alliance, a UK-based lobby group and think-tank, with the notion of *third generation environmentalism*. The first two generations of environmentalists, he notes, were predominantly outsiders, concerned initially with environmental and habitat conservation issues, only later incorporating a more social and economic dimension, but still focusing on protecting natural resources. For Burke, the time is now right for insiders to transform the policies and practices of major institutions of government and big business. In a speech marking the 25th anniversary of the Green Alliance in 2005, Burke noted that third generation environmentalists 'are to be found in their hundreds of thousands within the walls of bureaucracies, financial institutions, universities, trades unions, professional associations and elsewhere. They have all been infected with the environmental virus and they carry it with them wherever they work.' The need is to break out of the green ghetto and the way to do this is threefold (Burke, 2005):

- 1 **To communicate better** – 'We understand the environment better than we do people. We need to frame our arguments in terms that resonate more immediately with others. Without a stable climate, national security and economic prosperity are impossible, the world will not be fairer, communities will not be stable, families will be hurt, personal opportunities will be limited, our children's future will be stolen. But we rarely sound as if we are talking about those everyday concerns.'
- 2 **To get real about political discourse** – 'Changing environmental outcomes in the

twenty-first century will require some serious money. Today, we spend just under 300 billion pounds a year on social protection, health and education. We spend about 55 billion pounds on internal and external security. We spend a fraction over 7 billion pounds on the environment. Do you really believe those are the right proportions to ensure the continued wellbeing of the British people, as our environmental problems accumulate faster than we are finding solutions for them?'

- 3 **To build stronger institutions to defend the environment** – 'We build institutions to consolidate and express our values – to make them manifest in the world. It is a strange thought that, as environmental problems have become more pressing, our national and international environmental institutions have become weaker.'

Luke (2005) suggests some caution. He is concerned with how private sector interests have penetrated ecological initiatives, suggesting there is no sure guarantee that the market will result in better environmental outcomes. What is needed is a genuine 'public ecology', with new institutions, ideas and organizations which can balance the competing but often complementary insights of science, private stockholders with concerns about social equity. The socio-technical order has to be rebalanced so that commercialized private sector beliefs and practices of commoditization do not fully define the everyday activities of governments, societies and social systems. It is important to ensure that human civilization and the biosphere on which it depends are not managed as if they were a capitalist corporate enterprise writ large. Only thus can a sustainable ecology

emerge in which human and non-human life-forms can flourish.

These debates are important for green politics, since like any other democratic practice, good communication, transparency and open dialogue on values and policies is essential. In *Rethinking Green Politics*, Barry (1999) suggests it is harder to secure agreement on philosophical values than it is on the moral rightness of a particular course of action or policy. People may agree to the same policy for different reasons. Indeed, green activists, deep and shallow, seem for pragmatic reasons to increasingly agree on policy. For Barry, this is quite positive, not least because:

green arguments and policy proposals would receive a better hearing by the public if environmental policies were cast in terms of extended human interests, rather than emphasizing non-human interests. A clear example of this is environmental policy based on a moral concern for future generations.

(Barry, 1999, p26)

The problem with deep ecology, similar in part to the expiring environmentalism referenced above, is that it gives green politics a 'fundamentalist complexion', creating a distance between believers and non-believers. So often environmentalists have been accused of not caring sufficiently about people, leading Barry to suggest that the most appropriate political approach to sustainable development is to be critical of anthropocentrism, of existing human-social-environmental relationships, without denying their significance completely. Science can be enlisted to help 'displace the arrogance of humanism', to indicate that human beings are both part of and apart from the natural environment. And, simultaneously, scientific knowledge has a role in fashioning agreements on the nature of ecological problems and in developing politically acceptable agreements on social-environment issues and actions. Sustainable development cannot escape politics.

Governance, Democracy and Eco-welfare

Governance is not an easy concept to grasp and has been interpreted and defined in various ways. For the United Nations (UNDP, 1997, p5), governance refers to:

the exercise of political, economic and administrative authority in the management of a country's affairs at all levels. Governance comprises the complex mechanisms, processes and institutions through which citizens and groups articulate their interests, mediate their differences, and exercise their legal rights and obligations.

Governance occurs within corporate, local, regional, national, international and global contexts. 'Good governance' is an umbrella

term denoting lasting and positive changes in accordance with the six key principles of openness, participation, accountability, effectiveness, coherence and civic peace, which may involve civil society actions as well as major public sector reforms (Batterbury, 2006). From the perspective of human development as outlined in the Human Development Report for 2002, *Deepening Democracy in a Fragmented World*, good governance means democratic governance (Fukuda-Parr, 2002, p51). That is to say:

- People's human rights and fundamental freedoms are respected, allowing them to live with dignity.

- People have a say in decisions that affect their lives.
- People can hold decision-makers accountable.
- Inclusive and fair rules, institutions and practices govern social interactions.
- Women are equal partners with men in private and public spheres of life and decision-making.
- People are free from discrimination based on race, ethnicity, class, gender or any other attribute.
- The needs of future generations are reflected in current policies.
- Economic and social policies are responsive to people's needs and aspirations.
- Economic and social policies aim at eradicating poverty and expanding the choices that all people have in their lives.

Together with security of tenure, UN-Habitat (2000) and a number of observers (Beall et al, 2000; Benjamin, 2000; Devas, 2004; Baud and Dhanalakshmi, 2007) see good governance as an 'enabling tool' in reducing urban poverty, improving service provision, combating crime and violence, fostering civic participation and enhancing economic performance.

Political ecology can act as a frame for good governance because it explicitly recognizes the multi-scaled factors that influence communities, places, local environments and human agency. It examines the human social influences on ecosystems, vulnerability to environmental hazards and scarcity and shows how political reforms may affect human use of the land, natural resources and the overall physical landscape (Batterbury, 2006). Good governance, in needing to be inclusive, also needs to be decentralized and linked to local context. Hoggett (2001), discussing governance and eco-welfare, sees human capacities

as essentially relational, expressive, spiritual and practical-intellectual, developed through the experience of difference, conflict, participation, accommodation and transformation. Indeed, the quality of social relations depends on social conviviality and the democratization of everyday life. Hoggett argues that an eco-welfare model of society requires good governance to be green and so differs from a consumerist or state welfare model in that:

Green welfare would promote the utmost respect for human dependency and would champion the development of a new generation of human-scale institutions and integrated, community-based models of support in which holistic models of health, social care and education would flourish. We do not have to engage in abstract thought experiments: such an approach is already prefigured in some third-sector innovations throughout Europe and the UK, many of which are outlined in the recent ten-country European Foundation Report (Pillinger, 2000). Many such projects are experimenting with user- and worker-based cooperatives, emphasizing both user involvement and the development of a mutually respectful relationship between workers and users.

(Hoggett, 2001, p615)

Governance should not be confused with government, which refers to the act and process of governing and the organization or functional machinery through which power and authority are exercised in a political unit like a nation-state. Too often governments work within self-enclosed silos and associated mindsets (Dale, 2001), and for many years political commentators have been arguing for more holistic government (Perri 6, 1997), which would facilitate greater effectiveness, intergovernmental communication, and understanding of issues and challenges that can no longer be administratively confined within a single departmental boundary or

understood clearly by a single discipline. Joined-up government, if implemented sensitively, could empower communities by offering opportunities for meaningful participation and empowerment (Wilkinson and Appelbee, 1999). Sustainable development policies have many stakeholders and are hard to monitor and evaluate by conventional governmental methods. The risks of failing to communicate clearly to, and within, different autonomous government departments and

organizational cultures increases with the complexity of the policy and approach. Writing specifically on the UK experience, Ross (2005) describes the creation of the Environmental Audit Committee as an example of merging accountability structures dealing with specific cross-cutting issues, such as green government, climate change, environmental protection, education for sustainable development, and finance.

Global Civil Society and World Civic Politics

The last few decades have seen the growth of a number of non-governmental organizations (NGOs), such as Greenpeace, Friends of the Earth, Christian Aid, Amnesty International and Oxfam, and social movements, such as feminism, environmentalism, anti-poverty and anti-globalization, whose activities and influence on international politics, intergovernmental agencies and national governments have been significant in promoting a globalized ecological sensibility through animating sustainable values and practices. Many of the new social movements and global civil society organizations have developed in opposition to the work of the World Bank, the International Monetary Fund (IMF), the World Economic Forum, the World Trade Organization (WTO), the European Union and the Organisation for Economic Co-operation and Development (OECD), which have been perceived as insensitively, and unnecessarily, forcing neo-liberalist policies and practices on developing nations. Globalized protests reached a watershed in Seattle in 1999 and in Genoa in 2001, where opposition to global free trade, capitalist globalization and the self-regarding actions of the elite economic

nations (the G7) spilled onto the streets in a spectacular and well-publicized fashion. The protests against globalized capitalism morphed into an opposition to the growing militarization exhibited by nations such as the US and Britain following the 11 September terrorist attack on the World Trade Centre in New York, the 'war on terror', military action against the Taliban and Al-Qaeda in Afghanistan, and the highly controversial attack by the US and other national forces on Iraq in 2003. The growth of civil society activism also stimulated the formation of a counter-public sphere in the 'real' and virtual worlds, where neo-liberalism, globalization, imperialism, and alternative strategies and ideas could be vigorously debated and discussed.

The World Social Forum (WSF), probably the most visible manifestation of this counter-public sphere, has expanded, since its first meeting in the democratically radical city of Porto Alegre, Brazil, in 2001, to become an important dialogic space and key intervention in world political activity. Smaller thematic Forum meetings have taken place in India, Africa, Europe, and North and South America.

As Leite (2005) correctly notes, the WSF is a space and not an organization. It is a site for ideas, the sharing of experiences and intense networking among political activists from across the world. The WSF does not take a position on issues or pass resolutions. Its aim is to be, and remain, pluralist in conception and practice. As such, it should be understood as a process, rather than an event, constituting part of the larger movement opposing war, imperialism, and global economic and social exploitation. The WSF has helped create an environment that cultivates social movements, an ideological climate, and a new internationalism that offers opportunities for widespread participation and social and inter-cultural learning. The inauguration of the WSF in Porto Alegre was of practical and symbolic importance, because the city's radical budgetary planning process has been frequently cited as one of the best and most effective contemporary examples of large-scale and successful participatory democracy (Abers, 1998; Teivainen, 2002; Bruce, 2004). Porto Alegre demonstrates that Euro-centric knowledge structures, where the development model of the North is taught or imposed on the South, need not be applied or be even applicable. Writing of the WSF meeting in Mumbai in 2004, Smith (2004, p416) observes that:

to a larger extent than in the past, activists from India and Asia sought to use the WSF to educate international activists and to mobilize international support for their struggles. This points to a particular advantage of the WSF process in helping raise international awareness of the plight of marginalized groups whose voices never reach international forums. Many international activists left India far more informed about the injustices of caste, class and religious conflicts in India. They certainly would have learned about the

grievances of the Dalit, or the 'untouchables', who were prominent on the forum's programme. They might also have learned how the move of increasing numbers of well-paying information technology jobs from the US and Europe to India affects Indian workers. The Mumbai forum provided an opportunity for Indian hosts to honour a delegation from Pakistan and to expand a Hindu-Muslim dialogue. For their part, by interacting with a community of trans-national activists well versed in the values of participatory democracy, Indian activists (and the Brazilians before them) were forced to be sensitive to some of their own exclusionary practices.

Although not without its critics, tensions and conflicts, the WSF articulates possibilities for a distributed democratic global leadership through its commitment to the belief that 'another world is possible'. Through processes of dialogue, discussion and networking, activist groups can break free from their sometimes overwhelming sense of isolation and the seeming enormity of their aims. By 2005, the WSF had secured a prominent presence and largely sympathetic coverage by the world's news media, intrigued with its real-time/real-world actions and debates, supplemented and extended by innumerable blogs, online forums, links and websites. However, as Smith (2004) notes, isolated groups still exist, and these often lack the information and creative input needed to innovate and adapt in the face of concerted repression, exclusion and ignorance. Nonetheless, the WSF's support of trans-national solidarity energizes and inspires many activists unable to attend the main WSF meetings or global forum. Regional and local meetings act as focal points, expressing the unity among diverse local struggles and encouraging activist coordination at local, national and trans-national levels.

Box 5.2 The 2007 World Social Forum, Nairobi

On the upper tiers of the stadium, which have been partitioned off into smaller rooms using white canvas and Styrofoam panels, the facets of anti-globalization are being discussed in endless variations. But the core issues at each workshop or talk are the same. The global economic system leads to unfair conditions. The poor countries benefit far too little or not at all from globalization. The major corporations are so powerful that they are able to dictate their terms at will to entire countries, especially weaker ones. International organizations like the World Bank, the International Monetary Fund and the European Union are designed to serve not developing nations but the interests of the North, and instead of helping their policies destroy local markets and cultures.

One doesn't have to be a radical to see some truth in these ideas. Indeed, it seems that the time may have come when the World Social Forum no longer necessarily needs radicals to disseminate its core ideas.

Only a few years ago it was a different story. When the delegates in Porto Alegre talked about climate change and water shortages, about the dangers of genetic engineering and the deficiencies of international free trade agreements, governments and business leaders steadfastly believed that these dire predictions would not come true and that the free market would take care of the rest. But now a sense of alarm has become part of the mainstream, thanks in part to the World Social Forum.

The speakers in Nairobi included women from Mali who have dedicated themselves to an arduous struggle against the practice of female genital mutilation. There were activists from the southern Indian state of Andhra Pradesh who had come to Kenya to report on the successes of their campaigns against child labour. Kenyans talked about the kindergartens and workshops they have built and continue to run in Nairobi's slums. Young people from Malawi described their efforts to control recurring floods along the Thangadzi River, where they are digging out the riverbed to make it deeper, sometimes with their bare hands.

Source: Fichtner (2007).

Greenpeace International and the Politics of Perspective Change

International NGOs have helped create a global civil society, and their actions, as Wapner (1996) argues, can have a significant impact on world politics. Greenpeace International, originating in Vancouver, Canada, in the late 1960s with a small but highly visible direct protest action against nuclear testing in the Pacific, is now a large global organization operating trans-nationally, nationally and locally. Many of their actions have focused on securing sufficient publicity

to alter people's way of looking at the world, on changing their values and perspectives, and ultimately their actions and behaviour. Greenpeace aims to broadly disseminate an ecological sensibility that can operate as a political force by changing people's meaning schemes and perspectives, influencing policy development and implementation, and changing practice. With its defining campaigns against seal culling, whaling and the proposed dumping by Shell of their Brent Spa oil instal-

lation in the North Sea, Greenpeace has helped nurture an ideational context, through the use of striking imagery, that has in turn inspired their direct and indirect supporters to act in a more pro-environmental manner. Such activism often employs a sophisticated and effective image politics (Dale, 1996; DeLuca, 1999), and Greenpeace International has become a master of the political image, the mocking vlog, and the penetrating 'spot' and subversive culture jam. As Wapner (1996) notes, people generally tend to translate experience into action through their general interpretative categories, understandings and conceptions of the world. Their experience is mediated culturally through the dominance or operationalization of certain norms, values and predispositions. Greenpeace campaigns aim to (re)align these with a clearer and deeper concern for the planet, often by 'bearing witness', stinging people's consciences by showing environmental abuse or revealing corporate disinformation, and exposing the gap between the rhetoric and the reality of public relations, news management and actual behaviour.

Defining what is meant by 'ecological sensibility' and measuring changes to societal and ideological discourses is not easy. It requires a fluid approach that accepts diffuseness and is sensitive to subtle but meaningful changes in individual, group, institutional, corporate and governmental deliberations. Despite the cyclical nature of green activity and activism, environmental and sustainability awareness is slowly becoming mainstreamed within business, government, culture and politics. We are all environmentalists now, because a generalized ecological sensibility is increasingly pervasive, perhaps even fashionable, in Western civil society. Green has

become a symbol for global political action, as with the rapid expansion and globalization of new and old media, TV and the internet, national sovereignties are being perforated by images of protest, environmental degradation and activist achievements. Globalism is now increasingly associated with the drive for a global (ecological) citizenship (Dobson, 2003a; O'Byrne, 2003) that understands and acts with regard to the fragility of the planet's ecosystems, its life-support systems, its beauty and its interdependent nature, combined with a belief in global human equality. Similarly, global civil society campaigns like Jubilee 2000, Make Poverty History, Live Eight and Live Earth have arguably functioned to extend this ecological sensibility to encompass the wide range of sustainability concerns. Paul Hawken (2007, p165) has gone a step further, suggesting that 'the insanity of human destructiveness may be matched by an older grace and intelligence that is fastening us together in ways we have never before seen or imagined'. There is a 'movement of movements', informed by a broad spectrum of ideas and values, underpinning countless citizen-based organizations, from the rich suburbs of the developed world to the poor *favelas* and indigenous communities of the developing world, which are constantly challenging political corruption and inertia, corporate greed, environmental pillage, global poverty, preventable diseases, and species extinction. It is this 'blessed unrest', this human desire to change the world rather than simply interpret it, that offers hope for a sustainable future. Globalization is a fact; and, thanks particularly to new and emerging media technologies, we are all connected now (Anderson, 2001) and doing something about it.

Strong Democracy

For the political philosopher Benjamin Barber, strong democracy suggests that politics is something done *by* citizens, rather than *to* them by elites, big companies, bureaucrats or any other 'other' one can think of. Citizenship in this context is active and transformative. It is also very public, in the sense that it is about creating or building community and modes and habits of participation, deciding on public goods and public ends rather than reproducing isolated privatized lifestyles and wants. A participatory citizen democracy cannot avoid the necessity of public choice and judgement or the interconnectedness of issues and events. Citizens think in terms of *we* rather than *me*, and to be able to choose between courses of action, recognizing the inequity of power structures and social conditions, requires the application of a critical reason, or at least a *reasonableness* and imagination, in public deliberation. As Barber (1984, p152) writes:

Community grows out of participation and at the same time makes participation possible; civic activity educates individuals about how to think publicly as citizens, even as citizenship informs civic activity with the required sense of publicness and justice. Politics becomes its own university, citizenship its own training ground and participation its own tutor. Freedom is what comes out of this process, not what goes into it.

Strong democracy with active participatory citizenship has a close affinity with practices of community development, community empowerment and community action, all of which emphasize the importance of people having the capacity to be agents of change, capable of refashioning their social worlds and

themselves. The core values informing this type of action have been identified as conviviality and culture, critical and dynamic education, free access to information and communication media, health and wellbeing, strong participatory involvement, economic equity, opportunity and sustainability. Socio-economic inequality, uncertainty of public purpose or vision, may consequently place serious limits on the efficacy of participatory democracy. An adversarial approach to public discussion will also harm this form of democratic process. Political or public 'talk', Barber suggests, leads to the invention of alternative futures, the creation of mutual purposes, and the construction of possible visions for the community and agreed action to transform civil society. Engagement through public conversation allows the registration of intensity of feeling and belief, of public seeing and judgement of right and wrong. Given this, genuine participation builds those affective links that bind one to another, that engender social capital and self-respect, that offer avenues for empowerment, responsible self-governance and civic education. Too great a reliance on representative mechanisms and procedures, voting for representatives to do our talking and decision-making, says Barber, deprives individuals of common activities that could turn a citizenry into a genuine political community. This view is echoed by many other political theorists, who argue that democratic dialogue needs to be accompanied by the development of green institutions and the nurturing of green values. For Dryzek (2000), since democracy exists among humans and in human interactions with the natural world, what is needed for enhanced (ecologi-

cal) democratization is an effective integration of political and ecological communication. Nature does 'speak' to us; it does have agency, as is evident with climate change, deforestation, species extinction, Gaia and so on. We might not hear the words, but we can certainly feel the effects. Human beings need to see themselves as ecological beings as much as social or political ones. Human beings are parts of those ecosystems and ecosystem services that our economies depend on and exploit. Democracy is therefore more than representation or the aggregation of particular interests, but to see this requires enlarged thinking and new forms of interaction and deliberation transcending the boundary of the human world. We can listen to non-human animals through the very human (and bureaucratic) practices of sustainability appraisals, human and environmental impact assessments, and environmental reporting, and our institutions and institutional responses need to be appropriately calibrated to deal with the size and scope of the problems. Central and centralized structures may not effectively hear or engage with the various messages nature is sending us. For Dryzek (2000, p157), 'Bioregionalism is not just about a matter of redrawing political boundaries: it is also a matter of living in place. Redesigned political units should promote, and in turn be promoted by, awareness on the part of their human inhabitants of the biological surroundings that sustain them'. Discursive public spheres and political institutions will be variable, not limited by formal geographical boundaries, and debates will continue about the meaning and practice of green democracy, as without these debates a democratic society is unable to exist.

Processes and opportunities for participation are important in giving voice to those

whose voices cannot be heard or whose voices are never used. The argument against the practicality of increased participation is that the socially excluded, the poor and the victimized are too apathetic and the rich are simply too busy or too self-interested to get involved actively in civil society organizations, to join neighbourhood assemblies, forums, citizen juries and so on. Barber (1984, p272) disagrees:

But of course people refuse to participate only where politics does not count – or counts less than rival forms of private activity. They are apathetic because they are powerless, not powerless because they are apathetic. There is no evidence to suggest that once empowered, a people will refuse to participate. The historical evidence of New England towns, community school boards, neighbourhood associations and other local bodies is that participation fosters more participation.

Government and political decision-making needs to be closer to people's lives, and decentralization has been seen as necessary for improvements in democracy, environmental management and economic development (Bardhan, 2002). Arjun Appadurai (2001) writes of the activities of three civil society organizations in Mumbai: the NGO SPARC (Society for the Promotion of Area Resource Centres), the National Slum Dwellers' Federation and a cooperative group representing women's saving's groups, Mahila Milan. Working together they use their own local knowledge to develop capacity to negotiate with local government and to effect changes that drastically improve the conditions of poor people. They promote micro-finance, better sanitation, organize community housing surveys and exhibitions and the learning of key civic skills to leverage the support and recognition of other NGOs and government officials. Alliances, networks and exchanges

have been organized with urban poor federations in other countries, making for 'a globalization from below' and 'a politics without parties' that has deepened democratic processes. The spread of this model elsewhere, if successful, could produce more poor communities able to enter into partnerships with powerful agencies that concern themselves with poverty and citizenship. Similarly, Pal (2006), studying grassroots planning processes in Kolkata, India, recognizes the need for political decision-makers to design new institutional mechanisms if more people-centred politics and governance is to emerge. Goodin and Dryzek (2006) show that deliberative innovations, 'mini publics' such as citizen juries, deliberative polls, planning cells and consensus conferences, do have a real and tangible effect on the wider political scene, public debate, and policy formation and implementation. Media coverage of these mini publics may influence policymakers and other members of the public, who through listening and discussing issues may change their own ideas and policy preferences. The authors offer an example of a mini-public conference in 1999 informing the wider public debates in Australia on genetically modified foods. Debates in the Australian legislature referred to these debates, and Monsanto was forced to alter its communication strategy, recognizing that corporate engagement with local people needed to go far beyond sophisticated public relations. Mini publics can be used as a form of 'market testing', of 'listening to the city', which may ultimately result in citizens rejecting development proposals, as the Lower Manhattan Development Corporation discovered when its plans to rebuild the area devastated in the 11 September attacks were fully and openly discussed. The UK Government also explored the market of

public opinion regarding the extension of commercial GM and, despite its own stubborn refusal to heed much of the public debate, was nonetheless forced to pursue its pro-GM policies without the public enthusiasm or endorsement it had hoped for:

Thus, despite the government's insistence that all was well, the 'GM Nation?' debate – and especially its more genuinely deliberative 'Narrow but Deep' component, by which government explicitly set most store – succeeded in extracting some 'further action' from government. Those specific measures came in the areas of 'providing choice for consumers and farmers', 'mandatory labelling for consumers', and steps to ensure the 'coexistence' of GM and non-GM crops.

Beyond those specific measures, the government committed itself, first and foremost, to 'protect human health and the environment through robust regulation of GM crops on a case-by-case basis, consistent with the precautionary principle.'

(Goodin and Dryzek, 2006, p231)

Participatory processes may also promote empowerment by giving people the psychological confidence to express their views, learn from others, and challenge those in political authority or those with expert specialist (but not necessarily local) knowledge. Additionally, the experience of having participated in a debate, or on a citizen jury, may provide people with the skills and motivation to go further, mobilizing actions that apply pressure to the wider political system in other ways. Goodin and Dryzek argue that discursive forums are difficult for the established authorities to neutralize through co-option, because deliberative discussions are frequently very difficult to control, manage or predict. For instance, the scientific panel established by the provincial government of British Columbia to investigate clear-cutting in

Clayoquot Sound included both logging experts and local people, including representatives from indigenous groups. The result was a report encompassing a variety of perspectives, including that of the First Nations' traditional ecological knowledge, which scientific members generally accepted without resistance. The criticism of the deliberative process has focused not so much on the report but in the failure of the provincial government of British Columbia to properly

implement it. It is also interesting to recall that Gundersen (1995) conducted a series of 'deliberative interviews' with 46 subjects about ecological issues, all of whom had previously expressed little interest in or concern about the environment. He noted that by the time the interviews finished, they possessed a stronger commitment to environmental values than previously, suggesting the persuasive power of reasoned debate and communicative action.

Civic Environmentalism and the Politics of Place

William Shutkin (2001) takes a systems approach to public policy, local democracy and what he terms 'civic environmentalism'. He is strongly influenced by the work of environmental historians William Cronon (1983) and Carolyn Merchant (1989), who see the instability in human relations and culture as being bound up with changes in the environment. Cronon views human relations and the environment as mutually, dialectically, playing off each other, while Merchant argues that environmental change may be best understood by exploring changes in a given society's ecology, mode of production, biological reproductive processes, social relationships and forms of consciousness: consequently, social structure, the law and demographics help determine a society's demand for natural resources, and the ways in which societies and cultures understand the natural world depend on a combination of factors – religion, myth, thoughts, feelings, ideologies, belief or otherwise in human volition, and so on. For Shutkin, real democracy is strong democracy. It is citizen participation in decision-making, cooperation, trust, common purpose, open discussion, networking and real physical

(rather than virtual) places where people can genuinely interact socially and culturally. In other words, civic democracy is a combination of local environment, civil society and social capital. A sense of belonging and commitment to place, to community or localized identity, to where people physically interact with each other and may sensually experience the wider environment, is absolutely central.

Acknowledging the ideas of urbanists Dolores Hayden (1997) and Daniel Kemmis (1990), Shutkin sees the power or sense of place as the capacity for everyday landscapes, towns or cityscapes to foster within local citizens, neighbourhood residents or individual householders a public memory, a sense of a shared time and territory:

The relationship between the environment and civic life is thus not just about the physical effects of development, such as pollution or sprawl. It is also about the feelings, attitudes and sensory experiences nurtured by the environment that contribute to civic consciousness and identity. Just as civic attitudes and the 'habits of the heart' that Tocqueville saw as critical to the success of democratic communities affect the way in which physical space is developed, so too does the sense of place and

experience of nature influence our civic sensibility and consciousness.

(Shutkin, 2001, p49)

It is important to embrace the humble and the everyday, local solutions, to be inclusive, and to link environmental problem-solving with the building of community capacity. Shutkin explores some empirical real-world and ongoing examples of civic environmentalism, such as community conservation and conservation-based planning in Colorado, the development of a transit village in Oakdale, urban agriculture in Boston, and community planning and cooperation in a New Jersey suburb. Although inevitably incomplete, Shutkin elicits from his analysis the core concepts of civic environmentalism:

- **Participatory process:** Meaningful and informed participation in the decision-making procedures that impact upon the quality of people's lives. This means a bottom-up approach to democracy and a public recognition of the worth of all inhabitants or citizens.
- **Community and regional planning:** Meaningful structures to facilitate involvement, multi-stakeholder participation and collaboration, and a sense of responsibility for the future of places in which citizens live and may also work.
- **Environmental education:** Developing the recognition and understanding that the economy, society and the environment are interlinked and that local communities are able to alter their circumstances. This may mean people understanding the environmental consequences of their actions – CO₂ emissions produced by commuting by car, increased landfill use through profligate waste disposal and so on.
- **Industrial ecology:** Focusing on such actions as integrated pollution prevention, full-cost accounting, and ecologically sensitive development planning and economic growth.
- **Environmental justice:** The awareness of the social and spatial distributive aspect of environmental degradation and environmental protection.
- **Place:** Developing a sense of place or, as Alistair McIntosh (2004) puts it, recognizing the intimate connection between soil and soul.

Civic environmentalism involves many things ranging from the development and articulation of a place based on existential and cognitive processes of reasoning to community empowerment through participation (Friedmann, 1992) and a political literacy married to a set of political skills encompassing communication, argument, political action and 'politicking' (Flyvbjerg, 1998). The incorporation by professional planners of social with environmental impact analyses now encompasses an understanding of the hidden spheres of everyday life (for example the domestic, 'women's' worlds of child-rearing, caring and so on). This is particularly so in processes of collaborative and neighbourhood planning, where unless the voices and insights of marginal groups, including ethnic minorities, are recognized, community development programmes are likely to flounder by generating opposition, fear and conflict (Healey, 1997; Mills, 1998). Only an inclusive sense of community and belonging can nurture social cohesion, participation, trust and neighbourliness (Putnam, 2007).

Ecological Citizenship

The sociologist Bryan S. Turner (1993, p2) defines citizenship as 'that set of practices (juridical, political, economic and cultural) which define a person as a competent member of society, and which as a consequence shape the flow of resources to persons and social groups'. The word 'practice' is important, because it encompasses the experience of everyday life, of social structure and inequality, of action and agency, and of power, social relationships, and the distribution of resources within societies and between them. Modifying Turner's argument slightly, citizenship may be said to address the following issues:

- the nature of rights, responsibilities and obligations;
- the form or type of such rights, responsibilities and obligations;
- the social and political forces that produce practices of various sorts; and
- the arrangements whereby benefits (or otherwise) are distributed among people or between peoples, or between peoples and the non-human world.

We tend to value things either weakly or strongly. Environmental activists argue that if we do not value the environment, safe food or clean air strongly, we may become lesser beings as a result. Individuals have rights, but so does the planet, which has a real claim on me to act wisely, prudently and sensibly. Unfortunately, much environmental legislation, particularly in relation to the requirement to undertake environmental impact assessments, is based on the costs or benefits of specific developments, for example

a new motorway, and not on any principle of rights. It is utility or usefulness to 'society' or to the 'economy' that counts. However, underpinning the idea of ecological citizenship is active citizenship, social inclusion, deliberation, civic virtue, ecological welfare, information and political participation (Saiz, 2005). For Barry, citizenship and democratic deliberation involve social learning, perspective transformation and the internalization of others' interests – those of non-human animals, future generations, and political and environmental refugees. Ecological citizenship is democratic and is able to inform the voluntary creation and maintenance of an ecologically rational society because communicative and instrumental rationality characterizes ecological rationality (Barry, 1999, p230). For Dobson (2003b), ecological citizenship encompasses the private as well as the public realms, is more about obligations than rights, and is international and intergenerational, incorporating notions of ecological footprinting and ecological debt. Although formal education is important – citizenship is now, after all, part of the UK's National Curriculum – it is the reflection on one's *lived experience* that probably has most bearing on changing human conduct.

Globalization and cosmopolitanism have affected the life experience of the individual as well as the conduct of trans-national companies (TNCs), not least because of growing public awareness of global inequality and the serious problems associated with free trade and unsustainable modes of economic production. Zadek (2001) argues that TNCs should become good corporate citizens, taking due account of their employment practices

and ecological footprints in local and national environments. Although others suggest that TNCs will only do this if their financial bottom line is threatened, their commitment being purely instrumental, corporate social and environmental responsibility is a practice that many large companies now engage with seriously. The expectation of gaining new consumer markets or the fear of bad media publicity, as recently experienced by organizations such as McDonald's, Shell, Nike, Nestlé and Monsanto, are strong motivators. Consequently, there have developed a number of strategic corporate/NGO alliances in recent years – Starbucks and CARE, Reebok and Amnesty International – suggesting that the responsible corporation may be something more than a PR exercise (Palacios, 2004).

Equally, it may be asked whether it is easy for citizens to be green. How can individuals, groups and businesses fashion and act on their ecological obligations when so much of our social and economic lives are structured unsustainably or offer so many contradictory and incompatible forms of satisfaction and reward. As Paterson (2000) shows, car culture is intimately bound up with the global political economy. Cars themselves symbolize modernity, growth, success and development, as the massive expansion of car use and ownership in China testifies. Seyfang (2005), writing on ecological citizenship and shopping, notes that a major criticism of the mainstream model of sustainable consumption through market transformation argues that only purchases, not votes, really count in

today's world. However, not everyone is able to influence the market. Sustainable goods may be beyond a person's price range or may be simply unavailable in local stores. People may become disempowered, disillusioned with the ideology of green consumerism, and overly suspicious of corporate greening and green marketing. They may see themselves as being part of a corporately imagined or stimulated community, identifying themselves readily with particular brands and logos. Seyfang also recognizes that people buy things for a variety of purposes that may have little to do with being a good ecological citizen. People shop for therapeutic reasons to raise their self-esteem, to buy themselves a treat, to identify with a particular cultural group, to foster a sense of belonging or to display a certain social status in the community. In developing countries, ecological citizenship may take similar forms, but frequently, when combined with direct political action, the focus is strongly on engagement, action, participation, environmental learning, gender equality, human rights, subsistence, leadership and empowerment, rather than material consumption. However, this is not to deny that issues of consumption may not also be genuine issues of survival, cultural or personal identity. Civic environmentalism, combined with practices of ecological citizenship, including grassroots action, may therefore be firmly and literally rooted in the local ecology, generating both a sense of and a commitment to place, the land, the locality and the home (Maathai, 2004).

Box 5.3 The Green Belt Movement in Kenya

The Green Belt Movement (GBM) is a community-based, development and environmental organization focused on community mobilization and empowerment. Its vision is to create a society of principled grassroots people who consciously work for continued improvement of their livelihoods. This goal is achieved by mobilizing thousands of women's groups, who establish tree nurseries and plant indigenous trees on their farms and public lands, including forests, to prevent soil erosion and generally protect, rehabilitate and conserve the environment. For those tree seedlings that survive, women groups receive a financial token of appreciation, making the initiative an income-generating activity. The income earned by the women is mostly used to supplement domestic needs.

In the course of the past 30 years, the GBM has evolved a procedure that is effective at mobilizing action and has produced 30 million trees, transforming the landscapes and the lives of families and communities, which are very appreciative of their achievements. One of these achievements with long-lasting impact has been the inculcation of a culture of tree-planting and environmental care. Additionally, communities have internalized the linkages between their basic needs and a healthy environment. The GBM was founded in 1977 by Wangari Maathai, who nurtured it under the auspices of the National Council of Women in Kenya (NCWK). Over the years, GBM programmes have expanded to include civic and environmental education, advocacy and networking, household food security, Green Belt Safaris, and Women for Change (capacity-building for self-sufficiency).

Communities are organized into groups and networks, which engage in activities that promote primary environmental care. These activities provide communities with basic services like food, firewood, building and fencing materials, and fodder. Communities also provide themselves with security and responsible parenting by ridding themselves of illegal alcohol and drugs. This protects children, especially girls.

The mission of the GBM is to mobilize community consciousness for self-determination, justice, equity, reduction of poverty, and environmental conservation, using trees as the entry point. The overall vision of the GBM is to inculcate in our communities values such as volunteerism for the common good, love for a greener environment, action for self-betterment, accountability, transparency and community empowerment.

Source: The Green Belt Movement (2003).

Talking Politics/Avoiding Politics

Finally in discussing politics, agency, communication and dialogue, it is well to spend a little time considering the nature of talk. In everyday life people sometimes shy away from appearing overly political or committed to a particular point of view. One may not want to appear a zealot, or extremist, or 'greenie'. In various studies of political talk by Americans,

Nina Eliasoph (1990, p487) noted that 'holding an opinion' means different things to different people and that the display of opinion varies according to context and situation. In studying the relationships people display towards their own political views when speaking among others or in public, Eliasoph (1990, p465) remarks that people literally 'do

things with words! When talking politics, people are often as concerned about how they sound as about what they actually say. Far from being a palliative, a symbolic compensation for a structural lack of power, talking politics actually gives tangible life to the public sphere, even though it may seem that many people watch or read the news to reassure themselves that the public sphere remains far from their own lives. She also notes that it is important to discover how both membership of civic associations and the media influence political discussion and political displays. In later studies, Eliasoph (1998) and Eliasoph and Lichterman (2003) show how cultural and collective representations enable groups to develop a style of interaction that acts as a social and ideological filter. Eliasoph and Lichterman studied one group of environmental activists operating in a suburban setting where engagement could be seen as socially courageous. This group consequently used the language of expressive individualism and personal empowerment 'to affirm social responsibility and public-spirit-edness, rather than to subordinate them to self-centred expression' (Eliasoph and Lichterman, 2003, p748). By contrast, a group of Country and Western devotees, known as 'the Buffaloes', occupying a social space – a bar – that political scientist Robert Putnam would see as a potential generator of social capital, frequently appeared to be '*irrational, excitable, wild and passionate*' (Eliasoph and Lichterman, 2003, 760). They exhibited a group style the authors termed 'active disaffiliation', often breaking the moral code with racist or sexist jokes, teasing and often criticizing serious discussion as getting on the 'high horse'. There was to be no hypocrisy among the Buffaloes while engaged in social events, no false pretences or feigned political

correctness. They were to be authentically themselves. Eliasoph and Lichterman concluded (2003, p782) that through examining culture in interaction it can be seen that 'people always make meanings in specific social settings, in relation to each other as they perceive each other'. Political talk occurs in many contexts but is tailored to context and by the culture of interaction pertaining in everyday life. Thus Eliasoph and Lichterman (2003, p783) write:

A study of culture in interaction offers a more systematic method for analysing the 'tone' of these groups. Thus, the bar patrons and the suburban activist group's styles were not just not neutral, transparent conveyors of cultural meanings. Neither were they just pro- or antidemocratic. The concept of culture in interaction operationalizes an insight from students of public life such as Dewey (1927), Mead (1934) and others that meaning and practice – or 'content and form' – are intertwined, creating varied kinds of openings for members to become democratic citizens.

In an interesting discussion of Eliasoph's work on political talk and everyday life, Liebes (1999) identifies various cases where people do enter into political conversations about the state of the world without necessarily engaging in the political activist practice of trying to change it through lobbying, protest, negotiation, campaigning and so on. Of course, discussion and reflection is a form of action, and conversation and dialogue is a core component of a healthy democracy and human sustainable development. Following Liebes, political conversations can be seen as taking place:

- **over crises** – for example a major political failure;

- **around media events** – for example treaty signings and festivals like Live Earth;
- **around open texts** – for example developing news like climate change;
- **in a liminal situation** – for example a blog or online discussion forum;
- **when belonging to a task-orientated activist group** – for example an environmental group campaign against new road building; or
- **when identity politics is adopted** – for example gay rights.

Liebes suggests that political talk is framed or constrained by the degree to which a society is politicized. For example, Israel is a more politicized society than America, Northern Ireland more politicized than England. In many countries the traditional mainstream media

probably reflects rather than determines the political agenda and terms of debate, although with the advent of new media this is becoming increasingly unlikely. A final and interesting thought, which may be of note to sustainability activists not wishing to seem too shrill, is that a certain depoliticization, perhaps even a political neutering of debate and discussion, occurs when the rhetoric of caring, management and personality dominates a particular discourse. For Schudson (1999), political talk is not like everyday conversation – one is instrumental with an agreed goal or action in mind and the other is largely creative and free-flowing – and they require different, but perhaps complementary, skills and interactive cultures. Political action may mean more than buying organic chocolate or saying one cares for a plant.

Thinking Questions

- 1 In what ways can ecological democratization be achieved?
- 2 How important is a sense of place and ecological belonging in fashioning a green, or sustainable, political practice?
- 3 How important is ecological citizenship, corporate or individual, to fashioning a more sustainable society?
- 4 What is the value of organizations such as the World Social Forum?
- 5 In what ways may realizing a sustainable future be dependent on cultural changes and what might these be?
- 6 In your experience, do people feel comfortable discussing environmental and broader sustainability issues?

6

Beyond the Imperatives of Economic Growth and 'Business as Usual'

Aims

This chapter explores some key issues relating to modernity, capitalism and economic growth, focusing on a range of arguments and opinions that see business and development as both part of the problem and part of the

solution. It will critically consider the role of business in promoting sustainable development, addressing issues relating to 'ecopreneurship', corporate responsibility, fair trade and community economic development.

The Millennium Ecosystem Assessment

The demand for ecosystem services is now so great that tradeoffs among services have become the rule. A country can increase food supply by converting a forest to agriculture, for example, but in so doing it decreases the supply of services that may be of equal or greater importance, such as clean water, timber, ecotourism destinations, or flood regulation and drought control. There are many indications that human demands on ecosystems will grow still greater in the coming decades. Current estimates of three billion more people and a quadrupling of the world economy by 2050 imply a formidable increase in demand for and consumption of biological and physical resources, as well as escalating impacts on ecosystems and the services they provide.

(Millennium Ecosystem Assessment, 2005, p27)

Environmental scientists Gretchen Daily, Katherine Ellison and Walter Reid et al have written extensively about the dependence of the human economy on the planet's natural systems (Daily, 1997; Daily and Ellison, 2003; Reid et al, 2006). In 1999/2000, Reid initiated the Millennium Ecosystem Assessment (MEA) – a massive global study produced by 700 natural and social scientists and reviewed by 1300 others from 95 countries. It examined the state of the Earth's natural resources, its various ecosystems, and the 'services' these ecosystems provide in facilitating human development and wellbeing. These services fall into four categories:

- 1 *provisioning services* such as food, water, timber and fibre;

- 2 *regulating services* that affect climate, floods, disease, wastes and water quality;
- 3 *cultural services* that provide recreational, aesthetic and spiritual benefits; and
- 4 *supporting services* such as soil formation, photosynthesis and nutrient cycling.

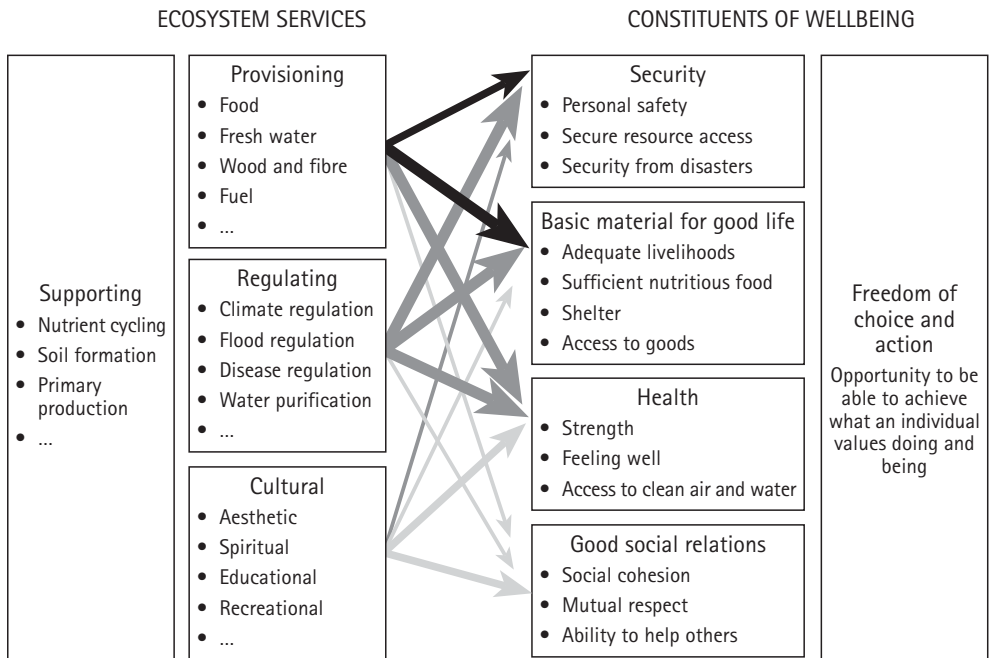
Despite the growth in human ingenuity, knowledge and technology, the survival and flourishing of human society is utterly and ultimately dependent on these ecosystem services. The MEA (2005) understands human wellbeing as consisting of:

- *basic material for a good life*, such as secure and adequate livelihoods, enough food at all times, shelter, clothing, and access to goods;
- *health*, including feeling well and having a healthy physical environment, such as clean air and access to clean water;

- *good social relations*, including social cohesion, mutual respect, and the ability to help others and provide for children;
- *security*, including secure access to natural and other resources, personal safety, and security from natural and human-made disasters; and
- *freedom of choice and action*, including the opportunity to achieve what an individual values doing and being.

However, the MEA (2005, p1) recognizes that freedom of choice and action is also influenced by education, political culture and economic wellbeing. It is therefore a scientific study informed by social, cultural and human contexts. There are four main findings:

- 1 Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period



Source: MEA (2005).

Figure 6.1 Constituents of wellbeing

of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fibre and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.

- 2 The changes that have been made to ecosystems have contributed to substantial net gains in human wellbeing and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of non-linear changes and the exacerbation of poverty for some groups of people. These problems, unless addressed, will substantially diminish the benefits that future generations will obtain from ecosystems.
- 3 The degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the Millennium Development Goals, particularly regarding the eradication of hunger, reduction in child mortality and disease control.
- 4 The challenge of reversing the degradation of ecosystems while meeting increasing demands for their services can be partially met under some scenarios that the MEA has considered, but these involve significant changes in policies, institutions and practices that are not currently underway. Many options exist to conserve or enhance specific ecosystem services in ways that reduce negative tradeoffs or that provide positive synergies with other ecosystem services.

Around 60 per cent of the ecosystem services that support life on Earth – fresh water, fish stocks, pests, natural hazards, regional regulation of climate – are either degraded or are

being exploited unsustainably. According to the MEA, the next 50 years will probably witness the collapse of more fish stocks, the creation of dead zones around some coastal areas, the emergence of new diseases, deterioration in freshwater quality, river flooding, desertification, deforestation, increase in invasive species, general species extinction, loss of biodiversity, habitat degradation and increased pollution, especially nutrient loading due to the increases in agricultural production – all leading to a decline in human wellbeing and loss of capital assets that even the wealthiest populations will notice. Of course, it will be the poor who are likely to suffer most. The report also states that the total economic value associated with the sustainable management of an ecosystem is usually higher than the value assumed to come from the conversion of the ecosystem through farming, clear-cutting or other intensive uses. Thus the MEA (2005, p15) outlines four possible scenarios exploring potential futures for both ecosystems and human wellbeing. These scenarios are based on differing assumptions about the forces driving change and their interactions:

- 1 *Global orchestration*: A globally connected society that focuses on economic growth, global trade and economic liberalization and takes a reactive approach to ecosystem problems, but also takes strong steps to reduce poverty and inequality and to invest in public goods such as infrastructure and education.
- 2 *Order from strength*: A regionalized and fragmented world, concerned with security and protection, emphasizing primarily regional markets, paying little attention to public goods, and taking a

reactive approach to ecosystem problems. Economic growth rates are low while population growth is high.

- 3 *Adapting mosaic*: Regional watershed-scale ecosystems are the focus of political and economic activity. Local institutions are strengthened and local ecosystem management strategies are common; societies develop a strongly proactive approach to the management of ecosystems. Economic growth rates are relatively low initially but increase with time. Population growth is relatively high.
- 4 *TechnoGarden*: A globally connected world relying strongly on environmentally sound technology, using highly managed, often engineered, ecosystems to deliver ecosystem services, and taking a proactive approach to the management of ecosystems to avoid problems. Economic growth is relatively high and accelerates, while population in 2050 is in the mid-range of the scenarios.

All four scenarios have a clear managerial and technicist orientation and none offer a truly radical alternative. Having said this, a number of important observations have been made:

- 1 Past actions to slow or reverse the degradation of ecosystems have yielded significant benefits, but these improvements have generally not kept pace with growing pressures and demands.
- 2 Substitutes can be developed for some but not all ecosystem services, for example plastics and vinyl for wood, but the cost of substitutes is generally high, and substitutes may also have other negative environmental consequences, for example pollution or increased economic costs.
- 3 Ecosystem degradation can rarely be reversed without actions that address the negative effects or enhance the positive effects of one or more of five indirect drivers of change: population change (including growth and migration), change in economic activity (including economic growth, disparities in wealth and trade patterns), socio-political factors (including factors ranging from the presence of conflict to public participation in decision-making), cultural factors and technological change leading to greater eco-efficiency.
- 4 Any effective set of responses ensuring the sustainable management of ecosystems must also overcome a number of barriers related to:
 - inappropriate institutional and governance arrangements, such as corruption and weak systems of regulation and accountability;
 - market failures and the misalignment of economic incentives, which can in part be rectified by eliminating subsidies that promote excessive use of ecosystem services, the levying of green taxes, payment for conservation services and so on;
 - social and behavioural factors that can be rectified in part through consumer education, empowerment and awareness campaigns to reduce aggregate consumption;
 - underinvestment in the development and diffusion of technologies that could increase the efficiency of use of ecosystem services and could drive ecosystem change, such as renewable energy; and
 - insufficient knowledge (as well as the poor use of existing knowledge)

concerning ecosystem services and management, policy, and technological, behavioural and institutional responses that could enhance benefits from these services while conserving resources.

The MEA (2005, pp33–34) states clearly that the value of ecosystem services have implications for policy formation and decision-making:

Current decision-making processes often ignore or underestimate the value of ecosystem services. Decision-making concerning ecosystems and their services can be particularly challenging because different disciplines, philosophical views and schools of thought assess the value of ecosystems differently. One paradigm of value, known as the utilitarian (anthropocentric) concept, is based on the principle of humans' preference satisfaction (welfare). In this case, ecosystems and the services they provide have value to human societies because people derive utility from their use, either directly or indirectly (use values). Within this utilitarian concept of value, people also give value to ecosystem services that they are not currently using (non-use values). Non-use values, usually known as existence value, involve the case where humans ascribe value to knowing that a resource exists, even if they never use that resource directly. These often involve the deeply held historical, national, ethical, religious and spiritual values people ascribe to ecosystems – the values that the MEA recognizes as cultural services of ecosystems. A different, non-utilitarian value paradigm holds that something can have intrinsic value – that is, it can be of value in and for itself, irrespective of its utility for someone else. From the perspective of many ethical, religious and cultural points of view, ecosystems may have intrinsic value, independent of their contribution to human wellbeing.

This report, together with the UK Stern Review (Stern, 2005), which quantified the likely

economic effects of climate change for business and society, caused a sharp refocusing of governmental and media interest throughout the world on environmental and sustainability issues. The Stern Review noted that if the world does not act immediately, the costs of climate change could be in the region of 5 per cent of global GDP each year from now – and for ever. If wider impacts are accounted for, the figure could conceivably rise to 20 per cent. In contrast, the costs of action, of reducing greenhouse gas emissions, are likely to be in the region of 1 per cent of GDP. Therefore what governments, businesses and society do in the next 20 years will affect life for the rest of the 21st century. The Review also argued that although climate change was a clear example of market failure, necessary remedial action need not negatively affect the aspirations of either rich or poor countries and could in fact promote a pro-growth strategy. For instance, each ton of CO₂ emitted causes damage worth at least US\$85, but emissions could be cut for less than US\$25 a ton. If the world shifts to a low-carbon development pathway, this could eventually benefit the economy by US\$2.5 trillion a year, and by 2050 markets for low-carbon technologies are likely be worth in the region US\$500 billion. Conclusion: a new economy of nature urgently needs to be developed (Daily and Ellison, 2003).

The Review argues that explicit action aimed at dealing with climate change will create significant opportunities for business. There will be new markets for low-carbon energy and goods and services, producing excellent profits and opportunities for employment in these new sectors. New energy technologies will allow economic growth to be decoupled from the production of greenhouse gases, but ignoring the climate crisis will

undoubtedly damage prospects for sustained growth. Pro-environmental change is both necessary and possible, and Stern's prescriptions include greater international cooperation in four areas:

- 1 emissions trading and carbon pricing;
- 2 innovation in low-carbon technologies and effective cooperation;
- 3 actions to reduce deforestation; and
- 4 adaptation (for example new crop varieties).

Barriers to energy efficiency need to be overcome and individuals and organizations need to be informed, educated and persuaded to act in a more sustainable fashion. That the 'business as usual' assumption is no longer tenable is, at least publicly, increasingly acknowledged. Nonetheless, Jonathon Porritt,

the British environmental campaigner and Chair of the UK Sustainable Commission, warns that although politicians may heed some (economic) warnings about climate change, many others, such as the build-up of toxic chemicals in the environment or the continuing loss of land to new development, are frequently ignored. This is partly because it is assumed that nature is infinitely resilient or that something is bound to turn up to offset the disasters that have beset previously civilizations (Diamond, 2005). As Porritt (2005, pp307–308) writes:

The idea that we now live in an age of evidence-based policymaking is preposterous. ... Talk of a whole host of natural limits to economic growth as presented in the Millennium Ecosystem Assessment report, and that's a completely different story. You're suddenly a radical subversive beyond the pale of intelligent discourse.

Ecology against Capitalism

In the early stages of capitalist economic growth, 'nature' became completely objectified as solely existing for the purposes of human exploitation and the satisfaction of human wants. Later, the major imperatives of continuing economic growth, industrialization and technological development meant the use of ever greater amounts of energy. Oil production, upon which the global economy has grown to depend, is now either near, past or actually at its peak. The future is likely to see oil prices rise, despite desperate attempts to drill in the world's last remaining wildernesses in the Arctic and Antarctic (Heinberg, 2004; Zittel and Schindler, 2007). Historically, when local environmental resources are exhausted, then industry looks further afield, extending both its geographical reach and ecological

footprint, and free market liberalism, and liberalization, has become the ideological rationale for increased production and consumption, even though wealth creation has been unequally distributed socially and geographically. For Carlos J. Castro (2004), the problem with the concept of sustainable development, and particularly in the form articulated by the United Nations and the World Bank, is that it is effectively synonymous with *capitalist development*, meaning continual economic growth, the private accumulation of profit and the optimization of utility. Understood as such, sustainable development is a contradiction in terms. For Castro, the idea that the capitalist system could transform itself to incorporate a strong sustainability thesis is highly unlikely:

The idea that economic growth is achieved by free trade, that economic growth reduces poverty and that, once poverty is reduced, environmental degradation will be reduced as well does not work out in practice.

(Castro, 2004, p198)

For post-structuralist and ecological Marxist writers, economic growth and the profit motive are integrally linked in theory and practice. Their criticisms are often acute, but they sometimes fail to fully develop practical proposals for sustainable change. Capitalism, with its driving logic of continuous accumulation, has privileged certain technological and economic initiatives but closed off others (Foster, 1999, 2000 and 2002). For instance, the car has been central to capitalist development, and although the eco-modernist promotion of greater fuel/eco-efficiency has led to modest eco-innovation in car manufacture, there has been little significant investment in public transit systems, particularly in the US and UK, which would have had far greater societal benefits. The car is also tied to growth in rubber, glass, steel and petroleum production, trucking, highway construction, and suburbanization. Consequently, a clear dependence on the car industry as a sure way of securing good profitability has emerged. As Foster writes (2002, p99):

The capitalist class is divided when it comes to reductions in carbon dioxide emissions to slow down the rate of global warming. A significant part of the ruling class in the US is willing to contemplate more efficient technology, not so much through a greatly expanded system of public transport, but rather through cars with greater gas mileage, or perhaps even a shift to cars using more benign forms of energy. Efficiency in the use of energy, as long as it does not change the basic structure of production, is generally acceptable to capital as something that would

ultimately spur production and increase the scale of accumulation.

For many Marxist analysts, hope lies neither in more stringent regulation or new technology, but in nothing less than the full transformation of the capitalist mode of production.

Indian economist Partha Dasgupta (2001) argues that globalization has led many economists to ignore the significance of geography and the local as conditions for economic development and progress, but he also recognizes that environmental damage may have some human benefit. He does not completely dismiss the value of cost-benefit analysis. A road may destroy part of a local ecosystem, but there are benefits to communication, travel and economic development. For Dasgupta, it is important to clearly understand economic signals, such as migration, price, resource scarcity and product quality, that derive from human interaction with the natural environment. However, he does not wholeheartedly dismiss the possibility and desirability of substituting one form of capital for another. People do seek alternatives to goods, services and resources when their traditional supply dries up. Necessity is the mother of invention, and with peak oil the world may invest seriously in alternative, renewable, fuel sources. For Dasgupta, then, economic development needs to be sustainable and growth needs to be measured in terms of wealth rather than crude economic activity (GNP) and understood as the value of manufactured assets like buildings and roads, human knowledge and skills, ecosystems, and civil and governmental institutions. GNP per capita may increase but overall wealth may not (for example in India). Substitution of human for natural capital may lead to an increase in both GNP and overall wealth (for

example in China). But there are limits to the services the planet's ecosystems provide – and limits to substitution. There is only so much CO₂ the ecosystem can accommodate before significant climatic change occurs. For Dasgupta (2001, p142), sustainable development means:

that an economy's wealth must not decline. But the equivalence doesn't mean that sustainable development is possible. Whether it is possible depends upon demographic behaviour, consumption patterns, and production and substitution possibilities among the myriad forms of capital assets.

On Economic Growth and Sustainable Development

Herman Daly (1996, 1999 and 2002) has significantly influenced the debate on the relationship between economics and the environment. He believes that as *critical natural capital* is not readily substitutable by *human-made capital*, it should be preserved and conserved as a top priority. Daly argues that economic growth is not a cure-all for unemployment, inequality, environmental protection and excessive population growth. There is such a thing as *uneconomic growth*, that is to say when the level of economic activity continues to use up precious natural resources and provides no tangible benefit to human wellbeing and welfare. The notion of uneconomic growth making us poorer has informed the work of a number of think-tanks and pressure groups, such as the New Economics Foundation in the UK, particularly in the attempt to measure sustainable economic wellbeing and to replace the crude indices of economic growth such as gross national product (see Chapter Eight). Daly also suggests that the global integration of the

Development is a cultural and economic process, leading many environmentalists and ecologists to look to indigenous cultures and values as a model for sustainability, but many of these are in fact hybrid cultures, having evolved in relationship to dominant Western economic and scientific paradigms (Agrawal, 1995; Escobar, 1995). The coevolution of societies and cultures, and of society with nature, has caused a 'metabolic rift' in the relations between humans and nature. The universal transformation of societies *is* a major feature of capitalism.

world economies will probably militate against opportunities for taking the radical political action necessary to combat contemporary socio-economic and environmental problems. Individual nation-states and a world 'community of communities' is the proper site for such action to develop. Only with this will his 'pre-analytic vision' of a fully functioning sustainable economy be realized and the planet's ecological limits respected:

Ecological limits are rapidly converting 'economic growth' into 'uneconomic growth' – growth which increases costs by more than it increases benefits, thus making us poorer not richer. The macro-economy is not the whole – it is part of a larger whole, the ecosystem. As the macro-economy grows in its physical dimensions (population and per capita resource use), it does not grow into a void. It grows into and encroaches on the larger ecosystem, thereby incurring an opportunity cost of pre-empted natural capital and services. These opportunity costs of sacrificed natural services can be, and often are, worth more than the extra production benefits of growth. We cannot be absolutely sure, because

we measure only the benefits, not the costs. And even if we measure the costs, we add rather than subtract them. But whatever the true benefits of economic growth, it is clear that they cannot apply to uneconomic growth.

Even if growth were still economic, much of what we mean by poverty is a function of relative rather than absolute income, that is of social conditions of distributive inequality. Growth cannot possibly increase everyone's relative income. We cannot all be above average – unlike the children of Lake Wobegon. There is a degree of inequality that is legitimate and in accord with a larger concept of fairness and incentives, but also there is a degree beyond which further inequality destroys community and social cohesion, as well as undermining incentive to work.

(Daly, 2002, p48)

Daly (2007) suggests that the growing acceptance of anthropogenic climate change has stimulated a sense of public urgency, but decision-makers still ask the wrong questions and consequently get the wrong answers. They ask 'What will be the economic damage inflicted by global warming?' 'How much will the costs of abatement be compared to expenditures?' And 'What will the discount rates be?' This leads to uncertainty, because the fine detail is not easily knowable. Instead, they should ask some fundamental questions based on first principles. For instance, can we systematically continue to increasingly emit CO₂ and other greenhouse gases into the atmosphere without causing unacceptable climate change? The answer is more certain. It is no. His next question is simple: What is causing us to do this? The answer is unequivocal: our commitment to exponential economic growth. These questions and answers imply fairly obvious policy options: heavily tax carbon extraction and compensate by lightly taxing income, which would produce climate

stability and public revenue. Thus, although the uncertainties engendered by complex empirical measurements and predictions would not disappear, 'setting policy in accord with first principles allows us to act now without getting mired in endless delays' and hesitations (Daly, 2007, p19).

Paul Ekins (2000) also explores economic growth and its relationship to environmental sustainability. He identifies four types of growth:

- 1 growth of the economy's biophysical throughput;
- 2 growth of monetary or non-monetary production (GDP, GNP);
- 3 growth of economic welfare measured by consumption and negative production feedbacks, for example environmental destruction or erosion of community; and
- 4 environmental growth measured by increases in natural capital through regeneration of ecosystem services.

Growth needs to be distinguished from development and welfare. The relationship between GNP growth and sustainable development is highly complex and not at all obvious, as perhaps exemplified in the debate over the negative climate impacts of flying and the insistence that aviation is a key to national and regional economic growth. The arguments are further complicated when environmental sustainability and economic development are linked to notions of lifestyle, the standard and quality of life of present and future generations. Costs and benefits and decisions about 'tradeoffs' shape the discussion. As Ekins (2000, p82) notes, 'sustainability guarantees certain life opportunities in the future at the cost of the modification or sacrifice of life opportunities in the present'. The difficulty is

deciding on what tradeoffs and how many. So, with this in mind, and by developing the work of Herman Daly, Ekins (2000, pp95–96) formulates a set of sustainability principles upon which such decisions could be based:

- Destabilization of global environmental features such as climate patterns or the ozone layer must be prevented.
- Important ecosystems and ecological features must be absolutely protected to maintain biodiversity.
- The renewal of renewable resources must be fostered through the maintenance of soil fertility, hydrobiological cycles and necessary vegetative cover and the rigorous enforcement of sustainable harvesting.
- Depletion of non-renewable resources should seek to balance the maintenance of a minimum life-expectancy of the resource with the development of substitutes for it.
- Emissions into air, soil and water must not exceed their critical load, that is the capability of receiving media to disperse, absorb, neutralize and recycle them, thereby preventing the build-up of toxins that could damage human health.
- Landscapes of special human or ecological importance should be preserved.
- Risks of life-damaging actions and technologies should not be undertaken.

Ecological economists argue that the economy is a subset of the environment. Attention therefore needs to be paid to that which adds value. For Douthwaite (1999b), as all growth involves the use of natural resources, it would be best if production levels remain stable and resource use be halved. He believes the eco-efficiency Factor Four notion

(Von Weizsacker et al, 1997) is a myth because living better in a materialist society still means producing more. Thus the only sustainable society Douthwaite envisages is one where population, energy, material production and consumption are maintained in constant equilibrium, with the total value of social, human, natural and fixed capital passed on to future generations not being less than that presently existing. A steady-state economy requires sustainable developments rather than sustainable development. From this analysis Douthwaite draws three main principles:

- 1 The interests of present and future generations must be given equal weight.
- 2 Other people's interests must be valued as highly as one's own.
- 3 Not everything is tradable (can be sold off for money or increased production).

Some economists believe the general focus on economic growth and the satisfaction of individual wants is now slowly being displaced by an ethic rooted in the concept, principles and practices of sustainability, which offers a new approach to economic organization and a new model for business decision-making (Balakrishnan et al, 2003). Rampant individualism has given way to a focus on society. The financial bottom line has been joined by social and environmental concerns to make up a *triple bottom line* (Henriques and Richardson, 2004). Opportunity cost no longer becomes exclusively identified with economic or financial matters, as factors other than utility need to be considered. The 'best use' of resources is being replaced by an adherence to 'minimal use', and, instead of seeing growth as the perpetual driver of economic development, other drivers are coming into view, for example perfecting products, earning

customer loyalty, providing human enrichment and maintaining natural ecosystems. As Balakrishnan et al (2003, p312) write:

Opportunity-cost decision-making is never neutral. Something and/or someone is always hurt. Ascribing those same underlying assumptions to sustainability, ethical analysis forces an examination of all potential costs. That tree in the yard has value. Cutting it down to construct a chair offers many benefits, among them money in the pockets of the carpenter and comfort for the individual purchasing it. Yet, letting it stand offers other benefits to humanity and nature, though not readily measurable monetarily or definable economically.

For Economists like David Pearce, putting a price tag on the environment could help. For

many years he has argued that without placing a monetary value on environmental gains and losses, we will continue to treat natural resources as if they were free.

Quantifying how much people will pay to preserve or improve their environment will enable decision-makers to see how much people value it. The more they are willing to pay, the more they appreciate the resource or amenity, enabling economists, using a form of cost-benefit analysis, to calculate the net worth of various options. As David Pearce et al (1989, p81) write, 'by trying to value environmental services we are forced into a rational decision-making frame of mind'.

Do Corporations Rule the World?

A great deal of the anti-globalization market is also anti-corporate, and those who campaign for deglobalization, localization and eco-localism frequently argue that the corporation, far from being a potential vehicle for sustainable development, is irredeemably a barrier. David C. Korten, whose books *When Corporations Rule the World* (1995) and *The Post-Corporate World: Life after Capitalism* (1999) have been widely discussed by environmentalists, suggests that trans- and multi-national corporations actually prevent the market – which would, other things being equal, enable more sustainable economies to emerge – from functioning in a healthy fashion. Most mega-corporations are grossly inefficient. Firms should be human scale and competition should not eradicate the weak. There should be economic democracy based on stakeholder ownership, economic relations should be managed locally or nationally, and effective

international agreements should regulate financial speculation as well as the activities of the corporations. A healthy market must rest on firm ethical foundations, and one major step towards realizing this is to end the legal fiction that corporations are 'persons', as they have more rights than actual persons but fewer legal, financial and moral obligations and fewer liabilities. For Korten (2000), the corporation is a legal perversion allowing for a massive accumulation of financial and economic power with the minimum of social accountability. Corporations employ millions of poorly paid workers in all parts of the world and are frequently in receipt of massive government subsidies. Only shareholders are legally entitled to benefit directly from the surpluses and profits the corporations produce, and in order to ensure the interests of shareholders are met, the needs of individual workers and whole communities are

sometimes sacrificed. Capital needs to be mobile – ‘footloose’ – to secure the lowest possible production and labour costs. Korten also notes that corporations bankroll political campaigns in order to protect their interests and gain favour, so as to call in favours when required. Organizations like the World Trade Organization (WTO) were established specifically to serve global corporate interests, even if these run contrary to the policies and needs of democratically elected governments and their people. The WTO has given corporations considerable operational freedom, which, combined with their power and size, frequently makes it very difficult for smaller businesses to develop. This has been no accident: as Beder (2006) demonstrates in her surgically precise analysis of global corporate politics, *Suiting Themselves: How Corporations Drive the Global Agenda*, through their creation of think-tanks and business associations, the big corporations have intentionally shaped the

global economic agenda to meet their own specific commercial ends at the cost of both the environment and the democratic process. The ecosystem services of the planet have been exploited for commercial corporate ends and have often been despoiled in the processes – sometimes irreparably so. For Korten, corporations have also done to people (human capital) what they have done to the environment (natural capital), and society as a whole has turned in one seamless series of commercialized and commoditized relationships. Big, for Korten, is far from being beautiful, and writers and activists like Colin Hines (2000) and Walden Bello (2002 and 2004) argue that ‘localization’, smaller-scale production with local producers meeting local needs, and the ‘deconstruction’ of the present system of global economic governance, including the World Trade Organization, the International Monetary Fund and the World Bank, is the only true path of sustainable development.

Capitalism for Ecology

Paul Hawken (1994), Hawken et al (1999), Lester Brown (2001 and 2006), Jonathan Porritt (2005) and many others have argued that business in a modified capitalist environment is part of the solution. Brown offers a vision of an eco-efficient economy and ecological modernization. There is a need for more accurate accounting procedures that fully recognize environmental and financial costs. Hunter and Amory Lovins of the Rocky Mountain Institute in Colorado have vigorously promoted the need for an eco-efficient ‘natural capitalism’. This approach to economic and business development protects the biosphere and improves competitiveness and profitability by making ‘simple changes’ to the

way businesses are run. The idea is to make more productive use of resources and to increase energy efficiency four- to ten-fold (‘factor four’ or ‘factor ten’) through sustainably enhanced technological design. This may also enable the trappings of the Western lifestyle to be preserved. For instance, the Institute has developed the ‘Hypercar’ – an ultralight vehicle with a hybrid-electric drive and low-drag design which on its first release was heralded as up to five times more efficient than conventional cars. To reach its full potential, and virtually eliminate pollution, the Hypercar needs to be powered by hydrogen fuel-cells. Richard Welford (1998) argues that sustainability must fully inform the

design of every product, building and service, as 80–90 per cent of a product's life-cycle costs, and waste resulting from the production process, are committed at the final design stage. Edwin Datschefski (2001) reinforces this, noting that just 1 in around 10,000 products is usually designed with the environment in mind. In *Biomimicry*, Janine Benyus (2002) demonstrates the benefits to designers and businesses from learning from natural systems, processes, shapes and forms. In *Cradle to Cradle*, McDonough and Braungart (2002) argue that creative sustainable design essentially means eliminating waste completely through the application of human ingenuity. Once a product has reached the end of its useful life in one form, it serves as the raw technical material, or biological nourishment, for another. Closed-loop industrial cycles will see recycling being replaced by downcycling, as exemplified by the plastic material from which the actual *Cradle to Cradle* book has been manufactured. From all this, Lovins et al (1999) identify four necessary interlinked shifts in business practices:

- 1 dramatically increase the productivity of natural resources;
- 2 shift to biologically inspired production models;
- 3 move to a solutions-based business model; and
- 4 reinvest in natural capital.

The US carpet manufacturer Interface, whose chief executive officer (CEO) Ray Anderson experienced an epiphany after reading Hawken's *Ecology of Commerce*, is frequently cited as an adventurous corporation adopting these necessary and interlinked shifts and committing to developing an ecologically sustainable business practice. In his autobiogra-

phy, *Mid-Course Correction*, Anderson (1998) writes of his billion-dollar corporation first becoming sustainable and then restorative. Instead of just taking materials from the Earth it will put things back. Carpet tiles will no longer be sold, used and then discarded but, in this 'age of access' Rifkin (2000), will be leased, reused and recycled. The production and consumption process will become cyclical rather than linear. Destructive technologies will be replaced by new ecologically sensitive ones and, most important, Interface will model a new, sustainable and successful mode of doing business that could be emulated by others.

But the world is a complex and complicated place. The Finland-based company Neste Oil has entered the increasingly controversial field of producing new forms of low-emission biofuels. Neste Oil's NExBTL Renewable Diesel reduces greenhouse gas emissions by between 40 and 60 per cent compared to conventional diesel, but is derived from palm oil viewed by Greenpeace International (2007) and other NGOs as a major environmental problem. However, Neste Oil prioritizes sustainable development in all its policies and operations and expects similar from its suppliers. The organization is a member of the Roundtable on Sustainable Palm Oil and is one of the main sponsors of WWF Finland. Indeed, the WWF is an adviser to the Roundtable, working closely to ensure that this renewable energy source is genuinely sustainable.

There is no shortage of models, of management systems, frameworks, guidelines, toolkits, manuals, books, academic readers, and training and coaching opportunities offering advice to organizations wishing to become socially responsible and environmentally sustainable (McDonagh and Prothero, 1997; Mellahi and Wood, 2002; Dunphy et al, 2003; BITC, 2006; Hitchcock and

Willard, 2006). Two of the most significant are The Natural Step (Natrass and Altomare, 1999), discussed in Chapter Eight, and the SIGMA Project (2003). Neither is there a shortage of media-friendly business gurus and futurists who see economic and business lessons being delivered in the fast-developing world of cyberspace. Chris Anderson (2006) sees the internet as offering an infinite number of niche opportunities for all types of businesses to satisfy the most arcane, and potentially the most ecologically sensitive, of consumers' needs and wants. For others, the net may simply create unlimited and unconstrained consumer demand. If you look hard

enough you can buy virtually anything on the internet. Tapscott and Williams (2007) see the Wikipedia phenomenon as prefiguring new forms of economic arrangements and production processes characterized by collective intelligence, social collaboration and self-organization. 'Wikinomics' is the future and the Chinese motorcycle industry is a sign of things to come. The internet is also giving many people the opportunity to be more professional in the way they interact with each other and with larger collectivities such as big corporations. InnoCentive is a web forum of about 1.5 million full-time, retired and amateur scientific experts. A company can

Table 6.1 *The sustainability spectrum*

1st Wave Organization		2nd Wave Organization		3rd Wave Organization	
Rejection	Non-responsive	Compliance	Efficiency	Strategically Proactive	Sustaining Corporation
Elite seeks profit maximization, treating all resources as means to that end.	More ignorant than oppositional. Prefers business as usual. Ignores negative environmental impacts.	Focuses on reducing risk of being penalized for not complying with minimum standards.	Introduces human and environmental policies to reduce costs and increase efficiency.	Seeks to be employer of choice. Seeks stakeholder engagement to innovate safe, environmentally friendly products and processes.	Reinterprets the nature of the corporation as an integral self-renewing element of the whole of society in its ecological context – and attempts to renew this.
Pays lip-service to health and safety.		Reactive to community and legal requirements.			
Opposition to government and green campaigners.		Prefers compliance but proactive in developing good public image.		Advocates good corporate citizenship to maximize profits.	
Community claims regarded as illegitimate.					
Value Destroyers	Value Limiters	Value Conservers		Value Creators	Sustainable Business

Source: Adapted from Kemp et al (2003, p34).

post its requirements on the forum, offer payment (usually less than US\$100,000) and immediately tap into this community of 1.5 million scientists spread over 170 countries. In 2004, Prize4Life, a non-profit group established by a group of Harvard Business School graduates and based in Cambridge, Massachusetts, offered a US\$1 million prize for the successful identification of a biomarker for amyotrophic lateral sclerosis (ALS). In 2006, Netflix, a mail-order movie company, offered US\$1 million for an algorithm that will perform 10 per cent more effectively than its current system for predicting whether a customer will enjoy a film. This does not replace corporate R&D but may encourage 'ways to spur innovation crucial to improving how well we – and our children and grandchildren – live' (Wessel, 2007).

Drawing on the work of Dunphy et al (2003), Kemp et al (2003) have added four value concepts to the three waves a business organization may pass through to become fully sustainable. Kemp et al state that those activities designed to control business impacts and risks *conserve* value and can be seen in any well-managed company. Those activities that generate additional revenue or improve cost-efficiency *create* value. There are, of course, also actions that may *destroy* or *limit* business value. At the final stage, companies pioneer alternative interpretations of business value and success and aim to develop restorative business practices that nurture natural and social capital. The task is challenging, but many corporations are on this journey, with many in the second but few, apart from Interface, in the third wave.

Box 6.1 New jobs in the eco-efficient economy: Lester Brown's Plan B

Restructuring the global economy will create not only new industries, but also new jobs – indeed, whole new professions and new specialties within professions. Turning to wind in a big way will require thousands of wind meteorologists to analyse potential wind sites, identifying the best sites for wind farms. The role of wind meteorologists in the new economy will be comparable to that of petroleum geologists in the old economy.

There is a growing demand for environmental architects who can design buildings that are energy- and materials-efficient and that maximize natural heating, cooling and lighting. In a future of water scarcity, watershed hydrologists will be needed to study the local hydrological cycle, including the movement of underground water, and to determine the sustainable yield of aquifers. They will be at the centre of watershed management regimes.

As the world shifts from a throwaway economy, engineers will be needed to design products that can be recycled – from cars to computers. Once products are designed to be disassembled quickly and easily into component parts and materials, comprehensive recycling is relatively easy. These engineers will be responsible for closing the materials loop, converting the linear flow-through (throwaway) economy into a recycling economy.

In countries with a wealth of geothermal energy, it will be up to geothermal geologists to locate the best sites either for power plants or for tapping this underground energy directly to heat buildings. Retraining petroleum geologists to master geothermal technologies is one way of satisfying the likely surge in demand for geothermal geologists.

Source: Brown (2006, p246).

Corporate Social Responsibility

In *Corporate Social Responsibility: Making Good Business Sense* (Holme and Watts, 2000, p6), published by the World Business Council for Sustainable Development, corporate social responsibility (CSR) is defined as 'the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.' The UK Government advocates CSR as a way of meeting the challenge of more ethical, resource-efficient, sustainable consumption and production and it is increasingly promoted by the World Bank, the UN, multi-nationals and many national governments. Its advocates view it as a private sector development that incorporates the goals of inclusivity, equity, environmental sustainability and global poverty reduction. Despite its growth and support by some high-profile business leaders, such as Richard Branson, the late Anita Roddick, Stuart Rose and Ray Anderson, however, neo-liberal economists like Milton Friedman view CSR as a distraction from the core business of business – developing new markets, making a profit for shareholders and so on.

Given this, it is important to make a distinction between the fiduciary rights of shareholders from the moral and social rights of stakeholders. Max Clarkson (1995) defines stakeholders as persons and/or groups who have, or claim, ownership, rights or interests in a corporation and its activities, past, present or future. He distinguishes between:

- **primary stakeholders** – including shareholders, investors, employees, customers,

suppliers, government and communities, without whom business infrastructure, markets, laws and regulations would not exist; and

- **secondary stakeholders** – including the media and a wide range of social interest groups, who may affect or influence the work of the business or corporation.

CSR, often shortened to CR and explicitly incorporating environmental and wider-ranging sustainability concerns, addresses the putative rights, interests and expectations of the stakeholder. It becomes imperative to see the business of business as being far more than the 'bottom line', although the bottom line ultimately colours everything a corporation does. Consequently, Hart (1997 and 2005) writes of the need for corporations to go beyond cosmetic greening by creating a vision for sustainability that will include product stewardship, clean technologies and pollution prevention. For Hart, there is a difference between being eco-efficient and eco-effective. The latter means corporations will simultaneously deliver economic, social and environmental benefits to the whole world. To do this, corporations must become indigenous to the places where they are located, developing 'native capabilities' that respect local culture and addressing the broad sustainability challenge and natural diversity. Apart from technological advances, new adaptable business models and innovations are required that go beyond continuous improvements to search for, foster and develop new markets, new (unconventional) partners and new emerging technologies. Hart writes of the 'great leap to the bottom', which essentially

means that corporations can meet the needs of the world's poor and make a good profit in the process. As C. K. Prahalad (2005) and Prahalad and Hammond (2002) have written, it is misleading to write of the 'global poor', as together they constitute a significant and untapped global market. By 2015 nearly 1300 cities in Asia, Africa and Latin America will have populations of over 1 million. 27 cities will have populations in excess of 8 million, half of whom will be 'bottom of the pyramid' consumers. In Rio de Janeiro, Johannesburg and Mumbai, the poor have a purchasing power of around US\$1.2 billion. Slums in these cities have their own ecosystems, informal economies and range of different businesses. Some companies are adopting a shared access model, where poor people hire or lease their computers, fridges, internet connections, mobile phones, cars and so forth on a pay-per-use basis from the providers of such services, who gain considerably more revenue per investment dollar than they would normally. Obviously new skills, new synergies and new management practices are required to make this work, but, as Prahalad shows, the benefits are real and tangible. In certain circumstances, consumption can, and does, alleviate poverty:

Consider healthcare. If you are legally blind with cataracts, you can't work and neither can the family member who cares for you. But if you get access to inexpensive cataract surgery, now you can see and both of you can work. Have you consumed eye surgery or increased the family's earning power? You've done both. It's two sides to the same coin.

(Prahalad, quoted in Green, 2007)

New media companies can make an important contribution to human and economic development. People in low- and middle-income countries make up more than 20 per cent of

the world's mobile phone users, with the growth of mobile phone subscribers in developing countries twice that of developed countries. Research conducted for Vodaphone in South Africa and Tanzania, *Africa: The Impact of Mobile Phones* (Coyle, 2005), demonstrated that the greatest impact of mobiles has been in reducing the need for travel. People have saved time and money by avoiding expensive and unreliable transport, have substantially improved business performance through providing better access to information and by creating new commercial opportunities, have helped nurture social capital, and have helped the poor in remote areas find employment. Mobile phones have provided farmers with weather and market information, helping them to decide which crops to plant, or when to harvest. Businesses have reduced costs by using mobiles to search for lower prices or by replacing more expensive services such as post. Vodafone has also participated in a project in Kenya and Tanzania (in partnership with Safaricom and Vodacom, and supported by the UK's Department for International Development) to develop ways in which mobiles can deliver financial services to 'unbanked' customers. Access to financial services is crucial to the success of micro-entrepreneurs and small businesses. Although the links between mobile phone technology and broad economic performance are complex, the section authored by Leonard Waverman, Meloria Meschi and Melvyn Fuss in the report noted that the impact of mobile growth on gross domestic product (GDP) in 38 low-income and lower-middle income countries between 1996 and 2002 had a strong positive impact on economic development.

CSR needs to accommodate a wide range of stakeholders. Hopkins (1999 and 2006)

argues that it is essential for businesses to carefully manage their relations with society and the natural environment. Collins and Porras (1994) suggest that those managers who reflect a real concern for their stakeholders produce superior results for their shareholders. De Gues (1997) goes a little further, arguing that although the average life expectancy of a company is less than 20 years, those that have lasted longest, 200 years or more, share four fundamental characteristics:

- 1 conservatism in financing;
- 2 sensitivity to the world around them;
- 3 awareness of their identity; and
- 4 tolerance of new ideas.

Porter and Kramer (2006), however, argue that CSR, and certainly CSR reporting, rarely seems to express a coherent strategy, often being more concerned with publicly demonstrating a company's social sensitivity than being genuinely forward-looking. Philanthropic activities are usually quantified in terms of volunteer hours and/or dollars rather than in overall social or ecological influence, with CSR largely being justified in terms of moral obligation, sustainability, licence to operate and reputation. These are all very important for many businesses, but fall short of properly integrating business activity with those social issues that may foster and produce a healthy society. For Porter and Kramer (2006, p85), social issues affect a company in three specific categories:

- 1 **generic social issues** that are not significantly affected by a company's operations nor materially affect its long-term competitiveness;

- 2 **value chain social impacts** that are significantly affected by a company's activities in the ordinary course of business; and
- 3 **social dimensions of competitive context**, where social issues in the external environment significantly affect the underlying drivers of a company's competitiveness in the location where it operates.

It is important that a corporate social agenda simultaneously achieves social and economic benefits, that employees take pride in what their employer does, and to realize this CSR needs to be responsive, strategic (in other words doing things differently from competitors) and able to articulate a clear and meaningful value proposition. All businesses should have a social, ecological and moral purpose, should seek to create shared value, recognizing that there will be some issues best left to NGOs and governments. Porter and Kramer (2006, p85) continue:

Supporting a dance company may be a generic social issue for a utility like Southern California Edison but an important part of the competitive context for a corporation like American Express, which depends on the high-end entertainment, hospitality and tourism cluster. Carbon emissions may be a generic social issue for a financial services firm like Bank of America, a negative value chain impact for a transportation-based company like UPS, or both a value chain impact and a competitive context issue for a car manufacturer like Toyota. The AIDS pandemic in Africa may be a generic social issue for a US retailer like Home Depot, a value chain impact for a pharmaceutical company like GlaxoSmithKline and a competitive context issue for a mining company like Anglo American that depends on local labour in Africa for its operations.

Box 6.2 Sustainable computing at Sun Microsystems

Greening our world, one datacentre at a time

With a billion people participating online today, the network consumes more than 100 billion Kilowatts of electricity and costs businesses around US\$7.2 billion in utility bills annually. And since the power consumption of datacentres doubled between 2000 and 2005, it's no surprise that 25 per cent of an IT budget is consumed by energy costs alone. Some analysts say infrastructure power usage will soon cost more than the hardware itself.

So it's clear: what's good for the environment is imperative for business.

Taking responsibility for product end of life

Electronic components and equipment naturally reach an end of life. Sun believes we have a responsibility to design and plan for this phase in our products' life-cycles.

We are fully committed to maintaining our current goal that less than 5 per cent of products involved in Sun's Global Product Returns Programme enter into the waste stream at end of life.

As a result, Sun has implemented a global product returns programme that recycles, reclaims and reuses components or entire systems. End users can return their end-of-life equipment to Sun for recycling, reuse or proper disposal. Customers will be required to pay the freight to ship the products to Sun, except where local legislation requires otherwise. Used computer equipment is then collected and sent to a third-party asset recovery vendor that recovers useful parts. These parts are then returned to Sun for remanufacture and reuse, often as field replacement units. Components and assemblies that have no commercial value as functioning systems or components are broken down for the recovery and recycling of metals and plastics.

Source: www.sun.com/aboutsun/environment/index.jsp.

Criticisms of Corporate Social Responsibility

Many NGOs and some academics are critical of CSR, suggesting there is a thin divide between CSR from PR (public relations), with companies more:

concerned with their own reputations, with the potential damage of public campaigns directed against them, and, overwhelmingly, with the desire – and the imperative – to secure ever greater profits. None of this necessarily means that companies cannot act responsibly if they choose too. But it does mean that their attempts to do so are likely to be partial, short-term and patchy – leaving vulnerable poor communities at risk.

(Christian Aid, 2004, p5)

Other critics of CSR suggest that there is no proven link between CSR, economic growth and poverty reduction, given that CSR's focus is usually on environmental, labour and human rights issues (Jenkins, 2005). There is also evidence that large corporations, often with the tacit acceptance of governments, do not always respect the environmental and other rights of indigenous peoples, or maintain their interest in the sustainable community development activities which often feature prominently in corporate public communications. Kimerling (2001), writing of Occidental's activities in Ecuador, states that

the language of sustainable community development was basically appropriated by the big corporation to serve its own economic ends, helping it to reproduce and perpetuate an environmentally dubious and potentially dangerous model of development. Local people were not informed or consulted effectively and in many instances were deliberately fed false or misleading information which, combined with pressure tactics and sheer economic power, simply wore down the local Qyicha communities. Their consent for Occidental to work in their localities was tricked out of them. Outside the area of oil exploration, Occidental used its PR machine to communicate a sound and responsible image to deflect potential criticism from environmentalists and journalists. In this way, as Doane (2005) warns, the CSR agenda becomes undermined if it serves corporate interests at the expense of its stakeholders. This may variously take the form of simplistic cause-related marketing or more sophisticated and Machiavellian risk-management actions:

On the former side, we find programmes in the UK like a supermarket's (Tesco) computers for schools, or a confectionary corporation's (Cadbury) sports equipment voucher programme, which gets children collecting chocolate wrappers in return for sports equipment for their schools. Both are aimed at providing community benefits through increased sales. Neither does anything to tackle the larger questions that CSR should have been confronting, that is, the very way that companies directly impact on communities through the ways in which they do business. What of Tesco's opening of big-box shops on green-field sites, and the additional implication that, by doing so, they have led to increased traffic and a closing down of local shops, leading to what some have called 'food deserts'? Or Cadbury's role in sourcing their cocoa through commodity markets, which

effectively keeps market prices low, resulting in poor labour standards in cocoa production? What too of the ethical issues associated with promoting chocolate consumption on the one hand and buying sports equipment to alleviate obesity on the other?

(Doane, 2005, p218)

Others have argued that stakeholder engagement continues to be more a way of pacifying communities than really engaging. BP (British Petroleum, now rebranded as 'Beyond Petroleum'), well known for its stakeholder dialogue programmes, has been criticized by civil society groups including Amnesty International for displacing local communities in Turkey or Azerbaijan. BP promotes its CSR to shareholders while passing on any relevant risk to the host government, thereby avoiding any direct responsibility as, according to legal convention, only governments and individuals acting on behalf of governments can commit human rights abuses. These and other criticisms led BP to review its approach, issuing a human rights 'guidance note' to project leaders and reaffirming its commitment to the Universal Declaration on Human Rights in its 2006 Sustainability Report (verified by Ernst and Young), noting that a company can 'demonstrate leadership in supporting and promoting international human rights norms' (BP, 2006, p3), which it is doing by helping to provide for the world's energy needs. Doane and the pressure group Corpwatch also note that BP has essentially bought itself into the renewable energy business by taking over smaller, more ethically motivated firms, making it difficult for some highly innovative small green businesses, the 'ethical minnows', to place their model of a more sustainable business practice onto a larger, possibly global, scale. These minnows are invariably swimming against the tide of ferocious competition from

less ethically motivated corporate competitors. Doane concludes (2005, p228):

The ethical minnows, however, seem to offer a gem of inspiration. One could foresee a future wherein big business no longer exists at all. What the ethical minnows have is an ability to innovate: to be closer to the people that produce and consume their products and develop products that serve, rather than drive, human need. They tend to drive out the middle-man and make new rules that satisfy a social end. The New Economics Foundation, amongst others, has called this 'social innovation'.

A positive future for minnows will require boldness in effecting individual and institutional change. It will probably require a system of sympathetic global governance that is unlikely to emerge in the very near future and will require businesses to go beyond the bottom line and seek out the changes to practices, regulations and organizational

culture that are being developed in the more progressive organizations. If this happens, CSR could easily and genuinely become synonymous with sustainability. Wal-Mart, like BP, have publicly adopted pro-sustainability practices, partly to rescue their brand reputation as a result of serious public criticism of their social and economic impact, as exemplified in Robert Greenwald's excoriating documentary feature *Wal-Mart: The High Cost of Low Prices*, and partly in recognition of the fact that large companies can do much to help restore some balance to climate systems by reducing greenhouse gases and dependence on oil, while still saving money for customers. Finally, as Mirvis and Coocins (2004) suggest, one way to distinguish companies that talk about social responsibility from those that live it is to observe what employees are doing about it.

Fair Trade

One aspect of creating an honest global market is the development of a fair-trade system, which in recent years has seen considerable expansion, developing far beyond coffee and tea, to fresh fruit and other products. The market is currently worth in the region of US\$1.5 billion and is growing, particularly in the UK and US. Many large supermarket chains are now developing their own fair-trade brands to meet and nurture this demand as well as to communicate their own commitment to CSR. However, when considered as a percentage of total sales, even 'big' sellers like fair-trade tea still constitute only a small percentage (2 per cent) of the total, and fair-trade sales as a whole in the UK make up just 0.2 per cent of all grocery sales.

There is an important difference between increasing the commercial profile of a brand and the aims of the fair-trade movement to impact positively on broader development goals. However, Mike Gidney, policy director at Traidcraft and chairman of the Fairtrade Foundation, notes the influence of fair trade is not easy to quantify. Consumers are more aware of development issues and frequently factor these into purchasing decisions. In 2007, Oxfam reported the results of a survey of more than 1700 UK residents and discovered that although 92 per cent of British consumers buy their food and drink at major supermarkets, just 11 per cent actually want to do so. Instead, most preferred to buy directly from farmers (69 per cent), local

independent retailers (54 per cent) or even to grow their own food (47 per cent). 14 per cent of British consumers buy fair-trade products at every possible opportunity, 57 per cent shop fair-trade on a regular basis and 80 per cent feel very clear about why people should buy fair-trade goods (Oxfam, 2007). Roughly 25 per cent of Traidcraft's 120,000 customers are active development campaigners. Oxfam has also noted that fair trade has undoubtedly helped generate interest in its own Make Trade Fair campaign (Oxfam, 2002) and has given the developing world more influence at global trade negotiations (Kelly, 2007). Additionally, a growing number of towns in the UK have been certified as Fairtrade Towns by the Fairtrade Foundation. The first was Gastang in Lancashire, and by early 2007 there were over 230 others.

Some new businesses are directly applying fair-trade principles in establishing ethically based but commercial social enterprises. In Luton, north of London, fair-trade tea is being sold directly from Indian tribal communities in Tamil Nadu to the deprived multi-cultural working class housing estate of Marsh Farm. A 40-bag pack of tea is sold door to door, on market stalls and in a few local shops. The retail price is at 75 pence, compared to £1.20 for regular tea and £1.60 for fair-trade tea at the major supermarkets. Stan Thekaekara, a trustee of Oxfam UK and fellow at the Saeed Business School at Oxford University, brought the Indian growers together. He suggests ethics should not just be for the well-off – fair trade should benefit deprived producer and consumer communities more than the big chains. He told John Vidal (2007a) of *The Guardian* that the experiment with tea is the first of a number of other intended initiatives involving rice, oils, spices and cloth:

Fair trade is more expensive. The supermarkets make the most profit out of it and nothing really changes in the trading system. Tea does not become a penny cheaper for the people who drink it by the gallon on British housing estates, and workers' children still face starvation and malnutrition on tea estates everywhere. It has to become a brand. If poor people cannot drink fairly traded tea, then it seems wrong.

Fair-trade certification and the influence of a number of alternative trading organizations have led some observers to see in this movement a new type of globalization, a reframing from below, where marginalized workers and producers in the Global South benefit in clear ways (Nicholls, 2002; Raynolds et al, 2007):

- producers enjoy guaranteed prices that are above those in conventional markets, this most important for those trading in tropical commodity markets, which are often volatile;
- organized capacity-building for democratic groups, for example producer co-operatives or worker unions, is supported;
- the development of marketing and other skills of fair-trade producers;
- provision of market information to consumers;
- transparent and long-term trading partnerships; and
- a social premium is provided in that community, so that healthcare, schools, roads, sanitation and other services can be financed.

As fair trade becomes increasingly popular, the movement will confront a number of challenges, not least in how it intersects with the dominant conventional market sector

while still enabling consumers to promote sustainability through their ability to consume more ethically. Some retailers and multi-nationals have attempted to enhance their own corporate brand value through 'clean-washing', in other words misleading consumers by using fair trade as a simple public relations tool to upgrade a company's reputation to that of a responsible and socially concerned organization (Pierre, 2007). Many criticisms of Nestlé's launch of its own fair-trade coffee, Partners' Blend, ran along these lines. Additionally, with the increase in demand, the future of small-scale producers

may become precarious, as supermarkets will demand both volume and perhaps quality and aesthetic standards and accreditation far beyond the purse of small growers and producers. This may lead fair-trade producers to pursue competition rather than cooperation strategies in order to secure and maintain contracts with the major retailers, thus jeopardizing the fair-trade movement's capacity to mediate and reshape local global relations and socio-ecological concerns in the interests of trade, social and environmental justice.

Social and Eco-enterprise

There are other models of business activity, such as social enterprise, that although not yet 'business as usual' could conceivably prefigure how businesses could operate to secure a more sustainable future. In *Social Enterprise in Anytown*, John Pearce (2003) argues that social enterprise should be defined as:

- having a social purpose or purposes;
- achieving the social purposes by, at least in part, engaging in trade in the marketplace;
- not distributing profits to individuals;
- holding assets and wealth in trust for community benefit;
- democratically involving members of its constituency in the governance of the organization; and
- being independent organizations accountable to a defined constituency and to the wider community.

Bill Drayton (2003), Chairman of Ashoka: Innovators for the Public, writes that social entrepreneurs focus their entrepreneurial skills and talents on solving social problems such as underachievement in children, the digital divide, environmental pollution and homelessness. It doesn't matter whether an entrepreneur is concerned solely with making money or effecting a social good, the skills required for both are roughly the same or at least very similar. Each entrepreneur can envisage ways of identifying and leveraging change to build up sufficient momentum to cause a tipping point making for significant, systemic change. Leadbeater and Miller (2004) write of the *pro-am revolution* and pro-am power, which basically means harnessing the interests, enthusiasms and skills people develop outside (as well as inside) their professional lives for the public good. They see pro-am activities building individual, social, economic and cultural benefits, bringing together notions of citizenship, volunteering, social modelling and social capital. They write

of pro-ams being motivated by their social and ethical commitments rather than a desire to make money. For them, leisure is active, engaging and participatory rather than passively watching the television or playing internet scrabble. Many pro-ams have, or have had, successful or long careers that have provided them with useful and varied experience but may also have been personally unfulfilling. They represent a new conceptual hybrid that cannot easily be classified or defined but is clearly illustrated with real-life examples. As Leadbeater and Miller (2004, p1) write:

An outstanding example is Bangladesh's Grameen Bank, founded in 1976 by Muhammad Yunus, a Bangladeshi economics professor, to provide very poor people with access to micro-credit to allow them to improve their houses and invest in businesses. Traditional banks, reliant on professional expertise, regarded poor people seeking small loans as unprofitable. Grameen built a different model, based on pro-am expertise. It employs a small body of professionals, who train an army of barefoot bankers. Village committees administer most of Grameen's loans. This pro-am workforce makes it possible to administer millions of tiny loans cost-effectively. By 2003, Grameen had lent more than US\$4 billion to about 2.8 million Bangladeshis, including 570,000 mortgages to build tin roofs for huts to keep people dry during the monsoons. Had Grameen relied on traditional, professional models of organization it would only have reached a tiny proportion of the population.

In 2006 Mohammed Yunus and the Grameen Bank were jointly awarded the Nobel Peace Prize for their work.

The adoption of environmentally and socially responsible business practices can open up an additional range of opportunities for entrepreneurs. The move to a sustainable business framework provides numerous niches

that enterprising individuals and firms can successfully identify and service. These include the development of new products and services, improvements to the efficiency of existing firms, new methods of marketing, and the reconfiguration of existing business models and practices. Green entrepreneurship, writes Schaper (2002), provides new opportunities for first movers who are able to spot and exploit opportunities, gaps in the market and new ideas. Green entrepreneurship can also act as a change agent within the wider business community, particularly when this wider business community recognizes that green business is good, profitable and rewarding. Green entrepreneurs will then exert a 'pull' that motivates others to become more proactive in their developments, which, if additionally supported by the 'push' factor articulated through revised government regulation, green taxation, and stakeholder and pressure group lobbying, could make a considerable impact. As Robert Isaak (2002) writes:

Businesses that are not designed to be sustainable decrease our health, shorten our time on Earth and destroy the heritage we leave for our children, no matter where we are located globally. In contrast, green-green businesses are models that can help show the way to increase productivity while reducing resource use in a manner that is harmonious with human health and the sustainability of non-human species as well. Green start-ups make it easier to 'fix' environmental components and processes from the outset. Green subsidiaries of larger firms can foster innovation and bring back the heightened motivation of social solidarity to businesses where it may be all too easy to slip into cynicism in an era of global economic crises.

All this is quite possible. There are existing models to emulate and new ones to develop. There are technologies that could easily enable

green entrepreneurship and innovation to flourish, but too often governments and politicians seem to lack the courage, foresight or capacity for leadership that could facilitate this. Sustainability ultimately relies on political commitment and political acts. It is also, given the degraded state of our planet, simple

common sense and good individual, civic and corporate citizenship. Investment should be 'ethical' and, if financial, social and environmental objectives are all blended into one, eco-entrepreneurship can be cultivated, reproduced, reinforced and normalized. It should become the business of business.

Thinking Questions

- 1 To what extent does the Millennium Ecosystem Assessment set the parameters for future business activity?
- 2 Is it feasible that economic growth might no longer be an acceptable policy goal?
- 3 In what ways can all businesses become social or eco-enterprises?
- 4 What makes an ethical minnow innovative?
- 5 In what way may big corporations not necessarily be a bad thing?

Envisioning a Sustainable Society

Aims

This chapter explores various methods and approaches to envisioning a sustainable society, making particular reference to past and present examples of utopian thinking. In relation to this, the potential and significance of practical experiments, strategies and plans

that focus largely on sustainable design and urban development will be discussed. Finally, the possible relationship between utopian thinking, scenario analysis and practical action will be addressed.

The Value of Utopian Writing

Many writers, from Plato (*The Republic*) and Sir Thomas More (*Utopia*) onwards have offered sophisticated and detailed visions of future utopian, and sometimes *ecotopian*, societies. Some have been fictional romances and others more non-fictional planning blueprints or intricate philosophical works. Lewis Mumford produced an enlightening critical study in 1922, *The Story of Utopias*, at a time when the modern world had been devastated by a world war. For those concerned with fashioning a more ecologically sustainable and socially just society, the anarchist ideas of William Morris (*News from Nowhere*), the futurist musings of Edward Bellamy's *Looking Forward* and, more recently, the bioregionalist extrapolations of Ernest

Callenbach (*Ecotopia*) are possibly the most interesting and influential. There are also a large number of political dystopias, with Aldous Huxley's *Brave New World*, George Orwell's 1984 and Margaret Atwood's *The Handmaid's Tale* probably being the most famous, and even panoramic visions of a future designed for clean, efficient living supported by speedy car travel, circular airports, eleven-lane highways and elevated walkways allowing more space for urban road vehicles. General Motors' popular *Futurama* exhibit at the 1939 World's Fair in New York, devised by industrial and Hollywood set-designer Norman Bel Geddes, articulates the power of the corporate imagination. The social ecology of Murray Bookchin (*The Ecology of*

Freedom, From Urbanization to Cities) is grounded in historical and social scientific analysis that looks to a different future. For Bookchin (1980), if utopian thinking has any power and significance at all, it is as a vision of a new society that brings into view all the pre-given assumptions of contemporary society while offering the opportunity to radically rethink new forms and values. It addresses qualitative changes to the way people live their lives and the deep-seated processes that govern our personal selves and relationships with nature. Utopias are, or must be, essentially libertarian, bioregional and ecological to warrant the name:

We must 'phase out' our formless urban agglomerations into eco-communities that are scaled to human dimensions, sensitively tailored in size, population, needs and architecture to the specific ecosystems in which they are to be located. We must use modern technics to replace our factories, agribusiness enterprises and mines with new, human-scaled ecotechnologies that deploy sun, wind, streams, recycled wastes and vegetation to create a comprehensible people's technology. We must replace the state institutions based on professional violence with social institutions based on mutual aid and human solidarity.
(Bookchin, 1980, pp284–285)

In a wide-ranging discussion, de Geus (1999) identifies eight metaphors found in eco-utopian writing that facilitate the envisioning of a sustainable society:

- 1 *Utopia as a kaleidoscope*: providing an array of philosophical reflections on the relationship between humanity and nature, the economy and ecology, consumer materialism and environmental degradation;
- 2 *Utopia as coloured glasses*: providing alternative interpretative frameworks and reference points by which we can recognize processes that degrade the quality of living and environment;
- 3 *Utopia as a Mirror*: providing a mirror to society showing up injustices and shortcomings that may have become invisible in the living of our day-to-day lives, such as increased consumption, road transport, bland design, draughty housing, air and water pollution;
- 4 *Utopia as a CT-scan*: providing an analysis of how far social and environmental problems are rooted in the current organization and structure of society, political governance and the economy;
- 5 *Utopia as an interactive medium*: providing stimulus to engage in debate and discussion about desirable futures, potential barriers and means by which an ideal may be realized;
- 6 *Utopia as a microscope*: providing an opportunity to envisage how future scenarios could have consequences for the minutiae of social life, of conduct, of energy use and of forms of pro-environmental behaviour;
- 7 *Utopia as a telescope*: providing a detailed, credible and broadly encompassing model of social, political and economic organization making for a clean and ecologically balanced society; and
- 8 *Utopia as a magic lantern*: providing vivid graphic and verbal images of possible futures.

For Pepper (2005), utopian thinking is not confined to radical environmentalism, but can also be readily found in the statements, theories, expectations and reformist policies of environmental modernizers. He suggests that practical ecological reforms usually associated with ecological modernization are frequently

Box 7.1 Car-less living in Ecotopia's new towns

San Francisco, 7 May. Under the new regime, the established cities of Ecotopia have to some extent been broken up into neighbourhoods or communities, but they are still considered to be somewhat outside the ideal long-term line of development of Ecotopian living patterns. I have just had the opportunity to visit one of the strange new mini-cities that are arising to carry out the more extreme urban vision of this decentralized society. Once a sleepy village, it is called Alviso, and is located on the southern shores of the San Francisco Bay. You get there on the interurban train, which drops you off in the basement of a large complex of buildings. The main structure, it turns out, is not the city hall or courthouse, but a factory. It produces the electric traction units – they hardly qualify as cars or trucks in our terms – that are used for transporting people and goods in Ecotopian cities and for general transportation in the countryside. (Individually owned vehicles were prohibited in 'car-free' zones soon after independence. These zones at first covered only downtown areas where pollution and congestion were most severe. As minibus service was extended, these zones expanded, and now cover all densely settled city areas.)

Alviso streets are named, not numbered, and they are almost as narrow and winding as those of medieval cities – not easy for a stranger to get around in. They are hardly wide enough for two cars to pass; but then there *are* no cars, so that is no problem. Pedestrians and bicyclists meander along. Once in a while you see a delivery truck hauling a piece of furniture or some other large object, but the Ecotopians bring their groceries home in string bags or large bicycle baskets.

Source: Callenbach (1975, pp24–25).

found in utopian writings if they are read carefully. However, the true value of utopias is in providing *transgressive* and *heuristic* spaces. To be of value, he writes, they 'must be rooted in existing social and economic relations rather than being merely a form of abstraction unrelated to the processes and situations operating in today's "real" world' (Pepper, 2005, p18). If not, they would be nothing more than intellectual exercises –

'mere utopias of escape' (Mumford, 1966a, p390). On the other hand, in emphasizing the influence of the physical environment, whether it be built or natural, some utopian, and certainly nature, writing, such as the recent work of Richard Mabey (2006) and Roger Deakin (2007), is able to sharpen our capacity for individual and collective understanding and sensuous understanding (Buell, 2001).

Practical Utopias: Ecovillages

As Dawson (2006) shows in his Schumacher Briefing on ecovillages, the history of alternative communities can be traced back to a small settlement, developed by Pythagoras, called Homakoeion in ancient Greece. Since

then there have been many experiments that have endured for varying periods of time, differing in size and purpose. Some have been overtly political and intentionally prefigurative. Others mainly meditative or mainly

spiritual. Robert Gilman (1991), one of the main founders of the Global Ecovillage Network, suggests an ecovillage community must encompass the following:

- **Human-scale:** the upper population limit is about 500 persons, although many contemporary communities have 100 persons or less.
- **Full-featured settlement:** all major functions of normal living – residence, food provision, manufacture, leisure, social life and commerce – are present in a balanced proportion, making the ecovillage a microcosm of a future society.
- **Human activities harmlessly integrated into the natural world:** humans do not dominate nature but live within it alongside other creatures. Ecovillages adopt a cyclic use of material resources, for example renewable energy, the composting of organic wastes and other strategies to minimize their ecological footprint.
- **A way that is supportive of healthy human development:** a balanced and integrated development of the physical, emotional, mental and spiritual elements of individual life and community living.
- **Able to be successfully continued into the indefinite future:** through the application of the sustainability principle and incorporating a commitment to fairness and non-exploitation of human and non-human persons and the natural world.

Gilman argues that we have the understanding, awareness, technological capacity and knowledge to live sustainably, for cities to be sustainable by being composed of a constella-

tion of ecovillages and for these to last over time. To do so, putative eco-communities must have the capacity to successfully negotiate a number of challenges, including:

- **the biosystem challenge:** living in an ecologically sound manner;
- **the built environment challenge:** minimize transportation needs, always using environmentally friendly building materials, balance of private and public space, and so on;
- **the economic system challenge:** economically and ecologically efficient business enterprise, equitable forms of property ownership or common use, and so on;
- **the governance challenge:** decision-making processes, leadership roles, conflict resolution mechanisms, and so on;
- **the 'glue' challenge:** vision, internal and external social relationships, closeness and cohesion, and so on; and
- **the whole system challenge:** 'to get an honest sense of the scope of the undertaking and then develop an approach that allows the community to develop at a sustainable pace.'

Many ecovillages, alternative and/or intentional communities have evolved and developed. Rarely do they exist in a complete bubble isolated from the wider society, and in many cases community members do not want or intend them to. However, for many people living within these communities, a spiritual and ethical motivation dominates which contests the materialism of contemporary culture and its abstraction from the natural environment. Ecovillages tend to reflect their cultural and ecological environment – some

are extremely small, residing discretely and quietly in woods and forests (like Tinkers Bubble in Somerset, UK), being concerned predominantly with living simply with the smallest environmental impact possible (Fairlie, 1996), while others may be more fashionable, consciously modern, settlements (and perhaps not strictly ecovillages) whose eco-values have been tempered by a market-orientated pragmatism, planning restrictions and desire to blend easily into the mainstream (Crystal Waters in Australia). Some sustainable community developments have been informed by innovative green architectural design (BedZed, London) and exemplary urban eco-planning and spatial development (Kronsberg, Germany). For Dawson, ecovillages mostly share five common features:

- 1 the community is of primary importance;
- 2 their origin as citizen initiatives;
- 3 self-reliance;
- 4 the sharing of a strong set of values; and
- 5 they frequently act as centres of research, demonstration and training.

The Findhorn Community in the north of Scotland is one of the best-known ecovillages in the UK, if not the world. It has been established for over 40 years, is spiritually based, with a profound commitment to living in harmony with the natural world, is largely democratic in organization and structure, and aims to be self-sufficient in food. Over the years it has been exceedingly enterprising in its approach to green building and design, developing external consultancy, fund raising and investment, and education and communication. In October 1998, Findhorn's Ecovillage Project was awarded a UN Habitat Best Practice citation and in 2006 an independent study concluded the community had the

smallest ecological footprint of any comparably sized settlement in the industrialized world (Tinsley and George, 2006). People who live in ecovillages, and intentional communities with an ecological ethos, usually fashion a holistic lifestyle, where the domestic situation becomes part of an overall project of social transformation, where residents live their beliefs, and where the communities provide safe places to experiment with different forms of living, behaving and acting. Many communities have open days or offer interested people the opportunity to join for a short while to see if they could live the life. In this way, ecovillages act as showcases for alternative and ecological living. Political values become infused in both the private/domestic and public spheres – shared living and working, organic permaculture production, communal decision-making, cooperative ownership, recycling, and so on. As Sargisson (2001, p88) notes:

Intentional communities form part of individual change: this includes patterns of behaviour, processes of communication, the integration of personal spirituality, work and ecology, and, importantly, the opportunity to bring all of these changes into everyday life. Change, paradoxically, becomes part of daily routine. In some communities, such as those associated with the Findhorn Foundation, these changes are consciously desired and cultivated. In others this occurs subliminally as part of the background and as an effect of participation. Intentional communities are an ideal space in which to effect and sustain personal transformation through practice and practical experience as compared (or in addition) to intellectual engagement with proselytizing texts or ideology. They lack dogma and seek rather to find better ways of living sustainably. The key, I suspect, is in the unselfconscious and unpretentious 'being' of ecological citizenry.

Other examples include Ecodyfi in west Wales, essentially a regeneration project inspired and emerging from the alternative community that is part of the Centre for Alternative Technology (CAT) just outside of Machynlleth. Specialist agencies, local government and community groups are engaged in a range of activities, in which CAT has developed considerable expertise, for example community-based water, wind, solar and wood fuel schemes, and sustainable land management. The overall aim is to regenerate the Dyfi valley in a sustainable fashion, building on its local attributes and engaging local people. Projects include horticulture, ecotourism, new green business start-ups,

affordable housing and community amenity developments. The Dfyi Biosphere Area is the only accredited United Nations Educational, Scientific and Cultural Organization (UNESCO) biosphere reserve in Wales.

In southern India, the spiritual community of Auroville has the largest concentration of alternative and appropriate energy systems in the subcontinent, is self-sufficient in milk and produces half its fruit and vegetables, has reforested many acres, has an extensive seed bank, and works with other local communities in cataloguing medicinal plants. In 2003 Auroville won an Ashden Award for Sustainable Energy. The community also hosts the well-respected Centre for Scientific Research.

Ecocity Development: Towards an *Ecopolis*

Although a great deal of ecological and bioregionalist thought focuses on the small scale and the rural, the majority of the global population now live in cities. If anything, the most important development in the 21st century will be to ensure urban development is sustainable, environmentally, socially, economically and politically. Sustainable urban design is extremely important, and the utopian, and increasingly the sustainable, city has captured the imagination of artists, architects, planners and urbanists of various descriptions. The 20th century witnessed practical utopian schemes by major architect-planners – Ebenezer Howard (Garden Cities of Tomorrow), Le Corbusier's Radiant City, Frank Lloyd Wright's Broadacre and, more modestly, Usonia (Hall, 1996). From Paolo Soleri's 'urban laboratory', Arcosanti, in the Arizona desert, to the Prince of Wales' retro-new urbanism of Poundbury in Dorset (UK), to the super-modernism of the massive ecocity

development of Dongtan in China, the integration of architecture, ecology and the planning of communities has seen no shortage of ideals and visions for those seeking alternative inspiration. However, it is important to make a distinction between the impractical and sometimes bizarre imaginings of some self-appointed prophets and visionaries and the more reasoned explorations of designers, architects, artists and planners which at their core have significant lessons to communicate. Thus for Fishman (1982), Howard, Le Corbusier and Wright's utopianism represent coherent bodies of thought that transcend the immediate situation and whose realization would break the bonds and cultural restrictions imposed by conventional wisdom. Their utopian visions were the three-dimensional expressions of social philosophies advocating human peace, beauty and harmonious living with nature. For Howard, the emphasis was on healthy, cooperative and

compact communities of no more than 30,000 people. His garden cities would relieve pressure on the big cities, combat urban alienation and reconnect people to the natural world. As Pindar (2005) concludes in his *Visions of the City*, utopian visions of future cities should not be so easily dismissed as authoritarian and irrelevant distractions or fantasies, for it is possible to learn a great deal from them if we allow them to be perceived as open, dynamic and provocative, thereby, perhaps, enabling us to effectively challenge the conditions and contradictions of the present. A number of contemporary ecological visions, ecovillage experiments, design scenarios and actually existing developments continue to demonstrate how the future could work (Manzini and Jegou, 2003; Beatley, 2004), and major international exhibitions such as 'Future city: Experiment and utopia and architecture 1956–2006' demonstrate the excitement as well as the need for continual exploration, conceptual creativity in project design that transcends disciplinary boundaries (Alison et al, 2006).

American architect Frank Lloyd Wright conceived of human settlements where each domestic unit or homestead would have plots of between one and five acres, with at least one acre for tillage. He rejected the big city, finance capital and landlordism. His Broadacre City was an attempt to realize in imagination and practice the reconnection of people with the land by merging town and country. He advocated a form of living influenced by the *transcendentalism* of Whitman, Emerson and Thoreau, with a Jeffersonian notion of democracy. He believed in a trenchant individualism, currently evading people in the densely inhabited and polluted cities like that 'fibrous tumour' he called New York. Modern communications, particularly the automobile and

telephones, would make the Broadacre concept possible, overcoming limitations of space and place. For Wright, new building materials and techniques made the verticality of the city 'unscientific' and unnecessary:

Broadacre buildings would be naturally adapted to the lives of the people, who would no longer build or be content to live in prettified boxes or take pleasure in the glassification of a glorified crate, however 'stylized'. Intelligence of life would not allow buildings as ignorant expedients; it would see a bad one as a serious impediment to good life. So in the free city now here in Usonian countenance of the countryside, find manhood seeking organic simplicity as appropriate character in everything; workmen themselves learning to see that organic simplicity is actually the fine countenance of Principle and no less so now in this our machine age than ever it was in ancient times. Rather more so. Yes and how much more necessary to life are architects who are in love with the poetry of life, they alone could say.

(Wright, 1958, p99)

However, his 'Usonian' vision, powerful in itself, was realized in another form that would not have won his wholehearted approval, even though Wright was one of the first architects to design houses with integral garage space – post-war suburban sprawl, a numbing automobile culture that arguably inhibits the development of community social relationships, degrading the natural environment with tract housing, billboards, strip malls and so on. As Lewis Mumford (1966b, p564) lamented, the suburb represented a childish view of the world, serving largely 'as an asylum for the preservation of an illusion. Here, domesticity could flourish, forgetful of the exploitation on which so much of it was based', undermined by a social and psychological emptiness.

Another 20th century architect whose utopian vision misfired was Le Corbusier,

whose Contemporary City and Radiant City seem to be a high point of modernism, emphasizing clean lines, high densities and efficient living – a synthesis of collective order and individual freedom, geometry and nature. For Le Corbusier, homes, or cells, were machines for living in, and, although he too felt the car was a liberator, he took no account of garaging or the effects of pollution. Nevertheless, Le Corbusier was drawn to what he considered to be organic and biological designs. Jencks writes (1987, p123):

His general scheme for the Radiant City develops on the biological analogy with the business centre as the head, housing and institutes as the spine, and factories, warehouses and heavy industry as the belly. The biological analogy leads of course to the separation of functions, or 'organs'. Le Corbusier makes this his keynote.

A plan arranges organs in order, thus creating an organism or organisms. Biology! The great new word in architecture and planning.

Although very different from Wright's vision, and sometimes associated with dehumanizing urbanism, some city planners, particularly in Japan, are relatively comfortable with marrying neo-Corbusian solutions to the very pressing problems of urban growth and development. But Le Corbusier's and Wright's visions offer both negative and positive lessons about utopian thinking, planning for the future and sustainability. Both contrast significantly with the eco-anarchist communities advocated by Bookchin and Callenbach and the ecological architecture and building at Findhorn.

Access, mobility and transportation are essential to contemporary living, but the social, environmental and human costs of the automobile are all too apparent. Around one million people die on the roads globally each year, the car is an immense consumer of resources, including land and oil, and although the car is a symbol of freedom, progress and modernity in both the developed and developing worlds, its effects on our quality of life are frequently negative – gridlock, personal frustration, atmospheric pollution, expense and so on. Although there has been considerable research on fuel-efficient cars, the hypercar, the hybrid car and increasing commercial development, publicized by celebrity endorsements, most famously with the Toyota Prius, the car remains a problem as a major consumer of raw materials. Crawford (2000) has analysed the possibilities of car-free cities, or rather cities where priority is afforded to other means of transportation, and has sketched out the urban design requirements, public transit alternatives and so on that would facilitate the practical utopia of such an environment emerging. In 1994, the city of Amsterdam organized the 'Car-free cities?' conference, the result of which was the formation of the Car-Free Cities Club to promote policies that discourage private car use. As Crawford (2000, p33) persuasively and powerfully states, 'car-free cities can offer rich human experience, great beauty and true peace. ... Car-free cities are a practical alternative, available now. They can be built using existing technology at a price we can afford.'

Applying the Hanover Principles at Kronsberg

A development of another sort is that of the city district of Kronsberg, southeast of Hanover in Germany. This area has been recognized by the European Union as a model of ecological optimization and human-scale development. In 1992 the City of Hanover had commissioned William McDonough and Michael Braungart (1992) to devise a comprehensive set of sustainability principles (the Hanover Principles) for urban designers, planners and architects that would inform the international design competitions for the EXPO 2000, whose themes were to be humankind, nature and technology. Kronsberg was a World Exposition exhibit in 2000. The plan allows for 6000 homes, 15,000 people and more than 3000 jobs. Ecological objectives had overriding priority in planning and construction, and no single developer was given ultimate authority. In fact 30 developers were involved in the building of the residential area, and this necessitated close consultation and cooperation with the local authority to ensure that high standards of soil, water and waste management, energy provision, and natural resource conservation were attained. Residential dwellings were required to emit 60 per cent less CO₂ than conventional housing units, this being achieved by a combination of solar, wind turbine and super-insulation projects. All rainfall on built-up and paved areas is absorbed, collected and gradually released, making for efficient water management, and ponds and other open spaces make water a design feature of the development that is constantly in the public eye. Waste separation and garden composting schemes address waste management issues, and excavated soil from the development has been

reused to establish local biotopes, to raise two hills that act as a noise buffer against a nearby motorway and to seal a local landfill site. Public transit and high residential densities, but with open green spaces and varied architecture, also figure prominently. The City of Hanover has since published *The Hanover Kronsberg Handbook* (Rumming, 2004) as part of the European Union's SIBART ('Seeing Is Believing As a Replication Tool') project, which, aimed at planners, developers and investors, addresses all aspects of the design, planning and construction of this exemplary sustainable urban district.

The Hanover Principles have formed the basis of other similar declarations throughout the world, including most notably The Shenzhen Declaration on EcoCity Development in 2002 (see Appendix 3). As the world's urban population increases, as economic development and foreign direct investment fuel urban growth in China (Zhang, 2002) and other parts of Asia, and as the relatively new phenomena of mega-cities of 10 million or more people become more common, environmental and social problems, ranging from air pollution to drug-related crime and unemployment, are likely to increase (Fuchs et al, 1994; Davis, 2006). In 2000 there were 18 mega-cities, but by 2025 Asia alone could have 10 'hyper-cities' with populations in excess of 20 million, including Jakarta, Dhaka, Karachi, Mumbai and Shanghai. By 2004, 183 of China's 661 cities had plans to become 'internationalized' cosmopolitan metropolises like New York, Paris or Tokyo, and by 2020, the Chinese urban population will be in the region of 900 million (Li, 2006). By 2050, 6 billion out of an estimated 9 billion

Box 7.2 The Hanover Principles

- 1 **Insist on the rights of humanity and nature to coexist** in a healthy, supportive, diverse and sustainable condition.
- 2 **Recognize interdependence:** The elements of human design interact with and depend upon the natural world, with broad and diverse implications at every scale. Expand design considerations to recognize even distant effects.
- 3 **Respect relationships between spirit and matter:** Consider all aspects of human settlement, including community, dwelling, industry and trade, in terms of existing and evolving connections between spiritual and material consciousness.
- 4 **Accept responsibility for the consequences of design decisions** upon human wellbeing, the viability of natural systems and their right to coexist.
- 5 **Create safe objects of long-term value:** Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creation of products, processes or standards.
- 6 **Eliminate the concept of waste:** Evaluate and optimize the full life-cycle of products and processes, to approach the state of natural systems, in which there is no waste.
- 7 **Rely on natural energy flows:** Human designs should, like the living world, derive their creative forces from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.
- 8 **Understand the limitations of design:** No human creation lasts forever and design does not solve all problems. Those who create and plan should practise humility in the face of nature. Treat nature as a model and mentor, not as an inconvenience to be evaded or controlled.
- 9 **Seek constant improvement by the sharing of knowledge:** Encourage direct and open communication between colleagues, patrons, manufacturers and users to link long-term sustainable considerations with ethical responsibility and re-establish the integral relationship between natural processes and human activity.

The Hanover Principles should be seen as a living document committed to the transformation and growth in the understanding of our interdependence with nature, so that they may adapt as our knowledge of the world evolves.

Source: McDonough and Braungart (1992, p6).

global population will be urban dwellers, 80 per cent of whom will be living in the developing world. As researchers on sustainable mega-cities at Bauhaus-Universität Weimer in Germany have noted, steering such urbanization 'is a central challenge in the pursuit of the goal of global sustainable development' (Bauhaus-Universität Weimar, 2004, p4). As Janice E. Perlman (2000), founder of the Mega-Cities Project, clearly states:

No precedent exists for feeding, sheltering, employing or transporting so many people. No precedent exists for protecting the environment from the pollution and resource consumption required by such multitudes. Urban regions, entire countries and ultimately the entire Earth could be affected by cities improperly managed.

Within cities, poor citizens face the worst environmental consequences. In low-income settlements, services such as water, sewage, drainage and garbage collection are often

non-existent. Lacking the resources to purchase or rent housing, between one-third and two-thirds of urbanites in developing countries become squatters on dangerously steep hillsides, flood-prone riverbanks and other undesirable lands.

The solution does not lie in simply scaling up solutions that work in small urban regions or directly transferring technologies from megacities in the developed world, but rather in creatively devising new solutions, urban management practices and modes of governance based on sound sustainability principles. Thus, as Haughton (1999) states, the fates of cities are intimately tied to the fates of their broader hinterlands, and with global economic trading, global exchanges of environmental resources and wastes, it will

not be possible, nor desirable, to create a sustainable city in total isolation from the rest of the planet. Satterthwaite (1997) discusses how the environmental costs of consumers in many growing cities are increasingly being transferred across national boundaries or into the future, although 'the scale and severity of environmental problems in cities reflect the failure of governments' (Hardoy et al, 2001, p7). The sustainable city model Haughton prefers is one that combines bioregional self-reliance with the values of environmental justice or 'fair shares', where basically environmental assets should be traded between cities and regions on the understanding that any damage or degradation should be adequately repaired or compensated.

In Praise of Cities

In a short article entitled 'Environmental heresies', the futurist Stewart Brand writes that environmentalists need to rethink many of their ideas. Brand (2005) writes that environmentalists tend to overvalue the rural ideal and despise cities even though life in many rural locations is far from idyllic, particularly for the poor. Hardoy et al (2001) also argue that cities offer many potential opportunities for promoting sustainable development, not least through economies of scale and proximity of infrastructure and services, water reuse and recycling, reduced heating and motor vehicle use, the funding of environmental management, and the establishment of good governance, participation and democracy. However, many cities, particularly in the developing world, offer the poor few opportunities for work, housing and education, although, as can be seen in Jeremy

Seabrook's *In the Cities of the South* (1996), Richard Neuwirth's *Shadow Cities* (2006) and Mike Davis' *Planet of Slums* (2006), even in the slums and shanties there is sometimes a sense of community solidarity not present elsewhere, which can be enhanced by innovative government schemes, as operating in Thailand, Nicaragua and Mexico, and more community-driven projects operating in India, South Africa and Brazil. These initiatives strive to reduce urban poverty and degradation through empowering the 'squatter citizen' (Mitlin and Satterthwaite, 2004). For many people, urban areas in the developing and developed world signify hope and possibility, making the need to ensure these urban environments are socially and environmentally sustainable all the more imperative. Thus, despite the many problems associated with the contemporary urban environment – pollu-

tion, alienation, overcrowding, violence and so on – Amin (2006) argues that at the centre of the good city must be ‘four registers of solidarity’ which are feasible, desirable and necessary:

- 1 **Repair:** The trans-human material culture of telecommunications, water, transport, social ritual, software systems and so on that prevents cities from collapsing under the strain of horrifying events like terrorist attacks on the underground;
- 2 **Relatedness:** Welfare, healthcare, public service activities, ethical tolerance and other measures like returning a city’s public spaces to public use have the capacity to deal with alienation, inequality and disaffection;
- 3 **Rights:** Through participation, the right and entitlement of all citizens to shape urban life and to benefit from it – civil liberty, community planning, local political engagement, and a fair and equitable representation of all social and ethnic groups; and
- 4 **Re-enchantment:** The celebration of urban life through good design, good services, adequate housing, clean environment, public art, enjoyable leisure amenities and meeting places, and an urban life not predominantly based on a consumerist ethos.

Civic politics can facilitate urban living, thicken democratic processes, support social relationships, celebrate difference and diversity, and so restore a sense of hopefulness to cities. For Amin, a civic ethic of care based on a politics of recognition is needed far more than any attempt to foster a community of communities or joined-up urban governance. Herbert Girardet has been an advocate of

sustainable urban living for decades and differs a little from Amin. His work with the UN’s HABITAT Human Settlements Programme clearly outlines the key dimension of urban sustainability in a series of highly detailed and substantial reports on global urbanization, the challenges and problems relating to growth of slums, and urban safety and security. It also addresses the ecological loops and flows of urban consumption, waste minimization and recycling, organic composting, resource use and budgeting, energy conservation and efficiency, renewable energy technology, economic expansion, green architecture and planning, durable construction, good public transport systems, local supply of staple foodstuffs, good quality housing, and proximity of work to home, which all help improve the quality of urban life by staying within ecological limits. Girardet (1996) writes that contemporary cities need to conceptualize their relationship to the rest of the world and that for this to be realized new forms of governance and organization will have to develop. Joined-up, or holistic, city government, with each department working to an environmental brief, is required. Cities need to be multi-centred and their built inheritance needs to be reused, renovated and rearticulated. They need to become places people want to be proud of – an end and not simply a means. Giddings et al’s contribution to Jenks and Dempsey’s excellent *Future Forms and Design for Sustainable Cities* (2005) emphasizes the need for the city economy to be inextricably linked to the livelihoods of its inhabitants, to be essentially local and ecologically sensitive to their region, thus enabling both urban and rural environments to re-establish their own distinct identities and purpose. City regions need to be diverse, vibrant and organic:

While getting food, energy and water from their surroundings, they in turn provide other vital components of sustainability, including health services, festivals, education and manufactured goods. Often the best way to strengthen the centre of cities is to support the existing local people, business, activities and culture. They enhance the quality of the environment without gentrification, encourage walking, and support public places and buildings and design for people.

(Giddings et al, 2005, p26)

William J. Mitchell, author of *City of Bits* (1996), *E-topia* (2000) and *Me++* (2003), sees tremendous potential in the application of emerging media technologies to urban public and private spheres. He is not alone in developing the notion of 'the intelligent city', defined simply as an urban environment incorporating a degree of digital infrastructure responding autonomously to a range of stimuli (Briggs, 2005). Cities and the buildings in them can be 'smart', although the digital infrastructure is just one element in a city's physical fabric, its 'hardware'. What really animates the city is the social and cultural interactions, its politics and sociality, its economic and commercial transactions, and so on. Consequently, Briggs argues that the broader understanding of the intelligent city allows us to see the city holistically and therefore sustainably. City intelligence will assess the capability to adapt to an array of pressures and impacts – global trade, technological

developments, new skill and knowledge requirements, investment flows, and climate change – while maintaining the quality of life and work and without negatively affecting the wider environment. Mitchell sees the developing digital infrastructure as affecting public policy, planning and politics, suggesting that intra-urban digital networking potentially offers a contemporary version of the agora, revitalizing democratic debate and participation. Online communities could complement physical ones, stimulating new social relationships, entrepreneurial and employment opportunities, economic markets, and informational connections. Rural telecommunications infrastructure could deliver numerous educational, health and business services. The disturbing divisions between rural and urban living may gradually fade. Virtualization and miniaturization could alter our sense and use of space. Digital sensors will help us monitor our consumption of renewable and non-renewable resources. An electronically managed vehicle rental and distribution service could lead to the rejection of the two- or three-car household by creating highly efficient information, booking and tracking systems. Work could become more flexible, more mobile and connected. Living and working spaces may no longer require separate zoning, with leisure, learning, living and working spaces being more intricately interwoven than before.

Transition Towns: Powering Down

Starting with a group of further education college students in Kinsale, southwest Ireland, permaculture teacher Rob Hopkins initiated the 'transition town' movement in 2005. The aim is that any locality – a village, town, city or

district – can reduce its consumption of fossil fuels. The transition town movement is above all about articulating an ethical but practical vision local inhabitants can support, develop and identify with. As Hopkins (2005a) writes:

The continual decline in the net energy supporting humanity [is] a decline which mirrors the ascent in net energy that has taken place since the Industrial Revolution. It also refers to a future scenario in which humanity has successfully adapted to the declining net fossil fuel energy availability and has become more localized and self-reliant. It is a term favoured by people looking towards peak energy as an opportunity for positive change rather than an inevitable disaster.

The idea was provoked by the notion of 'peak oil' and the work of Richard Heinberg, particularly *Powerdown* (2004), and inspired by the social and economic changes that have taken place in Cuba since 1991, following the drastic reduction in its oil supplies, food and trade economy following the fall of the Soviet Union (Quinn, 2006). Limited petrol supplies have transformed Cuban agriculture, with much food now grown in urban neighbourhoods and permaculture design principles applied widely. Small-scale renewable energy and energy-saving mass transit systems have been developed. Educational and healthcare provision has been localized. The Cuban national slogan is now 'A Better World is Possible', replacing 'Socialism or Death'. The first decade of the 21st century will probably see the maximum extraction of oil from the Earth, after which oil supplies will steadily diminish while the need for processing will increase as the oil extracted decreases in quality. It is therefore imperative for all communities to develop alternative energy sources and reduce energy consumption, while maintaining and enhancing the quality of individual and collective living. To do this, it is necessary to establish a path of 'energy descent', applying permaculture design systems and relocalizing the economy. The anticipated benefits include:

- healthier food;
- more active lifestyles;
- greater self-reliance;
- a sense of connection to place and products;
- the re-emergence of local identity;
- an emphasis on quality over quantity;
- a means of overcoming addictive behaviours such as over-consumption; and
- a meaningful common goal and sense of purpose.

In 2005 Hopkins, working with students and colleagues, devised the first energy descent plan, Kinsale 2021, with Kinsale Town Council a little later officially adopting it as council policy. Energy descent is about *living* a post-carbon future rather than preparing to *live in* a post-carbon future. It is about changing everyday habits, behaviours, proclivities and perceptions. It means rooting transitional change in individual and community action. The transition process involves community education and networking; food mapping; community arts activities and craft workshops; research, natural building, renewable energy and permaculture projects; the creation of community gardens; and local political lobbying, dialogue and clear media communication. The idea has caught on. By 2007, a number of towns in the UK, including Totnes, Ivybridge, Falmouth and Stroud, had become 'transition towns', with others, like Lampeter in Wales, showing considerable interest. In Totnes, community working groups focusing on healthcare, energy, food, local government, livelihood, economics, the arts, the psychology of change, housing, transport, education, youth and community have been established. A pilot local alternative currency, the 'Totnes pound', was launched in March 2007 to engage a wider number of local

people and businesses. Inspired by regional alternative currency models developed in Germany and the southern Berkshire region of Massachusetts in the US, the aim is to strengthen the local economy by keeping money circulating within a geographically bounded locality, which in effect is the same as attracting new money and owes much to the theories of economic localization or local protectionism (Crowther et al, 2002) and that

of the New Economics Foundation (Ward and Lewis, 2002). As Douthwaite (1999a, p1) has written, local and alternative currencies are nothing new. In the past they have helped fashion different types of societies and cultures by establishing an ecology of money: 'if we wish to live more ecologically, it would make sense to adopt monetary systems that make it easier for us to do so.'

New Urbanism

The recent development of 'urban villages' may offer environmental benefits, high-quality and affordable neighbourhoods, and mixed-use urban space with stable and diversely populated communities. 'New urbanism' (Katz, 1994) has set about redefining the American Dream, replacing suburban sprawl with higher densities, open space, less pollution and:

neighbourhoods of housing and parks, and schools placed within walking distance of shops, civic services, jobs and transit – a modern version of the traditional town. The convenience of the car and the opportunity to walk or use transit can be blended in an environment with local access for all the daily needs of a diverse community.

(Calthorpe, 1993, p6)

Talen (2002) assesses how the physical design principles of new urbanism, as stated in the Charter of New Urbanism (Congress for the New Urbanism, 2000), relate to realizing the goals of community, social equity and the common good for the new urbanism movement as a whole, rather than just in a few high-income developments. There is a general agreement that good design can contribute to residents' commitment or attachment to a place, foster localized social

interaction, and help nurture a sense of community. New urbanism expresses community abstractly, referring generally to the promotion of social identity and civic bonds, although Talen admits that good design can foster genuine sociologically informed neighbourhood level interaction. New urbanist planning provides for pedestrian, bicycle as well as motor vehicle access to physical resources and civic amenities, thereby clearly contributing to social equity. As for the common good, this can be interpreted as referring to the protection of the environment, historical buildings and farmland, the provision of public transport, and the promotion of a place-based, neighbourhood identity through the provision of spaces for public gathering. Furthermore, new urbanism is committed to participatory design, making physical improvements a public matter, and so builds in a capacity to develop a community as well as a series of buildings. New urbanism therefore recognizes that social and environmental problems need to be dealt with together and has explicitly linked a variety of social goals with optimum urban form.

In the UK, the Prince of Wales' new development of Poundbury in Dorset is based

on the principles of new urbanism, particularly regarding the emphasis on traditional architecture, walkability, and 'car-unfriendly' and community values (Hardy, 2006). The master plan was designed by Leon Krier and construction started on the 400 acre site in 1993. Many of the commissioned architects are local and many of the building materials, like the stone and slate, distinctive of the area. There is a strong sense of heritage in many of the

buildings' design, which has led some critics to perceive the Poundbury vision as somewhat kitsch. Nonetheless, new houses are currently being built to the EcoHomes 'excellent' standard (the highest rating). 20 per cent of domestic properties have been designated for affordable housing. By October 2006, 1250 were living and 750 working in Poundbury. The overall development is expected to last for between 15 and 20 years.

Environmental Design and the Sustainable Community

Environmental design seeks to create spaces that will enhance the natural, social, cultural and physical environment. The relationship of people to place, their identification with specific neighbourhoods, and their use of particular spaces for social, political and cultural activities may be influenced by design and may be renewed through environmentally sensitive planning processes. Designers must understand social psychology, human behaviour and ecology. Café society, culturally vibrant street life, pedestrianized shopping precincts, crime prevention and community safety through natural surveillance, the construction of children's play areas, accessible street furniture and resting places for the elderly and infirm, and open public spaces that support the practice of social and political democracy are all aspects of good environmental design as they promote and support social sustainability. Environmental design is therefore about helping to fashion human experience through a created physical space. Many see the high density compact city as a solution to many environmental problems, combating suburban sprawl by building at higher densities, encouraging walking, cycling and social interaction, and

discouraging car use, aided by congestion charging, fewer parking facilities and the provision of reliable public transport systems, particularly light rail and trams (Jenks et al, 1996; Williams et al, 2000).

Architects and engineers may exploit solar and wind power, choose environmentally sound building materials, recycle old brick and concrete as aggregate, install double or triple glazing, insulate effectively, use natural ventilation to provide thermal comfort and healthy air circulation, design roof gardens or even turf roofs, allow for the recycling of grey water, minimize noise pollution through effective sound absorption, and be open to unconventional built forms. But without cooperation between architects, engineers and planners, a great deal of environmental design will never be seen. In many parts of Europe, wood has become the sustainable building material of choice, this going far beyond the visible green-wash of external cladding. As a result craft traditions have been revived, with carpentry enjoying renewed popularity. Computer technology, including computer-aided design, combined with glue-laminated timber technology, have enhanced the possibilities of timber engineering and construction, with

many keynote designs consciously emulating natural forms, as with 'the core' at the Eden Project in Cornwall. So long as forest sources are managed sustainably, the fit between wood construction and sustainable development is near perfect. In energy terms, timber uses 190kWh per cubic metre compared to 8500kWh for steel and 11,000kWh for plastics (Lowenstein and Bridgood, 2007). The 'passive houses' developed in Sweden, Denmark and Germany are designed to need no active heating – they can be kept warm 'passively' using internal heat sources such as the inhabitants, solar energy admitted by the windows, and by heating the supply of fresh air. The first prototype passive houses were built in Kranichstein in the city of Darmstadt in 1991, with the emphasis on thermal insulation and heat recovery ventilation. Since then design improvements have been made, and by 2006 over 6000 of these very comfortable, ecologically sound and warm houses had been built in Germany alone. As Lockward (2006, p130) writes in the *Harvard Business Review*, building green is 'no longer a pricey experiment'. It is now the sensible option for businesses and communities. Environmental design and construction may also aim to reduce greenhouse gas emissions through energy-efficient buildings, combined heat and power systems, water recycling, and waste minimization. Large household gardens, trees and turf roofs all reduce high temperatures as well as increasing the potential for domestic food production and composting. Parks and gardens, the city's 'urban lungs', provide healthy recreational areas and the acquisition of land for nature reserves, town trails, community gardens, urban farms, allotments, widespread tree planting and urban agriculture (a tool for transforming urban organic wastes into food and jobs, improving public health and land,

and saving water and other natural resources) are ways urban dwellers can build mutually supportive social relationships and reconnect to the larger ecosystems.

Urban environments have hitherto been shaped by economic rather than social and environmental goals. Hough (1995), McLennan (2004) and Low et al (2005) argue that designers must ensure that urban developments positively influence the environments they change. Stefanovic (2000) remarks that the ways in which we spatially and operationally structure and construct our human settlements inform how we envision social and community relationships and our relationships with the natural world. Architecture can help us articulate and find our place in the world. And being rooted in a place provides a sense of belonging, nurtures an ethic of care, and perhaps promotes a more efficient and ecologically meaningful use of resources than a more mobile and transient habitation. Natural processes need to become incorporated into human activities through the creation of multifunctional, productive and working spaces that integrate people, economic activity and the environment, and where design is more intimately connected to the changing nature of our climate. For Low et al, the key to good green urban design is the ability to bring people back into contact with nature, whether it is in the home, work environment or local neighbourhood. It is important to make transparent the processes by which nature is turned into the goods and services we use for our convenience, our lifestyle and our homes, and there are general green design principles that can, and should, be applied to the construction, maintenance or refitting of our homes, apartments and housing developments. These include (Low et al, 2005, p53):

- design for local climate;
- orientating the house so the main windows face the sun (north in the southern hemisphere and south in the northern hemisphere);
- optimizing use of thermal mass;
- providing good insulation;
- design for good ventilation, minimizing leakage of heat and air;
- good water management;
- using localized energy systems with the national grid as back-up; and
- aiming at zero greenhouse gas emission for everyday use of the dwelling.

Green housing developments should (Low et al, 2005, 70):

- minimize use of resources – atmosphere, water, land, and rare or toxic materials;
- be responsive to local environment, make open space useful and accommodate for the lives of non-human others;
- minimize need for travel, maximizing low-energy modes of transportation (for example bicycles, walking and public transport);
- keep space public and as far as possible occupied and socially inclusive;
- design for public safety, with walkways open to view; and
- be affordable, with sufficient dwellings available for those with special needs.

Hugh Barton (2000, pp89–90) argues that places, neighbourhoods, are best conceived as open ecosystems if sustainable living environments are to be achieved and maintained, and a community's ecological footprint reduced without compromising choice and opportunity.

The inventor and designer Stewart Brand (1997) has written on 'low-road' buildings and

spaces that people make their own – where they feel free and in fact are free 'to do their own thing'. These spaces become places of personal significance because of the freedom and psychological warmth they offer as a result of their customization. Low-road space can become part of the self. Similarly, the anarchist writer Colin Ward (2002) has written warmly of individuals and movements of people who also occupy space to build or construct their own places of leisure and respite away from or in opposition to planning regulations, social conventions, political and economic power, and mainstream cultural expectations. In many ways, squatter settlements make homes and place out of necessity: but then isn't necessity the mother of invention and cannot the converted garage be a place of immense creativity because of the freedom it affords?

Self-build more generally has been an important part of many people's desire to create their own space, often articulated with ecological principles, aims and values. However, self-build has its own issues and problems, not least with the need for self-builders to have the requisite time, skills, finances, and understanding of building techniques, building regulations and planning processes. Nevertheless, creating one's own space is something all animals need to do. It is what we call home, and feeling at home in a space or place is surely the key to caring for it and feeling one belongs to it. As geographer Yi-Fu Tuan (1977) writes, home is a place that offers security, familiarity and nurture, and can take many forms.

Architect and teacher Samuel Mockbee once said that 'everybody wants the same thing, rich or poor – not only a warm, dry room, but a shelter for the soul'. Working at the College of Architecture at Auburn

Box 7.3 Samuel Mockbee – Learning and the Rural Studio

Sanders–Dudley House, Sawyerville, AL, 1999–2001 2nd Year Project

With the assistance of the Hale County Department of Human Resources, the Rural Studio selected the Sanders–Dudley family as clients for a new home. The family has six children. The Sanders–Dudley house encompasses 1500 square feet and has three bedrooms, two bathrooms, a kitchen/family room, a den and a dining room. The family gathering spaces open onto a central courtyard which is bathed in light at sunrise and sunset. The house is designed to accommodate the many different needs of such a large family, attempting to give children and parents adequate private space, but at the same time creating rooms that foster family interaction. Great consideration was given to daily activities such as preparation for school so that the house might ease the hectic task of raising six children. The material palette employs rammed earth for all exterior walls, a steel roof structure, metal studs and sheet-rock on the interior, and an abundance of glass and transparent sheets of poly-carbonate in clerestory windows above eight feet and window-walls surrounding the courtyard.

Rammed-earth construction, chosen for the Sanders–Dudley house, is a building technique in which a cement/soil mixture is compacted into forms to create load-bearing walls that harden into what is essentially man-made, engineered rock. Rammed earth was chosen for the construction method because of its durability, its natural resistance to fire and tornado and its sense of permanence and security. The students have researched the rammed earth method through books and government publications, consultation with experienced contractors, and extensive tests and mock-ups. Except for some experimental housing built in the 1930s near Birmingham, Alabama, this is the first house in the southeast to use this method of construction.

Source: www.cadc.auburn.edu/soa/rural-studio/projects_sandersdudley.htm.

University in Alabama, Mockbee established the Rural Studio in the 1990s for his students to gain real-world experience of architectural and building projects. Unlike many architectural education programmes, Mockbee's aim was to work constructively with the rural, usually black, poor, providing them with decent, well-designed, beautiful and innovative homes and community buildings at low cost. Much of the work is in Hale County, made famous in the 1930s by the documentary photographs of Walker Evans and James Agee's book *Let Us Now Praise Famous Men*. Materials are often recycled or reused, his students' designs sympathetic to the local

environment and vernacular style but totally fashioned to meet their client's needs, whose views and practical requirements fully inform the students' learning and evolving architectural knowledge. As Mockbee said, the community is the students' classroom and frequently their first intimate experience with 'the smell and feel of poverty' (Dean and Hursely, 2002, p3). Aesthetics and ethics, honesty and spirituality, combine in a pedagogy and practice that demonstrates to usually middle-class students that they, and their chosen profession, can make a genuine difference for the good.

Ezio Manzini and the Sustainable Everyday

For the Italian designer Ezio Manzini (Manzini and Jegou, 2003; Manzini, 2004 and 2005), everyday urban living is influenced by population density, technical functions and networks (water, transport, energy, waste), the quality of the built environment, human social connectivity and interaction, and the quality of localized services. In addition, the size and role of the family or household, social expectations regarding human social welfare, opportunities for democratic participation, and the distribution of wealth and knowledge are other more social influences. Cities are complex places, and so is the experience of living in them. Frequently, what affects urban dwellers' lived experience may have no obvious or direct cause; if it does, that cause has its origins in opaque and distant decision-making or vaguely defined economic or market forces. Given this, grassroots changes to everyday living might seem doomed to insignificance, and Manzini agrees that changes to an individual's lifestyle choices, actions and behaviour will not in themselves alter the urban physical and social forms. On the other hand, Manzini argues that any transformation of a complex system requires that it be put under some tension from within at the micro-scale as a preparation for wider systemic change. This is what urban dwellers can do by changing their everyday habits, routines and actions. Things can be done differently, new and old skills can be learned, and alternatives to 'business as usual' can be sought out and developed. New practical pathways can be supported and reinforced by the generation of new cosmopolitan ideas, business opportunities, applied research and technological innovation. It is possible to learn from the diversity within

cities across the globe to produce a dynamic catalogue of new urban possibilities – new scenarios for everyday living, new opportunities for communication, sustainability projects and the diffusion of a new design culture. Manzini's initial research led to 72 proposed scenarios which together exhibit a number of common traits and recurrent ideas:

- **Multiple aims:** Each proposal has more than one aim, representing an emerging heterogeneity and a culture of complexity.
- **Local–global link:** Each proposal is open to communication flows between the local and global and, although place-based, is not rooted in a nostalgic search for a golden past.
- **Individual–community link:** Both individuals and communities are able to benefit from and develop each proposal.
- **Ecology of time:** Each proposal will move at a different speed and rhythm, creating islands of slowness within faster-paced city flows.
- **Enabling technology:** Each proposal accepts the potential role of technology, but none posits technology as the sole or simple solution.

The scenarios emerge from a growing social consciousness and everyday sustainable development practice. Based on actual innovations from countries across the world – in China, Canada, Italy, India, the US and Japan – they include:

- **the extended home**, including a kitchen club, sauna network, net shopping service and clothes-care service;

- **localized activities**, including neighbourhood office space, optimal management and multifunction use of city work spaces, and combined telework and recreation areas;
- **alternative mobility**, including systems of local delivery services, use of light vehicles and personalized public transport;
- **advanced natural food**, including the prevention of ill health through the consumption of traditional food and eating seasonal fresh and local foods;
- **sympiotic nature**, including greenhouses, community gardens and allotments all over the city and community eco-landscaping projects;
- **socio-bio-technological building construction**, including green roofs, communal spa and bathing facilities, and efficient municipal water management; and
- **sustainable micro enterprises**, including small green businesses, 'fix it shops', etc.

The realization of sustainable everyday living will require social learning, cooperation between urban designers and communities, social experimentation, and the modelling of new project ideas and actions. It will also require urban planning systems to facilitate the emergence of open and lively cities with significant centres of local cultural diversity, a new and dynamic fluidity to everyday life, and the development of new types of services and empowered places that exhibit a form of

ambient intelligence, harnessing the possibilities afforded by emerging media technology. As Manzini and Jegou (2003, p223) write:

Given the complex, hybrid nature of these local-global, real-virtual services, they could in fact become catalysers for other, wider phenomena. Particularly in the perspective of a multi-local city, they could be engines for a strategy of 'bottom-up' change where, by operating on a neighbourhood scale while being highly connected on a global scale, they could activate new dynamics in the economic and social fields, leading to the generation of new forms of community and identity. In short, if appropriately planned, they could contribute to the birth of a new sense of place and consequently to a new idea of the city.

The sustainable city will be created by a change in outlook, a critical and reflexive mindset, and a million and one small changes to the living of our everyday lives. Manzini offers various pictures, or scenarios, for future and present sustainable living. Some involve a degree of technological problem solving, but the technical fix is only part of the process and you don't have to be a writer, designer or architect to envision a sustainable future. As noted earlier, the Local Agenda 21 (LA21) process frequently involves communities imaging better ways of doing things and planning their futures. In addition, there have been many local regional and global initiatives involving various groups of stakeholders who have undertaken various forms of visioning, scenario-building, forecasting and backcasting.

Scenario Analysis

Economic forecasters, weather forecasters and scientific forecasters use very similar methods, building models based on the collection,

description and analysis of vast quantities of often quantitative data, leading to a presentation of future behaviour as a product of

carefully calculated mathematical probabilities. But, as the authors of the Stockholm Environment Institute's report *The Great Transition* (Raskin et al, 2002, p13) state, 'predictive modelling is inadequate for illuminating the long-range future of our stunningly complex planetary system! Global futures evade prediction because of three factors:

- 1 **Ignorance** – Incomplete information on the current state of the system and the forces governing its dynamics leads to a statistical dispersion over possible future states.
- 2 **Surprise** – Complex systems are known to exhibit turbulent behaviour, extreme sensitivity to initial conditions and branching behaviours at critical thresholds; the possibilities for novelty and emergent phenomena render prediction impossible.
- 3 **Volition** – the future is unknowable because it is subject to human choices that have not yet been made.

Scenarios outline contexts and situations in which possibilities unfold – issues, actors, events, processes, flows, images, actions and so on. Global scenarios particularly are based on the combination of science and the arts, of hard facts and flights of the imagination, the description of current trends, the extrapolation of likely future consequences, and the construction of alternatives for human and non-human beings and the natural and the social environment. Utopian and dystopian thinking may be part of this, just as practical possibilities and desires may be. As Raskin et al (2002, p14) write, 'rather than prediction, the goal of scenarios is to support volition and rational action by providing insight into the

scope of the possible.' This is what Manzini has done on the everyday neighbourhood scale and what the Stockholm Environment Institute has done on a macro-level.

Three archetypal scenarios of the future have been developed – *Conventional Worlds*, *Barbarization* and *Great Transitions*. The Conventional Worlds scenario assumes that current trends will play out without producing major disturbance to the evolution of contemporary institutions, environmental systems and human values. In the Barbarization scenario, fundamental and unwelcome social change does occur, causing significant human misery and the destruction of civilized norms. In the Great Transitions scenario, fundamental social transformation also occurs, but this leads to a new and arguably higher stage of human civilization. Raskin et al (2002, p15) explain in some detail:

Conventional Worlds assume the global system in the 21st century evolves without major surprise, sharp discontinuity or fundamental transformation in the basis of human civilization. The dominant forces and values currently driving globalization shape the future. Incremental market and policy adjustments are able to cope with social, economic and environmental problems as they arise. Barbarization foresees the possibilities that these problems are not managed. Instead, they cascade into self-amplifying crises that overwhelm the coping capacity of conventional institutions. Civilization descends into anarchy or tyranny. Great Transitions, the focus of this essay, envision profound historical transformations in the fundamental values and organizing principles of society. New values and development paradigms ascend that emphasize quality of life and material sufficiency, human solidarity and global equity, and affinity with nature and environmental sustainability. For each of these three scenario classes, we define two variants, for a total of six scenarios. In order to sharpen an important distinction in the contemporary

debate, we divide the evolutionary Conventional Worlds into *Market Forces* and *Policy Reform*. In *Market Forces*, competitive, open and integrated global markets drive world development. Social and environmental concerns are secondary. By contrast, *Policy Reform* assumes that comprehensive and coordinated government action is initiated for poverty reduction and environmental sustainability. The pessimistic *Barbarization* perspective also is partitioned into two important variants, *Breakdown* and *Fortress World*. In *Breakdown*, conflict and crises spiral out of control and institutions collapse. *Fortress World* features an authoritarian response to the threat of breakdown, as the world divides into a kind of global apartheid with the elite in interconnected, protected enclaves and an impoverished majority outside.

There are also two variants of Great Transitions: *Eco-communalism* and the *New Sustainability Paradigm*. *Eco-communalism* offers a bioregional, localist, participatory democracy supported by economic autarky. Raskin and his co-authors find it difficult to envisage a plausible path from today's globalizing trends to *Eco-communalism* without involving some form of *Barbarization*. Thus the Great Transition becomes identified with the *New Sustainability Paradigm*, which would change the nature of global civilization, encompassing global solidarity, cross-cultural interaction and economic connectedness, while aiming for a liberating humanistic and ecological politics rather than relying on mainly localist anarchistic-style solutions. The authors base their scenario analysis and 'history of the future' on a detailed interpretation of current drivers, including demographics, economics, social issues,

culture, technology, environment and governance. There are moments, 'branch points', when opportunities arise and when development may take different directions. Leadership for change may come from different quarters, linking and influencing change in other areas. Globalization is presented as a process that expands categories of consciousness and not something that should be opposed outright, as if it is civilized then it offers significant new potentialities for corporations, civil society, technological development and application, and governance. In the great transition taking place after 2025, Raskin et al suggest that a new social movement, 'the accountability movement', will emerge, encompassing increasing numbers of business leaders accepting the legitimacy of many social and environmental demands and leading newly creative business initiatives to meet them. Countless global manufacturing firms will adopt 'zero impact' goals – producing no waste, releasing no pollution, and accepting responsibility for post-consumer product recovery and recycling. Many corporations will have cut costs dramatically as a result and are providing affordable basic goods, services and jobs in poor communities, which in the process creates large new markets. Other corporations will harness nanotechnologies to produce products using less raw materials and energy. Consequently, sustainable development will mean a new form of ecologically based 'reindustrialization', providing the material basis for the continuance of human civilization.

Thinking Questions

- 1 In your view, what is the value of utopian thinking to sustainable development?
- 2 Does each separate worldview imply a specific vision of the future?
- 3 In what ways do sustainable architecture, planning and design benefit from utopian thinking?
- 4 Are ecovillages practical utopias?
- 5 What is the relationship, if any, between utopian visioning and scenario analysis and backcasting?

8

Tools and Systems for Sustainability

Aims

This chapter will examine a range of tools and measurements designed to assess the progress made towards realizing sustainability goals. The relationship between the Natural Step Framework and the development of sustainability indicators, and the theory and application of ecological footprinting analysis

and ecological space will be discussed. Finally, the chapter will evaluate the role and applicability of a range of sustainability indicators in the broader process of communication and social learning accompanying sustainable development practice.

Delivering Sustainable Development

For the economist Paul Ekins (2000), sustainable development means that economic, social, environmental and other benefits must be delivered. Human beings need to live and produce within ecological limits. Human social welfare needs to be enhanced for all, with equity and justice defining a sustainable society, but the benefits of living in a sustainable society need to be clearly and distinctly communicated in a series of measures or summaries of relevant information. The problem for Ekins is that, although numerical indicators may exist for certain areas, for example finance or economic capital, combining them all into one index of sustainable development is extremely difficult to achieve

as many potential indicators are not commensurable. Ekins also notes that, in public policy terms, standards for sustainability are usually set by government, becoming, through the governmental process, motivating targets and indicators. Turnhout et al (2007) suggest that although many ecological indicators are based on scientific knowledge and understanding, they cannot be purely scientific in their practical application. Ethical issues are invariably involved too, as they inform the policy process, help define the policy problem, and are frequently used strategically, or tactically, to effect socio-political, economic and environmental change:

This means that the idea of a 'chain of knowledge' needs to be reconsidered. The overlap between science and policy in the boundary area means that it is not only knowledge translation and transfer that takes place here, but knowledge production and use as well. In the case of ecological indicators, science and policy enter into some kind of joint knowledge production. Scientific knowledge is used in ecological indicators, but so is political knowledge. Ecological indicators are shaped by political preferences and considerations to protect certain species, certain types of nature and so on. Development and use of indicators go hand in hand and are hard to distinguish empirically. Clearly, ecological indicators cannot be unproblematically labelled as scientific. Labelling it as solely political, on the other hand, does not acknowledge the scientific input that is required.

(Turnhout et al, 2007, p221)

Science can inform and ecology can serve as a model for sustainable development, but sustainable development cannot be reduced to either. Ethical and political considerations

will always be part of the picture, this is clearly seen perhaps in their influence on the development of good governance indicators. Stewart (2006) argues, in his discussion of political participation in the Greater Vancouver region, that social justice and inclusion needs to be operationalized by applying the theory of 'persistent losing'. Community members may be committed to collective decision-making but may persistently lose out in the decision-making process. In this context, they would be acting quite reasonably if they rejected the rules which persistently cause this to happen. In this way, the interests of marginal, perhaps aboriginal groups, can be factored in. For Stewart (2006, p203), both the World Bank (World Bank, 2006) and UN Habitat (UNDP, 2006) have failed 'to include an adequate assessment of citizen participation in their good urban governance indicator sets, nor do they provide much guidance as to why their indicators are

Table 8.1 *UN Habitat Urban Governance Indicators: Project categories and measures of 'good urban governance' in developing world cities*

Effectiveness	Equity	Participation	Accountability	Security
Major sources of income	Citizen's charter	Elected council	Contracts, tenders, budget and account publications	Crime prevention
Predictability of local budget transfers	Percentage of women councillors	Elected mayor	Protection from higher levels of government	Police services per 100,000
Published performance delivery standards	Pro-poor pricing policies for water	Voter turnout	Codes of conduct for officials	Conflict resolution
Consumer satisfaction surveys	Incentives for informal businesses	Public forums	Facility for citizen complaints	Violence against women policies
Vision statement		Civic associations per 10,000	Anti-corruption commission Disclosure of income and assets Independent audit	HIV/AIDS policy

Source: Stewart (2006, p197).

essential and, most importantly, how these indicators should be assessed! The most appropriate and effective indicators are developed dialogically, working at the interface of (social) science and their specific socio-cultural, political and economic contexts.

Unfortunately, but perhaps inevitably, this may occasionally lead to some necessary vagueness in order to necessarily and diplomatically accommodate different perspectives, values and interests.

Ecological Footprint Analysis

The continuing design, application and revision of sustainability indicators, and other similar tools, is often an attempt to manage the sustainability process by gently questioning the notion that only what is measurable is valuable. We need to move to a position where we seek to measure what we value. Developing a sustainable indicator is an attempt to point out both what we value and how we intend to measure it. The problem arises in selecting a reasonable and manageable number of indicators that effectively serve to organize information into specific categories and showing the interconnections and possible tradeoffs among them. Apart from being resonant, valid and motivational, for Chambers et al (2000, p18) indicators must also be:

- organized around a sharp purpose (for example building municipal sustainability);
- captured in an effective framework for organizing the indicators that explains the challenges and tradeoffs (for example economic quality of life and maintaining Earth's biocapacity);
- imaginative and realistic about possible intervention points (public planning); and
- specific about the next steps beyond the indicator project (for example new green taxation and regulation).

Ecological footprint analysis, as defined and developed by Mathis Wackernagel and William Rees (1996), refers to the total area of productive land and water required continuously to produce all the resources consumed by a region (or city) *and* to assimilate all the wastes produced by a particular population, wherever on Earth that land is located. The ecological footprint is therefore a land-based substitute measure of the population's demands on natural capital. It assumes that it is possible to accurately measure a given population's resource consumption and waste production and that these flows can be converted to a biotically productive area. It should not be confused with the related concept of 'environmental space', designed by the pressure group Friends of the Earth in the 1990s (McLaren et al, 1998). Environmental space methodology identifies the ecological capacity of a particular resource used by people and sets a target of what consumption of it ought to be if everyone has a fair share (of, say, CO₂), that is to say a share that allows everyone to live within the Earth's carrying capacity. Environmental space sets normative sustainability targets and, through setting such targets, the methodology articulates a philosophy of environmental justice as well as providing a useful policy tool for governmental and corporate decision-makers. However, space targets do not always readily appeal to

individuals or adequately express how different resource uses and material substitutions interact with one another. Environmental footprint analysis, on the other hand, although it too has certain disadvantages, is arguably easier to understand and communicate to a broad non-specialist public. The major strength of the footprinting approach is its conceptual simplicity – it is accessible, intuitive and easily communicable in graphic forms, making the idea of ecological restraint more meaningful or acceptable to those reluctant to embrace pro-sustainability behaviour change. The footprint aggregates ecological flows associated with consumption and production, translating them into an appropriate land area serving as the key indicator and ready comparator between demand for ecological space and its finite supply. According to the WWF (2006, p2) and many other authorities:

humanity is no longer living off nature's interest, but drawing down its capital. This growing pressure on ecosystems is causing habitat destruction or degradation and permanent loss of productivity, threatening both biodiversity and human wellbeing.

A moderate business-as-usual approach to using the planet's ecosystem services is likely to lead to complete ecosystem collapse this century, but there are also currently vast differences in different nation's environmental impacts. The WWF (2006) states that given the world's present population, the average biocapacity per capita is 1.8 hectares. The actual per capita ecological footprint is 9.6 hectares for the average American, 5.6 for the Briton, 1.6 for the Chinese and 0.8 for the Indian, with the economies of the latter two states growing quickly and massively. Sustainable development is not an option, it is an imperative.



Figure 8.1 *National ecofootprints (to scale)*

By focusing on the tension between the standard and quality of life and the ecological integrity of the planet, ecological footprinting effectively captures the primary sustainability notion that the economy is a means to an end and not an end in itself. People's lived experience, life satisfaction, and social and human development are at the root of much of the work that has gone into developing ecological footprint analysis. For example, Wackernagel and Yount (1998, p513) define sustainability as 'the continuous support of human quality of life [in other words people's subjectively perceived wellbeing] within a region's ecological carrying capacity [in other words the ecological or biotic capacity within a region to regenerate used resources and assimilate waste]'. The tension between living well and living sustainably, and the reality of the interconnected nature of the world, where even renewable resources like forests can disappear if we exploit them without a thought for tomorrow, is clearly brought to the fore. It also makes trade imbalances and the ameliorating effects of new technology visible, while expressing the first and second laws of thermodynamics. These laws state, respectively, that mass is neither created nor destroyed but just gets rearranged and energy

is neither created nor destroyed but is just transformed; and that everything ultimately runs down. Despite all the advantages, ecological footprinting has one significant drawback: it is not a dynamic modelling tool and has no predictive capacity. It is not a forecast of the future or even an analysis of socio-political issues, but simply a means of indexing biophysical impacts, of evaluating the present state of affairs and providing some tools for understanding possible alternative 'what if' scenarios. It also tends to underestimate overall impacts and may overestimate the planet's carrying capacity although it remains a very useful tool, as Rees and Wackernagel argue:

Ecological footprinting acts, in effect, as an ecological camera – each analysis provides a snapshot of our current demands on nature, a portrait of how things stand right now under prevailing technology and social values. We believe that this in itself is an important contribution. We show that humanity has exceeded carrying capacity and that some people contribute significantly more to this ecological 'overshoot' than do others. Ecological footprinting also estimates by how much we have to reduce our consumption, improve our technology or change our behaviour to achieve sustainability.

(Rees and Wackernagel, 1996, p231)

Additionally, ecological footprinting does not indicate how trade may reduce incentives for material resource conservation by facilitating and reinforcing urban dependences on other territories, as resources are basically sought further afield. This becomes especially apparent when trade and natural flows in contemporary relationships between the North and the South are examined:

Much of the wealth of urban industrial countries comes from the exploitation (and sometimes liquidation) of natural capital, not

only within their own territories, but also within their former colonies. The energy and material flows in trade thus represent a form of thermodynamic imperialism. The low-cost energy [essential energy] represented by commodity imports is required to sustain growth and maintain the internal order of the so-called 'advanced economies' of the urban North. ... Colonialism involved the forceful appropriation of extraterritorial carrying capacity, but today economic purchasing power secures the same resource flows. What used to require territorial occupation is now achieved through commerce.

(Rees and Wackernagel, 1996, p239)

The authors conclude that urban policy should aim to minimize disruption of ecosystem processes and reduce energy and material consumption. For McManus and Haughton (2006), as an indicator of impact, ecological footprinting decontextualizes place and natural diversity, by suggesting that everything can be reduced to one common metric, and may actually narrow our understanding of sustainable development despite raising our general awareness. For Newman (2006), it may help frame environmental management and sustainable development policies but has difficulties in assessing detailed priorities as to what needs to be reduced first or even by how much, for example a city's use of water, energy or land. However, since the work in the early 1990s, methods of ecological footprint analysis have been refined and the extent to which the world's population is overshooting the biosphere's capacity is becoming clearer. Ecofootprinting does provide possibilities for comparing a variety of sustainability options and project choices in business, technological and industrial production processes, policy scenarios for development, population and consumption, urban design and regeneration, and so on. It can be applied to testing such things as the role of efficiency gains in reduc-

Box 8.1 The ecological footprint of Greater London

- The population of Greater London in 2000 was 7.4 million.
- Londoners consumed 154,400GWh of energy (or 13,276,000 tons of oil equivalent), which produced 41 million tonnes of CO₂.
- Londoners consumed 49 million tons of materials (6.7 tons per capita).
- 27.8 million tons of materials was used by the construction sector.
- 6 million tons of waste was generated, of which 15 million tons was generated by the construction and demolition sector, 7.9 million tons by the commercial and industrial sector, and 3.4 million tons by households.
- 6.9 million tons of food was consumed, of which 81 per cent was imported from outside the UK.
- Londoners travelled 64 billion passenger kilometres, of which 69 per cent was by car.
- Water consumption reached 876,000,000,000 litres, of which 28 per cent was leakage.
- The ecological footprint of Londoners was 49 million global hectares (gha), which was 42 times its biocapacity and 293 times its geographical area. This is twice the size of the UK, and roughly the same size as Spain.
- The ecological footprint per London resident was 6.63gha. This compares with the UK average ecological footprint of 6.3gha and far exceeds the global 'earthshare' of 2.18gha.
- The ecological footprint of London tourists was estimated at 2.4 million gha, which equates to an additional 0.32gha per Londoner.
- The predicted 'earthshare' in 2050 is estimated at 1.44gha per capita.

From the above, it follows that for Londoners to be ecologically sustainable by 2050, a 35 per cent reduction by 2020 and an 80 per cent reduction by 2050 of their ecological footprint will be needed.

Source: Bestfoot Forward Ltd (2002) 'City Limits: A resource flow and ecological footprint analysis of Greater London', available at www.citylimitslondon.com.

ing resource consumption, the relationship between income and ecological impact, dematerialization of economies, the relationship between economic and ecological debt, the link between population health and resource throughput, and transition to a solar economy, and provides a practical and expressive education tool in schools, colleges, universities, community groups, business and the professions (Wackernagel and Yount, 2000). The same type of analysis can be done for local communities, small business, transnational corporations, cities, city regions and

nation-states by both specialists and non-specialists. It is an organizing, educational and analytical tool. The method's repeatability enables the development of comparisons, debate and discussion. Finally, although there is evidence that a smaller ecological footprint does not necessarily mean a reduced quality, or even standard of living, Wackernagel and Yount suggest that ecological footprinting could be more socially embracing if it were linked to, or complemented by, measures of human satisfaction or happiness.

Sustainability Assessments and Appraisals

Cities are massive consumers of resources and many are literally getting bigger by the day. Newman (2006) looks into reducing the ecological footprint of Sydney by applying the more finely grained tool of *sustainability assessment*, which simultaneously considers social, economic and environmental issues and has the potential to encourage integrated policy initiatives suitable for the urban management of specific factors, such as energy, transport, waste, employment, access, governance, population/housing density and land use. A sustainability assessment requires any new development to produce a 'net benefit' in the three areas of environment, social and economic performance, with no tradeoffs between any, by promoting positive outcomes from development. Ravetz (2000), working on similar and related concerns, has developed an integrated sustainability appraisal process in his work on the Greater Manchester city region. His discussion of complexity, systems, flows, stocks, limits, dynamics and externalities complements the work of Rees and Wackernagel by highlighting the practical/programme, planning and policy dimensions of city governance. The problems Ravetz confronts are essentially the complex interdependencies of ecosystems, the intangible qualities of environmental capital, the tangibility of material resources, and the dynamic evolutionary nature of physical and human systems over time. Ravetz also explores the possibilities of integrating the social and the economic (although not the political) into the development of sustainability indicators and the evaluation of their likely future directions. He recognizes that virtually any approach to sustainability appraisal,

integrated or not, of corporations or urban municipalities will be value-laden and will require linking up different forms of professional expertise, knowledge and opinion. So given this, the application of a systems perspective is valuable in putting together multiple factors from environmental, economic and social dimensions:

For integration of environmental and socio-economic assessments in an IA [integrated assessment] framework, there is an important distinction between weak and strong approaches. Weak integration leaves different sets of impacts to be balanced by stakeholders and decision-makers, or in effect integrated through a political process. Strong integration aims to carry out the integration within the technical process, whether multi-criteria or economic, and thus requires comprehensive frameworks, which are more vulnerable to indeterminacy and multiplicity. Integration via community impact evaluation relies on the expert definition of costs and benefits for different stakeholders, which again has difficulty with cumulative effects, multiple values and contested boundaries. Integration via the criteria of futurity and equity also struggles to define these in practical terms where different actors have multiple perspectives and the line between costs and benefits is often fuzzy.

(Ravetz, 2000, p57)

In practice, Ravetz continues, indeterminacy and multiplicity means that any sustainability appraisal is never a final and true answer – it is always work in progress – but it is more likely to be viable if holistic system principles guide the methods and context of investigation.

Sustainability indicators can also be translated into an array of league tables seeking to compare the performance of one business or city with another and in the process motivate changes and improvements.

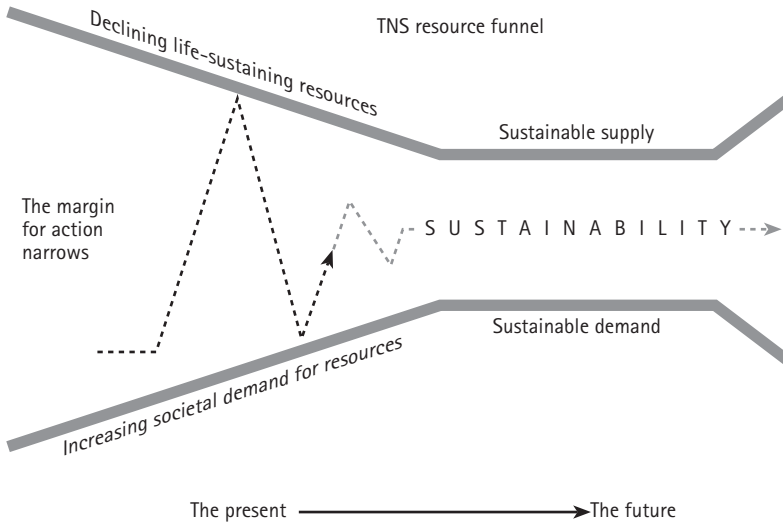
League tables are notorious for their oversimplification of highly complex issues, but they often produce a picture that demonstrates the effectiveness or otherwise of policy and action. However, there is always a difference, it seems, between rhetoric or appearance and reality, as even though league tables may be based on sound and generally accepted criteria, they frequently operate on a range of political and ethical levels. What city government wants to preside over a dirty city? Who wants to live there and what business will want to invest there? In 2007, the charity Forum for the Future produced a league table or index of 20 sustainable cities in the UK, applying a range of specific measures and official data sets offering both specific environmental, quality of life and 'future proofing' (assessing the way in which cities are preparing for future social and environmental impacts) indices and one aggregate ranking. The results were enlightening. The greenest city in the index was the former textile town of Bradford in West Yorkshire, which, thanks to a long process of industrial and commercial decline, has seen the environmental quality of its degraded land and rivers slowly improve. However, due to a range of social problems and lack of economic oppor-

tunities, Bradford figures less well in terms of quality of life, safety and security. The overall leader in Forum for the Future's index is the affluent town of Brighton and Hove on England's south coast, just an hour on the train from central London. Affluent cities, particularly service cities, are able to devote significant resources to sustainability issues and usually do not have to deal with the lingering effects of deindustrialization. They sometimes have a sizeable and growing Green vote. Interestingly, the report, 'The sustainable cities index', questions the efficacy of a major element in British urban regeneration strategy, namely the emphasis on iconic architecture and grand projects evident in Glasgow, Manchester, Liverpool and Birmingham, whose grand designs seem relatively incapable of significantly improving the local environment or people's quality of life 'and may distract from a broader set of criteria of what makes a successful, sustainable and liveable city' (Forum for the Future, 2007, p13). The report concluded that the English cities that performed best were those, like Leeds, Bristol and Plymouth, which have not pursued the iconic 'trophy-collecting' regeneration pathway but engaged in a range of varied, smaller-scale projects and initiatives.

The Natural Step Framework – Socio-ecological Indicators

The Natural Step (TNS) Framework is a methodology that has been developed to enable organizations and communities to plan their activities in a more sustainable fashion (The Natural Step, 2000). The TNS Framework outlines a set of system conditions, developed over time by an international network of scientists, that must apply if a sustainable society is to be achieved. TNS focuses on the

initial causes of problems, rather than the environmental effects. It supports proactive rather than reactive environmental planning with investments and measures selected specifically to foster a sustainable trajectory offering long-term flexibility and short-term profitability. The TNS process lends itself to both graphic and numeric formulations (see Figure 8.2).



Source: www.naturalstep.ca/.

Figure 8.2 *The funnel as a metaphor*

TNS System Conditions are summarized as follows: in a sustainable society, nature is *not* subject to systematically increasing:

- 1 concentrations of substances extracted from the Earth's crust;
- 2 concentrations of substances produced by society; or
- 3 degradation by physical means;

and in that society:

- 4 human needs are met worldwide.

As anything can be done within the above constraints, TNS aims to nurture positive and creative solutions-based thinking, brainstorming, sharing knowledge and ideas, and social and organizational learning. TNS consists of the following five levels:

- 1 **Principles of ecosphere** (social and ecological constitution): Historically, resource availability, productive ecosys-

tems, purity, trust and equity in society decline while simultaneously population, resource demand and competitiveness increase.

- 2 **System conditions** (principles of sustainability): This may be considered the success or achievement level.
- 3 **Strategy** (principles for sustainable development): Particularly backcasting from principles.
- 4 **Activities** (concrete actions): These could include phasing out fossil fuel use, switching capacity to renewable energy, or substituting metals that are naturally abundant in the biosphere or benign for ones that are scarce or potentially harmful.
- 5 **Tools** (management): Such as environmental management systems, ISO 14001, life-cycle assessment, Factor 10, ecological footprinting, zero emission or TNS's own ABCD analysis (see below).

} TNS
FRAMEWORK

TNS originator Karl-Henrik Robèrt argues that to create a sustainable society, and for groups and organizations to be successful in complex systems, all participants must articulate the same mental models in their economic and business practices (Robèrt, 2000; Robèrt et al, 2002). Each individual, group, institution and business will be able to contribute their own special skills and talents, but the real challenge is for stakeholders to think in a systems-like way. TNS is designed to facilitate and lead this necessary learning process through its application of core principles and values, including such methods as backcasting ('What do we need to do now to get where we want to be?'), while offering the freedom to creatively harness energy and enthusiasm at an operational or local level. In an interview with Julian Gold, Robèrt (2004) notes:

Focusing on the basic principles of complex systems is not only a methodology for individual intellectual performance; it is a way of leadership. Clarity, a shared understanding of what we are trying to achieve, and a framework to use in moving forward are tremendous sources of hope and inspiration. In my mind, this is where the solutions are going to come from – by people becoming engaged in the process, more so than by people being told what to do and what not to do.

TNS practitioners recognize that the core principles must not be violated, even though they will not know exactly what a future sustainable organization will look like. TNS is a

strategic approach that maintains a clear motivational and ethical vision, as can be illustrated in Holmberg and Robèrt's discussion of renewable energy (2000, pp304–305):

Transformation into renewable energy is a measure to meet the four system conditions.

The rationale for renewable energy is that:

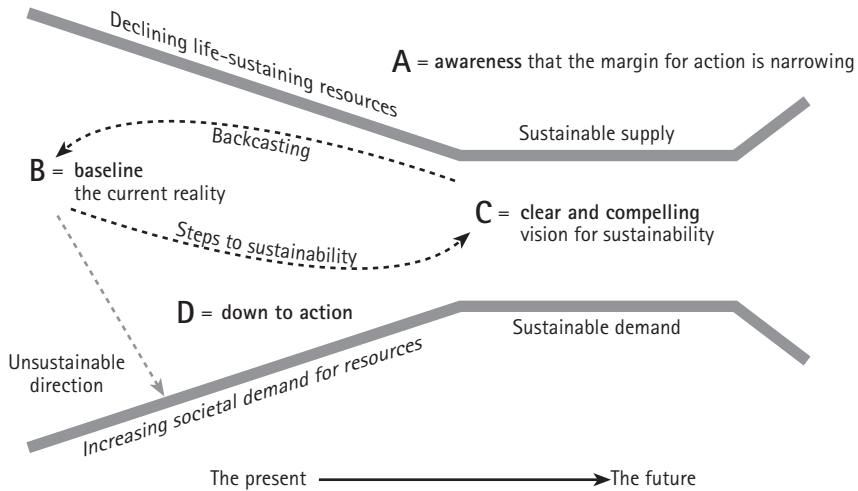
- Compounds from the Earth's crust, such as fossil carbon, forming carbon dioxide and radioactive elements must not accumulate in the ecosphere (system condition 1).
- Compounds that are produced in energy conversion, such as nitrogen oxides or plutonium, should not accumulate in the ecosphere (system condition 2).
- The exploitation of energy sources must not destabilize the conditions which support the life processes of Earth, for example degradation of ecosystems in the sea due to drilling for and transportation of oil or degradation of ecosystems on land due to mining for uranium (system condition 3).
- We must not waste resources and eventually run out of our potential to meet human needs further ahead (system condition 4).

Thus the four system conditions form the *core rationale* of what TNS founder refers to as ABCD analysis.

The TNS management and development framework has been widely taken up in many countries and by a number of very well-known businesses, including IKEA, Interface,

Table 8.2 *TNS's ABCD analysis*

Step A	In ABCD analysis (or backcasting) the four system conditions define the frame for all planning. It is also important to identify the need of the product, service or organization and key stakeholders .
Step B	The present situation is analysed – What is doing well and what needs to change? This involves a review against the TNS four system conditions.
Step C	Future scenarios that work within the frame are envisioned.
Step D	Strategies are identified and adopted that will create a more sustainable future .



Source: www.naturalstep.ca/.

Figure 8.3 *The Natural Step Framework: The ABCD process*

Nike, Starbucks and McDonald's, and by many public and voluntary sector organizations. In the case of the Swedish company IKEA, TNS initiated the emergence of a successful corporation that continues to develop and enhance its commitment to sustainability through introducing green travel plans, providing bus services to customers in some locations, giving gifts of bicycles to employees, and introducing waste-to-energy technology and geothermal heating techniques in some stores. In the UK, charging for plastic bags reduced customer bag use by 95 per cent or 32 million bags (Webb, 2007).

In a technical article, Azar et al (1996) identified a range of socio-ecological indicators that they feel could aid the planning and monitoring process in corporations, governments and other bodies. Unlike many other indicators, they argue, TNS focuses on the relation between society and ecosystems, rather than simply the state of the environment, concentrating on processes early in the causal chain:

There are two aspects that are important in the construction of our indicators:

(i) There are in many cases long time delays between a specific activity and the corresponding environmental damage. This means that indicators based on the environmental state may give a warning too late, and in many cases only indicate whether past societal activities were sustainable or not; and

(ii) The complexity of the ecosystems makes it impossible to predict all possible effects of a certain societal activity. Some damages are well known, but others have not yet been identified. Most of the sustainability indicators suggested so far are formulated with respect to known effects in the environment. We suggest that indicators of sustainability should be formulated with respect to general principles or conditions of sustainability.

(Azar et al, 1996, p90)

The authors identify four socio-ecological principles upon which the indicators are based. Indicators for Principle One refer to society's use of elements from the lithosphere and will measure such things as carbon dioxide in the atmosphere, sulphur dioxide and acid rain,

phosphorous in lakes, heavy metals in soils and in human bodies. In practice this means restrictions on extraction of metals and fossil fuels combined with increased recycling and the substitution of abundant elements for scarce ones. Principle Two deals with restricting emissions of anthropogenically produced substances with measures/indicators for CFCs, DDT, radioactive inert gases, etc. Principle Three addresses the anthropogenic manipulation of nature and will monitor deforestation and desertification, animal and plant extinctions, exploitation of productive land for waste landfill sites and other activities that injure the long-term functioning of global ecosystems. Principle Four relates to the efficiency of society's use of natural assets recognizing that limited assimilative capacity and available resources human needs will have to be met more efficiently and equitably, including a just distribution of resources to eradicate poverty, disease and hunger.

As public awareness about the world's ecological problems grows, it is becoming increasingly incumbent on business corporations to be ecologically responsible. However, as Keeble et al (2003) remark, the sustainable development agenda has brought to the boardroom many issues that lie outside the

direct control of business, are difficult to characterize, and are often based on value judgements rather than hard data. This sometimes makes it very difficult for business decision-makers, who require sets of indicators that reflect the commercial realities of business and the culture and values of the organization. Large corporations may have an organizational structure that may also cause problems, particularly as the sustainability performance of individual divisions may be obscured by generalized statements about the accomplishments of the organization as a whole. TNS consultants usually advise that time should not be wasted on looking to develop *ideal* indicators but rather attempt to create indicators that are dynamic and negotiated, encourage debate, involve external stakeholders, and transparently inform the decision-making process. Additionally, indicators need to be 'owned' by the organization and functionally adhere to recognizable standards for measurement and comparison. In offering a scientific grounding, a vision and a practical method for creating a more sustainable world, TNS may help to change the dominant 'business-as-usual' mindsets still existing within many organizations.

The Global Reporting Initiative

It is also becoming increasingly necessary to communicate sustainable development practices internally to employees and stockholders and externally to the general public. For some businesses, maintaining or improving market share may depend on how green the company is and appears to be. The Global Reporting Initiative (GRI) is a not-for-profit foundation with funding derived from volun-

tary donations and support in kind. It is a collaborating centre of the United Nations Environment Programme and has produced a widely used sustainability reporting framework setting out principles and indicators which organizations may use to measure and communicate their economic, environmental and social performance. This framework has been developed, and is regularly reviewed, by a

wide range of business, civil society, trade union and professional stakeholders. The major aim of the GRI is to promote a standardized approach to reporting, to stimulate demand for sustainability information, and facilitate the implementation of sustainability reporting through the provision of learning materials and the accreditation of partner organizations. The GRI network consists of around 30,000 stakeholders, including more than 1000 companies, among which are many leading brands who have adopted the guidelines. The third version of the centre's sustainability reporting guidelines (G3) was developed with the financial assistance of BP, Shell, GM, Microsoft, Alcan, Ford and the RBC financial group and published in 2006 as a free public good available on the internet. The G3 framework includes 'sector supplements' (specific indicators for industry sectors such as finance, telecommunications, mining and metals, transportation, and the automotive industry), 'protocols' (detailed reporting guidance on content, quality, boundary-setting, performance and management disclosure) and 'national annexes' (addressing country and/or regional sustainability issues). Sustainability reports based on the GRI framework from major companies such as BMW and Coca-Cola are freely available and may be used to benchmark and compare organizational performance, demonstrating as well as communicating organizational commitment to sustainable development.

The GRI also undertakes research with partners on sustainability. In 2007 it published the results of a survey conducted by itself and KPMG, 'Reporting the business implications of climate change in sustainability report' (GRI, 2007). It discovered that most companies

reported on the potential opportunities of climate change, such as new products, services and trading, rather than the financial or legal risks. The reasons for this included the desire to seek new profits so the perception or even identification of long-term risks and the need for a new ecological paradigm for business organization and activity was largely beyond business planning and reporting horizons. However, greenhouse gas emissions and emission trading were frequently reported on, and for nearly one-third of the companies surveyed climate change was presented as a major issue of stakeholder dialogue and engagement. For the oil and gas sector, climate change issues are becoming linked with organizational reputation and brand value, but many other companies did not explicitly make the same connection.

The GRI focuses on corporate external communication of sustainability in business and requires the publication of qualitative and quantitative, systemic micro and macro, and some cross-cutting indicators. The GRI's sustainability reporting guidelines encompass three connected elements:

- 1 **Economic:** For example wages and benefits, labour productivity, job creation, expenditures on research and development, and investments in training and other forms of human capital;
- 2 **Environmental:** For example impacts of processes, products and services on air, water, land, biodiversity and human health; and
- 3 **Social:** For example workplace health and safety, employee retention, labour rights, human rights, and wages and working conditions in outsourced operations.

Building Sustainable Communities

For many sustainability practitioners, it is important to emphasize that everyone can make a difference – individuals, groups, governments, NGOs, large corporations – and encourage them to do so. It is possible to envisage scenarios whereby in using my car less I may contribute to reducing traffic congestion, the production of greenhouse gas emissions, noise, and inconvenience to cyclists and pedestrians. I may even become a healthier and fitter person too. What one person does may strike a chord with another. What one group can achieve may act as an inspiration to others. The success of one pressure group campaign, for example to conserve a natural habitat or to pressurize supermarkets to label foods with GM ingredients, may empower others to do similar things. Networks and social relationships may

emerge, facilitating the growth of an active environmental citizenship of individuals, groups and corporations.

In Britain, the New Economics Foundation, the World Wide Fund for Nature, Friends of the Earth and the Community Development Foundation have published much material to help individuals and community groups to get involved, set things up and influence others. Citizens may need to examine their communities to see what is good, what is bad and what can be done to improve them. This often leads to developing techniques that facilitate community participation and the selection of sustainable community indicators demonstrating the success or otherwise of various actions.

At a wider level, cities, counties and regions have also been engaged in developing

Table 8.3 *Examples of sustainable community indicators*

Issue: Protect and enhance the environment	Examples of popular community indicators
Use energy, water and other natural resources efficiently and with care	Number of buildings measured for energy efficiency; Water leakage (in litres/property/day)
Value and protect the diversity of nature	Wildlife in rivers and streams; Wildlife diversity
Protect human health and amenity through safe, clean, pleasant environments	Number of asthma cases; Skin cancer incidence; Number of bronchodilator asthma treatments prescribed
Meet local needs locally wherever possible	Percentage of shops selling locally produced or processed foods; Basic services within walking distance; Alternative means of transport: kilometres of dedicated cycle lanes
Ensure access to good food, water, housing and fuel at reasonable cost	Homelessness: number of households applying to local authorities; Average house prices; Availability of a healthy food basket

Source: McGillivray et al (1998).

and communicating a range of sustainability indicators through inclusive and participatory processes. Local authorities, regional development agencies, regional and national assemblies, and central government have all played key roles in indicator research and dissemination. Writing of the work within the City of Bristol, McMahon (2002, p182) states:

Bristol has made a head start compared to many other cities and, from benchmarks set in 1995, citizens have been able to gauge trends and patterns in quality of life and sustainable development with 'traffic light' indicators. Local government officers are well placed to lead indicator initiatives at local or national level that encourage a holistic and multi-sectoral approach, strengthening partnerships with other agencies, and using methodologies that are applicable to many municipalities. But professionals and politicians need the public's insight and to reconcile the 'top-down' approach with the 'bottom-up', community-led approach to select and measure relevant indicators. Both approaches are being developed in Bristol so that a baseline of information is provided to help focus the needs within neighbourhoods. Indicators now provide the city with a tool that is not only assisting the development of Local Agenda 21, community profiling and service delivery, but is measuring performance and progress in a

way that is less bureaucratic and more meaningful to communities.

According to John Merefield of the University of Exeter, research currently being undertaken in Bristol seems to show that the public's and 'non-public's' (those on the edge of society) perception of environmental issues is improving.

In *Local Quality of Life Indicators* (Audit Commission, 2005) the UK Government's Audit Commission together with the Office of the Deputy Prime Minister and Defra identified a range of quality of life indicators, together with assessments of other tools and methodologies. This document, combined with *Securing the Future and Sustainable Development Indicators in your Pocket* (Defra, 2005a, b), demonstrates the seriousness with which many official bodies are devising measures of sustainability, although some critics suggest the emphasis on quantitative measures and targets leads to an overly managerial and controlling approach. In response, the Audit Commission reiterates the Government's public commitment to research and the need for evidence-based policymaking and implementation.

Data Gathering and Ecological Frameworks

In a careful consideration of the relationship between measuring progress (performance management) in sustainable development and numerical data, Hardi and DeSouza-Huletey (2000) suggest that accurate econometric and statistical analysis is essential for long-term planning, monitoring and reporting. Effective performance measurement and meaningful data interpretation depend on the interrelationship between the empirical (the real-world

context) and numerical models (the transformation of sustainable development issues into measurable entities). Hardi and DeSouza-Huletey offer a number of recommendations which they argue will improve data collection and interpretation, for example:

- Data assessment should be carried out before the final selection of indicators.
- A mechanism should be designed for local

authorities to collect and monitor their own data. Each data-collection method should use the kind of information needed for the study since there is no single method that is superior to others.

- Data analysis based on statistical and econometric techniques should be applied to all models.
- The definition of the geographic scale and time range for a study should depend on the context and accessibility of data.
- Linking different data sources and creating a database to archive all existing sources of sustainable development data will provide a new opportunity for a historical perspective on the systematic review of existing work.

Finally, Becker (2005, p88) suggests that 'educating stakeholders about the process of achieving sustainable development may be the most important result of the indicator selection process' and that education should not be divorced from communication and dissemination. Bell and Morse (1999) apply a soft systems approach as a way of understanding the progress being made by sustainable development activities and projects. They suggest a pictorial presentation of sustainability progress, the 'AMOEBA' (a Dutch acronym meaning 'general method for

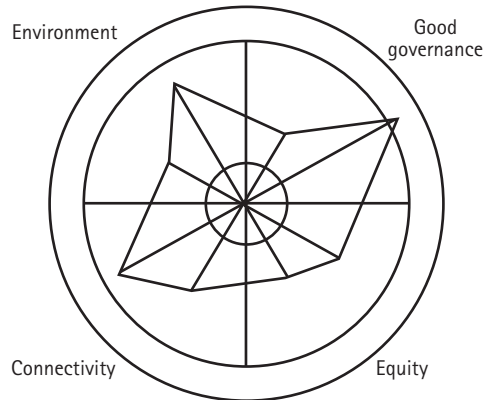


Figure 8.4 *Illustration for a neighbourhood or community*

ecosystem description and assessment'), as being an appropriate way of developing in a participatory fashion and fully comprehending a sustainability project (Bell and Morse, 2003). Others, notably Clayton and Radcliffe (1996), have written of the advisability of adapting Sustainability Assessment Maps that similarly represent in pictorial form progress towards sustainability along a number of selected ordinal axes. With due recognition given to weightings and the value of given indicators, Bell and Morse suggest that the closer the AMOEBA is to a perfect circle the more balanced and so more sustainable the activity is.

Eco-labels

Graphic representation and coding are simple ways of communicating a message and changing mindsets. Eco-labelling may help raise awareness about the nature and impact of consumption. Who now buys a D-rated fridge? And, although there may be many issues to do with product labelling, particu-

larly regarding foodstuffs, where nutritional value as well as origin may be important, the idea of the label or kite mark signifies the use of indicators as key elements in communicating sustainability. The European Ecolabel Scheme was launched in 1992, aiming to establish a credible and generally recognized

sign across the European Union. The flower emblem can be applied to both goods and services and can be seen in all 27 EU countries as well as in Norway, Iceland and Liechtenstein. Its basic aims are:

- to promote the design, production, marketing and use of products which have a reduced environmental impact during their entire life-cycle; and
- to provide consumers with better information on the environmental impact of products.

Making indicators, kite marks and logos resonate with everyday life experience enables them to be readily recognized and understood. The Fair Trade Association, Soil Association, Forestry Stewardship Council, and many other organized and regulated labels communicate trust, authority and transparency because they come with a clear explanation of the criteria informing them. This serves to undermine the rather vague and usually meaningless green claims some manufacturers place on their products. What, after all, does 'environmentally friendly', 'simple' or 'natural' mean unless there is a clear explanation? In the US, progress has been made regarding food labelling, but there are still no clear standards for household products. As Beth Daley (2005) of the *Boston Globe* noted, 'to find out what's really inside a cleaner, consumers must decipher label claims or request documents the company must publish that list federally named hazardous substances'.

Occasionally, changes to policy can lead to widespread critical discussion. In October 2007 the Soil Association, Britain's most important campaigning and certification organization for organic food and farming, announced that it was recommending that

only organic food air-freighted into the country that had been produced according to the Association's own ethical trade standards, or those of the Fair Trade Association, would qualify for the Soil Association label. The reasoning behind the decision was to help minimize the use of air freight, since this mode of transportation generates 177 times more greenhouse gases than shipping. It is clear that increasing fossil fuel use worsens the effects of global warming, and Africa is already suffering particularly badly from climate change. Less than 1 per cent of organic food comes into the UK by air, but 80 per cent of this is produced by farmers in low- or middle-income countries who otherwise have a very low carbon footprint. Recognizing the moral difficulty of this recommendation, Anna Bradley, Chair of the Soil Association's Standards Board said:

It is neither sustainable nor responsible to encourage poorer farmers to be reliant on air freight, but we recognize that building alternative markets that offer the same social and economic benefits as organic exports will take time. Therefore, the Soil Association will be doing all it can to encourage farmers in developing countries to create and build organic markets that do not depend on air freight. We also want the public to have clear and meaningful information about both the environmental and social impact of air-freighted organic food.

(Soil Association, 2007)

Similarly, *Ethical Consumer Magazine* provides consumers with information on the ethical and sustainability performance of companies and products, rating them against five ethical criteria based on information from a variety of sources, including NGO reports, corporate communications and daily news. The resulting 'ethiscore' enables users to quickly differentiate between companies, monitor corporate

ethical performance, and benchmark companies within product or market sectors. The five categories are:

- 1 environment (environmental reporting, nuclear power, climate change, pollution and toxics, habitats and resources);
- 2 people (human rights, workers' rights, supply chain policy, irresponsible marketing, armaments);
- 3 animals (animal testing, factory farming);
- 4 politics (political activity, boycott call, genetic engineering, anti-social finance, company ethos); and
- 5 product sustainability (organic, fair trade, positive environmental and/or sustainability features).

There are two types of ethiscore. For companies the score can range from 0 (bad) to 15 (excellent) and for products 0 (bad) to 20 (excellent), based on combining the company

ethiscore with a score for product sustainability. Points are deducted for criticism of company performance, for example on workers' rights or animal testing, and added for positive product attributes, for example fair trade or organic. An example of the value of such a system can be found in a recent study of the effects of large corporate takeovers on the performance of smaller ethical enterprises such as Ben and Jerry's, Pret a Manger, Green and Black's, The Body Shop, and Rachel's Organic. In each case, the bigger corporation wants to improve its brand image by incorporating the ethical business, but in each case reviewed the smaller organization's company and product ethiscore dropped, in some cases quite considerably. The rating of the ice-cream manufacturer Ben and Jerry's, for example, fell from its pre-takeover rating of 13 to 1.5 following its capture by Unilever (Teather, 2007).

Production and Consumption: The Logic of Sufficiency

For Thomas Princen (2002 and 2005), one major problem confronting contemporary society in any attempt to become more ecologically sustainable is the emphasis placed on production rather than consumption. If cars pollute, then we produce catalytic converters and more fuel-efficient engines. If traffic is congested, we produce more road signals and more roads. If suburban growth becomes too extensive, we promote 'smart growth'. If flooding destroys property, we produce better flood defences. If aquifers are depleted, we sink deeper wells. And so on. The alternative is to develop an ecological conception of economic activity that incorporates environmental consideration as integral to

both the analysis of economic practice and the practice itself – 'goods may be good but cautious consuming is better' (Princen, 2002, p27). People need to produce goods and services in order to live, to engage with others in society, and to secure a decent standard and quality of life, but not all of people's needs have to be met through the purchase of commercially produced goods and services. One problem is that the simple consumption of material goods, particularly consumer goods, does not satisfy socially constructed wants and needs for any length of time. Advertisers promise more than the goods are able to deliver, and many are instantly disposable, not least because of fashion, but also

because their functionality is either superseded by new developments or they just break down. For design critics like Jonathan Chapman (2005), the problem is partly one of design: users and purchasers rarely relate emotionally to the product. Design does not generally elicit an emotionally durable commitment or connection. We dispose of things, of stuff, because we basically do not care about what we throw away. Non-purchase decisions also need to be factored in, as it is quite possible for many people to secure a healthy diet by growing some produce themselves, to enjoy music by playing an instrument with others rather than buying a CD or purchasing a download. It is quite possible to meet some needs without increasing economic and material throughput. In other words, it is quite possible to develop an ecological economics that relates biophysical conditions with human behaviour by simply focusing on various aspects of material provisioning and ecosystem services, in other words the appropriation and application of energy resources and materials for production and consumption.

Obviously, consumption is necessary for the survival of any and every species on the planet. There is obviously a necessary background level of consumption. But ecological economics suggests that human consumption can lead to problems if there is too much of it (over-consumption, excessive throughput) or where consumption is mis-directed (misconsumption). Unlike other species, humans can reflect on what they do and offer moral judgements on what they do (or don't do), both at a macro-aggregate (society/planet) and an individual (personal) level. We can buy something to make us happy and when that happiness wears off we can buy something else, throwing the first

purchase away. But in doing so, we can cause both societal and individual psychological problems, and producers will continue to produce more if consumers and the market demand it. For Princen, it is therefore incumbent on producers and consumers to develop restraint if further ecological damage is to be avoided. Simple living, micro renewable energy-generation, and local currencies as used in local exchange and trading schemes and in some 'transition towns' are self-limiting behaviours that place ecosystem services ahead of ongoing material production, capital accumulation and resource depletion. Consequently, a consumption perspective highlights the nature of demand. Do we need more houses because of population increases? Do new housing developments reflect their full ecological costs and impacts? Is car use facilitated by subsidized road building? Does easy credit encourage undesirable consumerism? Tied to all this, as Maniates (2002) argues, is the individualization of responsibility for living lightly and reducing environmental impacts. Apart from ignoring larger institutional responsibilities, eco-living has itself turned into a consumer product growth industry, as the publication of green lifestyle magazines and features seems to confirm. Capitalism is capable of incorporating and commoditizing alternatives and ideological dissent, such as 'No Zone like the Ozone' T-shirts or buying into tree-planting schemes to offset carbon emissions simultaneously with your e-ticket cheap flight weekend break in Copenhagen, leading to little more than building 'a better mousetrap' – unless organized social and political power, the control and guidance of economic development, and technological innovation is confronted through collective action (Winner, 1989). Maniates argues that the very processes that

individualize consumption can be addressed by revising the familiar environmental formulation 'IPAT':

$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

Maniates sees IPAT as naively obscuring an understanding of political power and, as such, being quite disempowering. In its place, a convenient and more accurate formulation might be 'IWAC':

$$\begin{aligned} \text{Environmental Impact} &= \text{Quality of Work} \\ &\times \text{Meaningful Consumption Alternatives} \\ &\times \text{Political Creativity} \end{aligned}$$

For many people, work is deeply unsatisfying, arduous and insecure. Corporate downsizing, restructuring and permanent change is not compensated for by either salaries or the relentless search for consumer commodities,

foreign holidays or the soon-to-be-obsolete new media devices. This means that consumers will need to ensure they extract the full benefit from their purchases, that what people need is not more 'stuff' but more satisfaction. Manno (2002, p67) has devised the concept of 'consumption efficiency' to help this process of challenging commoditization, replacing the primary emphasis on the maximization of a good or service's potential to be sold in a competitive marketplace with establishing economic arrangements that foster an economy of care and connection. The private car, plastics and the new media technology industry are prime examples of this, with considerable amounts of research and development being invested in ensuring use value is secondary to exchange or commodity value. Obviously, a different form of rationality, an ecological rationality, needs to come into play.

Money Makes the World Go Around?

It has long been established with tools such as the Index of Sustainable Economic Wellbeing (Ekins, 2000) and major studies like those of Robert E. Lane (2000) that more goods and increasing demand through advertising do not necessarily mean greater human happiness and contentment. As Lane (2000, p179) writes:

Although it is said that the function of the market is to satisfy human wants and so maximize various satisfactions, it is not true that the function of advertising is to maximize satisfaction; rather, its function is to increase people's dissatisfaction with any current state of affairs, to create wants and to exploit the dissatisfactions of the present. Advertising must use dissatisfaction to achieve its purpose.

Hamilton (2003) writes of a growth fetish which has basically failed to improve the quality of people's lives in the more developed countries. Crime, drugs, environmental destruction, job insecurity, family breakdown, rampant and conspicuous consumerism, economic inequality, feelings of political impotence, and corruption are identified as key factors wrong with contemporary Western society. 'Social democracy is being superseded by a sort of market totalitarianism,' he writes (2003, p21). Robert Frank (1999) has shown that our satisfaction with our materialistic way of life depends very much on how we see ourselves in relation to others – and not just those similar to us. Kasser (2002) examines a

number of psychological studies into the effects of consumerism on everyday happiness and psychological health. People who are highly motivated by materialistic values seem to have lower personal wellbeing than those who believe a materialistic way of life is relatively undesirable. What increases psychological health and wellbeing are feelings of safety, security, autonomy, authenticity and connection to others. Those people who tend to watch a great deal of commercial television have materialistic values reinforced through advertising and popular TV programming on celebrity lifestyles, leading to a tendency to (over)idealize possessions and wealth, to buy themselves out of unhappiness (retail therapy), and to enter less into community and other social activities. Freedom of choice and a overabundance of goods and services comes at the cost of feeling pressured and compelled to keep up. Materialistic people also tend to show little interest in environmental and ecological issues and exhibit little empathy or intimacy in their relationships. It seems we are not happy and, in the present

cultural circumstances, are unlikely ever to be so. One recognition and reaction to this has been the growth of the voluntary simplicity movement – the intentional personal downsizing of wants and commodity needs, the reduction in working hours or the search for more fulfilling and less stressful employment, and the desire perhaps to live with a much reduced environmental impact (Durning, 1992; Andrews, 1997; Schor, 1998; Maniates, 2002). Those who adopt this simplified lifestyle, usually middle class but not necessarily wealthy or privileged, tend to use their time in more socially, culturally and community-orientated activities. Voluntary simplifiers are not dropping out, but becoming more engaged at a time when because of various pressures many people are disengaging from civic and community life. Others have emphasized the need for and importance of personal growth, reconnecting with nature and doing something 'meaningful' instead of seeking short-term gratifications in the marketplace.

Wellbeing and Human Flourishing

This dissatisfaction has also led critics to develop alternative measures of progress and development. GNP and GDP measure the level of economic activity expressed in monetary terms so that, for example, the money spent on clearing up an oil spill will mean an increase in economic activity, irrespective of the social and environmental harms incurred. The index of sustainable economic welfare (ISEW) (Daly and Cobb, 1989) and the genuine progress indicator (GPI), on the other hand, are two, albeit contested, alternatives attempting to incorporate a range of factors

that influence human wellbeing into a single aggregate index. Costs and benefits are included in the calculus. Jackson and Marks (1998) revised the ISEW, basing it explicitly on Manfred Max-Neef's (1991) characterization of human needs (subsistence, protection, affection, understanding, participation, idleness, creation, identity, freedom) and existential satisfiers (being, having, doing, interacting). They demonstrate that consuming economic goods and satisfying human needs are not the same thing, because the relationship between the consumption of an

economic good and the satisfaction of an underlying need is complex. For example:

In their most functional capacity, cars provide mobility. But mobility itself is neither a satisfier nor a need. Rather it is a structural element within the attempted satisfaction of many needs. Mobility allows us to travel to work, where we can earn a living (subsistence) and to shop so that we can buy, for example, food and clothing (subsistence and protection). But use values for cars are now well-established in relation to a wide variety of other needs. Cars are associated in the prevailing Western culture (and increasingly in other cultures) with social status (participation and identity), with sexual success (affection), with personal power (identity), with recreation and leisure (participation, idleness), and with freedom and creativity.

(Jackson and Marks, 1998, p430)

Over the years, consumer expenditure aimed at satisfying material and non-material needs, such as travel, sports and recreation, electrical goods, communications, clothing, alcohol, leisure and entertainment, has increased significantly, but Jackson and Marks's conclusions (1998, p439) are salutatory: increased needs-satisfaction cannot be inferred from increased expenditure, with material consumption probably offering no more than 'a pseudo-satisfaction of non-material needs' and possibly actually inhibiting the satisfaction of those needs. In other words, 'wellbeing does not consist in the accumulation of material possessions'.

The GPI will evaluate job losses against economic growth, attempting to value the full psychological as well as financial costs of unemployment, will assess activities that enhance wellbeing but which fall outside of the marketplace, like housework and community volunteering, and will deduct the costs of crime-related expenditure, environmental

pollution and the depletion of non-renewable resources. According to the GPI, the costs of economic growth now significantly outweigh the benefits. Distaso (2007) applies Sen's theory of wellbeing as the basis for making the concept of sustainable development operational through the construction of a multidimensional index of sustainability that also addresses the inadequacies of both GDP and some multi-attribute indices like the ISEW and the UN's human development index (HDI), which stress such factors as longevity, literacy and maternal mortality rates. Sen (1999) posits qualitative analytical categories such as functionings (personal achievements), capabilities (achievable functionings) and freedom (actual opportunities). Meaningful variables relating to sustainability, such as consumption, income distribution, life expectancy, health, education, employment, pollution, and aesthetic and cultural values, were selected. Various weightings were then decided and, using a standardized deviation methodology, Distaso applied the index to the countries of the European Union. The method allowed relationships between natural capital and quality of life, social wellbeing and environmental and economic conditions, and environmental wellbeing and issues relating to inter- and intra-generational equity. Irrespective of the sustainable development ranking, however, Distaso (2007, p178) concluded that each country 'should implement policies which are specifically aimed at reaching a development more careful to the environment, notwithstanding the well-known economic implications'.

Lawn (2003) notes that many critics of multidimensional indices argue that they lack a robust theoretical foundation, particularly with regard to their valuation methods, which may be rather crude and involve some massive

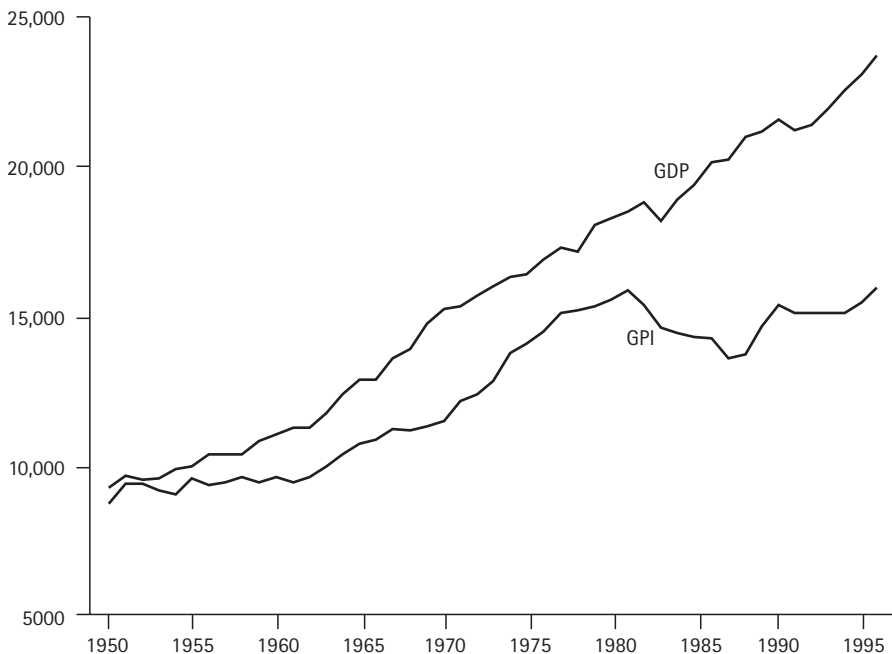
Table 8.4 *EU sustainable development ranking*

Sweden	1	Belgium	9
Austria	2	UK	10
France	3	Spain	11
Germany	4	Greece	12
Denmark	5	Luxembourg	13
Netherlands	6	Ireland	14
Finland	7	Portugal	15
Italy	8		

assumptions. However, Lawn argues that, although these methods can be improved upon, they are basically sound, if warranting a continual refinement over time. Better standardization and better welfare comparisons between nations will improve the likelihood of these alternative indices to GDP being more broadly accepted and applied. However, a note of caution is expressed by Stapleton and Garrod (2007), who, examining

whether the equal weights assumption informing the HDI should be relaxed or not, conclude that only limited, if any, gains in validity may be achieved by increasing the complexity of an already highly complex system.

Another alternative index that has attracted considerable recent interest has been developed by the New Economics Foundation. The happy planet index (HPI)



Source: Hamilton (1999).

Figure 8.5 *Australia: GDP and GPI, 1950–1996 (constant 1990 prices)*

attempts to express the average years of happy life or wellbeing produced by any given society or nation compared to the consumption of the Earth's finite resources. The HPI incorporates three separate indicators relating to a country's ecological footprint and people's life expectancy and life satisfaction. Data from 178 countries have been compiled to produce a global happiness league table. The G8 countries do rather poorly, with Britain in 108th place, France 129th, the US 150th and Russia 172nd. The Foundation's HPI Report (Marks et al, 2006) makes the following points:

- **Countries classified by the United Nations as 'medium human development' fair better than both low and high-development countries** because, beyond a certain level, vastly increasing consumption fails to lead to greater wellbeing.
- **Wellbeing is not based on high levels of consumption:** For example, Estonia, with high consumption, rates poorly on wellbeing, while the Dominican Republic enjoys consumption at an equitable global (lower) level, but wellbeing is high.
- **Life satisfaction varies wildly country by country:** 29.4 per cent of Zimbabweans rate their life satisfaction at the lowest level, while 5.7 per cent rate it highly. In contrast, 28.4 per cent of Danes rate their life satisfaction highly, with less than 1 per cent rating it poorly.
- **Life expectancy varies wildly:** Life expectancy in Japan is 82 years, in Swaziland it is just over 32.
- **Social, cultural and political structures are strongly associated with life satisfaction,** with high levels being found in those nations where more people belong

to community groups, where government is open and democratic, and where concepts of adventure, creativity, meaningful work and loyalty are valued highly.

- **Overall, we are overburdening the Earth's currently available biocapacity** by consuming 22 per cent above our ecosystems' ability to regenerate.

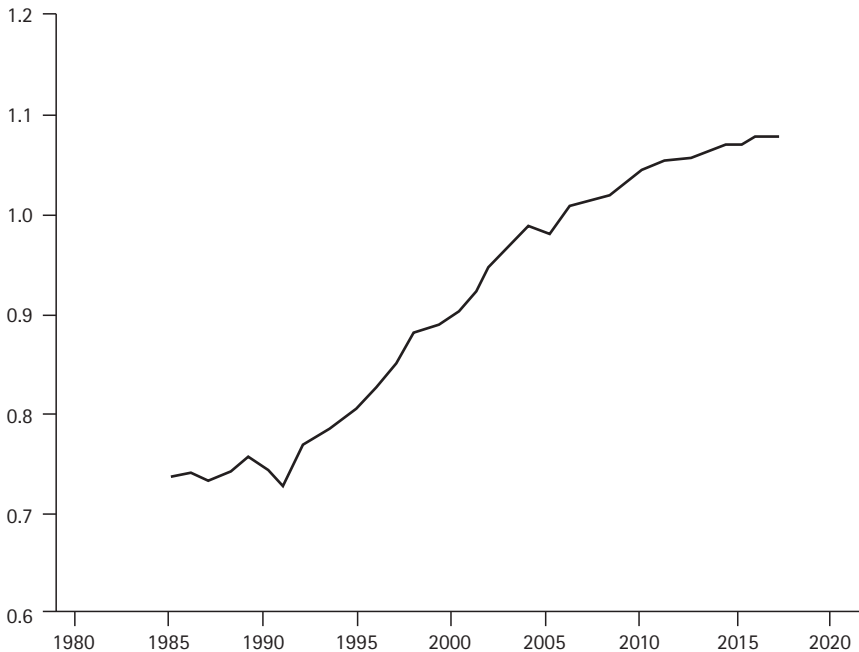
This will come as no surprise to readers of Helena Norberg-Hodge's powerful study of Ladakh, *Ancient Futures* (Norberg-Hodge, 2000), before and after its modernization. A settled, spiritual and traditional culture was displaced by a consumer-driven one that led to dissatisfaction, disruption and an alienation from both past and present. The need for change and the need to live equitably on one planet without destroying its ability to sustain human and other life-forms is now recognized globally as of the utmost importance. Footprinting, environmental space methodologies, corporate sustainability indicators, and broader schemes such as the WWF's One Planet Living are elements of a wide social and cultural movement to change minds and behaviours. The survey *State of the Future*, produced by the World Federation of United Nations Associations (Glenn and Gordon, 2007), offers considerable statistical information: the global economy grew at 5.4 per cent in 2006 to US\$66 trillion, although income disparities remain huge, with 2 per cent of the world's richest people owning more than 50 per cent of the world's wealth, while the poorest 50 per cent of people own just 1 per cent. Despite many violent clashes, the vast majority of the world is living in peace, with the number of conflicts falling, dialogues among differing worldviews growing and the number of refugees decreas-

Table 8.5 *State of the future index 2007: Where humanity is winning and losing*

Winning	Losing
Life expectancy	CO ₂ emissions
Infant mortality	Terrorism
Literacy	Corruption
GDP/capita	Global warming
Conflict	Voting population
Internet users	Unemployment

ing. Gender equality is growing too, with the legislative, senior official or managerial positions held by women increasing slowly from 25.6 per cent in 1995 to 28.3 per cent in 2006. Gender equality in primary education has virtually been achieved, although 781 million adults (two-thirds women) still lack basic literacy skills. On the other hand, violence against women by men continues to cause more casualties than wars. There are

more slaves in the world today than at the highest point of the African slave trade, with estimates varying from 12.3 million to 27 million (the majority are Asian women). The shortage of fresh water is acute in some regions. The incidence of AIDS in Africa is levelling off. Computer power is increasing, as is climate change awareness. And the list goes on.



Source: Glenn and Gordon (2007, p6); 'Executive Summary' available at www.millennium-project.org/millennium/sof2007-exec-sum.pdf.

Figure 8.6 *State of the future index*

With so much data available, it is extremely difficult to know whether the general state of the future is improving or not, but the 2007 report helpfully offers a revised state of the future index (SOFI), including 29 variables, attempting to give a general indication of how we are likely to do.

The conclusion: the SOFI is improving, but not as rapidly as it did in the previous 20 years. However, as the renowned Cambridge economist Partha Dasgupta (2001) notes, different indicators indicate different things, and very few offer a holistic and informed understanding of sustainable development.

Case Study: Guiding Principles of One Planet Living

To achieve a sustainable future, we need to design communities that enable people to live sustainably. Clearly, the situation in different countries will vary. Factors such as the commuting distance between home and work, where the food comes from, and how waste is dealt with will be as important as, if not more important than, the energy performance of buildings. The NGOs BioRegional and WWF aim to build on their work to promote the concepts of sustainable development and ecological footprinting, notably by establishing a set of sustainable communities in diverse contexts across the globe. Projects are intended to be delivered via partnerships with private developers, community groups and the public sector and must commit to and adopt the guiding principles of One Planet Living. Via these communities and associated initiatives,

the programme aims to have a transformative effect on the surrounding region and inform policy changes at national and international levels. The One Planet Living programme is based on ten guiding principles, which act as a framework to highlight the sustainability challenge in a given situation and as a mechanism for developing and presenting solutions. The principles – zero carbon, zero waste, sustainable transport, local and sustainable materials, local and sustainable food, sustainable water, natural habitats and wildlife, culture and heritage, equity and fair trade, and health and happiness – offer a clear direction, and although actions to realize them may vary according to context or organization, it is clearly possible to develop indicators identifying and communicating progress in all these areas.

Thinking Questions

- 1 What are the important advantages and disadvantages of the ecological footprinting and environmental space metaphors?
- 2 How do indicators relate to frameworks such as The Natural Step or One Planet Living?
- 3 In what ways are indicators more than communication tools?
- 4 What value do aggregate quality of life or happiness indices have in promoting sustainable development?
- 5 What is the significance of product labelling?

Communication and Learning for Sustainability

Aims

This chapter will examine various aspects of communication and learning for sustainability. The role of marketing, public communication campaigns, product design, the internet, cyberspace, film and television will be explored using a range of examples. The chapter will close with a brief discussion of the main

features of education for sustainable development, referencing both formal learning taking place within institutions like schools, colleges and universities and informal learning occurring outside the classroom in the community and everyday life.

Mediascapes, Mediation and Mediapolis

The anthropologist Arjun Appadurai (1996, p33) has written of the global cultural economy and the interrelationship of five global cultural flows: ethnoscapescapes, mediascapes, technoscapes, financescapes and ideoscapes. He uses the suffix 'scape' to highlight the variability of these environments and to 'indicate that these are not objectively given relations that look the same from every angle of vision but, rather, that they are deeply perspectival constructs' shaped by language, politics, space and place:

Mediascapes refer both to the distribution of the electronic capabilities to produce and disseminate information (newspapers, magazines, television stations and film-

production studios), which are now available to a growing number of private and public interests through the world, and to the images of the world created by these media. These images involve many complicated inflections, depending on their mode (documentary or entertainment), their hardware (electronic or pre-electronic), their audiences (local, national or trans-national), and the interests of those who own and control them. What is most important about these mediascapes is that they provide (especially in their television, film and cassette forms) large and complex repertoires of images, narratives and ethnoscapes to viewers throughout the world, in which the world of commodities and the world of news and politics are profoundly mixed. What this means is that many audiences around the world experience the media themselves as a complicated and interconnected repertoire of

print, celluloid, electronic screens and billboards.

(Appadurai, 1996, p35)

From these mediascapes people are able to construct scripts of others' imagined lives and of events beyond their direct experience, to gain information communicated by big global corporations, public broadcasters, international agencies or small groups of indigenous peoples harnessing the opportunities of new media technology to tell their stories to whoever will listen in the rest of the increasingly 'wired-up' world. Related to the concept of mediascape is that of ideoscape, which refers to chains of ideas, concepts, images and values like freedom, democracy, growth and perhaps sustainability that constitute individual and group worldviews and perspectives. There are many debates and discussions about the economic and ideological power of global media corporations, with fears that global culture is being standardized, simplified, homogenized and Americanized. Ritzer (2000) writes of social, cultural and business practices suffering from 'McDonaldization' and Bryman (1999) sees the 'Disneyization' of much of our cultural leisure practices. A form of cultural imperialism is often evident through the ubiquity of Hollywood movies and the Hollywood-style, adaptable television formats and global sales of popular US entertainments like *Friends*. However, this argument is contested by those who see consumers as being producers too – of meaning and interpretation that culturally mediates alien ideas, values, and also of media artefacts such as

films, video shorts, blogs, advertisements that increasingly find distribution in the still largely unregulated globalized cultural commons known as the internet (Tomlinson, 1991; Ginsburg et al, 2002; Couldry and Curran, 2003; Roth, 2005; Parks, 2005, Thussu, 2006). The advertising, marketing and public relations industry is also viewed by many as a direct influence, or even cause, of the insatiable growth in global consumerism (Schiller, 1989). However, as Silverstone (2007) states, the mediated space of appearance he calls the 'mediapolis' is important because ultimately its freedom, or otherwise, will influence not just the free flow of communication, our access to others' worlds and worldviews, ideas and ideologies, but the very possibility of social dialogue, human growth and development. To enable this, we need global standards for media practice that will combat the pollution of the global media environment – the mediascape – by powerful corporations and reactionary governments. Securing the future of our physical environment, Silverstone argues, will in the end be of limited value if we allow our symbolic one to be fatally eroded or destroyed. We need both eco-sustainability literacy and media literacy, combining knowledge and skills with morality and ethics from both cognate fields:

For without an adequate expression of the plurality of the world which the mediapolis must provide, both on the screen and in the interaction of screen and spectator, then there is little to look forward to.

(Silverstone, 2007, p55)

New and Emerging Media

The internet is the media platform of the 21st century and is the focal point for the convergence of virtually every other traditional and familiar media of communication – speech, still and moving image, news and information, political debate and campaigning, environmental monitoring, community access, public art, and, of course, advertising and marketing. It is potentially a 'smooth' way of spreading ideas in a virus-like fashion (Godin, 2002). For public communicators, including public relations specialists and marketers, the internet allows global reach to be achieved at relatively low cost. Website visits, clicks on ads, products purchased, and documents or videos downloaded can be counted and campaigns evaluated. Direct sales and customized marketing is possible: 'customers who have bought X may also be interested in Y' or 'welcome, we recommend...'. Despite this, websites can be impersonal and invisible to those not looking for them, which means internet search engines are becoming increasingly important and commercially valuable.

The internet has also been used increasingly effectively by radical activists and campaign groups as new technology and open-access publishing of pressure group material has improved and facilities for digital interaction, communication, debate and dialogue have expanded. The real possibilities of the net as an organizing tool became clearly apparent at the time of the anti-capitalist protests in Seattle in 1999 (Bennett, 2003; de Yong et al, 2005). Bennett (2003) argues that the integration and growth of internet communications has influenced the form and perspective of political campaigns – from ideologically based to more personal

and with a looser mode of association. Political issues that tend to be relatively ignored by government or traditional media, such as food standards, environmental issues, labour relations, human rights and cultural identity, are picked up, often to the clear discomfort of corporate and government bureaucracies and politicians. Communication practices become almost inseparable from organizational and political capabilities. For example, patterns of digital communication allow the following:

- Campaigns can change shape and continue over considerable lengths of time.
- Digital communication campaigns are frequently quite rich in addressing identity and lifestyle issues.
- Digital hub organizations often become resources for other, emerging, campaign groups.
- New media can influence information flows and agendas in mainstream mass media news outlets.

Corporate identity, brand positioning and logo awareness have made many corporations vulnerable to net-based anti-globalization and pro-democracy campaigns. Microsoft, Nike, Shell and BP have all experienced highly effective cyber campaigning. Peretti (2003) has shown how an individual culture jammer working on a small scale can swiftly unleash a communication 'virus' that can have serious and widespread effects. And, as Bennett suggests, the internet is a force that has yet to reach its full potential:

The rise of distributed electronic public spheres may ultimately become the model for public information in many areas of politics, whether establishment or oppositional. It is clear that conventional news is withering from the erosion of audiences (more in commercial than in public service systems) and from the fragmentation of remaining audiences as channels multiply. Perhaps the next step is a thoroughly personalized information system in

which the boundaries of different issues and different political approaches become more permeable, enabling ordinary citizens to join campaigns, protests and virtual communities with few ideological or partisan divisions. In this vision, the current organizational weaknesses of internet mobilization may become a core resource for the growth of new global publics.

(Bennett, 2003, pp34–35)

Web 2.0 and Web 3.0

YouTube, MySpace, Facebook and many other social networking sites offer many opportunities for personal expression, information sharing, dialogue and discussion. YouTube has become a major outlet for NGO video promos such as WWF Australia's Earth Hour climate change awareness campaign of 2007, which, in winning a marketing award at Cannes, has encouraged the organizers to go global in 2008. The Wiki phenomena is a further example of Web 2.0-based collaboration, interactivity and participation generating a collective knowledge and intelligence that has much in common with the fan cultures studied by Henry Jenkins (2006) but with a clearly enhanced educational purpose. In *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*, media theorist Henry Jenkins writes:

A growing body of scholarship suggests potential benefits of these forms of participatory culture, including opportunities for peer-to-peer learning, a changed attitude toward intellectual property, the diversification of cultural expression, the development of skills valued in the modern workplace, and a more empowered conception of citizenship. Access to this participatory culture functions as a new form of the hidden curriculum, shaping which youth will succeed and which will be left behind as they enter school and the workplace.

(Jenkins, 2007, p3)

Educators and critics tend to ask the wrong question when they assert that Wikipedia is inaccurate, because this implies a conception of Wikipedia as a finished product rather than a work in progress. Users can edit articles and monitor how these articles have been altered. They can discuss and argue about the changes and in so doing gain new skills, knowledge and understanding about the subject at hand, politics and the media itself. This means that Wiki articles are indeed open to intellectual and other vandals, but it also means that users may generate both content and a sense of responsibility for maintaining the integrity of their contributions, interests and concerns. In 2004 Wikipedia published its 500,000th article and has continued to expand. As Weinberger (2002, p69) suggests, we ought to embrace this new emergent way of looking and learning. The web may be distracting and open to abuse but, like the world, it is potentially so interesting that 'when set free in a field of abundance, our hunger moves us from three meals a day to day-long grazing'. In other words, we often can't leave it alone. Similarly, for Jenkins (2007), developing the work of Pierre Levy (1997), wikis offer an important learning environment whose processes and possibilities seem constitutive of a sustainable education itself:

- **collective intelligence** – the ability to pool knowledge and compare notes with others often working towards a common goal;
- **judgement** – the ability to evaluate the reliability and credibility of different information sources;
- **networking** – the ability to search for, synthesize and disseminate information; and
- **negotiation** – the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative sets of norms.

Indeed the number of wikis is continually growing and, like the worldwide web more generally, their application and significance has been recognized by many sustainability educators, political activists and media practitioners. Sunstein (2006), for example, suggests that, unlike blogs, which tend to be highly personal, often cocooning information, wikis are freer to challenge assumptions, values and predispositions. In the net-based global information society the overall amount of non-expert knowledge exceeds that of specific experts so long as the many minds engaged in an issue do not get bogged down in clumsy, irrelevant and time-consuming deliberation and when the majority of those engaged feel they are more right than wrong and are unwilling to compromise or concede a point. Finally, it is now commonplace to argue that the web offers an infinite wealth of possibilities, most of which cannot be known in advance, and some of which will be undoubtedly be good but others less so. TreeHugger, a 'green CNN', founded by social entrepreneur Graham Hill, fully utilizes the Web 2.0 platform, offering articles, vlogs and space for

user-generated content on a global range of sustainable development issues. Striving to be 'a one-stop shop for green news, solutions and product information', it is structured into a series of 'departments' – design + architecture, food + health, cars + transportation, science + technology, business + politics. TreeHugger also directly encourages inter-activity, participation and action through its discussion forums, Hugger 'How to' guides, video competitions, internet TV, a job board and 'Hugg', a user-generated blog. TreeHugger articulates a contemporary aesthetic that steers clear of the radical or the weird. In September 2007, it estimated having in excess of 3,615,000 page-views and more than 1,997,945 visitors.

Planetark.com is a web-based image archive established in Australia in 1991 as a not-for-profit organization and sponsored by Reuters News Agency. The images made available promote lifestyle change, are accessible and populist in nature, and are used by many bodies as important elements of their public education and communication campaigns. The images do not have the overtly political or confrontational resonance of those produced by organizations like Greenpeace International, but nonetheless offer illustrations of community-based environmental actions such as recycling aluminium cans, reducing plastic bag use and planting trees. Planetark also produces education packs for use in primary schools. For some critics, the generally unregulated nature of the web produces so much uncorroborated rubbish that some users will mistake prejudice for knowledge and fiction as fact, with the sheer multitude of sites, hyperlinks and imagery resulting in a distracted, dumbed-down, sub-intellectual culture. This fear is probably unfounded, however, as Jenkins (2007) argues

in a discussion of ongoing research at the University of Southern California. Jenkins notes that young learners often exploit the emerging digital tools to the full, going far beyond cut and paste, and are likely, because of their collaborative experience of digital knowledge production, to be highly critical consumers of information garnered from wikis and elsewhere. This means, says Jenkins (2007), that the digital divide really concerns the uneven access to new digital technologies, which leads to inequalities in the acquisition of new media literacies – net-based social skills and cultural competences.

The virtual world of Second Life (Web 3.0), established by the San Francisco-based Linden Lab in 2003, is currently one of the best-known cyberworlds in operation. It has over 6 million users, including some veritable institutions like the Harvard Law School, and has become an important tool for learning, networking, leisure, business and (virtual) real estate development. Through the playing out of personal and collective fantasies via the creation of an avatar or with the construction of a virtual signature building, these worlds seem to be extensions of our own more grounded desires, wishes, hopes and fears. Individual avatars often closely resemble cultural or normative stereotypes – toned, slim but buxom, usually white (but tanned) young females or tall muscular males. However, some figures are literally 'fantastic', with the cyber user's avatar becoming 'an opportunity to express deeper personal identities that require radical reconfiguration of bodily space' (Jones, 2006, p24). Virtual worlds consequently offer all manner of creative communication and networking possibilities. In 2007, the University of Southern California Center on Public Diplomacy ran an iCommons

Summit in Second Life. Its aim was to mix the real and virtual worlds for both actual attendees of the Summit in Dubrovnik and those who could not be there. By doing this, the global diversity of the conference was enlarged, enabling participants to more broadly learn, collaborate and share knowledge and experiences. Unlike the conventional diplomacy operating between states and international organizations, public diplomacy starts from the premise of a two-way dialogue involving the shaping of messages a country wishes to present overseas and understanding the ways the messages are interpreted by diverse cultures and societies. Public diplomacy helps develop the tools of listening, conversation and persuasion. Second Life has also been used by activist groups as a resource for public education and campaigning. The United Nations, Greenpeace International and Better World Island offer users the opportunity to view global problems relating to war, environmental degradation and human suffering and seek ways to rectify them. Camp Darfur enables users to virtually experience the horrors of the conflict in the Sudan. The Garden of Hope, the Peace and Justice Center, the Center for Water Studies and the Peace Tile Center are other areas of Better World Island, with explicit educative purposes supporting peace and sustainable development. A parallel event to the Live Earth concerts was held in the Center for Water Studies in July 2007, and in December the NGO OneWorld hosted a virtual meeting of the UN Climate Conference in Bali on Second Life. Recent research suggests that virtual engagement with the world's real-life problems can positively enhance social understanding and stimulate political action. As Davis (2007) writes:

The Center for the Digital Future at the University of Southern California's Annenberg School recently reported that nearly two-thirds of online community members who are involved in social activism on the internet weren't familiar with their chosen cause before joining such a community. Of the 200 study participants, 44 per cent said that they

have become more politically active since joining an online social network.

However, it does seem that some of the less savoury aspects of the real world, like crime and anti-social behaviour, are beginning to appear in these virtual worlds too.

Empowerment through Communication

The relatively new phenomena of citizen journalists, online news rooms and independent media centres are a potentially liberating force in the mediapolis. The increased potential for participation, direct action, free expression, dialogue and engaged critique is a welcome alternative to the dominance of corporate and state media, of Fox News and the failure of traditional editorial policy to cover issues not meeting the narrow criteria of newsworthiness or the constraining principle of 'due impartiality'. Citizen media projects may not always be commercially successful, but blurring the distinction between producer and audience is a useful antidote to the blurring of editorial and advertising/funding criteria in many commercial operations. A citizen journalist does not need a great deal of technical skill to post a comment or upload an image from a camera phone, though to set up a site does require significant technical knowledge and understanding. One famous example of this is the Independent Media Center (IMC). Established by a number of independent and alternative media organizations and activists in 1999 to provide grassroots coverage of the World Trade Organization (WTO) protests in Seattle, the IMC is a network of collectively run media outlets with the common purpose of creating and disseminating radical but accurate reportage. It acted as an internet

clearinghouse of information for journalists, offering the latest reports, photos, and audio and video footage. The IMC produced a series of five documentaries, uplinked daily to satellite and distributed to public-access TV stations throughout the US. In the year following the Seattle protests, decentralized and autonomous networks of media activists established other independent media centres in London, Canada, Mexico City, Prague, Belgium, France and Italy. In the UK, Shuvra and Aurgha Mahmud established a globally orientated and analytical citizen journalism site called Wanabehuman in June 2005. The Wanabehuman project is an attempt to combine the traditional values of journalism and photojournalism with the emerging values of citizen journalism. Bowman and Willis (2003) suggest:

Voice and personality are also key hallmarks of participatory media. Several observers have argued that the informal style found in many participatory forms frees the writer from the 'official voice' of the media company, and that makes for better storytelling. The official voice of journalism is usually formal, often drained of colour and attitude, and written as an objective and balanced account. In contrast, weblogs and discussion groups thrive on their vivid writing, controversial points of view and personality-rich nature – traits that many readers find compelling.

However, some journalists and academics have questioned the quality and therefore the effectiveness and credibility of vlogs, blogs and various other components of the indymedia/citizen journalism phenomenon (Grubisich, 2005 and 2006). Many see the internet as undermining established, high-quality editorial control and trusted investigative journalism.

Similarly, public-access television such as Deep Dish TV in the US and community media including television, video, radio and the internet also aim at empowering non-professionals through engaging interest, developing skills through constructing reports, news items, artworks and entertainments that would not be transmitted by mainstream media. There are many access organizations, internet TV sites, media groups and activists throughout the world giving voice to minority, alternative and/or radical points of view, ranging from productions by indigenous peoples in the developing world to anti-corporate and

environmental campaigners in the developed (or overdeveloped) world (Halleck, 2002). Accompanying websites and production activities are always subject to the constraints and restrictions of uncertain funding, but links with education institutions, particularly media schools, often provide access to facilities, important contacts and influential networks. There has also been a considerable growth of, particularly, internet TV, with NGOs, corporations and government departments establishing their own sites and an increasing number of small enterprises such as GreenTV assiduously working to raise awareness of environmental, social and other issues – and not just climate change. Big Picture TV streams free video clips of leading experts, thinkers and activists in environmental and social sustainability and New Consumer TV (a new media extension of *New Consumer Magazine*) champions fair-trade and ethical living throughout the world by effectively communicating ethical alternatives.

Television for the Environment

Established in 1984, Television for the Environment (TVE) is an independent non-profit-making organization contributing to non-formal development education across the globe. It is funded from a variety of sources, including the European Union, the WWF, the UK Department for International Development (DFID) and the United Nations, with productions ranging from public service announcements and shorts to half-hour documentaries in the long-running documentary series *Earth Report* and *Life. Hands On* reports are divided into five or six items, providing broad coverage of serious problems and people's successful attempts to remedy

them. Empowerment, participatory action and efficacy are the dominant motifs. Many of these productions are distributed to television stations in the developing world as well as to the major networks, such as the BBC in the UK and PBS in the US. In 2005, TVE programmes were seen in 129 countries including China, Poland, Syria, Malaysia and South Africa. TVE is also producing new programmes for Al Jazeera International, the English-language network of the Qatar-based company. 'Joined-up communications' is the basic aim. Porter and Sims (2003) argue that ending poverty, improving living standards, and protecting the environment and human rights are interna-

tionally agreed goals and the media has a duty to be objective but not necessarily neutral.

In 1995, TVE helped coordinate a global network of women broadcasters, producers and film-makers in the long-running project Broadcasting for Change. 32 short films made in 31 countries, Snapshots for Change, were made to support the tenth anniversary of the Fourth World Conference on Women held in Beijing. Topics included women campaigning against sex trafficking in Nepal and HIV/AIDS prejudice in China, Fiji and Kenya. Issues such as education, domestic violence, trafficking and women's rights were addressed, and in 2005/6 a copyright arrangement allowed each individual member's five-minute short to be available to the whole network. For the price of making one short, broadcasters would have access to 44 others. TVE film-makers have also collected a number of awards: Sandra Mbanefo Obiagio from Nigeria won best director award for her documentary *Cash Madam* at the Biennial Africast conference in 2004 and Aarti Chataut won the Nepalese 2006 Women's Empowerment Journalism Award for her film *Shakti – Empowerment*. The series *Earth Report* and *Life* forcefully explore broad thematic issues such as health, global warming, the race to the bottom, development education, urban violence, pollution, environmental destruction, indigenous land rights, sustainable construction, fair trade, grassroots activism, world trade and gender inequality. Two *Life* programmes, *Holding Our Ground* and *Balancing Acts*, have specifically given women in the developing world an international voice to tell their important and necessary stories.

Occasionally, TVE influences film-makers through screenings at environmental or human rights film festivals, or by screening films to delegates and decision-makers at UN, European Union or World Bank conferences.

Significant resonance is achieved when a major broadcaster is inspired by a TVE report to use a report as a basis for a much larger and ambitious production. Deputy Director Jenny Richards (Blewitt, 2007) says:

What fascinates me about what we do is how our low budget regular programming is being used by all these people out there, in many different ways; and what you then find is some of these storylines reappearing in soaps or in other people's programmes like, I shouldn't really claim this, *The West Wing*, which tackled intellectual property rights after we had covered it in four programmes. TVE has catalysed other productions around the world. We know we've done this with *Panorama*.

BBC *Panorama's Dead Mums Don't Cry*, broadcast in 2005, focused on the Millennium Development Goal to cut maternal mortality by two-thirds by 2015. The report featured the work of Dr Grace Kodindo, an obstetrician in Chad, who showed viewers the problems she confronts working in a hospital with little equipment, few basic drugs and no blood supplies. The programme was available for download from the BBC website in the week following its initial screening and TVE secured funding for it to be translated into French so it could be rebroadcast in Chad, Somalia, Ethiopia, Sudan and elsewhere. TVE retained the rights to distribute *Dead Mums* for broadcast in other developing countries and for non-broadcast educational use elsewhere. Some TVE films have been re-edited and used on mobile video vans in Namibia, in public education and communication campaigns aimed at halting the spread of HIV/AIDS. Others, like *Dead Mums* and the *Life* programmes on health and sanitation, have revisited areas to monitor and assess changes taking place since the time of the first production.

Reporting and Representing

The United Nations Decade for Education for Sustainable Development, 2005–2014 (ESD) identifies the media as an important vehicle for promoting learning about the global environment and the developing world. The draft implementation guidance for the ESD Decade states:

Journalists and media organizations have an important role to play in reporting on issues and in helping raise public awareness of the various dimensions and requirements of sustainable development. Their involvement can contribute to reinforcing access to information, communication and knowledge, as well as access to the know-how and capacities necessary for effective use of ICTs in the framework of development programmes. This can include, for instance, the production of radio and television programmes with local content and on themes such as gender equality and universal basic education.

(UNESCO, 2005, p25)

CARMA International, a consultancy group specializing in 'corporate and organizational reputation', suggests that the media:

works like the 'Push-Me-Pull-You' beast in *Doctor Doolittle*, at once driving perceptions and opinions but also crystallizing and condensing received cultural and social discourses. This rocking effect not only impacts consumer and governmental behaviour but also helps to interpret and negotiate messages on how we all, as consumers of media, ought to think and act and what we say and do.

(CARMA, 2006)

CARMA's 2006 report on Western media coverage of humanitarian disasters included analyses of media reporting on Hurricane Katrina in the US, Hurricane Stanley in Central

America, famine in the Sudan, the Boxing Day tsunami, and earthquakes in Kashmir and Iran (CARMA, 2006). The conclusion is stark: Western self-interest is the major precondition for any significant coverage of an overseas humanitarian crisis. Economics was discovered to be a far more important motivator of media interest than the loss of human life, human suffering or displacement, and overt Western political interests determined the timing and extent of the coverage. Too often, as the BBC's Developing World Correspondent David Loyn (2006) has written, the mainstream media's and even NGOs' interest in 'compelling pictures' of dying babies or famine to promote or document a cause becomes little more than 'disaster-porn'. TV news and NGO marketing is unable to articulate the full story of a complex emergency into a simple visual narrative. Misguided development policies, war and long-term climate change, rather than locusts or short-term drought, are often the real culprits of 'sudden disasters'.

Recently there have been an increasing number of television and film documentaries (*An Inconvenient Truth*, *Darwin's Nightmare*, *The Corporation*, *Favela Rising*, *Ghosts*, *Black Gold*), feature articles in popular magazines, and Hollywood blockbusters (*Syriana*, *Lords of War*, *The Day After Tomorrow*, Erin Brockovich) addressing some of the principal elements of sustainable and unsustainable development. Leiserowitz's (2004) impact study of *The Day After Tomorrow*, essentially a disaster movie/melodrama about climate change, suggests the film did alter audience attitudes, although it was difficult to tell whether attitudes would remain changed. The

film was seen by 21 million Americans (10 per cent of the US adult population) at the box office and by many more on television and DVD, mainly because people enjoy blockbuster disaster movies. Leiserowitz concludes (2004, p33):

The Day After Tomorrow had a significant impact on the climate change risk perceptions, conceptual models, behavioural intentions, policy priorities and even voting intentions of moviegoers. The film led moviegoers to have higher levels of concern and worry about global warming, to estimate various impacts on the US as more likely, and to shift their conceptual understanding of the climate system towards a threshold model. Further, the movie encouraged watchers to engage in personal, political and social action to address climate change and to elevate global warming as a national priority. Finally, the movie even appears to have influenced voter preferences. These results demonstrate that the representation of environmental risks in popular culture can influence public attitudes and behaviours.

Another impact study, in Germany, had slightly different results, but the authors (Reusswig et al, 2004, p60) concluded that the film:

raised awareness of the problem and stimulated the willingness to act, or at least to support government action. At the same time, the film has had a remarkable effect, having stimulated a more complex and enriched view of the Earth system in general and the climate system in particular.

Similarly, Morgan Spurlock's *Supersize Me*, released in 2004, addressed the problem of the fast-food industry's contribution to obesity and ill health, focusing specifically on the huge portions and poor nutritional value of McDonald's burgers. For 30 days, the director Spurlock subjected himself to a diet of nothing but McDonald's, resulting in significant weight gain, increased cholesterol levels and other health ailments, including mood swings, liver damage and sexual dysfunction. The surrounding publicity, particularly after its screening at the Sundance Film Festival, combined with the long-running 'McLibel trial' in London, seriously tarnished McDonald's reputation. Although denying the decision had anything to do with the publicity the film generated, McDonald's soon started to phase out its supersize option, introducing healthier menu options while maintaining health problems were largely the result of consumers overeating. In Australia, the company even offered to pay cinemas if their staff were allowed to distribute apples to audiences watching the film. In 2005 the medical journal *The Lancet* published a study (Pereira et al, 2005) arguing that fast food could increase risk of obesity and diabetes through excessive portion size, emphasis on primordial taste preferences for sugar, salt and fat, and high glycemic load and trans-fatty acid content.

Box 9.1 Communicating climate change

A study conducted by the Institute for Public Policy Research (IPPR) in London found that the contemporary climate change discourse in the UK remains 'confusing, contradictory and chaotic. For every argument or perspective, whether on the scale of the problem, its nature, seriousness, causation or reversibility, there is a voice declaring its opposite' (Ereaut and Segnit, 2006, p7). Although there is growing scientific consensus, the public debate is still in a state of flux, with media repertoires ranging from the alarmist through comic denial to small action pragmatism. Popular responses consequently go from 'everything is too big even to consider doing something about it' to 'climate change is so familiar that there's no point doing anything now', with climate change reportage becoming like wallpaper or elevator music. The IPPR's advice to climate change and other sustainability communicators is to treat the fundamental facts as self-evident rather than contestable and use deep-seated cultural norms to galvanize interest and action. Some problems are huge and do require heroic efforts, and heroic efforts have been made before and individuals have driven massive changes and inspired high-profile activities – Bob Geldorf and Live Aid, Al Gore and Live Earth. There are heroic myths in most cultures (Campbell, 1993), so it may be wise for communicators to tap into these when shaping their marketing and communication strategies. The actions need to become part of people's practical consciousness. They need to be valued personally, willingly, and understood and accepted in culturally meaningful terms. 'The answer is not to try to change their radar but to change the issue, so it becomes something they willingly pick up, because it means something valuable in their own terms', with communicators marketing 'climate-friendly everyday activity as a brand that can be sold' (Ereaut and Segnit, 2006, p28). Ereaut and Segnit go on to recommend the following:

- Communications must be targeted at groups bound by shared values, behaviours and communications literacy – 'people like us'. Desired climate-friendly behaviours need to be made to feel simply like 'the kinds of things that people like us do' to large groupings of people.
- Desired behaviours must be made attractive and compelling to ordinary people through using metaphor as well as reason to enable them to engage emotionally with the problem.
- People increasingly trust other people (even those they have not met) rather than governments, businesses and other institutions, so communications should not be perceived as being top-down.
- Contemporary Western culture is largely 'outer-directed', highlighting esteem-driven needs and seeking success, recognition and status through acquiring and displaying the 'right' brands, fashionable lifestyles, and so on. Hence combating climate change must become fashionable, 'sexy', a positive lifestyle choice.

Climate-friendly behaviours must therefore feel normal, natural, right and 'ours'.

Remarkable Design, Remarkable Communication

Effective marketing, public relations and branding often involves establishing a communication dialogue between a company, organization or product and its various stakeholders – customers, employees and suppliers. Marketing communications and public relations are the art and management science of building relationships between an organization and its key audiences. This may involve modelling a new way of doing business, a more sustainable production process, creating different meanings from a commonplace object and developing durable experience relationships between users and products. When a small eco-enterprise wishes to expand by breaking out of its limiting but relatively comfortable niche market position, there exists a considerable communication challenge. Remarkable Pencils Ltd, a small plastics manufacturing company specializing in recycled materials based in the English Midlands, faced just this challenge. It has no desire to compromise its environmental principles, which are:

- to develop technology and provide products that will be sensitive to the Earth's finite resources and environment through the use of recycled and sustainable materials;
- to promote energy-saving activities, considering all aspects of the product's life-cycle, in order to minimize the environmental impact of raw materials and components while conserving natural resources through waste reduction and the use of recycled and sustainable materials and components;
- to endeavour to meet or exceed all applicable environmental and safety regulatory requirements;
- to promote waste minimization activities, giving preference to recycled or renewable sources wherever practicable;
- to promote continuous improvement and methods for improving manufacturing processes that minimize environmental impacts; and
- to encourage environmental awareness among all employees so that environmental factors are considered in all decision-making processes.

The company's aim is to produce products that are fun and functional, have a long second life, and stimulate interest, even though the products are simple – pencils, pens, plastic box notepads, mouse mats and tyre pads. Some 57,000 pencils are produced daily, and the company's retail outlets include major super-market chains whose initial scepticism regarding the perceived negative quality of recycled products and the marginality of green products in the minds of consumers had first to be overcome. The need then was for Remarkable to establish a brand identity that would be acceptable to the commercial mainstream, for, as the company's founder has argued, to be sustainable, a green company needs to be commercial. Paul Micklethwaite and Anne Chick (2005), researchers at Kingston University in London, were commissioned to help fashion a new Remarkable brand image which would communicate the youth, innovative and passionate nature of the company's mission. Working with a brand agency, Dragon Brands, they concluded that

design had to be a key selling point, the core brand message had to be inspirational rather than educational, and lifestyles had to be sold as much as the products, which themselves had to be attractive, appealing and remarkable in the story they told. Emphasis was consequently placed on innovation, invention and quality, with messages to potential buyers, particularly young consumers, being expressed in a lively, accessible and non-environmentalist manner. Being British, home-grown, helped too. Packaging, logo and product had to project the Remarkable 'personality', encapsu-

lated in the strapline 'Turning junk into something Remarkable'. On a pencil a customer can read 'I used to be a CD case', on a pen 'Pen made from recycled games consoles'. Other products proudly state 'We used to be plastic cups'. In 2004, just eight years after the company was started in a London bedsit by Edward Douglas Miller, Remarkable products were taken up by Selfridges, Habitat, Sainsbury's and Tesco. In 2006, the company had a turnover of £4 million, with the cultural diffusion process continuing briskly (Rogers, 2003).

The United Nations Environment Programme's 'Talk the Walk'

Marketing techniques can be applied in a range of settings for a wide variety of social, environmental or commercial purposes. They can be community- or neighbourhood-based, aimed at changing everyday behaviour in a given locality (McKenzie-Mohr, 2000), or less obviously aiming to shift opinion or cultural predispositions regarding sustainable consumption (Collins et al, 2003; Jackson, 2005). A 2002 report produced by the consultancy firm McCann Erikson asked the simple question 'Can sustainability sell?' The answer is yes, but it needs to be effectively promoted. Advertising and marketing clearly influence consumer patterns linking producers with consumers, and the advertising, marketing and PR industries are renowned for employing exceptionally gifted creative talents. Even so, Ries and Ries (2002) suggest in *The Fall of Advertising and the Rise of PR* that advertising is in crisis. Consumers know that advertisers are trying to sell you something and are automatically sceptical as a result. The authors believe that advertising has lost public credibility and that, if an organization wishes

to build a brand or spread an idea, public relations activities, third-party endorsement, positive accounts in the press or other media, and word-of-mouth communication are probably more effective. Advertising is best for keeping a product or service in the public eye once it has been established.

The issue for sustainability practitioners is finding ways of harnessing advertising, marketing and public relations talents to produce attractive and engaging ways of encouraging people to buy sustainable products and adopt sustainable lifestyles. Agencies like Futerra, a busy London-based communication and public relations company, specializes in innovative and creative ways of promoting sustainable development. Its *Communicating Sustainability* (UNEP/Futerra, 2005) gives clear practical advice and guidance on how sustainability practitioners should seek to understand what motivates audiences, how to address them, and ways the big vision can be turned into personally meaningful and practical messages that also inspire a response.

There is a growing imperative for producers to meet consumer needs sustainably, and many consumers are increasingly exercising discretion over what and from whom they buy. Many consumers state that they would buy green if they had sufficient information about functionality and pricing to enable them to do so. The growth of fair trade and organic markets is testimony to this. The United Nations Environment Programme (UNEP, 2005) argues that some of the most heavily advertised products are often highly resource-intensive, particularly food, personal transportation and to some extent household goods. For UNEP, sustainable lifestyle marketing covers three aspects:

- 1 **responsible marketing** – procedures and management systems developed to avoid promoting unsustainable behaviours;
- 2 **green marketing** – the design and promotion of goods and services with an environmental value added, which might include improvements over the life-cycle of a product such as environmentally friendly sourcing, clean production process, improved impact during use, reduced packaging, recyclability, reusability or existence of take-back schemes; and
- 3 **social marketing** – programmes and campaigns raising public awareness in order to introduce more sustainable action, such as energy or water conservation, waste reduction, reducing car use, and promoting sensible driving.

In order to successfully promote sustainable products, services and lifestyles, organizations will need to carefully associate green selling points with traditionally orientated purchasing criteria, such as overall economic benefit,

social status and environmental safety; embrace corporate responsibility goals that enhance product responsibility (no more gas-guzzling SUVs); and, most important, strengthen their credibility and green credentials to avoid successful accusations of greenwashing.

Many corporations have used their marketing and PR departments to manage reputations following public criticism and many media and environmental critiques which have highlighted expensive-looking PR, advertising and marketing campaigns as being deliberately deceptive (Beder, 1997). Indeed, some companies have invested disproportionate amounts of their advertising budgets on promoting relatively modest green initiatives. BP, for example, developed its new Helios logo to convey its commitment to going 'beyond petroleum', with its growing interests in solar energy, even though BP's investments in oil and gas were actually increasing. It spent \$7 million developing its new green brand image while planning to spend a further \$200 million on rebranding its facilities between 2000 and 2002, and \$400 million on advertising petrol and its new logo. BP continues to explore for oil in environmentally sensitive areas such as the Atlantic Frontier, the foothills of the Andes and Alaska (Beder, 2002). As Chief Executive John Browne was reported by the BBC as saying, 'It's all about increasing sales, increasing margins and reducing costs at the retail sites' (BBC News, 2000). Some advertisers have inflated the green credentials of their clients. In December 2006 the Advertising Standards Authority (ASA) in the UK ruled that a national newspaper advertisement gave a misleading impression regarding the 'low emissions' of the Golf GT TSI. In June 2007 the ASA upheld a complaint against a television commercial for misleading information exaggerating the environmental

benefits of the Toyota Prius. A number of brands, particularly in the travel sector, seem to be making green claims without being able to substantiate them, prompting the Committee of Advertising Practice to prepare additional environmental guidelines. In such a context, the United Nations Environment Programme's concern to develop and disseminate approaches to marketing and advertising that effectively and properly promote sustainable development is truly to the point. Part of this project involved producing an educational 'toolkit' to be used by businesses, marketing professionals and sustainability practitioners to learn more about sustainability and promote sustainable lifestyles and responsible business practice. This toolkit (UNEP, 2007) suggests that the most important determinants of effective communications from a marketing and social perspective include:

- **Sincerity and transparency** – The organization needs to be legitimate,

relevant and authentic in its commitments to sustainability, rather than simply instrumental.

- **Consistency** – Business practice needs to match the public image and communications; it needs to be proactive and anticipatory rather than reactive to sustainability issues. Sustainability has to pervade the whole organization.
- **Analysis** – Knowledge of the target audiences' perceptions and behaviours needs to be understood.
- **Credibility** – Sustainable marketing communications must:
 - Be integrated with a broad-based sustainability strategy at an operational as well as policy level;
 - Engage with credible NGOs working in the field of sustainable development; and
 - Use green labels or certifications awarded by independent and respected bodies.

Art, Activism and the Public Interest

Visual metaphor or backgrounds in advertising imagery are frequently used to suggest particular associations – natural, energetic, fresh, powerful, cool, sexy and so on. However, much media and advertising research demonstrates that there is no guarantee that visual metaphors will be either recognized or interpreted by audience members in the way advertisers or producers intended. A number of factors here are important, including how media consumers read an image and their gender, age, cultural values and perceptions, political interests, visual literacy, and personal experiences and motivations. As Proctor et al (2005) write:

Arguing that human-engineered communication systems are purposive in nature, we assume there is intentionality in consumer communication and accept the inevitability of a polysemy of interpretations because of the 'member resources' of the interpreter. However, in examining advertisements where metaphors may be perceived, it is interesting to consider the possibility of the intended message never reaching the consumer because of the ambiguity of the message, which may lead to a plethora of interpretations. It is therefore interesting to explore what consumers do take from these messages.

Phillips and McQuarrie (2004) suggest that visual figures can be effectively differentiated in terms of their visual structure, defined in

terms of the physical arrangement of image elements and their meaning operations, and understood in terms of the instructions for inference they suggest. Visual structure and meaning operation are fundamentally rhetorical ideas. They are rhetorical because they distinguish and bring out the available possibilities for creating a deviant visual interpretation. Some photojournalists straddle the worlds of fine art and political activism, thereby giving their work both cultural and political capital. Green architectural designs may operate in a similar fashion to inspire and prefigure future possibilities. The aerial photographs of Yves Bertrand communicate both the Earth's beauty and the impact of human activity on the planet, offering a personal aesthetic that is possibly far more emotive than the remote sensing images produced by orbiting satellites and published in such works as the United Nations' *One Planet, Many People* (Singh, 2005) or even Andrew Johnston's (2007) glossy *Earth from Space*, although these images too have a terrible beauty, especially when animated or enhanced on a screen, and when one recognizes the degradation and change they so frequently signify. Sebastiano Salgado combines a high art photographic style with a incisive reportage that brings out the cruelty and human costs of economic globalization, but people from every walk of life are creators of their own images with their camera phones or with their bodies. Powerful, cinematic design can enhance a 'coffee table' book from being a piece of interior decoration to being a stimulating and disturbing learning tool. The book design for *An Inconvenient Truth* (Gore, 2006) mimics that of the feature documentary, with striking colour photographs and diagrams creating a powerful montage of attraction. People communicate with each other in many

ways. Virtually everything we do gives off 'signals' of some description, whether we like it or not – our manner of dress, lifestyle, body language, choice of interior or exterior décor, car and so on. Some of this communication is intentional and some not. Some occurs within private spaces and other in the public sphere. Marketing, advertising, public relations, radio and television broadcasting, theatre, music, photography, cinema, architecture and fine art are all elements of a communication process that may, or may not, facilitate debate, dialogue, discussion, knowledge, and understanding of sustainability, justice and peace. Art is not necessarily for arts sake – and never has been.

The American art critic Suzi Gablik (2002) believes it is necessary to re-enchant art by breaking down the barriers between the individual and the wider world, showing how artistic creativity may serve a wider purpose than self-expression. For Gablik (2000), her writing simply puts down what is already 'in the air':

Ours is a 'doing' culture, however, which means that there is unrelenting pressure to produce, and to produce something visible, a saleable product, or you will get left behind. Thinking of art as an essentially social-dialogical process – as improvised collaboration or relational activity – definitely steps on the toes of those who are deeply engaged with the notion of self-expression as the signal value of art's worth. Often, in my lectures, I would talk about artists who had shifted their work from the studio to the more public arenas of political, social and environmental life. They looked at art in terms of its social purpose rather than its aesthetic style. Many of them were exploring a more 'feminine' and responsive way of working, opening up spaces for 'deep listening' and letting groups that had been previously excluded speak directly of their own experience.

Creative artists are frequently concerned with stimulating reflection, thought and action on specific issues, events and experiences. Environmental artists, for example, tend to work with nature, natural forms and natural materials to produce works of aesthetic value and beauty, but also, perhaps, to invite the spectator to meditate on human, social and natural relationships. Such meditation requires contemplative time and maybe an immersion in the spatial, spiritual and emotional experiences the artworks afford. Art can foster dialogue and conversation about culturally sensitive and politically controversial issues (Kester, 2004), empower disadvantaged communities by harnessing latent talent and repressed creativity (Cockcroft et al, 1998), and even physically transform a local ecology through a process of 'ecovention' – artists working in collaboration with local communities (Spaid, 2002). The cultural geographer Ian Cook (2000 and 2004), taking a lead from Gablik, looks at the aesthetic connections and stories photographs, paintings and installations may offer the engaged spectator. Lowenstein (2001) refers to the Scottish environmental artist Andy Goldsworthy's primary concerns being simplicity and process – with making connections tracing the journey from the leaf to the tree, to growth, to the resonance of place. It is this that animates Goldsworthy's use of natural materials. The Canadian multimedia artist Janet Cardiff has produced 'audio walks', replicating three-dimensional (binaural) sound that enables the listener to explore external and interior worlds and relationships to place, memory and imagination. For example, Cardiff's *Her Long Black Hair* is a 35-minute soundscape journey beginning in Central Park South which turns a simple walk in the park into an engrossing psycho-geographical experience. Listeners are

guided on a twisting journey through 19th-century pathways which follows the footsteps of a mysterious dark-haired woman, producing a complex exploration of location, time, sound and physicality through stream-of-consciousness observations that merge fact, fiction, local history, opera, gospel music and other cultural elements. In an image-soaked universe, Cardiff's audio excursions and other works, including films and installations, are simultaneously liberating and disconcerting (Egoyan, 2002).

Other art projects may be more closely associated with specific campaigns, protests or issues. Murals may protest against ethnic inequality or environmental injustice as well as asserting cultural heritage and identity. Indigenous and aboriginal art forms frequently express the interconnected relationship of human beings to all aspects of the living landscape – rock, trees, birds, plants, rivers and the infinite cosmos – and within this living landscape are encapsulated the great myths of creation known as 'the Dreamtime' (Morphy, 1998). This has inspired artists, writers and film-makers throughout the world to creatively articulate a sense of place and belonging and may be seen clearly in the experimental, meditative and mesmerizing video art of Bill Viola's *Hatsu-Yume* (Viola, 1981). Art may inhabit public spaces as well as elite art galleries and can continue its life in the virtual world of the internet. Community murals, poster and graffiti art, guerrilla theatre, and performance may form a constellation of personal and community expression, social empowerment, ideological critique and political action. Many NGOs, for instance Greenpeace and Friends of the Earth, frequently use street theatre and/or performance stunts to gain media and public attention. One of the most infamous street

performers and culture jammers with an explicit eco-political message is the Rev. Billy of the Church of Stop Shopping, whose act, including preaching to shoppers outside major stores against the evils of consumerism, has often gained considerable publicity and the occasional spell in jail for disorderly conduct or obstruction. The Bristol artist Robin Banksy has produced a striking array of stencilled images that are both politically pointed and creatively daring. His work is presented on the street, in art galleries and on the web. Banksy (2005, p85) muses:

Imagine a city where graffiti wasn't illegal, a city where everybody could draw wherever they liked. Where every street was awash with a million colours and little phrases. Where standing at a bus stop was never boring. A city that felt like a party where everyone was invited, not just the estate agents and barons of big business. Imagine a city like that and stop leaning against the wall – it's wet.

Graffiti and community art, street theatre, fine art and architectural exhibitions, the anti-globalization activists, and new media technologists are teaming up, producing exciting, creative and innovative communications and many new political possibilities.

Education for Sustainable Development

The UN Decade for Education for Sustainable Development (ESD) applies to all areas of education – formal and informal sector, schools, colleges and universities, adult and work-based learning, learning throughout life, from cradle to grave and in effect beyond. The UN Decade clearly identifies the main ESD tasks as to:

- act as the primary agent of transformation towards sustainable development, increasing people's capacities to transform their visions for society into reality;
- foster the values, behaviour and lifestyles required for a sustainable future;
- become a learning process, facilitating decision-making that considers the long-term future of the equity, economy and ecology of all communities; and
- build the capacity for such futures-orientated thinking.

The education systems in different countries and regions tackle sustainable development

issues in relation to the nature and extent of their knowledge, cultural values, languages, worldviews and ideological perspectives in different ways. Indeed, the UN Decade suggests that culture, understood in a broadly anthropological and connective sense, will in large part predetermine the way issues of education for sustainable development are addressed in specific national contexts.

Education is therefore supremely important, with a great deal to do, but as the report *Every Child's Future Matters*, issued by the UK's Sustainable Development Commission, provocatively remarked (SDC, 2007, p7), 'Our generation is the first to knowingly degrade the environment at the expense of children now and in the future – a fact that challenges much of the rhetoric about the importance of children in society.'

In *Earth in Mind*, the American educator David Orr (1994) notes that, with climate change, environmental degradation and species extinction, a great deal of that on which our future health, livelihood and

prosperity depends is under serious threat. Significantly, he continues, this is not the work of ignorant people but of highly educated ones often holding highly desirable and well-respected qualifications. It is therefore logical to deduce that there is something wrong with the education systems dominating the advanced and developed nations of the world. One cause may lie with the root metaphors and assumptions informing our scientific worldviews – the world is like a machine, the mind is separate from the body, the planet and all its wonders are just there for humankind to exploit and destroy. Orr also suggests that it is imperative to confront a number of common myths. First, that ignorance is a solvable problem. It isn't; it is part of the human condition and so it is something we have to live with. Second, that with sufficient knowledge and technology we can manage the Earth and all the problems we have given it. But the ultimate complexity of the Earth's natural systems means the best we can manage are our own desires, emotions, policies, economies and communities. We must reshape ourselves, not the planet. Third, that our stock of knowledge is increasing. But in fact with the information explosion much traditional and local knowledge is actually being lost or discounted under an avalanche of new data. Fourth, that contemporary unreformed higher education can restore what we have lost. Unfortunately, progress in developing trans-disciplinarity has been slow and uneven (Blewitt and Cullingford, 2004) and, despite the positive and growing actions of staff and students alike, higher education sector impacts have been modest (Bartlett and Chase, 2004; Corcoran and Wals, 2004). Fifth, the purpose of education is to provide its students with the means for upward mobility and economic success, however defined. But

what the planet really needs are 'more peace-makers, healers, restorers, storytellers and lovers of everykind' (Orr, 1994, p12). Finally, the imperialistically arrogant and misinformed myth that Western culture is the highest achievement of humanity. Learning to live well and sustainably is not a once and for all activity. Orr, like Sterling (2001), considers that education's response ought to be a major rethink, a paradigm shift, offering a combination of humility and reflexivity, creativity and renewal. To this end, Orr identifies six possible principles to guide such a rethink:

- 1 All education should in effect be environmental education.
- 2 The goal of education should be self-mastery rather than mastery of subject matter.
- 3 With education and knowledge comes the duty to see that the planet is well used.
- 4 Knowledge can only truly be said to exist when we can understand the effects of knowledge on people and their communities.
- 5 Educational institutions together with their staff should be models of care, mindfulness, integrity and responsibility.
- 6 Learning should be active, enquiring, sensitive and sensual, formal and informal.

Without this, learning, and certainly formal education, can be a dangerously abstract, instrumental and amoral thing. Education needs to reconnect people with their environments, with their experiences and with themselves. It needs to recover the importance and value of the senses and their inter-relationships, of their feelings and intuitions, seeking to embody an engagement with the world of which we are all a part (Abram, 1996).

Curriculum change is just one necessary part of this paradigm shift, for it also requires a major shift in the wider cultural values, dispositions and proclivities informing modernization and (post-)industrial development that currently define the purpose of 'education'. In many countries, not just the UK or US, primary/elementary education has driven ESD, inspired in large part by the belief that adults are 'saving' the world for their children. This is a notion often referencing Native Americans, such as Chief Seattle's 1855 'Manifesto for the Earth' (the authenticity of which is disputed by some), in which he asserts that the Great Chief in Washington who wants to buy 'Indian' territory cares nothing for the land and once having conquered it will surely move on, forgetting 'his father's grave and his children's heritage' (Chief Seattle, quoted in Benton and Short, 2000, p12). The idea that we should teach children to care for the natural world and non-human inhabitants has long been popular, reasonably funded from public and private sources, and politically quite acceptable (Palmer, 1998). Over the years there have been innumerable pedagogic approaches, educational theories, toolkits, curriculum packs, teaching aids, lesson plans and so on, produced by the likes of the IUCN, the WWF, UNESCO, and even some of the major oil and chemical companies like Shell. There have also been numerous conservation, wildlife and outdoors environmental education programmes, like Project Wild, aiming to nurture awareness, action and responsible citizenship among young children. Steve van Matre's *Earth Education* (1990) and Joseph Bharat Connell's *Sharing Nature with Children* (1998) have been particularly influential, although it should be remembered that environmental education is only one aspect of ESD.

Scott and Gough (2003) have identified three approaches to thinking about sustainable development, learning and change. The first approach sees the problems we face as being primarily environmental, to be understood and solved through science and the application of appropriate technologies. The second approach sees our current problems as primarily social and political, in which the environmental is relegated to the status of symptoms rather than causes. Solutions can be found through the application of social scientific, local and indigenous knowledge, where learning facilitates choice between perceived alternatives and futures. The third approach sees our knowledge and tools as essentially inadequate, requiring learning to be inevitably open-ended and lifelong. Uncertainty and complexity characterize our life-worlds, necessitating reflective social and cooperative learning. Institutionally based education must facilitate change through promoting skills development, behaviour change and, importantly, by fashioning a learning *for* sustainable development. But this too is insufficient, because our learning, our technologies, our emergent understandings help shape our moral universe, our social and political worlds, and the very possibilities for, and of, sustainable living. Given this, Scott and Gough write of learning as sustainable development, the building of capacity to think critically about (and beyond) expert knowledge enshrined in the conventional wisdoms and nurturing capabilities for individually and collectively exploring the contradictions inherent in sustainable living. Blewitt (2006) complements this analysis through his emphases on the importance of informal learning, social practices, cultural mores and the experience of everyday life – the antimonies and joys of consumption, travel,

leisure, food, work, the media and life itself – and Dyer (2007) suggests that, despite the steady increase of cultural heritage, ecology and sustainability in formal education, there is still lacking the holistic energy that will effectively transform facts into feelings, understanding into personal action, or professional development into corporate responsibility. The major reason for this is the absence of a certain magic and enchantment, the 'wow' factor, that would render learning a truly memorable, meaningful and life-enhancing experience. There is consequently no shortages of ideas, theories and, thankfully, practical examples of education for sustainable development, though perhaps less so for education as sustainable development. Tilbury and Wortman (2004) have offered their contribution to the debate by arguing that ESD should consist of the processes described in the following sections.

Imagining a better future

Learners are encouraged to envision their ideal, preferred or possible futures, which in the process reveals their underlying beliefs and values. Envisioning can be deeply motivating, not least because it enables people to develop their own interpretation and understanding of sustainability, to share and enter into dialogue with others:

In education for sustainability, all people need to share knowledge and participate in working towards a sustainable future. For such participation to effectively take place, people need both the time and freedom to articulate their ideals and dreams and to share them in a learning space that sees each of them as equally valid and meaningful. Such a process values every person's vision of what a better future might look like, regardless of their background, knowledge or expertise. The process of envisioning facilitates an under-

standing of what sustainability is in their context and how it relates directly to their lives. Visioning is also a process that is inclusive to all cultures, and one that begins a dialogue which *strengthens intercultural understanding*. It can act as a bridge to incorporate intercultural and indigenous perspectives and knowledge. Every individual's vision can have direct or indirect implications for future action and provokes further questions. In some cases, strategic partnerships can help people to address questions, obstacles and opportunities for action. (Tilbury and Wortman, 2004, p25)

Critical thinking and reflection

Critical thinking and reflection means exploring questions and the answers and actions they elicit. Critical thinking invites a questioning of information sources, of social behaviour and community relationships, of the nature of political power and governmental decision-making, and of the role of technology, big business and science in our society. It invites us to investigate and understand the basis of our pre-given assumptions, ideas and values. Critical thinking helps us to understand the systemic causes of problems and avoid simplistic or misconceived solutions. Critical thinking enables us to explore the cultural and/or religious influences shaping our world-views. Self-reflection and critical thinking can facilitate values clarification and participation in the sustainable development processes.

Participation in decision-making

Participation in decision-making is a key element in sustainable development, ranging in practice from cursory consultations more akin to the manipulation of the weak by the powerful to genuine full stakeholder engagements empowering communities and individuals. Learners are therefore at the

centre, building skills, increasing confidence, and developing knowledge and understanding in a free and democratic manner, with the professional educator acting as a facilitator rather than 'expert'. Participation helps learners self-organize to develop greater self-reliance and a stronger sense of personal, cultural or community identity, which in turn can deepen a commitment to lifelong learning and long-term sustainable actions.

Multi-agency partnership working

Multi-agency partnership working is a key means of effecting sustainable, structural change at global, societal and community levels. ESD partnerships frequently involve formal education institutions, businesses and community groups working to create a shared vision and common ground for action. Partnerships can seek synergies, share knowledge and skills, and develop capacity to lever vital private and public sector project-funding. Ideally partnerships should nurture long-term commitments and predispositions for sustainable learning and change. The Johannesburg Summit suggested two main types of partnerships for sustainability:

- Type I: government partnerships aiming to fulfil agreed commitments; and
- Type II: voluntary and self-organizing partnerships of government, international organizations and major civil society groups.

Systemic thinking

Systemic thinking encourages us to think outside of our familiar boxes. It is a relational way of thinking, enabling us to focus on processes rather than things, dynamics rather than static states, and wholes rather than parts.

Systems or holistic thinking crosses disciplinary boundaries and eschews either/or dichotomies or mechanistic cause and effect metaphors. Most sustainability issues, such as climate change, are indeed highly complex, requiring new knowledge and approaches to problem identification and understanding that are not reducible to simple analyses or single disciplinary solutions. For Sterling (2004), systems thinking is related to three dimensions:

- 1 **perception** – extending our viewpoint and boundaries of concern;
- 2 **conception** – helping us recognize connections and patterns of relationship; and
- 3 **action** – helping us to design and act in a holistic and integrative way.

Underpinning ESD is the aim to encourage people to become eco-literate. This involves being able to comprehend the world holistically and developing the knowledge and capacity to perceive its overall interrelatedness. It must fully engage with a set of ethical values embracing notions of care or stewardship, environmental justice, and community (Bowers, 2001). An eco-literate person is not just a person who thinks and feels; at the base of his or her ecological perspective must be a practical competence that enables action and the generation of knowledge derived from the experience of doing. To this end, eco-literacy is more likely to be developed non-formally in community-based action-orientated learning activities than in formal settings like schools (Wharbuton, 2006). So, as David Orr (1992, p92) notes, 'knowing, caring, and practical competence constitute the basis of ecological literacy', with Earth-centred education constantly seeking to nurture that quality of mind that seeks out connections. ESD must

therefore broadly ensure that cognitive, affective and aesthetic domains of learning are not compartmentalized. An understanding of the signs and symbols, metaphors and stories, tools and technologies (traditional and emerging) that bind people into networks of understanding and which constitute new relationships between self and others, and self and the 'natural world' are required.

Schools are an important part of any community and their importance in promoting social health, skills and social capital should not be denied. Schools can lead by example by demonstrating ways of living, working and being that generate ecological literacy and practical competence. The UK Government aims for all schools to become models of sustainable development by 2020,

with sustainable schools being 'guided by the principle of care: for oneself, for each other (across cultures, distances and time) and for the environment (far and near)' (DfES, 2006, p2). The UK's National Framework for Sustainable Schools asks schools to extend their commitment to sustainable development in eight key areas, or 'doorways', incorporating the curriculum (teaching and learning), campus (ways of working, food, travel, energy, and building construction and renovation) and community (promoting wellbeing and public-spirited behaviour). Unfortunately, initiatives like Sustainable Schools in the UK will probably need substantial legislation to ensure any real degree of success.

The UK Eco Schools programme is currently growing at around 400 a month. By

Table 9.1 *UK National Framework for Sustainable Schools, 2006*

Doorway	Action by 2020: All schools to be models of healthy...
Food and drink	Local and sustainable food and drink produced or prepared on-site (where possible), with strong commitments to the environment, social responsibility and animal welfare and with increased opportunity to involve local suppliers.
Energy and water	Energy efficiency and renewable energy, showcasing wind, solar and biofuel sources in their communities and maximizing their use of rainwater and waste water resources.
Travel and traffic	Sustainable travel, where vehicles are used only when absolutely necessary and facilities for healthier, less polluting or less dangerous modes of transport are exemplary.
Purchasing and waste	Resource efficiency, using low-impact goods that minimize (or eliminate) disposable packaging from local suppliers with high environmental and ethical standards, and recycling, repairing and reusing as much as possible.
Buildings and grounds	Living, learning places where pupils see what a sustainable lifestyle means through their involvement in the improvement of school buildings, grounds and the natural environment.
Inclusion and participation	Social inclusion, enabling all pupils to participate fully in school life while instilling a long-lasting respect for human rights, freedoms and creative expression.
Local wellbeing	Good corporate citizenship within their local areas, enriching their educational mission with active support for the wellbeing of the local community and environment.
Global dimension	Good global citizenship, enriching their educational mission with active support for the wellbeing of the global environment and community.

Source: DfES (2006).

April 2008, 9000 schools had registered in England alone – 40 per cent of all English schools – and many are enthusiastically involved in significant and exciting local initiatives. In South London near London Bridge, the Bankside Open Spaces Trust, a community-owned and -led charity, works with Southwark Council, local schools and businesses, Tate Modern, and local community members of all ages and social and ethnic backgrounds to revitalize the urban green spaces, parks and gardens. One Southwark primary school is working with the trust to involve residents in renovating some wasteland by creating a community orchard and space where local people can grow vegetables. Another school is helping to regenerate a neglected public recreation area and has helped establish a local cricket league. The trust's vision is that wherever you are in Bankside, there will be something green and beautiful to see.

Sustainable schools must directly involve and engage pupils. Ideally many initiatives should be pupil-led, as this develops a sense of possibility and encourages practical learning, teamwork, group dialogue and decision-making, and action and a predisposition to care. As one London head teacher remarked

when interviewed by a graduate student from Exeter University, 'developing a sustainable school can transform a school into a creative and innovative learning environment for the pupils, raise standards of attainment and put it at the heart of a vibrant cosmopolitan community'. (This quote, like much of the information for this sub-section on schools, is derived from the work of Penny Sturges, a mature student on the MSc Sustainable Development course at the University of Exeter, who conducted a number of interview with staff and students in London schools in 2007.) Through school it is possible for children to become eco-literate citizens and members of a community that values and respects the wider environment. Krasny and Tidball (2007) refer to the civic ecology aspects of ESD in their discussion of garden mosaics of cultures, plants and planting practices within urban community greening activities in South Africa and the US. These community garden projects empower learners through building community resilience, enhancing existing individual, social and environmental assets, and nurturing the experience of inclusion and cooperation, skills of social learning, and the capacity to grow in a world of change and uncertainty.

Thinking Questions

- 1 When does sustainability communication end and education for sustainable development begin?
- 2 How important are feature films and television in raising ecological awareness?
- 3 In what ways can images be more powerful than the spoken or the printed word in promoting sustainable development?
- 4 What is the likely influence of new and emerging media technologies on communication, learning and sustainability?
- 5 In your view what skills and knowledge does an eco-literate person need to develop?

10

Leading the Sustainability Process

Aims

This chapter aims to develop an understanding of the theory and practice of leadership in organizations and society, highlighting the need to explore different dimensions of leadership within sustainable development. An important aspect of this is the relationship between learning, knowledge management and innovation, and, by examining the views of a number of writers who place leadership

within a systems or ecological perspective, the clear relevance of leadership to sustainable development practice will be outlined. Finally, by identifying a number of traits and characteristics frequently associated with leaders and leadership, it may be possible for readers to discern their own personal and professional development needs and the means to realize them.

Looking for Leaders?

In 2007, the authors of the Human Development Report, *Fighting Climate Change: Human Solidarity in a Divided World* (Watkins et al, 2007), called on developed nations to immediately take the lead in combating climate change by cutting carbon emissions by up to 30 per cent by 2020 and 80 per cent by 2050. Unless this is achieved, at least 40 per cent of the global population will suffer immensely. Stephanie Draper (2006) of Forum for the Future has discussed a business leadership model based on competitive advantage that may promote more responsible and sustainable behaviour by inspiring and

motivating others to adopt ecologically sound businesses practices. However, this may not work in other sectors, cultures or times. Underpinning all leadership activity is human agency, sometimes acting independently but almost always acting collectively in groups or in networks. A town can only embark on the road to transition if the people within choose to act in certain ways. The Isle of Wight, just off the southern coast of England, can only become the world's largest eco-island, as is planned (Vidal, 2007b), if its inhabitants, its politicians, its business people and others work to make it so, linking the local inevitably to the

global. The world's first zero-carbon ecocity, intelligent and green housing, organic farms, and eco-friendly transport in Dongtan in China, demonstrated during the Royal Institute of British Architects' China Fortnight in the autumn of 2006, is the result of massive partnership activity between British architects and engineers and Chinese officials and builders. The state of California can only shift political awareness and will in the US if its political leadership makes and implements certain policies offering the possibility of change that will engage both supporters and sceptics. If Governor Schwarzenegger had not signed the Executive Order capping greenhouse emissions in 2006, or announced publicly with Prime Minister Tony Blair his commitment to environmental action, or given pro-environmental speeches at the University of Georgetown in April 2007 and to international bodies like the United Nations on the imperative need to combat climate change, and if former Vice President Al Gore and the whole Intergovernmental Panel on Climate Change had not acted as they did to be jointly awarded the Nobel Peace Prize, then there would not have been the debate or shift in attitudes that occurred in the US during 2007. Schwarzenegger argues that courageous goal setting makes industries innovative and creative problem-solvers that can address economic and environmental issues simultaneously and effectively. He argues that sustainability and the environment needs to be seen as sexy and inspiring. He uses his own business and movie background as a way of directly communicating the message so that it resonates in the media, appearing on the front cover of *Outside* magazine and *Newsweek*, and among voters in their communities. A field poll released soon after the Governor's speech at the University of Georgetown showed that 81

per cent of Californian voters said global warming was a very serious or somewhat serious problem. Only 21 per cent believed the federal government was positively addressing it. Of course, as commentators have noted, there is a danger in suggesting that politicians and businesses may not have to make fundamental changes, particularly if technical solutions like biofuels or hydrogen cells fail to provide the hoped-for environmental benefits. But that is what makes sustainability a political act and not a scientific concept.

In 2007 Forum for the Future conducted a poll of 262 'green movers and shakers' on sustainable leadership. Over 80 per cent of respondents voted for Al Gore and, although voters had three votes, the female Indian environmentalist Vandana Shiva garnered just 14 per cent. As Roger East (2007), editor of Forum's *Green Futures* magazine, noted, the female half of humanity was hugely under-represented in the poll. He could also have added people from the Third World and all those who are not in elite positions in the First. For Vandana Shiva (1993), writing specifically of the Chipko Movement, it is the unsung, and particularly women, rather than the well-known charismatic leaders who frequently deserve the credit for initiating change and debate in contexts far wider than their own; but they rarely receive it. The publicly applauded achievements of the most visible leaders are often due to the achievements of the invisible many. The Forum poll, then, certainly articulated a certain type of leadership and leader, but there are other possibilities including the idea that sustainable development does not need leaders, and certainly not charismatic ones, but simply people who simply do, who guide, who advise, who nurture, who innovate and who embrace the natural world. So just as sustainable devel-

Box 10.1 Schwarzenegger's guiltless green

Governor Arnold Schwarzenegger made a keynote speech at a global warming conference at Georgetown University. He said:

For too long the environmental movement has been powered by guilt. You know the kind of guilt I'm talking about: smokestacks belching pollution and powering our jacuzzis and our big-screen TVs and, in my case, powering my private airplanes. It's too bad for us that we can't live the lives of Buddhist monks in Tibet, but you know something, it doesn't happen.

I don't think any movement has ever made much progress based on guilt. Guilt is passive, guilt is inhibiting and guilt is defensive. ... Successful movements are built on passion, they're not built on guilt. They are built on passion, they are built on confidence and they are built on critical mass.

California as you know is big, California is powerful and what we do in California has an unbelievable impact. We are sending the world a message, what we are saying is we're going to change the dynamic on greenhouse gases and carbon emissions.

I was followed around by environmental protesters with signs. They didn't like my Humvees and Hummers and my SUVs or anything that I did, so even when I promised I would improve the environment when I became governor, they didn't believe I would. Here we are now, three and a half years later, and I'm on the cover of *Newsweek* as one of the big environmentalists. Only in America.

We don't have to go and take away the muscle cars. We don't have to take away Hummers or SUVs or anything like this, because that's a formula for failure. Instead we have to make those cars more environmentally muscular.

The tipping point will be occurring when the environment is no longer seen as a nag, but as a positive force in people's lives. I don't know when the tipping point will occur, but I know where – in California.

The question is: 'Can you drive a Hummer and sport a green warrior badge?'

Source: Coile (2007).

opment may be conceived as a dialogue of values encompassing a myriad of perspectives and worldviews, approaches to leadership for sustainability may be equally diverse and

multifaceted, embracing even a denial of the importance of leadership itself. In other words, it may all depend on circumstances, issues, philosophies, knowledge, values and feelings.

On Leadership

Management theorists have invested a great deal of energy in analysing leaders and leadership. They frequently draw lessons from politics, history and war as well as business. The focus is frequently on the individual and

his or her relationship to situation or contingency. There has been relatively little work on the type of leadership required to fashion a more sustainable world, although recently sustainability practitioners have begun to

think about this quite seriously. There is no longer a reluctance to see leadership negatively as inevitably hierarchical, linear, or a danger to equity and democracy, although it can be that and may even be conceived and promoted as such. The business theorist Peter G. Northouse (2007, p3) defines leadership as being principally 'a process whereby an individual influences a group of individuals to achieve a common goal', pointing to four key elements:

- 1 Leadership is a *process*, an interactive transactional event that takes place between a leader and his or her followers and is as such open to everyone – not just the great, special or worthy.
- 2 Leadership involves *influence* or the ways in which a leader affects followers. Without influence there can be no leadership.
- 3 Leadership occurs within a *group* context, involving influencing people who have a common goal or purpose. These groups can be small or large, task-orientated or ideologically motivated.
- 4 Leadership involves *goal* attainment, achieving a desired aim, end or task collectively.

For many, this may be too restrictive and too individualized, but it nonetheless does offer a starting point. Whatever the approach or theory, leadership almost inevitably involves consideration of political power, personality traits, institutional and organizational culture, motivation, inspiration, emotion, intelligence, visioning, skills, ethics and learning. Mumford et al (2000) developed a capability model of leadership, relating a leader's knowledge and skills with the leader's performance. Leadership capabilities can be learned and

developed through experience. They consist of various competencies, including problem-solving and social judgement skills and the ability to acquire and process information into knowledge. But for many environmentalists, the most important element of any leader must be the values he or she has and is able to successfully communicate to others so that we can achieve. As Egri and Herman (2000, p600) write:

Transformational leaders are needed to effect transformations in the way humankind relates to the natural environment. The importance of human agency in this endeavour cannot be overstated. Just as human agency has contributed to ecological degradation, human agency will play an essential role in advancing long-term environmental sustainability. Although this role may seem daunting to many, modern society will need more people like this leader of a for-profit environmental retail organization to take on the challenge.

The most appealing part is being able to take a group of people, an organization, a concept, an idea or a mission from one place to another. You can dream and then make it happen. Nothing is more exciting to a leader than to hear 'You can't do it'. Perfect! That's just what I want to hear. So now we are going to do it. I think that's what I enjoy the most. Trying to get to places that we didn't think we could go.

Leadership is perhaps above all an *intervention* primarily rooted in the imagination. This involves having a *vision* of when, why, where and how something will be achieved invariably leading to self- and organizational transformation. CEO Ray Anderson of Interface may be perceived as a transformational leader, a man who changed himself through serious reflection and through a series of motivating, inspirational, pragmatic,

learning and empowering actions which altered the nature and purpose of his company and his employees. Interface is frequently cited as a commercial organization that has come closest to realizing the goals of sustainability. In his autobiography, Anderson (1998) writes that the new sustainability thinking now permeates everything Interface does, particularly product design and development. He says one person can make a difference but leadership is not a solitary activity – transformation cannot be dependent on one person as it takes place in social, community and organizational settings involving many others:

I believe one person can make a difference. You can. I can. People coming together in organizations like yours and mine can make a big difference. Companies coming together, for example customers and suppliers uniting in recycling efforts, can make a vast difference. Harnessing wind, current solar income and hydrogen can make a monumental difference. ... 'The power of one' has become a recurring theme in our company, as many of our customers, as well as our people, recognize.
(Anderson, 1998, pp140–141)

Anderson recognizes that Interface, and indeed society, has a long way to travel before anything approximating sustainability can be realized. He sees the journey as taking place on three levels:

- the level of *understanding* – learning the what and where of sustainability, including the methods, approaches, technologies, practices and attitudes required;
- the level of *achieving* sustainability – bridging the resource, technical, ingenuity and knowledge gaps between envisioning and doing; and
- the level of *influence* – extending sustainability beyond the point of doing no harm to being positively restorative ecologically and socially.

Transformational leaders, and organizations, have a strong set of internalized values and ideals which raise the game emotionally and intellectually for all concerned. The overarching goal of leadership is to motivate, to inspire and sometimes to be morally uplifting (Avolio, 1999). Anderson seems to perfectly fit the model of the transformational leader – offering a vision, shaping an organization, creating trust and creatively deploying his personal strengths.

However, this may not be enough. Julia Middleton (2007), founder and chief executive of the leadership training enterprise Common Purpose, argues that in virtually every sector, conventional boundaries are dissolving, with traditional forms of authority becoming less clear and less relevant. Unfortunately, many organizations still hope to operate in silos, with leaders focusing exclusively on their own responsibilities, but in an increasingly interconnected world this occurs at the expense of context, which renders leaders vulnerable to threats or unable to see opportunities. For Middleton, leaders must understand the value of diverse networks that extend beyond their zones of comfort, familiarity and even competence. In these new circumstances, they must rely on influence rather than power because they are in effect operating beyond their authority. In a world where partnership, collaboration and cooperation is becoming increasingly necessary, leaders and decision-makers of all descriptions cannot afford to operate in isolation. By working in what Middleton terms 'the outer circles', leaders are able to detect small but significant changes in

the environment that may sooner or later impact seriously on their immediate sphere of influence, control and responsibility. However, leaders need to maintain an independence of mind that combines self-confidence with a degree of humility. In a complex, complicated, changing, connected and uncertain world it is quite easy to be wrong. So what becomes really important is the ability to communicate effectively across different cultural fields and to supplement traditional leadership tools with others.

For Heifetz (1994), *followers* are important too, because just as good leaders may reflect the problems back to where they have to be solved, it is the followers who also rectify the consequences of mistakes leaders must inevitably sometimes make. Heifetz (1999) feels that students of leadership have spent too much time examining resistance to change, because change is frequently welcomed and when it is not it is usually the result of change representing the possibility of loss, apprehension, fear and anxiety. Changes representing gains of some description are usually most welcome, but the past must not be forgotten or dismissed in its entirety. Leadership involves mobilizing people's capacity, whether in business, the community or wider society, to select and carry with them what is essential from their past, enabling them to adapt better to the present and emerging future than they would have otherwise. And the better people adapt, the more innovative they become and the more able they are to fashion an active or creative consciousness. When this occurs, people become increasingly willing to engage with different or opposing ideas and values without fearing they will be accused of being inconsistent. This nurturing frequently means applying an ethic of care or raising followers'

awareness and understanding to a higher level, which may emphasize values such as liberty, justice, equality and now certainly sustainability (Cuilla, 2003). Ladkin (2006) suggests that leaders need to be attentive both to their own values and responses to a given situation and to those of others. They need to be able to influence others and in turn be influenced. They need to be able to apply what the German philosopher Heidegger termed a sense of 'dwelling' – a staying or being with a problem, particularly when ethical issues dominate. To dwell means to open up to possibilities by letting go of preconceived assumptions, interpretations, analyses and judgements. Others are then more likely to open up themselves, because they perceive leadership to be caring and sensitive to complexities rather than enacting a stereotypical leadership role that rushes to judgement with speedy prefabricated actions. All this takes time, but the potential benefits may be immense. This slower, more meditative approach to leading, according to Ladkin (2006, p96), requires three specific adjustments to the conventional wisdom on leadership:

- In practicing 'staying with', the leader attends to the present and the factors which have shaped that present rather than focusing his or her energies solely on the future. This noticing of the present enables new contours of the given situation to be revealed and, through that, new understanding to be gleaned.
- The leader is influenced as well as influencing, and actively seeks out information which will help him or her to understand the situation more fully. Through their comportment, they suggest to others that they are willing to be moved and influenced by others' ways of being in the world and their understanding of a given situation.

- The leader is not required to have a clear vision of the 'right' course of action or decision, but instead, through a process of engagement, enables a space to be created wherein a resolution which 'fits' the situation emerges.

Leadership and the Upside of Down

The Canadian political scientist Thomas Homer-Dixon (2002 and 2006) argues, like many others, that the world is currently facing a convergence of multiple stresses, which is leading to changes that could quite possibly engulf us. It is in these threats of catastrophe, however, that opportunities for change and renewal lie, if only we can engage and fashion a resolution which fits as the situation emerges. Homer-Dixon identifies five tectonic shifts:

- 1 differential demographic growth, with populations increasing in poor areas and remaining static or in decline in richer areas;
- 2 climate change – increase in greenhouse gas emissions and global warming;
- 3 environmental degradation, particularly in the developing world, which is reducing economic capacity and weakening institutions;
- 4 in the area of energy, peak oil and natural gas production is occurring with no clear plans for alternatives; and
- 5 global income and wealth inequality, with massive global poverty coexisting with massive wealth, causing anger, resentment and conflict.

The effects of these stresses are being multiplied by the increased connectivity and speed with which materials, energy and information move around the planet, leading to cascading failures among the world's ecological, economic and social systems, and a power

shift down the social hierarchy from states and large organizations to various subgroups and individuals, enhanced by the analytic power of new information technologies and possibilities of terrorist action. The danger is increased by the possibilities of convergence and simultaneity, with all the shifts happening in one place at the same time. Additionally, in the future we may not have sufficient high-quality energy to run our complex systems as the energy return on investment is declining (more energy is needed to produce energy). One of the deep drivers of our contemporary crisis is the desire to increase economic growth, resulting in increased material throughput and based on the assumption that more means a better quality of life. These drivers counteract attempts to improve efficiency and lessen our impact on the environment and, although it is not possible to predict the future, for Homer-Dixon, systems breakdown and increasing systems volatility seem ever more likely.

However, this grim scenario does have a brighter side, as a number of opportunities lie between the twin poles of living harmoniously and sustainably and complete catastrophic breakdown. Complex systems are able to adapt, and adaptation to moments of breakdown offers possibilities for creativity and for leadership to push society down one path rather than another. Adaptation will depend on the extent to which we are able to increase our social, economic, political and technological resilience, accomplished in large part by the development of a 'prospective mind' that recognizes that sharp and hurtful discontinu-

Box 10.2 One Planet Leaders

The WWF sees a future in which business moves from creating demands for non-essential goods and services to creating and selling solutions to the world's problems.

While there is a wealth of data and factual information on sustainability issues (for example trends in environmental degradation, the implications of resource scarcity, climate change, human rights, working conditions and economic justice), most individuals and organizations still struggle with how to respond to such information and adapt their behaviour.

One Planet Leaders is a cross-professional CR/CSR and Corporate Sustainability development programme that will enable business managers to explore and apply the latest thinking on sustainability to create future value for their company.

Source: WWF International, 'One Planet Leaders', www.panda.org/about_wwf/how_we_work/businesses/training/index.cfm.

ities are an inevitable part of our future. We must embrace the unexpected and expect surprises. For Homer-Dixon (2006, p283), scientific knowledge remains the best tool people have to distinguish between 'plausible and implausible futures'. This may mean new localized and sustainable forms of energy production, more time to deal with shocks, abandoning the system of 'just in time' production, and embarking on a proactive process of advanced planning and thought which focuses on how future crises could be dealt with in a 'non-extreme', dialogic, networked and collective manner. Open-source approaches that have been used to develop computer software need to be applied ferociously to hard social, political and environmental problems. The seeds of rebirth will therefore be found in the reality of present problems, with the possibilities of future breakdown breaking down denial and inertia to

produce something new, useful and hopefully sustainable. As Homer-Dixon writes (2006, p282), we therefore need to be:

open to radically new ways of thinking about our world and about the way we should lead our lives. We need to exercise our imaginations so that we can challenge the unchallengeable and conceive the inconceivable. Hunkering down, denying what's happening around us and refusing to countenance anything more than incremental adjustments to our course are just about the worst things we can do. These behaviours increase our rigidity and dangerously extend the growth phases of our adaptive cycle. When a social earthquake eventually occurs, we'll have no new concepts, ideas, or plans to help us cope and no alternative ways of seeing our future.

Is this not a task for us all?

Is this not a task for us all to be leaders in, whatever the spheres in which we lead out our lives?

Leading Change for Sustainability

As an ecological sensibility begins to pervade Western culture, government and business leaders are increasingly looking to ways in

which they can embed sustainability into their business practices. Hitchcock and Willard (2006, p121) state that 'sustainability can be a

powerful framework for harnessing employee commitment and energy' and that senior management teams can apply five clear strategies:

- 1 **assessing threats, opportunities and constraints** which can be incorporated through processes of strategic planning, scenario planning, stakeholder management and backcasting, perhaps using the Natural Step Framework;
- 2 **choosing terms and communication frameworks** such as business-friendly 'zero waste', high-performance building, triple bottom line, smart growth, corporate responsibility and product stewardship;
- 3 **devising an implementation strategy and enlisting support**, involving selecting the best entry point for new sustainability practices (for example capital investment, energy saving and green transport plans) and establishing the best organizational structure to effect this;
- 4 **aligning business systems** through strategic and operational planning, budgeting, performance appraisals, orientation and training, and environmental management systems; and
- 5 **providing for transparency and stakeholder engagement** through the publication and public dissemination of corporate responsibility reports and partnership working with green consultancies and possibly NGOs like the WWF, Friends of the Earth or even Greenpeace.

In *Leading Change for Sustainability*, Bob Doppelt (2003) analyses the processes whereby private and public sector organizations may successfully realize sustainability goals. He offers a theoretical framework and a methodology that managers may use to trans-

form and orientate their organizations towards sustainable development. According to Doppelt, discussions about new technologies and policy instruments have dominated public dialogue on sustainability, with relatively little attention paid to how organizations may change their internal thinking, values and assumptions, and conduct. For Doppelt, organizational and cultural change is key to the effective and successful operationalization of sustainable development. Avoiding 'sustainability blunders' and achieving a more sustainable organization will require interventions in:

- **Governance** – Organizations that have made good progress towards sustainability see their internal and external stakeholders as important parts of an interdependent system. In leading sustainability organizations, a sensitive distribution of information, power and wealth among employees and stakeholders enables all to feel valued and meaningfully involved in the core vision and purposes of the organization.
- **Leadership** – Effective sustainability leaders keep their organization focused on achieving this core vision while dealing with numerous, sometimes contradictory, demands and pressures. Intelligent leaders inspire and mobilize employees and stakeholders to embrace change as a significant learning opportunity. In exemplary organizations, leadership may be found at all or most levels of the organization.

Doppelt bases his analyses and prescriptions on detailed research and explains his finding with the help of many case studies, interviews and checklists. After identifying seven major

Table 10.1 *Sustainability blunders and solutions*

Blunder	Solution
1 Patriarchal thinking that leads to a false sense of security	<i>Change the dominant mindset</i> through the imperative of achieving sustainability
2 A 'silo' approach to environmental and socio-economic issues	<i>Rearrange the parts</i> by organizing sustainability transition teams
3 No clear vision of sustainability	<i>Change the goals</i> by crafting an ideal vision and guiding sustainability principles
4 Confusion over cause and effect	<i>Restructure the rules of engagement</i> by adopting new strategies
5 Lack of information	<i>Shift information flows</i> by tirelessly communicating the need, vision and strategies for achieving sustainability
6 Insufficient mechanisms for learning	<i>Correct feedback loops</i> by encouraging learning and rewarding innovation
7 Failure to institutionalize sustainability	<i>Adjust the parameters</i> by aligning systems and structures with sustainability

Source: Doppelt (2000).

sustainability blunders, he discusses seven interventions, a 'the wheel of change', that should correct them (Table 10.1).

Although recent research and debate concludes that leadership and management in an organizational context are not totally distinct, that a good manager often exhibits leadership qualities or is able to work with others in order to motivate colleagues and initiate and adapt to change, for many, there remains an underlying feeling that leadership is separable from management. Kotter (1996) offers some clarification here – managers are concerned with planning, budgeting, organizing, staffing, controlling and problem-solving,

and leaders with establishing direction, aligning people, and motivating and inspiring people. Rost (1991) sees leadership as being concerned with developing mutual purposes in multidirectional relationships, while management is basically a coordinating function, operating in a unidirectional authority relationship. Leadership is a contradictory, dynamic or paradoxical art with a strong relational aspect, frequently rooted in the context in which it emerges or is practised. It may be that this dynamic nature of leadership is fully suited to the changing realities, pragmatics and dialogues surrounding the theories, hopes and practices of sustainable development.

Project SIGMA: Environmental Management and Leadership Combined

Project SIGMA (Sustainability – Integrated Guidelines for Management) was launched in 1999 by the UK Government's Department for Trade and Industry in partnership with the

British Standards Institution, the NGO Forum for the Future and AccountAbility (the international professional body for accountability). The overall aim was to provide clear, practical

Table 10.2 *Project SIGMA management framework*

Management Phase	Purpose
Leadership and Vision	
LV1 Business case and top-level commitment	To develop a business case to address sustainability issues and secure top-level commitment to integrate sustainable development into core processes and decision-making.
LV2 Vision, mission and operating principles	To identify stakeholders and open dialogue with them on key impacts and suggested approaches.
LV3 Communication and training	To formulate the organization's long-term sustainable development mission, vision and operating principles and a high-level strategy that supports them, and to revisit them periodically.
LV4 Culture change	To raise awareness of sustainability issues and how they may affect the organization's licence to operate, its future direction, and its training and development requirements.
	To ensure that the organizational culture is supportive of a move towards sustainability.
Planning	
P1 Performance review	To ascertain the organization's current sustainability performance, legal requirements and voluntary commitments.
P2 Legal and regulatory analysis and management	To identify and prioritize the organization's key sustainability issues.
P3 Actions, impacts and outcomes	To develop strategic plans to deliver the organization's vision and address its key sustainability issues.
P4 Strategic planning	Consult with stakeholders on plans.
P5 Tactical planning	To formulate tactical short-term action plans to support the agreed sustainability strategies with defined objectives, targets and responsibilities.

Source: SIGMA Project (2003).

advice to organizations, enabling them to contribute significantly to the process of sustainable development, helping businesses to become more ecologically responsible

through the adoption and development of an alternative business model. Consequently, the SIGMA project developed guidelines for organizations to:

- effectively meet challenges posed by social, environmental and economic problems, threats and opportunities; and
- become change agents for a sustainable future.

SIGMA's guiding principles consist of:

- the holistic management of the natural, social, human, manufactured and financial capital that reflect an organization's overall impact and wealth;
- the exercise of accountability, by being transparent and responsive to stakeholders; and
- complying with relevant voluntary and statutory rules and standards.

Project SIGMA's management framework (Table 10.2) identifies a basic four-phase cycle, together with various sub-phases, designed to

manage and integrate sustainability issues within an organization's core activities.

Management Phase

Complementing the principles and management framework is the SIGMA toolkit, which consists of a number of targeted tools and approaches to help with specific management challenges illustrated by a range of practical real-life case studies; a 'SIGMA guide to sustainability issues', relating to everything from directors' pay to ozone depletion; and guidance on designing a business case through which an organization can develop, promote and communicate its commitment to sustainable development by detailed information on the reporting of its sustainability practice and performance in accordance with the SIGMA guidelines and management framework.

Leadership, Complexity and Self-organization

As noted in Chapter Two, the idea of complexity is associated with ecology, with living beings, usually manifesting itself at the level of the system itself. Complexity and systems thinking has had a profound effect on many thinkers and activists promoting sustainability values and practices in a wide variety of fields – business, community, politics, society and the economy. A complex system comprises many elements which interact physically and communicatively in relation to the transfer of information and other factors. These interactions are fairly short range, with each element operating in ignorance of the overall nature of the system itself. However, they may have consequences far in excess of their localized existence. The effects are therefore

non-linear in scope and not necessarily predictable. Feedback loops may enhance or stimulate development, or alternatively hinder or inhibit it. Most importantly, complex systems are not closed, as they constantly interact with the external environment, adjusting or not adjusting according to their degree of internal flexibility and capacity to accommodate, manage or mediate the variety of flows they experience. The behaviour of a complex system is not determined primarily by the priorities of the individual components or elements of the system, but is the result of complex patterns of interaction. Complex systems only achieve equilibrium when the possibility of change is exhausted. Hence the whole is greater than the sum of a system's

constituent parts, and its structure is not so much designed and imposed as emerging from the various interactions taking place between the system and its relation to the wider environment. This does not deny the significance of human agency, but does qualify any notion of purely voluntaristic action or planned management outcomes. A self-organizing or autopoietic system selects flows of information or influence, enabling it to develop or change its internal structure spontaneously and adaptively. What it integrates is not so much a product of conscious decision-making, but rather the system's capacity to make sense of, and rearticulate or redesign, itself in accordance with what it encounters. A self-organizing system is not determined by an established series of specific goals or targets. Rather it may be said to have a function shaped by and within the overall context in which it operates. This is a lesson for leaders and managers of the sustainability process.

It is also the basis of James Lovelock's highly influential Gaia hypothesis and the work of Fritjof Capra (1996), who argues that a basic set of principles derived from our understanding of ecosystems as self-organizing networks and dissipative structures may serve as guidelines for building sustainable human communities of practice, experience and hope in business, the community and elsewhere. These principles include interdependence and networking, non-linear relationships, cyclical processes, flexibility, and partnership, inferring democracy, enrichment and personal empowerment. Management theorist Peter Senge (1990 and 1999) argues that our focus must be on generative and creative learning that sees systems as shaping events. When we fail to grasp the systemic source of problems such as economic growth,

we are left to 'push on' symptoms rather than eliminate underlying causes. Adaptive learning is simply about coping, but coping is not enough. To create a learning organization and sustainable human communities, non-hierarchical, lateral and cooperative leadership is needed. As Senge writes (1990, p489):

Leadership in learning organizations centres on subtler and ultimately more important work [than simply energizing the troops]. In a learning organization, leaders' roles differ from that of the charismatic decision-maker. Leaders are designers, teachers and stewards. These roles require new skills: the ability to build shared vision, to bring to the surface and challenge prevailing mental models, and to foster more systemic patterns of thinking. In short, leaders in learning organizations are continually expanding their capabilities to shape their future – that is, leaders are responsible for learning.

In *Leaders and the New Science* (Wheatley, 1999) and *A Simpler Way* (Wheatley and Kellner-Rogers, 1999), Meg Wheatley develops an approach to leadership and organizations that is deeply rooted in systems thinking and eco-philosophy. Life, she writes, is about invention, creativity, self-organization, order, functionality (what works), relationships and networks. All manner of possibilities emerge when people connect with one another, when there is freedom to experiment in a playful way or to see the world differently and to fashion something new and exciting. Much emphasis is placed on coevolution, collectivities and interdependencies. For Wheatley, there can be no heroes or visionary leaders and little place for individuals in a world perceived as so many interweaving systems, networks and webs:

We make the world lonelier and less interesting by yearning for heroes. We deny the

constant, inclusionary creating that is going on; we deny our own capacity to contribute and expand.

(Wheatley and Kellner-Rogers, 1999, p44)

However, the sense of individual purpose is not absent from Wheatley's writings. We all seek meaning in our lives, and sometimes, though not always successfully, in our work, because most people are creative and often quite passionate. The ethical and spiritual dimension is aptly summarized when she writes (Wheatley and Kellner-Rogers, 1999, p64) that in 'a systems-seeking world, we find wellbeing only when we remember that we belong together'. In other words, systems are part of us, systems influence us and, by extension, we influence systems, enabling them to 'self-organize' to higher levels of complexity so as to deal more effectively with present contingencies, dangers and other influences. Many sustainable development practitioners draw on this insight by recognizing the significance of the concept of 'emergence' and elevating it to the level of principle.

Interactivity leads to the emergence of new structures, possibilities and properties that stand outside and beyond the explicit knowledge and formal configuration of every organization. For the new to emerge, we need to participate openly and trustingly rather than just strategize, action plan, work plan and implement. We may need to visualize things differently – metaphorically, visually, poetically – to arrive at understanding, adaptation and the adoption of new capacities and capabilities. For Capra (2002, p107), 'the ability to express a vision in metaphors, to articulate it in such a way that it is understood and embraced by all, is an essential quality of leadership'. Building on this, Wheatley (1999) argues that a vision is a power and not place or destination. It is

essentially an influence rendering congruent the messages and values we care about and the behaviours needed to realize them. Visions can offer and nurture clarity and integrity. But organizations need to be open to new ideas and new knowledge and in order to facilitate emergence, and leaders must create this openness by nurturing a learning culture through encouraging questioning and rewarding innovation. Such a culture will value diversity and tolerate marginal and sometimes maverick activities that provide stretch, difference and novelty. It is not just about speedily applied new technologies, information processing or instant sticking plaster solutions. It is often the product of long reflection, meditation and thought.

For Wheatley and Capra, people and organizations do not resist change unless they are treated as non-living, non-creative and irresponsible things. In nature, change never happens in a directed, top-down, preconceived fashion. Change begins at quite low and localized levels, often simultaneously and in many places. And the levels will remain localized unless, or until, they are connected in some way and, when they do, change emerges powerfully on a larger scale (or scales). Organizational and human relationships, communities of practice, and social and knowledge networks are the ways in which knowledge is created, learning generated, innovation diffused and new practices implemented. Relationships open up a variety of potentialities, serving to close off expectations that the world is ultimately predictable. For Wheatley (1999), what gives power its charge and people and organizations their creative force is the quality of these relationships. People become different persons in different places, they become surprising and more interesting, they stop arguing about the

Box 10.3 Ricardo Semler and the Semco way

Semco has no official structure. It has no organizational chart. There's no business plan or company strategy, no two-year or five-year plan, no goal or mission statement, no long-term budget. The company often does not have a fixed CEO. There are no vice-presidents or chief officers for information technology or operations. There are no standards or practices. There's no human resources department. There are no career plans, no job descriptions or employee contracts. No one approves reports or expense accounts. Supervision or monitoring of workers is rare indeed.

It's our lack of formal structure, our willingness to let workers follow their interests and their instincts when choosing jobs or projects.

It's our insistence that workers seek personal challenges and satisfaction before trying to meet the company's goals.

It's our commitment to encouraging employees to ramble through their day or week so that they will meander into new ideas and new business opportunities.

It's our philosophy of embracing democracy and open communication, and inciting questions and dissent in the workplace.

Even though our workers can veto a deal or close a factory with a show of hands, Semco grows by an average of 40 per cent a year and has annual revenue of more than US\$212 million.

We need to first walk through the seven-day weekend that is the metaphor for the Semco way. ... It's about creating an atmosphere and culture that grants permission to employees to be men and women in full for seven days a week. Why should the fun, fulfilment and freedom stop first thing Monday morning and be on hold until Friday night? ... I believe no one can afford, can endure or can stomach leaving half a life in the parking lot when she or he goes to work. It's a lousy way to live and a lousy way to work.

Source: Adapted from Semler (2004).

nature of truth and look to what works. In engaging with their environments, they help fashion those environments in creative ways. Change occurs and change can be directed because of the critical connections between and among these relationships. Thinking should be strategic and should displace the overweening desire to plan and to learn 'skills'. The ability to analyse and predict should be replaced by a capability to understand what is happening now 'and we need to be better, faster learners from what just happened. Agility and intelligence are required to respond to the incessant barrage of frequent, unplanned changes' (Wheatley, 1999, p38).

Knowledge is often linked with power. Perhaps it would be more appropriate to link it to life and sustainability. As Wheatley (2001b) writes:

Although we live in a world completely revolutionized by information, it is important to remember that it is knowledge we are seeking, not information. Unlike information, knowledge involves us and our deeper motivations and dynamics as human beings. We interact with something or someone in our environment and then use who we are – our history, our identity, our values, habits, beliefs – to decide what the information means. In this way, through our construction, information becomes knowledge. Knowledge is always a reflection of who we are, in all our uniqueness. It is impossible to disassociate who is

creating the knowledge from the knowledge itself.

Adaptability to change within communities, organizations and societies will largely depend on their relationship to new and possibly disturbing information. Wheatley (1999, p83) concludes:

Information must actively be sought from everywhere, from places and sources people never thought to look before. And then it must circulate freely so that many people can interpret it. The intent of this new information is to keep the system off-balance, alert to how it might need to change. An open organization doesn't look for information that makes it feel good, that verifies its past and validates its present. It is deliberately looking for informa-

tion that might threaten its stability, knock it off balance and open it to growth.

Open access to information contributes to self-organized effectiveness. Innovation is nurtured by seeking and securing information and developing knowledge from a variety of connections that cross disciplinary or institutional boundaries, cultural spaces and physical and virtual places, from actively participating in a variety of professional and other networks, and so on. Knowledge will therefore grow within relationships shared, made meaningful and developed through dialogue, debate and interaction. Indeed, a living network will only pass on what it believes to be meaningful.

Changing Minds

The process of sustainable development often involves changing attitudes and values as well as behaviours. The American psychologist Howard Gardner (2006, p1) writes that, almost by definition, leaders can be understood as people who change minds. He reviews a number of ways and contexts in which minds change directly within organizations, intimate family situations or other personal relationships or indirectly within a culture or within nature. Whatever the case, the key to changing minds is changing people's mental representations, in other words the way a person conceives, perceives, codes, retains and accesses information. This may occur through speech, discussion, art, scientific discovery or lived experience. It may involve sound, image, touch – indeed all of the five senses. Mind changing will also encompass, in one form or another, one or a combination of the following:

- the use of reason, analysis and evaluation;
- the collection of relevant information in one or more forms;
- the appeal to the emotions as well as the intellect;
- the redescription or representation of a particular state of affairs or viewpoint in different ways – linguistic, numeric, graphic – recognizing the significance of people's multiples intelligences;
- encouragement, enticement or motivation to change;
- the impact of real-world events or, to put it simply, life; and
- personal, social or cultural resistance to change or difference.

For Gardner, an intelligence is the biophysical potential enabling people to process information in certain kinds of ways, and people have

many of them. He first outlined his theory that human beings possess multiple intelligences in his *Frames of Mind* (Gardner, 1993). Intelligences include the linguistic, logico-mathematical, musical, spatial, bodily-kinetic, naturalist (about the natural environment), inter- and intra-personal, emotional and existential (addressing the big meaning of life-type issues). Intelligence involves fashioning products and solving problems. The more of a person's intelligences a leader is able to engage or appeal to in fashioning an argument, the more likely that leader will change minds and behaviour. And although it is harder to change minds when views and perspectives are held strongly and publicly, it is far easier when individuals find themselves in new or relatively unfamiliar environments, when surrounded by people with different ideas and values, or when confronted with transformative, perhaps shattering experiences. Being with persuasive and charismatic others also helps. Leaders who tend to address large and diverse audiences will frequently use a story 'serene in its simplicity' (Gardner, 2006, p88) to explain or paint a picture of an issue, problem or aspiration. Leaders working with smaller, more uniform groups will tend to use theories, or maybe stories, exhibiting a high degree of complexity to enlist listeners' attention, interest and appreciation. A form of dialogue will always be present. Leaders need to use their linguistic skills, but need to avoid accusations of hypocrisy by actually embody-

ing in their actions the changes they seek to induce in others. For Gardner (2006), the key attributes of an effective leader include:

- excellent linguistic, emotional and existential aptitudes – they can fashion good stories, understand people, and articulate the big questions or vision;
- excellent instinct, intuition or 'gut feeling', meaning they are able to perceive, and put into words, resemblances between present and past situations and experiences; and
- excellent integrity – usually the consequence of having the capacity for deep analysis, reflection and self-knowledge.

Excellent leaders are often highly creative people, not necessarily artistically or scientifically, but in the ways and means they deal with people and events. They may initiate new strategies for change, like the Indian political leader Mahatma Gandhi's advocacy of non-violent political action relating the practical to the spiritual, or, like Muhammad Yunus, developer of the Grameen Bank, devise a new micro-finance model to encourage community engagement and business development among poor people in India, or, like Al Gore perhaps, communicate a complex issue simply, graphically, resonantly and powerfully in conference speeches, academic seminars or political writings or on film or popular television.

On The Practice of Dialogue

Sustainability leaders need to bring about ecological and sustainable *learning* that is both social and dialogic. They need to communicate and persuade people with all

manner of backgrounds, understandings and experiences. This may mean acting beyond one's authority, operating in the outer circles, moving out of familiar comfort zones,

challenging opposing views and starting up a conversation. As Bocking (2007) notes, both Al Gore, with his film documentary and book *An Inconvenient Truth*, and Rachel Carson (2000), whose *Silent Spring*, first published in the US in 1962, is regarded by many as one of the foundational texts of the environmental movement, have sought to communicate complicated science to non-scientists in the public sphere. Carson did so through the use of detailed evidence and having the social authority stemming from being a scientist, and Gore does so by visually representing scientific knowledge in stunning photographs, and video and computer graphics. Both present a clear moral view of the human–nature relationship as one where human action disrupts the underlying harmony and balance of nature, and both have demonstrated how ecological damage affects our very selves. Gore is quite personal in his discussion of his own experiences, while Carson writes more dispassionately about the effects of DDT on our bodies. What is common to both their lives and their commitments is passion. And passion is, in many instances, an important aspect of leadership and a key ingredient of being taken seriously. Both have also been criticized, but, most important, both initiated a widespread and wide-ranging public dialogue and debate.

Sustainability leaders and practitioners in less visible public arenas frequently need to persuade others to think differently. This usually means entering into a conversation or dialogue in the community, at work, in the pub, in the home or in the classroom, and when misunderstandings or disputes occur, the problem often lies not so much in a failure to communicate but in a failure to learn to think together. When confronted by novelty or the need to be creative, innovative or to 'think

outside of the box', we resolutely stay inside because of feelings of safety and familiarity and from habit. As William Isaacs (1999, p6) notes, we cling to and defend existing views 'as if our lives depended on them'. However, for Isaacs, we can learn to go beyond this by nurturing a conversational spirit that can penetrate and dissolve the most inflexible and intractable of issues and problems. This can occur in close personal relationships, at the workplace within large organizations, within government, and between governments and peoples. Dialogue is the key and, to borrow an ecological metaphor from David Bohm (1996), if we remove what pollutes our thinking upstream, then we can avoid all sorts of problems and difficulties further down. 'The whole ecological problem,' writes Bohm (1999, p10), 'is due to thought, because we have thought that the world is there for us to exploit, that it is infinite, and so no matter what we did, the pollution would all get dissolved away.' Similarly, our thoughts, preconceived and pre-given assumptions often prevent us from talking freely, from sharing our fears, worries, thoughts and expectations. This affects the whole meaning of what we do, what we say and how we act. Conversation is never static. It must always be in motion, for there are times when people will fight, contest, be polite or nice, engage creatively or simply argue. Leaders have the responsibility to fashion the space, or 'container', in which these conversations emerge and change, where dialogues may embrace wider ideas and pressures, where the experience of interaction may be enriched and enhanced, and where a variety of styles and approaches may secure recognition and acknowledgement. Dialogue is therefore as much about learning as communication, but it does not just happen. It is, like the creation of

new knowledge, the responsibility of everyone, a collective, community activity. Drawing on Bohm, Isaacs identifies four fields of conversation constituting a fruitful dialogue:

- **Field One:** Instability of the field – politeness in the container. Participants do not say what they think or feel, do not share as a result of convention, expectation, politeness, insecurity or just a lack of familiarity with the process.
- **Field Two:** Instability in the field – breakdown in the container. Participants seek dominance, battle with each other, oppose or withdraw, get angry. The leader's task is to fashion new ways of acting that allow people to think, reflect and be together differently.
- **Field Three:** Enquiry in the field and the flowering of reflective dialogue. People express their own thoughts, admit not knowing and exhibit a spirit of curiosity. Meaning unfolds through conversation, exploration and the free flow of ideas. From fragmentation emerge new creative spaces and possibilities.
- **Field Four:** Creativity in the field – generative dialogue. A rare space where participants are aware of the significance of the whole, where new rules for interaction are fashioned and where people experience synchronicities, connections, and individual and collective 'flow'.

Having experienced the fourth field, problems may arise when participants leave the dialogic space and return to their 'real' worlds. The key to this re-entry is for people to learn to let the meaning of this familiar world change, observing critically, evaluatively and sensitively the frames and spaces in which others operate most of the time. As Isaacs (1999,

p287) notes, 'leadership emerges when an individual or a group understands the shape of the world, and so is not deceived or overly intoxicated by any particular arrangement of its features'. The task of the leader is to ensure people come together so that talk does not drive people apart, enabling people to learn to listen to others and to suspend preconceptions and assumptions so as to encourage flexibility and creativity in thought and expression. Thus people are able to genuinely enter into dialogue when they demonstrate qualities of:

- **listening**, not only to others, but to ourselves, dropping our assumptions, resistance and reactions;
- **respecting** different viewpoints;
- **suspending** our opinions, stepping back, changing direction and seeing with new eyes; and
- **voicing**: speaking genuinely, discovering our own authority and relinquishing any need to dominate.

Different leadership skills are required within each field. For example, in field one the leader or convener needs to relate to each person differently in order to draw them out, develop a predisposition to deep listening and to suspend judgement; in field two the leader needs to help people learn by facilitating conversation between different perspectives; in field three the leader must model reflective enquiry and listen out for emerging themes; and in field four the leader must become the servant to the group, encouraging deep reflection and seeking paths and possibilities for future action and resolution. In field four the leadership function may change, but the essence is for all to see the whole as primary – the sum is greater than its individual parts.

Dialogue facilitates participation and the development of richer and potentially wiser interpretations of the world and ways to change it. Indeed, through dialogue and participation new possibilities are not only created and made real but those who have facilitated their emergence may sense among group members a growing commitment and ownership of the process. Knowledge management theorists Ikujiro Nonaka and Ryoko Toyama call the phenomenological time and space where new knowledge is created and where new learning occurs and problems are posed and solved "ba":

Ba can emerge in individuals, working groups, project teams, informal circles, temporary meetings, virtual spaces such as email groups

and at the front line contact with the customer. Ba is an existential place where participants share their contexts and create new meanings through interactions. Participants of ba bring in their own contexts, and through interactions with others and the environment, the contexts of ba, participants and the environment change.

(Nonaka and Toyama, 2004, p102)

Dialogue is central to the sustainable development process because it facilitates collective and different ways of thinking, learning and communication. Before this process is initiated, sustainability practitioners ought to ask questions about themselves, about the deep sources of their own thoughts, beliefs, assumptions, values and feelings. It is useful to know who you are.

Developing Emotional Intelligence in Sustainability Leadership

Good communicators and effective leaders need to understand people. This is particularly important when discussing issues and values, listening to others, and making sense of their and one's own experiences and feelings. Daniel Goleman (1996 and 2002a) has formulated a theory of *emotional intelligence*, which essentially refers to how individuals effectively relate to self and others. This intelligence, or capability, may be broken down into a series of elements or competencies, which for Goleman are major prerequisites for effective leadership. Leaders must therefore exhibit the qualities described in the following sections.

Self-awareness

- Emotional self-awareness – attuned to inner feelings and convictions;
- Accurate self-assessment – aware of strengths and limitations and welcoming

constructive criticism; and

- Self-confidence – providing presence and self-assurance.

Self-management

- Self control – the ability to manage disturbing emotions and impulses and channel them in productive ways;
- Transparency – leaders *live* their values, are open and *authentic*;
- Adaptability – flexible, able to adjust to changing circumstances and uncertainties;
- Achievement – high personal standards, constantly seeking improvements in performance and continuous learning opportunities;
- Initiative – a sense of efficacy; and
- Optimism – a positive attitude.

Social awareness

- Empathy – able to attune to a wide range of emotional signals in other people or groups;
- Organizational awareness – politically astute, able to detect crucial social networks and read key power relationships; and
- Service – foster a supportive emotional climate.

advocate change even in face of opposition, producing compelling arguments, and overcome barriers;

- Conflict manager – understand different perspectives, able to draw out all parties, redirecting energy towards shared ideals; and
- Teamwork and collaboration – collegial, team players, models of respect and cooperation, drawing out others' commitments and enthusiasm.

Relationship management

- Inspiration – create resonance and motivating vision, making work exciting;
- Influence – build 'buy-in', persuasive communication, and engage others;
- Developing others – cultivate people's skills, interests and capabilities, giving timely and constructive feedback;
- Change agent – challenge the status quo,

Goleman also discusses how particular leadership styles may be appropriate for specific situations and particularly in developing teams.

Allied to emotional intelligence is what Earley and Mosakowski call cultural intelligence – a capability that helps people engage with others from different occupational, national or ethnic cultures. Given the highly

Table 10.3 Leadership styles for resonant organizational teams

Leadership Style	How it Builds Resonance	Impact on Climate	When Appropriate
<i>Visionary</i>	Moves people toward shared dreams	Most strongly positive	When change requires a new vision, or when a clear direction is needed
<i>Coaching</i>	Connects what a person wants with the team's goals	Highly positive	To help a person contribute more effectively to the team
<i>Affiliative</i>	Creates harmony by connecting people to each other	Positive	To heal rifts in a team, motivate during stressful times or strengthen connections
<i>Democratic</i>	Values people's input and gets commitment through participation	Positive	To build buy-in or consensus or to get valuable input from team members
<i>Pacesetter</i>	Sets challenging and exciting goals	Frequently highly negative because poorly executed	To get high-quality results from a motivated and competent team
<i>Commanding</i>	Soothes fears by giving clear direction in an emergency	Often highly negative because misused	In a crisis, to kick-start a turnaround

Source: Goleman (2002b).

connected nature of sustainability, both cultural and emotional intelligence are clearly significant. As Earley and Mosakowski (2004, p140) remark:

A person with high emotional intelligence grasps what makes us human and at the same time what makes each of us different from one another. A person with high cultural intelligence can somehow tease out of a person's or group's behavior those features that would be true of all people and all groups, those peculiar to this person or this group, and those that are neither universal nor idiosyncratic. The vast realm that lies between those two poles is culture.

Educationalists write of *intercultural learning*, finding common values and common ground, and cultural intelligence is a tool which may allow this to be realized:

The people who are socially the most successful among their peers often have the greatest difficulty making sense of, and then being accepted by, cultural strangers. Those who fully embody the habits and norms of their native culture may be the most alien when they enter a culture not their own. Sometimes people who are somewhat detached from their own culture can more easily adopt the mores and even the body language of an unfamiliar host. They're used to being observers and making a conscious effort to fit in.

(Earley and Mosakowski, 2004, p140)

Community leadership can also take many forms, but invariably involves dialogue, group facilitation, conflict negotiation, leading by example and inspiration, and may be symbolized by the action and energy of a single individual, group or of a cultural initiative. In the favelas of Rio de Janeiro, where gun crime and drug trafficking have blighted many poor communities and distorted the life chances of many young people, the activist Anderson Sa, himself a former drugs trafficker turned

musician, by detaching himself from his host culture became a leader of a cultural and social movement based around music – the community-based Grupo Cultural AfroReggae (GCAR), formed in 1993. The group opened its first Núcleo Comunitário de Cultura (cultural community centre) in a slum area called Vigário Geral favela in 1993 and quickly organized workshops in dance, percussion, garbage recycling, soccer and *capoeira* (a cross between a martial art, a dance and a game). Four years later, in 1997, the GCAR opened the Centro Cultural AfroReggae Vigário Legal (Vigário Legal AfroReggae Cultural Centre), which had better facilities to run social, educational and cultural programmes. The vibrant hip hop sounds of the Banda AfroReggae inspired many young favela residents to participate in the 'Centro', which soon offered previously unknown possibilities for collective engagement and individual and group creativity. The GCAR has since mobilized and empowered many slum communities. In *Favela Rising*, a documentary directed by Jeff Zimbalist released in 2005, Anderson Sa can be seen reasoning with street kids, organizing events and community actions, performing his music, and bravely recovering from serious injury following a terrible accident. The film, together with the book *Culture is Our Weapon* (Neate and Platt, 2006), explores and clearly demonstrates how leadership is both complex and social and also intensely personal. The GCAR and the street kids of Rio could not respond to managerial or bureaucratic initiatives – only something that truly emerges from their own lived experiences will resonate with their needs and desires for a life cleared of the false and temporary excitements, and rewards, of drugs, violence and aggression. Anderson Sa personalizes and personifies the possibility and reality of change, leadership

and sustainability. Similar energetic cultural initiatives can be seen in many other cities in both the developing and the developed

worlds, sometimes running parallel with a range of other community regeneration projects.

Leadership Lessons from Indigenous Cultures

In order to learn from other cultures, it is necessary to be open to different ideas and experiences, even those which might at first seem odd or alien. In order to lead by example, there need to be those who are willing to follow, to learn and to act on that learning. Indigenous cultures in many parts of the world offer opportunities for learning and for leadership. Whether in Australia or North America, storytelling is central to indigenous culture. The way human beings are part of nature is passed on through the generations by stories told by the elders. Human beings talk of being with or becoming animals, of the wind whispering, and of the spirits communicating knowledge of the sacredness of the Earth. Life is part of a natural cycle and is itself inherently cyclical. The indigenous worldview is essentially connective, with understandings of both time and space frequently expressed in oral and visual metaphors. Spirituality is timeless, and linear time – beginning, middle and end – is but part of the aboriginal person's circular understanding of a time continuum. Stories are retold, become acknowledged, and, through the experience of time, place, character, event and purpose, are shared communally and made real. As Fixico (2003) writes in *The American Indian Mind in a Linear World*, the logic of the Native American's worldview combines the physical with the metaphysical, the conscious with the subconscious. This is real, this is profound and knowledge of it only becomes truly meaningful if it is used to help the community.

To learn from this, people in the developed world will require a change of mindset, including the desire and capacity to rethink, re-evaluate and challenge their long-held and fundamental assumptions about the world, about the nature of intelligence, about leadership and about themselves. As environmental educator Chet Bowers (1995 and 2003) says, unintelligent behaviour is really any action, way of thinking or moral view that degrades the environment. We therefore need to think and understand relationships in similar ways to that of many indigenous peoples, applying ecological principles of interdependence, sustainability, ecological cycles, energy flows, partnership, flexibility, diversity, complexity and coevolution. We need to rethink the mechanistic linear root metaphors we live by and recognize that the dominant target-driven, goal-directed managerialism is neither realistic nor effective. It has disconnected humanity from the source of its meaning and, if the process of sustainable development needs leaders, then these leaders should perhaps best be perceived as actors, as agents, as people with the wisdom to create and to conserve. As Swedish management theorist Karl Erik Sveiby and Australian Aboriginal artist Tex Skuthorpe (2006) write in their book *Treading Lightly: The Hidden Wisdom of the World's Oldest People*, the Aboriginal people of Australia have a sophisticated culture that has enabled them to live sensitively with the rhythm and dynamics of the Earth for 40,000 years, and they have done so without leaders.

Box 10.4 A story of leadership, hope and achievement: Gaviotas

In 1966, Colombian activist Paulo Lugari and a group of scientists, artists, agronomists and engineers took a 15-hour journey along a tortuous route from Bogotá to the Llanos Orientales (eastern plains) bordering Venezuela. They wanted to immerse themselves in the ecosystem and develop alternative technologies that could meet the basic needs of any community. They chose Gaviotas, where the soil is 'like a desert', where employment prospects were poor and where a high level of violence existed.

Soon the Gaviotas pioneers were planting trees and digging gardens to grow food for their day-to-day needs. The soils of the river banks were too poor for vegetables, so they grew tomatoes, cucumbers, lettuce and eggplants in containers made out of rice husks, washed by a manure tea. By the late 1970s, they had created a square kilometre of hydroponic greenhouses and set up co-operatives to sell and exchange produce with villages in the region.

By 2003, many of the indigenous Guahíbo people and rural peasants living in Gaviotas were riding to work on Gaviotas-designed savannah bicycles. The settlement has a decent school and a solar- and wind-powered hospital, where patients enjoy the aesthetic pleasure of shrubs and benefit from the 250 species of tropical medicinal plants cultivated in its greenhouses. In the wards, indigenous hammocks alternate with traditional hospital beds.

The electricity needed to run Gaviotas comes mainly from the winds of the savannah. Around 58 types of windmill were tried and tested before the pioneers came up with one that functioned best in the plains. That is how the gigantic 'sunflowers', so characteristic of Gaviotas, came into being. Originally manufactured at Gaviotas, there are now thousands throughout Central and South America as their creators are determined not to patent their invention.

Around 8000 hectares of forest were planted, in ever-increasing circles. As the pine forest grew, it provided shade for other seeds dropped by birds. The rainforest started to return – as did its creatures – deer, anteaters, capybaras and eagles. The resin harvested from the trees made eco-friendly turpentine, replacing imported petroleum-based products. And the pollution-free factory built to refine the resin won Gaviotas the 1997 United Nations World Zero Emissions Award.

Source: Adapted from Pilar and Marin (2003).

Or rather, they have done so by recognizing the value of respect for all of nature, that knowledge is embedded in nature and the way we tread upon the Earth. It is through the wisdom of the elders that a human social environment may be nurtured, enabling consensus and the empowerment of all people through sharing. The elders have no power as understood in the developed world, but they do have a responsibility to empower by fostering participation, discussion, dialogue and agreement. Survival requires balance. We need

balance. Instead of looking ahead, we need to look around us, for only by examining our environment and all our relations, our 'context', will we be able to see what is to come. As Black Elk noted (quoted in Fixico, 2003, 58–59), if the buffalo disappears, then the people do too:

Moving around the lodge in a sun-wise manner, the mysterious woman left, but after walking a short distance she looked back towards the people and sat down. When she rose the people were amazed to see that she

had become a young red and brown buffalo calf. Then this calf walked farther, lay down and rolled, looking back at the people, and when she got up she was a white buffalo. Again the white buffalo walked farther and rolled on the ground, becoming now a black buffalo. This buffalo then walked farther away from the people, stopped and, after bowing to each of the four quarters of the universe, disappeared over the hill.

The moral lesson offered is that in studying and reflecting upon indigenous ways of life, we must recognize that other, quite different,

and probably better, ways of understanding the world and the human condition are possible. We need to examine our present situation at the most fundamental level, recognizing the harm we have done to the planet and being determined to change our ways, if we are to have any hope of achieving a fulfilling, equitable and sustainable existence. The leadership task within sustainable development processes should therefore be clearly apparent, but how is it to be done?

Thinking Questions

- 1 In what ways might systems theory inform the development of leadership in sustainable development practice?
- 2 How closely should dialogue be associated with leadership for sustainability?
- 3 Where are leaders for sustainability to be found?
- 4 How significant is the idea of leadership to the creation of a more sustainable future?
- 5 What can we learn from indigenous cultures?

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Appendix 1

The Earth Charter

Preamble

We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with

a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.

Earth, Our Home

Humanity is part of a vast evolving universe. Earth, our home, is alive with a unique community of life. The forces of nature make existence a demanding and uncertain adventure, but Earth has provided the conditions essential to life's evolution. The resilience of the community of life and the well-being of humanity

depend upon preserving a healthy biosphere with all its ecological systems, a rich variety of plants and animals, fertile soils, pure waters, and clean air. The global environment with its finite resources is a common concern of all peoples. The protection of Earth's vitality, diversity, and beauty is a sacred trust.

The Global Situation

The dominant patterns of production and consumption are causing environmental devastation, the depletion of resources, and a massive extinction of species. Communities are being undermined. The benefits of development are not shared equitably and the gap between rich and poor is widening. Injustice,

poverty, ignorance, and violent conflict are widespread and the cause of great suffering. An unprecedented rise in human population has overburdened ecological and social systems. The foundations of global security are threatened. These trends are perilous — but not inevitable.

The Challenges Ahead

The choice is ours: form a global partnership to care for Earth and one another or risk the destruction of ourselves and the diversity of life. Fundamental changes are needed in our values, institutions, and ways of living. We must realize that when basic needs have been met, human development is primarily about being more, not having more. We have the knowledge

and technology to provide for all and to reduce our impacts on the environment. The emergence of a global civil society is creating new opportunities to build a democratic and humane world. Our environmental, economic, political, social, and spiritual challenges are interconnected, and together we can forge inclusive solutions.

Universal Responsibility

To realize these aspirations, we must decide to live with a sense of universal responsibility, identifying ourselves with the whole Earth community as well as our local communities. We are at once citizens of different nations and of one world in which the local and global are linked. Everyone shares responsibility for the present and future well-being of the human family and the larger living world. The spirit of human solidarity and kinship with all life is strengthened when we live with reverence for the mystery of being,

gratitude for the gift of life, and humility regarding the human place in nature. We urgently need a shared vision of basic values to provide an ethical foundation for the emerging world community. Therefore, together in hope we affirm the following interdependent principles for a sustainable way of life as a common standard by which the conduct of all individuals, organizations, businesses, governments, and transnational institutions is to be guided and assessed.

Source: www.earthcharterinaction.org/2000/10/the_earth_charter.html

Appendix 2

Principles of Environmental Justice

Preamble

WE THE PEOPLE OF COLOR, gathered together at this multinational People of Color Environmental Leadership Summit, to begin to build a national and international movement of all peoples of color to fight the destruction and taking of our lands and communities, do hereby re-establish our spiritual interdependence to the sacredness of our Mother Earth; to respect and celebrate each of our cultures, languages and beliefs about the natural world and our roles in healing ourselves; to insure environmental justice; to promote economic alternatives which would contribute to the development of environmentally safe livelihoods; and, to secure our political, economic and cultural liberation that has been denied for over 500 years of colonization and oppression, resulting in the poisoning of our communities and land and the genocide of our peoples, do affirm and adopt these Principles of Environmental Justice:

Environmental justice affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.

Environmental justice demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.

Environmental justice mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.

Environmental justice calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.

Environmental justice affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.

Environmental justice demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.

Environmental justice demands the right to participate as equal partners at every level of decision-making including needs assessment, planning, implementation, enforcement and evaluation.

Environmental justice affirms the right of all workers to a safe and healthy work environment, without being forced to choose between an unsafe livelihood and unemployment. It also affirms the right of those who work at home to be free from environmental hazards.

Environmental justice protects the right of victims of environmental injustice to receive full compensation and reparations for damages as well as quality health care.

Environmental justice considers governmental acts of environmental injustice a violation of international law, the Universal Declaration On Human Rights, and the United Nations Convention on Genocide.

Environmental justice must recognize a special legal and natural relationship of Native Peoples to the U.S. government through treaties, agreements, compacts, and covenants affirming sovereignty and self-determination.

Environmental justice affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and providing fair access for all to the full range of resources.

Environmental justice calls for the strict enforcement of principles of informed consent, and a halt to

the testing of experimental reproductive and medical procedures and vaccinations on people of color.

Environmental justice opposes the destructive operations of multi-national corporations.

Environmental justice opposes military occupation, repression and exploitation of lands, peoples and cultures, and other life forms.

Environmental justice calls for the education of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives.

Source: <http://www.ejrc.cau.edu/princej.html>

Environmental justice requires that we, as individuals, make personal and consumer choices to consume as little of Mother Earth's resources and to produce as little waste as possible; and make the conscious decision to challenge and reprioritize our lifestyles to insure the health of the natural world for present and future generations.

Adopted today, October 27, 1991, in Washington, DC.

Appendix 3

The Shenzhen Declaration on EcoCity Development

Preamble

Adopted by the Attendees of the Fifth International Ecocity Conference, Shenzhen, China, August 23, 2002.

At the start of the 21st century, the cities in which we live must enable people to live in harmony with nature and achieve sustainable development. An ecocity is an ecologically healthy city.

The participants of the Fifth International EcoCity Conference at Shenzhen in China, urge that integrated, holistic ecological perspectives and principles be applied to city planning and management.

People oriented, ecocity development requires the comprehensive understanding of complex interactions between environmental, economic, political and socio-cultural factors based on ecological principles.

Cities, towns and villages should be ecologically designed to enhance the health and quality of life of their inhabitants and maintain the ecosystems on which they depend. This requires careful ecological planning and management and participation of citizen and stakeholder groups into planning and management processes.

Ecocity development is a whole systems approach integrating administration, ecologically efficient industry, people's needs and aspirations, harmonious culture, and landscapes where nature, agriculture and the built environment are functionally integrated.

Ecocity development requires:

Ecological security – clean air, and safe, reliable water supplies, food, healthy housing and workplaces, municipal services and protection against disasters for all people.

Ecological sanitation – efficient, cost-effective eco-engineering for treating and recycling human excreta, gray water, and all wastes .

Ecological industrial metabolism – resource conservation and environmental protection through industrial transition, emphasizing materials re-use, life-cycle production, renewable energy, efficient transportation, and meeting human needs.

Ecoscape (ecological-landscape) integrity – arrange built structures, open spaces such as parks and plazas, connectors such as streets and bridges, and natural features such as waterways and ridgelines, to maximize accessibility of the city for all citizens while conserving energy and resources and alleviating such problems as automobile accidents, air pollution, hydrological deterioration, heat island effects and global warming.

Ecological awareness – help people understand their place in nature, cultural identity, responsibility for the environment, and help them change their consumption behavior and enhance their ability to contribute to maintaining high quality urban ecosystems.

Key actions needed:

Provide safe shelter, water, sanitation, security of tenure and food security for all citizens and with priority to the urban poor in an ecologically sound manner to improve the quality of lives and human health.

Build cities for people, not cars. Roll back sprawl development. Minimize the loss of rural land by all effective measures, including regional urban and peri-urban ecological planning.

Identify ecologically sensitive areas, define the carrying capacity of regional life-support systems, and identify areas where nature, agriculture and the built environment should be restored.

Design cities for energy conservation, renewable energy uses and the reduction, re-use and recycling of materials.

Build cities for safe pedestrian and non-motorized transport use with efficient, convenient and low-cost public transportation. End automobile subsidies, increase taxation on vehicle fuels and cars and spend the revenue on ecocity projects and public transportation.

Provide strong economic incentives to businesses for ecocity building and rebuilding. Tax activities that work against ecologically healthy development, including those that produce greenhouse gases and other emissions. Develop and enhance government policies that encourage investment in ecocity building.

Provide adequate, accessible education and training programs, capacity building and local skills development to increase community participation and awareness of ecocity design and management and on the restoration of the natural environment. Support community initiatives in ecocity building.

Create a government agency at each level – city, regional and national – to craft and execute policy to build the ecocity. The agency will coordinate and monitor functions such as transportation, energy, water and land use in holistic planning and management, and facilitate projects and plans.

Encourage and initiate international, inter-city and community-to-community cooperation to share experiences, lessons and resources in ecocity development and promote ecocity practice in developing and developed countries.

Shenzhen city won the Awards of 2000 International Garden City and the UNEP's Global 500 in 2002.

Source: www.icsu-scope.org.cn/english_version/Ecopolis/

[The%20Shenzhen%20Declaration%20on%20Ecocity%20Development%202002.pdf](#)

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