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Education for Sustainability: Assessing Pathways to the Future

John Huckle
Bedford College of Higher Education
England

> It is easy to describe the mess the world is in, and to preach large changes of heart. Short, saleable books which do that may be useful if they persuade people in good directions, but only if people know how to move in those directions. (Hugh Stretton, 1976, p. 2)

In June 1992, the UN Conference on Environment and Development will be held in Brazil. A follow up to the World Commission on Environment and Development, it will mark the twentieth anniversary of the first UN conference on the environment, held in Stockholm in 1972. Promoting environmental education is one of 23 objectives for the conference.

Conference delegates in Brazil are likely to hear that the global ecological crisis has worsened, that sustainable development is not being realised, and that there is a continuing need for education. Yet more initiatives in environmental education are likely to be advocated and some delegates will go away feeling happier.

What they and others may fail to realise is that much environmental education is part of the problem rather than the solution. Current practice fails to reveal the true causes of environmental problems and to educate pupils in ways which enable them to realise sustainable development. It is based on inadequate theory and practice yet receives increasing support from powerful elites who must manage the global ecological crisis in their own interests.

In this paper I will point 'education for sustainability' along a pathway provided by critical theory and pedagogy. I will use such theory to examine the nature of ecological crisis, the contradictions inherent in calls for sustainability, and the opportunities and pitfalls for environmental educators in developments prompted by the Brundtland Report. I will suggest that we can establish valid pathways to "Our Common Future" but that these are likely to be part of a broader and difficult road which leads not only to sustainability but also to greater democracy and justice.

The nature of ecological crisis

The current global ecological crisis results primarily from the workings of the capitalist world economy (Wallace, 1990). This economy now links the world's peoples, nation states and environments, in a single process of combined and uneven development which ensures that an ever increasing number of people use natural resources in ways which are not sustainable in the long term (O'Connor, 1989). Collective action could reorganise the world system in ways which solved such problems as poverty, resource depletion and environmental pollution, but the only institutions capable of carrying out such action are currently controlled by powerful minorities with strong interests in the status quo (Johnston, 1989).

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To understand why these minorities are showing an increased interest in sustainable growth and environmental education, we need to adopt an historical perspective.

The forty years since 1950, in which global manufacturing output has increased sevenfold (WCED, 1987 p. 206), can be divided into two distinct periods (Green & Sutcliffe, 1987). The "long boom", or fourth wave of capital accumulation, from 1950 to the mid 1970s was an unprecedented era of sustained growth for the major capitalist economies of the world. Their high rates of growth, profit and investment, took place against a background of enabling material and institutional conditions. There were reserves of labour power, cheap raw materials, and technological innovation to draw upon and there was also a stable international monetary system and political order, controlled largely by the USA. The limits to growth were temporarily overcome and the resulting treadmill of production and consumption (Schnaiberg, 1980) provided the foundation for an era of welfare capitalism and social democracy in most of the core states of the world system. Increased affluence relieved social pressures for the redistribution of wealth and diverted most people's attention away from the true costs of such development which were increasingly paid by people and environments elsewhere in the world (North, 1986; Seabrook, 1988; Seabrook & Blackwell, 1988).

The conditions which enabled the "long boom" clearly could not last for ever. The ability of the USA to stabilise the world order declined as competitors took a greater share of world trade. Continuing economic growth gradually depleted reserves of labour power, technological innovation, and raw materials, with the result that limits to growth gradually reappeared. The treadmill of production and consumption pushed against physical and ecological limits and by the early 1970s, concern about resource scarcity and pollution had prompted the emergence of the modern environmental movement (Sandbach, 1980; O'Riordan, 1981; Pepper, 1984) and led to the first UN Conference on the Environment. The treadmill also pushed against economic and political limits. Rising costs, capital overaccumulation and saturated markets were resulting in falling rates of profit. Attempts to restore these, by attacking wages and welfare provision, increased political conflict.

After 1973, economic stagnation meant that the treadmill slowed and concern for the environment temporarily abated. Growth declined and unemployment and inflation increased. A massive restructuring of the world economy began to gather pace; resulting in job losses and factory closures, the introduction of new products, technologies and labour processes, and a geographical redivision of labour. Restoring profitability also meant eroding welfare capitalism by reducing taxes and controls on capital, privatising state enterprises, and cutting welfare spending and the power of organised labour. Such New Right policies provoked opposition not only from the Left, but from new radical forces which included the green movement (Spretnak & Capra, 1985; Hutton, 1987; Porritt & Winner, 1989).

What motivated these new political movements was a growing awareness that the restructuring of the world economy was being carried out at the expense

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of the conditions of production worldwide (O'Connor, 1988). By the mid 1980s it was clear that attempts to overcome the economic limits to growth were again rendering physical and ecological limits more apparent. Deregulation of the environment and a readiness to overlook more of the social and environmental costs of production, meant that restructuring was having profound effects on the environmental well-being of the vast majority of the world's people. Their health and safety was being endangered by an increasingly toxic environment. The natural systems and processes which supported their livelihoods were being undermined and the built environments in which they lived were increasingly unable to meet their needs and assist their development. The conditions of production (human beings and their labour power, nature and the natural environment, and urban and rural space) had been neglected to the point where both further capital accumulation and human survival were threatened. The priority now was to restore the conditions of production and ensure their continued reproduction.

The concept of sustainability

It was in this historical context that the concept of ecological sustainability was rediscovered and adopted as a mediating term to bridge the ideological and political differences between the environment and development lobbies. Interests aligned with conventional development (growth in the production of commodities for profitable sale) use it to assist and justify their restructuring of the nature and conditions of production while environmentalists use it to promote alternatives. Since its revival in the World Conservation Strategy in 1980, the concept has entered the dialectic which characterises modern environmentalism and taken on different meanings for technocentrists and ecocentrists (see Figure 1). This largely accounts for the contradictions which Redclift (1987, 1990) has revealed. He notes that while natural scientists disagree as to what is to be sustained at what levels, over what spatial and temporal scales, social scientists use the concept both in a normative sense, linking it to human needs or livelihood, and as a methodology for maintaining economic growth.

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Figure 1

THE FOUR WORLD VIEWS OF MODERN ENVIRONMENTALISM

A "CORNUCOPIAN" TECHNOCENTRISM:

an exploitative position supportive of a growth ethic expressed in material terms (eg GNP); it is taken as axiomatic that the market mechanism in conjuction with technological innovation will ensure infinite substitution possibilities to mitigate long-run real resource scarcity;

B "ACCOMMODATING" TECHNOCENTRISM:

a conservationist position, which rejects the axiom of infinite substitution and instead supports a "sustainable growth" policy guided by resource management rules;

C "COMMUNALIST" ECOCENTRISM:

a preservationist position, which emphasises the need for prior macroenvironmental constraints on economic growth and favours a decentralised socio-economic system;

D "DEEP ECOLOGY" ECOCENTRISM:

an extreme preservationist position, dominated by the intuitive acceptance of the notions of intrinsic (as opposed to instrumental) value in nature and rights for non-human species.

Source: Turner, (1988), p. 1.

Turner (1988) and O'Riordan (1988) echo Redclift in distinguishing between sustainable growth and sustainable development (see Figure 2). O'Riordan traces the historical development of these two modes of sustainability from the Greek notion of Gaia, through the democratic resource managers of the Roosevelt era in the USA, to the debates within the IUCN in the 1960s and 1970s. He shows that attempts to regulate the reproduction of the conditions of production are not new and describes how ways of reconciling development with nature conservation in the South, have gradually evolved into the notion of sustainable livelihood development (Riddell, 1981; Glaeser, 1984; Chambers, 1986). This is also relevant to the North and Figure 3 indicates what it involves.

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Figure 2

SUSTAINABLE GROWTH	SUSTAINABLE DEVELOPMENT
technocentrist	ecocentrist
essentially a technical concept	a broader concept embracing ethical norms eg bioethics, inter/intragenerational justice
bound by formalistic rules of existing institutions	requires new institutions to deliver
social reform	social revolution
conservation one of several goals within an overall materials policy including waste recycling/reduction	conservation the sole basis for defining a criterion on which to judge policy/alternative allocations of resources
three basic elements of policy: resource recovery/recycling, residuals management, waste reduction	policy derived from theories of eg zero growth, steady state economy, bioeconomic equilibrium, coevolutionary development
requires a modified economics	requires a new economics
requires attention to O'Riordan's premises (i) and (ii) (see Figure 4)	requires attention to all four premises
core is reforming social systems to ensure reproduction of conditions of production	core is changing social systems to ensure popular control of livelihood or the conditions of production
is manageable and politically acceptable because it is safely ambiguous	is politically treacherous since it challenges the status quo
the "greening of capitalism"	the "greening of socialism"
Sustainable development should be both ecologically and socially sustainable (Meadows, 1989)	

Based on Turner, (1988) & O'Riordan, (1988)

Figure 3

SUSTAINABLE (LIVELIHOOD) DEVELOPMENT

- regards its fundamental OBJECTIVE as meeting people's BASIC NEEDS
- employs SUSTAINABLE RESOURCE USE as the MEANS of meeting needs

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- makes use of APPROPRIATE TECHNOLOGY and encourges SELF RELIANCE
- draws on ECO-DEVELOPMENT strategies to ensure CONTEXT (location/culture) specific variants of sustainable development
- generally requires STRUCTURAL TRANSFORMATION (DEMOCRATIZATION) as an ENABLING CONDITION

Based on O'Riordan, (1988).

Figure 4

FOUR PRECEPTS UNDERLYING THE CONCEPT OF SUSTAINABILITY

(i) knowability : the amount, rate and other characteristics of renewability are knowable and calculable.

(ii) homeostasis : renewable resource systems operate broadly around equilibria or can be manipulated to approximate steady states following human intervention - homeostasis is a preferential state of nature.

(iii) internal bioethics : the act of drawing upon a renewable resource even below some threshold of take has implications only for the tightly confined ecosystem that is that resource.

(iv) external bioethics : utilising a renewable resource up to the point of sustainable yield is morally justifiable even though that resource, below the threshold of optional "take" may have other ecological values and functions.

Source: O'Riordan (1988)

O'Riordan also identifies four precepts which underlie the concept of sustainability (Figure 4). Precepts one and two are statements about the scientific feasibility of sustainable resource use and apply to sustainability in the sustainable growth mode. Precepts three and four relate to ethical and political issues and are more relevant to the concept in the sustainable development mode. He argues that since *none of these principles is realistic, practicable or justifiable* (1988, p.30) sustainability in either mode should be approached with considerable caution.

Before examining the two modes of sustainability (Figure 2) in more detail, it is important to note that the distinction between them is not clear cut and various intermediate positions are possible. Green socialism, which I will examine below, represents a growing coalition between accommodating technocentrists and communalist ecocentrists (Figure 1) around variants of sustainable development.

The greening of capitalism

Faced with a double crisis of economy and ecology, the owners and managers of capital and their allies in government, are currently seeking sustainable growth via

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new products, technologies, and institutions. These are generally presented with "green" language and images which suggest that they will solve environmental problems and promote the common good. Green capitalists include market liberals, of New Right persuasion, who rely on market forces, scientific and technological innovations, and new pressures from consumers and shareholders, to create a more environmentally aware business community. They also include welfare liberals, or social democrats, who advocate a significant role for government in regulating the market and guiding development towards sustainability with legislation and planning.

Green capitalists like John Elkington (Elkington, 1987) maintain that there is no inevitable conflict between profit and environmental excellence. The emerging industries of the fifth wave, such as biotechnology, offer major possibilities for environmental protection and improvement. They generate wealth with less energy and materials, are generally cleaner, and so lay the foundations for future "green growth". Business can adapt to ecological limits provided it follows simple "conservation rules" (Turner, 1988; McNeill, 1989).

Government can encourage such adaption by insisting that economic accounting becomes more sensitive to the neglect of the conditions of production. Environmental economics has evolved a battery of techniques for doing this which includes cost-benefit analyis, environmental impact assessment, pollution taxes, tradeable pollution permits and variable discount rates. Environmental economics has been rediscovered along with sustainability. In Britain David Pearce's report *Blueprint for a Green Economy* (Pearce, Markandya & Barbier, 1989) has been strongly endorsed by Environment Minister Chris Patten who suggested that it "provides a vital step in showing how we can translate sustainable development into practice, looking after our environment better while continuing to prosper" (Trudgill, 1990, p. 39).

The green capitalists in the core states see their products and technologies having wide application elsewhere in the world. The British Government has set about greening its aid programme and the World Bank appears to have been converted to sustainable growth; urging governments, corporations, and development projects to accept " a revamping of neo-classical economics" (Goodland, 1989). The countries of the South and Eastern Europe risk becoming yet more dependent on imported technologies of environmental management, but their new label of "sustainable development" may mask continued imperialism (Idris, 1990).

The greening of socialism

The dilemma for green capitalists is that they must realise sustainable growth or sustainable capital accumulation, without incurring massive costs or conceding control over economic development. Tackling problems like cancer, illiteracy, global warming, desertification, and urban renewal is hugely expensive and effective solutions require state intervention and greater planning. Taking action to ensure the restoration and reproduction of the conditions of production carries political risks. Not only are people likely to challenge the distribution of costs and

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benefits but as the restructuring of the mode and conditions of production inevitably becomes more "visible", people are more able to imagine the transition to sustainability taking a different form and being carried out under popular or democratic control. Tackling economic and ecological limits to growth accentuates political limits with green socialists amongst those seizing new opportunities to promote sustainable development.

Green socialists maintain that the greening of capitalism cannot deliver sustainability with justice or equity. The imperative of capital accumulation will continually limit and distort its reforms and many of these will worsen the plight of poor, particularly in the South (Stretton, 1976). Sustainable development requires planned production for use rather than production for profit or exchange and ecological crisis therefore provides further justification for socialism. Only in conditions of approximate equality, freedom and democracy, can people collectively reshape the world order in ways which enable them to realise their common interest in sustainable development. Only when economic and political life at all levels is under democratic control, we will be able to realise "Our Common Future".

The theory and practice of sustainable development (Figures 2 and 3) evolved in the South as a response to the failures of conventional capitalist and socialist development. Green socialists in the North are now learning from the South as they search for a "third way" (Barbrook, 1990) which discounts the possibility of socialism being established by a benevolent minority from above. In Europe both state socialism in the East and social democracy in the West have failed to deliver equality, freedom and democracy and economic restructuring and technological change have displaced workers and eroded socialism's expected constituency. In seeking a "third way" green socialists look to the mass action of ordinary people to reshape society from below and believe that political activity within workplaces and communities, can unite the labour and new social movements. The people of Eastern Europe did not choose the third way after the revolutions of 1989, but its appeal is likely to increase as the costs of greater dependency on the world system begin to mount.

It is these costs which persuade a growing number of communities in the South to seek their own variants of the "third way", in forms of community self help (Schneider, 1988). They provide successful small scale examples of sustainable development (Timberlake, 1987; Harrison, 1987), often supported by overseas agencies, but these are likely to remain marginal to the mainstream. As in the North, they can only spread to embrace the whole of society if people gain control of the state, bring much of the economy under social ownership, and work collectively with other socialist states to establish a new international order. Society can only be reconstructed from below if there is co-ordination and planning from above. But this should facilitate decentralisation and democracy in ways which restore people's faith in socialism and their ability to secure their livelihood.

The red-green debate

A feature of recent years has been a sustained dialogue between libertarian socialists advocating a "third way" and members of a new green movement which often

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overlooks its socialist roots (Pepper, 1984). Greens have reminded reds that a future socialist society will need to adopt forms of production and development which allow harmonious relations not only within society, but also between society and nature. Struggles centred on the social relations which shape the reproduction of the conditions of production are as important as those focussed on the relations of production themselves. The socialist agenda therefore needs to be widened to incorporate new issues and new sites of struggle, such as economic and cultural reproduction in households and schools.

For their part, socialists have persuaded some greens that many of their early diagnoses and prescriptions were naive and utopian. They often failed to identify the real nature and cause of environmental problems and were often too ready to dismiss the benefits of "growth" and the labour movement's record in improving people's environmental welfare. They were also inclined to discount political struggle and the need for state power in the belief that social change can be brought about through reform and by changing people's beliefs and values. Reds reminded them of the limits to such reformism and of the continuing need for class struggle (Harrison, 1978; Weston, 1986; Huckle, 1986).

The red-green debate features in a growing body of critical theory which unites the natural and social sciences and enables radical environmentalists to continually revise their ideas and strategies. Geographers, historians, economists and political scientists are remedying a weakness in our intellectual tradition and providing a valuable resource for environmental educators. Europe's leading green socialist thinkers (Bahro, 1982; Gorz, 1989; Ryle, 1989) seek to anchor such theory in existing material conditions, drawing on their own variant of green economics (Ekins, 1986, Daly & Cobb, 1990) and on the theory and practice of socially useful production (Bodington et al, 1986), democratic planning (Hodgson, 1984; Costello et al, 1989) and local socialism (Gyford, 1985). The technologies of the fifth wave offer people liberation from work and new opportunities for self management and community development. These would lessen the alienation which currently drives them to seek liberation in work via social democracy and which motivates obsessive consumption (Roberts, 1979). Such liberation should appeal particularly to the poor (Seabrook, 1988).

Democratisation of the world order at all levels is then necessary if communities are to realise sustainable development. Only democracy will allow planned production for need to replace production for profit and ensure that environmental criteria are given appropriate weighting in all decisions. It will allow resource use to be fairly adjusted to levels compatible with ecological limits and global justice and will enable people to better share the costs and opportunites of moving to conserver societies with more reuse, repair and recycling (Rees, 1990). The Chipko movement in India (Weber,1989), the rubber tappers of Amazonia (Hecht & Cockburn, 1989), the new green parties of Eastern Europe (Redclift, 1989), local councils promoting socially useful production in Britain (Blunkett & Jackson, 1987) and people promoting a conserver society in Australia (Trainer, 1985) are just a few elements of the growing international movement for green socialism.

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The World Commission on Environment and Development

Having examined the concept and politics of sustainability how should we view the influential report of the World Commission on Environment and Development (WCED, 1987)? While the twenty two members of the Brundtland Commission are said to have worked hard and long to reach a consensus (Starke,1990, p.173), their report inevitably embodies contradictions and political tensions. It appears radical in that it challenges the standard agenda of environment and development, recognises the need for social change to enable sustainability, and recommends a return to the agenda of social concern and multilateralism. At the same time it appears conservative in that it seeks solutions through reform or a modified version of "business as usual" which could leave existing structures of power intact.

The Report seeks to explain rather than describe environmental problems and to view them in the context of development. It urges that environmental policy should become a more central element of social policy and establishes a very political agenda. According to the Commission, considerations of human need are paramount:

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (WCED, 1987, p.43)

> Sustainable development is a process in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony, and enhance both current and future potential to meet human needs and aspirations. (WCED, 1987, p.46)

The Commission's main recommendations seek to meet the needs of the poor through growth with sustainability:

- Revive Growth
- Change the Quality of Growth
- Conserve and Enhance the Resource Base
- Ensure a Sustainable Level of Population
- Reorient Technology and Manage Risks
- Integrate Environment and Economics in Decision-making
- Reform International Economic Relations
- Strengthen International Co-operation (Starke, 1990, p. 4)

These recommendations, the Commission claims, can only be delivered as part of a process of social transformation whereby societies develop:

- a political system that secures effective citizen participation in decision making;

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- 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 basis 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. (WCED, 1987, p. 65)

The central weakness or contradiction within the Report is that it fails to link this social transformation with international green socialism (sustainable development) and opts instead for a social democratic or welfare version of green capitalism (sustainable growth) on a global scale. Despite its mandate, the Commission did not identify the true causes of environmental problems and while its recommendations are open to radical interpretations, they do not explicitly recognise the need to replace the capitalist world order with a democratic alternative. This leads Linda Starke (1990) of the Centre for Our Common Future to express a sense of puzzled bemusement at the lack of progress towards sustainability since 1987. She cannot understand why it is that despite the obvious logic and appeal of the Commission's recommendations, international bodies, governments, citizens groups, industry and the media, have done so little. Why, she asks, does the poverty gap continue to widen? Why is it so difficult to find the money for sustainable development? Why are institutions and values so slow to change? She cites authorities who urge radical structural change but is unable to answer her questions by carrying their remarks to logical conclusions.

One person who could help Linda Starke and others in their bemusement is Larry Lohmann. He attended the "Globe 90" conference in Vancouver and has produced a most illuminative account (Lohmann, 1990) of how global elites are organising to tackle the global environmental crisis. In keeping with my earlier analysis, he regards the World Commission and the UN Conference in 1992 as being the latest of a series of initiatives (the New Deal, the Marshall Plan, Bretton Woods, multilateral lending, the Brandt Report) whereby those with power and their institutions seek to turn pressure for change to their own advantage. Like previous initiatives, their latest form of economic, political and cultural management (the greening of capitalism) fails to analyse causes, uses vague code words to rally support, seeks solutions that do least damage to the existing order, and identifies the executors of solutions with the existing power stucture.

Lohmann describes a power elite determined to prevent green socialists and others from exploiting the contradictions within the Brundtland Report. It seeks to direct attention away from its own role in causing environmental problems by attributing blame to such factors as poverty, population growth, or underdevelopment. It uses words like "common security" to enlist support but fails to acknowledge that increasing the security of the poor generally entails

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undermining the security of the rich. It uses global green capitalism to shore up existing industrial and financial systems; expecting greener growth to "trickle down" to the poor in undisclosed ways. Finally, it seeks a four-way alliance between private and public sectors, scientists and non-governmental organisations, to carry out its programme. NGOs are the new element in this alliance; offering a new source of legitimation and enabling claims that community or grassroots movements have been given a voice.

Environmental education

As suggested earlier, green socialists recognise the need for political struggle within those sites which reproduce the conditions of production including human labour power. Schools reproduce workers and citizens with skills, beliefs, and values appropriate to the existing order and current calls for more environmental education should be seen in the historical context already examined. Industry and governments need more professional environmentalists to facilitate the greening of capitalism and more citizens who are prepared to accept environmental problems as an explanation for greater austerity and reduced freedoms. Technocentric forms of environmental education, sometimes labelled education about the environment (Huckle, 1983), are likely to dominate the new agenda, but because social reproduction in schools is not smooth and uncontested, more ecocentric or radical forms (education for the environment) may find a place. Our consideration of the contradictions surrounding sustainable development would suggest that education for the environment should be a shared speculation with pupils on those forms of technology and social organisation which can enable people to live in harmony with one another and with the natural world. It should be a form of social education cast in what Giroux (1983) describes as the emancipatory mould. This seeks to empower pupils so that they can democratically transform society. It does this by encouraging them to reflect on their experience in the light of critical theory and to act on the insights gained. It is a form of praxis (Grundy, 1987) which by allowing pupils and teachers to reflectively deconstruct and reconstruct their social world, develops the critical and active citizens who are capable of bringing about the transition to sustainable development. Shor (1980), Freire & Shor (1987), and Giroux (1989), all provide extended accounts of emancipatory or socially critical pedagogy which has the following characteristics:

- learning is active and experiential;
- classroom dialogue introduces elements of critical theory and encourages pupils to think critically;
- pupils begin to see themselves, their histories and futures, in new ways. They develop a sense of their own power to shape their lives;
- values education develops comprehension of the sources of beliefs and values, how they are transmitted, and the interests they support;
- pupils reflect on the structural and ideological forces that influence and restrict their lives and on democratic alternatives;

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- pupils are taught how to act democratically with others to build a new social order.

In Britain, education for the environment developed out of a long tradition of urban-community education associated with libertarian socialists and anarchists (Huckle, 1988a). It re-emerged in the late 1960s as part of a wider community movement which attacked the bureaucracy of local government and sought to improve the environment by opening its management and planning to wider public participation. While the focus of education for the environment was primarily urban and local in the 1960s and 1970s, in the 1980s it began to be adapted to focus on the social use of nature and issues of environment and development at all scales. The key agents in this development were non-governmental organisations and some local authorities.

At a time when the UK Government had other priorities in terms of educational policy, agencies like Oxfam, Christian Aid, and the World Wide Fund for Nature, expanded their role in curriculum development. By the late 1980s, the new materials they produced (Greig, Pike, & Selby, 1987; Beddis, 1988) were challenging the parochialism and conservatism of much that was previously available and were being joined by other exciting texts (Hopkin & Morris, 1987; Clammer et al, 1987). They put sustainable growth and development firmly on the environmental education agenda and became more widely known and used in schools as the staff of a growing network of Development Education Centres worked alongside teachers. The increasing media attention given to environment and development issues (BBC/SCF/WWF, 1990) helped to bring education for the environment to their attention and the components of an environmental education which might contribute to sustainable development are now increasingly clear (see Figure 5). They are reflected in a module of the World Wide Fund for Nature's Global Environmental Education Programme (Huckle, 1988).

Figure 5

THE NINE COMPONENTS OF EDUCATION FOR THE ENVIRONMENT

1 KNOWLEDGE OF THE NATURAL ENVIRONMENT AND ITS POTENTIAL FOR HUMAN USE Environmental education should be based on a knowledge of major ecological systems, the processes which sustain them, their carrying capacity and vulnerability to human modification. Science and geography should develop appropriate knowledge and together with the arts, should cultivate a sense of the sacredness of nature.

2 A THEORETICAL AND PRACTICAL GRASP OF APPROPRIATE TECHNOLOGY Lessons in science and craft, design and technology, should consider the development of technology in different societies and its impact on nature and the environment. Pupils should develop a theoretical and practical understanding of appropriate technologies and their role in sustainable development.

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3 A SENSE OF HISTORY AND A KNOWLEDGE OF THE IMPACT OF CHANGING SOCIAL FORMATIONS ON THE NATURAL WORLD The study of environmental history should develop pupils' understanding of changing social formations and their use of nature. Pupils should understand how the transformation of nature allows social development, how human environments are socially constructed and how social relations shape environmental relations. They should recognize the value of indigenous knowledge and technology in promoting sustainability in the past. Pupils should develop a basic understanding of the history and nature of global society and should be able to use this to explain why dominant forms of development and underdevelopment are not sustainable. They should learn about the history of nature conservation and the environmental movement.

4 AN AWARENESS OF CLASS CONFLICT AND SOCIAL MOVEMENTS The social subjects should make pupils aware that the costs and benefits derived from using nature are shared unequally in most societies. Lessons should focus on the struggles of the labour and environmental movements to lessen economic exploitation, to improve people's environmental well-being, and realize sustainable development. Pupils should study a range of environment and development issues around the world which illustrate the nature of environmental politics in societies variously located within the world system. These studies should critically examine attempts to realize ecologically and socially sustainable development.

5 POLITICAL LITERACY Since the state is the main arbitrator in disputes over the social use of nature, political education should develop pupils' political literacy so that they are able to understand and participate in environmental politics. Appropriate knowledge, skills and attitudes, should be developed through real or simulated involvement with environment and development issues at all scales from the local to the global. Due attention should be given to the social use of nature and environmental politics in societies organized on different principles from their own (link with 4). Such political literacy should develop pupils' constructive skepticism concerning politics. They should critically explore the limits to political action imposed by the dominant mode of production or world economy.

6 AN AWARENESS OF ALTERNATIVE SOCIAL AND ENVIRONMENTAL FUTURES AND THE POLITICAL STRATEGIES WHEREBY THEY ARE LIKELY TO BE REALIZED Social education should encourage pupils to consider a range of social and environmental futures and the ideologies and utopias which these reflect. They should recognize the need for sustainable development and the contradictions such development raises within the present world system. The desirability and feasibility of green socialism should be explored along with other options.

7 AN UNDERSTANDING OF IDEOLOGY AND CONSUMERISM Media and communication studies should help pupils to interpret the images, beliefs and values about nature and the environment transmitted by popular culture. Pupils should develop a basic understanding of the main environmental ideologies and utopias (linkwith 5 and 6) and an ability to detect and handle bias in the news media. They should also be helped to understand the politics of consumerism and the limits to green consumerism.

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8 INVOLVEMENT IN REAL ISSUES Pupils should be encouraged to identify for themselves practical ways in which they can work for a more sustainable relationship with the natural world. Ideally schools should be fully integrated into the life of the community and engaged in projects which promote sustainability, both locally and globally.

9 TENTATIVENESS AND OPTIMISM We lack total knowledge of environmental systems and often make decisions under conditions of great uncertainty. Environmental education needs to be tentative in its assertions and combine humanistic and rational approaches to knowledge. Teachers should avoid indoctrination but should be committed to justice, rationality and democracy, rather than to a form of neutrality which leaves existing patterns of power and privilege undisturbed. They should protect pupils from their own powers of persuasion and cultivate constructive skepticism. If they are not to overwhelm pupils with the world's problems, teachers should also teach in a spirit of optimism. They should built successful examples of sustainable development into their curriculum and develop awareness of sources of hope in a world where new and appropriate technologies now offer liberation for all.

A pathway for environmental education

At the same time as non-governmental organisations were reviving and updating education for the environment, local socialists who controlled such cities as Greater London, Sheffield, and Manchester, were developing economic and political strategies to ameliorate the worst effects of economic restructuring on people's lives. As the policies of Mrs Thatcher's Governments resulted in accelerated deindustrialization and deteriorating environmental welfare, they sought to expand local services and encourage a new relationship between people and the local state. Their policies included elements of green socialism with enterprise boards and workers co-operatives developing socially useful products; cheap public transport ensuring a cleaner and safer environment; and recyling centres reducing waste. Technology networks gave people greater control over new technology and popular planning sought their participation in environmental decision making (Blunkett & Jenkins, 1987). Local socialism was too popular and practical an alternative to government policy to be allowed to continue, but for a while it did sustain forms of community education which further developed education for the environment (Alexander, 1986).

This work of NGOs and local socialists in promoting education for the environment has parallels throughout the world and Australians have shown themselves to be particularly productive of relevant theory and practice (Robottom, 1987). There remains a need for this to be extended and more vigorously promoted and in Britain the establishment of the Education Network Project at Sussex University (Lacey and Williams, 1988; Abraham, Lacey & Williams, 1990) and the success of the journal Green Teacher (Randell, 1989) have been encouraging. More communication and co-operation to advance education for the environment at the international level is also necessary and some recent developments could be turned to significant advantage. A resolution supported by all the Ministers of Education of the European Community has called for environmental education:

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> to increase the public awareness of the problems in this field, as well as possible solutions, and to lay the foundations for a fully informed and active participation of the individual in the protection of the environment and the prudent and rational use of natural resources. (quoted in Martin, (1990), p. 8)

At the same time, Unesco-UNEP's International Strategy for Environmental Education and Training for the 1990s (UNESCO-UNEP, 1988; Meadows, 1989) offers a useful conceptual framework for educating for sustainability and contains within its twelve aims:

> 8 enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting the consequences;
>
> 10 help learners discover the symptoms and real causes of environmental problems;

Our task as environmental educators is to ensure that such policy statements, together with those from national and local governments, are interpreted in ways which advance sustainable development as well as sustainable growth. We should exploit the rhetoric and contradictions they contain but should remember that green socialism will primarily be established through material struggle for control of technology, economic development, and the state. As teachers, our work needs to be part of a broader movement in which the progressive elements of the labour and new social movements are seeking liberation for all via the establishment of true democracy.

In charting our pathway, we should reassess opportunities lost in the past and forecast future opportunities which can be put to better use (Wright, 1989). In Britain, the restructuring of schooling by recent Conservative Governments has brought major setbacks (Simon, 1987; Jones, 1989), but all is not lost (DES, 1989). The likely demise of Thatcherism, together with major shifts in the world order, may mean that significant opportunities lie ahead. 1989 reminded us that the world can change rapidly. People can realise greater freedom. The crises within the world system and the opportunities they present are not going to go away.

Meanwhile the classroom teacher has more immediate concerns. Her task is to find ways of interesting and empowering pupils whose level of alienation with school, society and environment is often already high. The greening of capitalism will condemn more of them to unemployment or under-employment on the margins of affluence, yet few are able to articulate their concerns and connect them with social action. We need more action research to close the gaps between pupils and teachers, theory and practice, and schools and community (Greig, Pike & Selby,1989). This is likely to suggest more education through community development projects (Dauncey, 1988).

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At the end of the pathway

The best of such projects hint at where our pathway might take us. Beyond the transition, are green socialist societies in which schools ave changed radically and may no longer exist. Education is lifelong, community based, and enabling (Trainer, 1990; Irvine & Ponton, 1988; Robertson, 1990). It develops a wide range of practical, intellectual and social skills, which allow people to live co-operatively and peacefully with one another and with nature. They learn from democratically planned community development and this is allowing them to find freedom, justice and sustainability.

The pathway to environmental education for sustainability is then reasonably clear. Whether or not it is followed by those attending the conference in Brazil in 1992, will partly determine whether sustainable development, like democracy, languishes as merely a good idea or becomes a reality. We can realise "Our Common Future" but it may mean taking environmental education in relatively new directions.

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