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Sustainable Development: Needs, Values, Rights

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ABSTRACT: ‘Sustainable development’ is analysed as a product of the Modernist tradition, in which social criticism and understanding are legitimized against a background of evolutionary theory, scientific specialization, and rapid economic growth. Within this tradition, sustainable development emphasizes the need to live within ecological limits, but allows the retention of an essentially optimistic idea of progress. However, the inherent contradictions in the concept of sustainable development may lead to rejection of the Modernist view in favour of a new vision of the world in which the authority of science and technology is questioned and more emphasis is placed on cultural diversity.

KEYWORDS: Development, environment, modernism, needs, post-modernism, sustainability, values

Sustainable development remains a confused topic. Like motherhood, and God, it is difficult not to approve of it. At the same time, the idea of sustainable development is fraught with contradictions (Redclift 1987). This has not prevented ‘sustainability’ from being invoked in support of numerous political and social agendas. This paper argues that sustainable development has gained currency precisely because of the way it can be used to support these various agendas.

The idea of sustainability is derived from science, but at the same time highlights the limitations of science. It is used to carry moral, human, imperatives, but at the same time acquires legitimacy from identifying biospheric ‘imperatives’ beyond human societies. This paper argues that married to the idea of ‘development’, sustainability represents the high water mark of the Modernist tradition. At the same time, the emphasis on cultural diversity, which some writers view as the underpinning of sustainability, is a clear expression of Post-Modernism. The strength of the idea of sustainable development, then, lies in its ambiguity, and its range.

Sustainable development can be viewed from different perspectives. The concept has its origin in the need to assert the primacy of living within ecological limits, without forfeiting the idea of 'progress'. In this the idea of sustainable development reflects ambivalent social goals. It is socially constructed, and yet the concept expresses a 'realist' position on the world. It is used to suggest that however we 'construct' the environment, living within limits is a challenge to human ingenuity that we cannot avoid. Sustainable development suggests the need to engage with the world, but our vision of the world is itself a social construction, and so, inevitably, a relativist one.

ANTECEDENTS: THE ETYMOLOGY OF 'SUSTAINABLE'

The word 'sustainable' is derived from the Latin *sus tenere*, meaning to uphold. It has been used in English since 1290, but the etymology of 'sustainable' carries interesting, and important, implications for the way the word is used. As de Vries (1989) reminds us, 'sustaining' can mean "supporting a desired state of some kind" or, conversely, "enduring an undesired state". The verb 'to sustain' carries a passive connotation, while the adjective 'sustainable' is used in an active sense. As we shall argue below, the juxtaposition of both normative/active, and positive/passive meanings, has enabled the idea of sustainability to be employed in a variety of contradictory ways.

The following propositions serve to illustrate some of these competing, but powerful, interpretations:

1. The first proposition is that sustainable development has *proved useful as a concept, precisely because it combines the idea of prescriptive action, with that of enduring, defensible properties, located in scientific principles*. As we shall see the reference to 'scientific' principles, as the basis for rational human action, is central to the environmental message. At the same time, of course, Green thinking takes issue with much reductionist science, regarding it as part of the problem to be addressed.
2. The second proposition is that the idea of sustainable development *is born of intellectual necessity, as much as political necessity. It emerges, in fact, from problems generated by Modernism itself, including our faith in science*. As David Cooper argues, the modern concept of The Environment "...is symptomatic not only of a predilection for a scientific perspective, but of the situation of today's intellectuals" (Cooper and Palmer 1992: 171). It follows from this proposition that the idea of sustainability reflects unease about the human condition; we use nature and the environment to mirror the discontents of human societies.

We will return to these propositions later. For the present, it is worth considering

the historical legacy from which the idea of sustainable development has grown. Although we increasingly refer to other cultures, and other epochs, in defence of the idea of sustainability, it should properly be seen as the outcome of a quite specific set of events, beginning with the idea of progress, and associated with the Enlightenment in Western Europe. Our willingness to authenticate sustainability by reference to societies which possess no such concept, is both historically and intellectually revealing. As we shall see, it carries serious implications for 'global' strategies of development, which ensure the continued economic hegemony of the northern, industrialized countries. The 'globalization' of environmental problems, and suggested solutions, today reflects a continuing history of colonial and post-colonial thought associated with the (Northern) idea of 'development'. The specific history of 'development' and 'sustainability' as *complementary* ideas is a product of this Modernist discourse.

SUSTAINABILITY AND DEVELOPMENT: THE DISCOURSE SURROUNDING NEEDS

In his classic study of the environmental idea, Clarence Glacken argues that "the association of the idea of progress with the environmental limitations of the earth" was, necessarily, a post-Enlightenment development (Glacken 1973: 654). The thinkers of the European Enlightenment, such as Condorcet, Godwin and Malthus, had all developed a primitive concept of 'carrying capacity', but they did not explore the implications of environmental changes that were driven by human behaviour. In the late eighteenth century even the most radical thinkers assumed a stable physical environment, as the backdrop for human progress. The earth could be cultivated "like a garden" but Enlightenment thinking did not consider that "an environment deteriorating as a result of long human settlement, might offer hard choices in the future..." (Glacken 1973: 654).

Later, Glacken makes his point even more forcefully, pointing to elements in the modern equation which pre-nineteenth century thinkers ignored. He writes that:

With the eighteenth century there ends in Western civilization an epoch in the history of man's relationship to nature. What follows is of an entirely different order, influenced by the theory of evolution, *specialization in the attainment of knowledge, acceleration in the transformation of nature...* (Glacken 1973: 705) (emphasis added)

These three elements – evolutionary theory, scientific specialization, and economic development on an unprecedented scale, throughout the nineteenth century – define the context in which sustainability was to become important. They also define the context for Modernism and, I would argue, the human (or 'inner') limits placed on the development of productive forces.

There has been considerable debate about what defines Modernism. For our purposes, Modernism is the view that ideas grounded in (essentially) Western philosophy and science can serve as the basis for social criticism and understanding. In the opinion of Post-Modernist writers like Lyotard, Modernism's mistake was to have recourse to "the grand narratives of legitimation" which are no longer credible (Lyotard 1984: 23). In terms of our discussion of sustainability, Modernism represents an attempt to deal with the problems of nature through reference to 'natural laws': to 'external limits' imposed on human societies. These laws were formulated throughout the eighteenth century, but it was not until the nineteenth century that scientific disciplines, and the successful application of science through technology, assumed the authority it has today. In a sense, then, Modernism sought to pit human ingenuity against the 'external limits', in the Promethean spirit. Some thinkers, including Engels, were dimly aware of the costs attached to the advance of science, principally in terms of the difficulties in managing nature (Engels 1970). However, managing nature was quite a different thing from understanding it, and the Modernist position placed human beings above the environment from which they had sprung.

There are two key elements in the Modernist perspective on the environment. The first is based on certain ideals of reason and freedom which are associated with the idea of 'progress'. Evolutionary theory, scientific specialization and economic development provided the context for this essentially optimistic perspective.

The second element concerns the way in which the basis for legitimation, in the new intellectual discourse, as well as the basis for criticism, was provided by science. Science provided the means to transform nature, and at the same time provided our critique of nature. As belief in the 'progress' of science has met more obstacles, so our ability to invoke 'science' in defence of human actions appears more problematic. Ultimately we are faced with questions that are both philosophical and political: does the modernist sense of progress entail destruction of the environment? Does our ability to elaborate notions of sustainability, without endorsing the idea of progress and development, mean jettisoning the modernist discourse altogether?

According to Sklair (1970) the nineteenth century represented a watershed in thinking about progress, because it was the period in which science became institutionalized, in which material progress was linked to new ways of thinking:

By the middle of the nineteenth century those who wrote about society were in a position to elaborate a theory concerning the relations between scientific and social progress from an entirely different ... point of view (Sklair 1970: 33).

The centrality of science to society has made it almost impossible to consider the idea of progress without thinking of its critique, which is by no means confined to Post-Modernist writing. Almost forty years ago Claude Levi-Strauss, in his celebrated tract on *Race and History* (1958) pointed out that historicist concep-

tions of progress are ultimately flawed: "...progress ... is neither continuous nor inevitable; its course consists of leaps and bounds... These ... are not always in the same direction" (Levi-Strauss 1958: 21). Later he goes on to write that advancing humanity is like a gambler throwing dice, and each throw giving a different score. "What he wins on one [throw], he is always liable to lose on another, and it is only occasionally that history is 'cumulative', that is to say, that the scores add up to a lucky combination" (Levi-Strauss 1958: 23).

Notwithstanding the 'progressive' nature of science and technology, however, and the material improvements to which they helped give rise, 'development' still has to confront a deep-rooted difficulty. If human progress can only be achieved at the expense of destroying the environment, and ultimately the resources on which development depends, then a theory of development lacks legitimacy. Fraser and Nicholson (1990) note that Modernism "...narrates a story about the whole of human history which purports to guarantee that the pragmatics of the modern sciences and of modern political processes – the norms and ends which govern these practices – are themselves legitimate" (1990: 22).

For ideas to retain their power, they must be legitimated. Sustainable development is one such idea, which seeks to legitimate its own propositions by recourse to what are assumed to be universal values. By incorporating the concept of 'sustainability' within the account of 'development', the discourse surrounding the environment is often used to strengthen, rather than weaken, the basic supposition about progress. Development is read as synonymous with progress, and made more palatable because it is linked with 'natural' limits, expressed in the concept of sustainability. The essential discourse surrounding nature, and what are assumed to be natural laws, is viewed not as part of a broader socially constructed view of 'progress', but as part of an essentially non-human logic, located in biological systems.

Sustainable development then becomes a methodology, as well as a normative goal, a model for planning, a strategy involving purposeful management of the environment. Like other models derived from nature, 'sustainability' acquires legitimacy from its biological origins. This also takes on ethical importance. Some of the approaches which recognise these political parameters, it must be added, are extremely useful within specific contexts. Michael Jacobs, for example, makes good use of the idea of 'sustainability planning' in his case for more recognition, from the political Left, of the role of market interventions in environmental management (Jacobs 1990). As we shall argue later, sustainable development seeks to define an 'ends/means' structure, based on a hierarchy of needs. As de Vries puts it "...planning for sustainable development assumes that a blueprint for Utopia can, *and should* be made ... a recipe for how to travel towards the end of the road" (de Vries 1989: 8). Other writers, notably Merchant (1980) find an echo in today's 'managerial ecology' of earlier, seventeenth century approaches, which also "...subjected nature to rational analysis for long-term planning..." (Merchant 1980: 252).

THE ALLOCATIVE PRINCIPLES BEHIND SUSTAINABLE DEVELOPMENT

If the idea of sustainable development is a product of Modernism, it also answers to the problems of Modernism, in a variety of ways. First, and here the comparisons with Marxism are particularly interesting, sustainable development *invokes the concept of 'need', in the context of 'development', to meet problems of resource allocation in time and space.* The discussion of needs illustrates the essentialist discourse surrounding sustainability.

Problems of allocation in time, between 'now' and 'later', between present and future generations, are central to the discourse surrounding sustainability. Intergenerational equity, in the way used by economists, is a concern to register the preferences and choices of future generations, as yet unborn. It is used to extend Neo-Classical theory, which would otherwise fail to fully reflect future choices over the way the environment is valued. The fact that intergenerational equity considerations play such a large part in environmental economics, reflects the constraints under which the Neo-Classical paradigm is employed as a tool of economic policy. Societies recognize questions of 'intergenerational equity' in a variety of ways, and these concerns are reflected in a variety of social science disciplines, notably in anthropology, jurisprudence and philosophy. Only economics has sought to incorporate the choices of future generations into its methodological corpus, making environmental questions more amenable to economic treatment.

Sustainable development also answers to problems of allocation in space: allocation of resources between 'here' and 'elsewhere'. These are the problems of intragenerational equity, especially between different societies and between North and South, which are often ignored in the discussion. Instead of addressing these issues, attention has focused on the future costs of development to our own societies, as if the satisfaction of our future needs is the principal bone of contention, rather than the way we currently satisfy our needs at other people's expense.

The importance, indeed primacy, of intergenerational equity is vividly illustrated by the currency given to the definition of sustainable development used by the Brundtland Commission: "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). This is an enticing definition, in many ways, but it begs at least as many questions as it purports to answer. This definition carries the clear implication that 'needs' can be divorced from the development process itself, that they are not part of development, but can be arrived at independently.

The experience of the last two centuries in the industrialized world hardly bears out this proposition. Some would argue that needs can be viewed from a relativist position; that is, they are essentially historically determined. How needs are defined then depends on who is doing the defining. The knowledge we have of needs changes over time, and is linked to our ability to satisfy them. Each

society 'defines' needs in its own way, and has evolved quite complex mechanisms to reassure its members that their needs are being met. Others, including many within the contemporary Green movement, would argue that we need to discriminate between these mechanisms, as the 'satisfiers' of needs, and the needs themselves, which are thought to be ahistorical.

Doyal and Gough (1991) point out that 'needs' are different things to different people, and distinguish different ideological positions on human needs. Thus, to Neo-Classical economists needs are preferences; to the New Right needs are dangerous; to Marxists needs are historical; to anthropologists needs are group specific; to radical democrats needs are discursive; and to phenomenologists they are socially constructed (Doyal and Gough 1991). Again a reflection of Levi-Strauss is quite illuminating in this instance. He writes that:

... cultures ... appear to us to be in more active *development* when moving in the same direction as our own, and stationary when they are following another line... (Levi-Strauss 1958: 25).

In other words, cultures only appear to be stationary because their ways of meeting their own needs are unfamiliar to us, often without meaning, and 'cannot be measured in terms of the criteria we employ' (Levi-Strauss 1958: 23).

SUSTAINABLE DEVELOPMENT AND THE PROBLEM OF LEGITIMATION

It was argued above that a distinguishing feature of Modernism is that it purports to legitimate its own discursive practices. The discourse surrounding sustainable development is therefore a metadiscourse, in which the claims to provide insights can only be evaluated in terms of the discourse itself. From this point of view, the important point about sustainable development is that *the choice of a biological concept (sustainability) leave open the possibility that it can be treated both as a model and as a point of legitimation*. The natural world is used, in other words, both as a model for systems based on human intervention and, ultimately, a constraint on human development. Sustainability appears to provide a point of reference outside the confines of human experience, which can also serve to guide human choices. We are dealing, then, with both the naturalization of social behaviour, and the legitimacy conferred on that behaviour by reference to natural laws. But, if sustainable development appears to provide a reference outside the confines of human experience, which is relevant to that experience, how seriously should we take this comparison? To what extent is the choice of biological systems merely one of metaphor, and to what extent is the natural environment treated as a point of reference? To answer these questions involves a short digression into the biological significance of 'sustainability'.

The concept of sustainability in ecology is an important one. Within plant ecology 'sustainable' is related to the successional changes in plant communities which might serve as a model for the management of forests and rangeland. The key idea is that environmental management can benefit from referring to natural succession, from utilizing the knowledge we have acquired about natural, ecological systems. The principle of 'sustainable yields' has become well established in certain fields of environmental management, particularly in fisheries management and forestry.

In ecological terms the most mature natural systems are those in which energy shifts away from production towards the maintenance of the system itself. The best example are tropical forests, which exhibit all the features of a 'climax system', including enormous natural diversity, and in which the survival of the species is guaranteed by the complexity of system interactions.

From an ecological point of view, agricultural systems are always modifications, in which natural ecosystems have been interfered with by human beings, usually to enhance their productivity at the expense of their sustainability. To an ecologist, then, agricultural systems should demonstrate the capacity to renew themselves, to regenerate, in the face of disturbances in their natural evolution.

The ability of agricultural systems to withstand disturbances, stresses and shocks, is the principal characteristic of sustainable agricultural systems, according to Conway (1985). It was also the guiding principle which lay behind the first World Conservation Strategy, published in 1980, that of 'sustainable utilization' (WCS 1980). In the hands of writers like Odum (1971) the ecologists' interest in 'evolutionary adjustment', the idea that ecosystems only evolve successfully when they are protected from rapid changes, served as a guide to the way that power was exercised in human society. Ecology provided ideas about the way systems work, including systems subject to human intervention, at the same time highlighting the point beyond which such systems are no longer 'sustainable'.

The use of a concept drawn from ecology, rather than one of the social sciences, can be regarded as conveying several ambiguities:

1. It is often not clear when biological systems are being used as a metaphor, and when as a referent.
2. Sustainable systems occurring in nature, were used as a model for environmental and resource management, without reference to the differences introduced by human needs and choices.
3. *Incorporating the ecological idea of sustainability represents a way of viewing the shortcomings, or contradictions, of 'development'. These shortcomings are usually seen as a 'malfunction' of the system and, as such, one which can be addressed by human intervention.* For example, the Brundtland Commission reported that "...as a system approaches ecological limits, inequalities (in access to resources) sharpen..." (WCED 1987: 49). The implication is that distribution problems, of intragenerational equity, are

made worse by the failure to adhere to sound ecological principles, which should inform global policy as well as local environmental management.

The confusion surrounding our inability to behave according to biological injunctions, represented here by the absence of sustainability, is central to the appeal of sustainable development. It eases the passage from 'scientific' uncertainty to political prescription. It provides a moral force, which we have seen as essential to Modernist discourse, that seeks to engage our emotions as well as our minds. As we shall argue later, this tendency to provide a normative foundation for allegedly 'scientific' injunctions, reaches its clearest expression in relation to global climate change. The call to take measures to avert 'global warming', and the suggestion that we have already reached unsustainable levels in our dependence on hydrocarbons, acquire moral, as well as scientific authority, from the profligacy of the current development model. Whereas the dilemma posed by the environmental lobby in the 1960s and 1970s was that the scarcity of resources posed 'limits to growth', in the 1990s the principal threat to our survival is identified in the 'externalities' (notably global warming and ozone depletion) of the growth model itself.

In the next section we examine the theory of value that underpins much of the discourse on sustainable development. If the concept of sustainable development represents an attempt to bring together ethical injunctions and scientific authority, the importance of the concept can be seen most clearly in the way it has come to inform economic policy making. Environmental economics, we shall argue, proceeds by setting aside most of the problems associated with science as a social process, and the social authority of scientific knowledge. Recourse is made instead to nature, and the laws of 'natural capital', providing increased legitimacy for the otherwise contested concept of 'development'.

ECONOMIC VALUES AND SUSTAINABLE DEVELOPMENT: PARADIGM REGAINED

Environmental economics has sought to extend Neo-Classical theory, by encompassing the environment, and attaching monetary values to losses in natural capital. The revisionist case, from within economics, begins with the observation that changes in wealth are only recorded in the national income figures *when they pass through the market*. This leaves changes in the stock of environmental capital outside the basis of calculation. There are two aspects of the 'conventional' approach to environmental assets that are criticised:

1. Conventional economic accounting frequently regards the destruction of resources as a contribution to wealth. For example, the destruction of tropical forests is recorded as an increase in Gross Domestic Product (GDP) in the national accounts.

2. At the same time, the cost of making good any environmental damage is recorded as a positive contribution to GDP. The costs of reducing pollution, for example, and of measures to prevent pollution, are registered as contributions to economic growth.

However, these two propositions lead to a paradox. If the costs of environmental redress are counted as a contribution to economic wealth creation, then logically pollution itself should be recorded as a cost against economic growth. We know, after all, at the intuitive level, that pollution (and other forms of resource degradation and depletion) actually reduce the value of the environment. Economics, in its conventional form, seems unable to recognize this fact.

Following our intuitive logic, nevertheless, carries problems. If we count pollution as a 'cost' against natural capital, we must also argue that developed countries, which pay a considerable amount for environmental abatement, are 'poorer' as a consequence, although pollution abatement is clearly a benefit.

They are paying, in effect, to maintain the quality of their natural capital stock. Presumably countries which are unable to pay the price of environmental abatement, or choose not to do so (including most developing countries), are therefore 'richer' than they would have been had they paid for the costs of abatement. This appears to lack logic, and to run counter to the experience of the real world, in which resource management in developing countries is increasingly unsustainable.

There is another problem, too. If we measure changes in environmental quality, such as air pollution, land degradation and the loss of species, how do we do it? There are two obvious answers which economists give to this question. First, we can measure the reduction in environmental quality by the cost of restoration. Second, we can calculate how much consumers are prepared to spend to maintain environmental quality (contingent valuation). In practice there are problems with both answers. Some environments, like that of the African Sahel for example, cannot be restored to their former quality, even if we knew precisely what it was. In addition, contingent valuation, for its part, is a very inadequate tool for measuring the value of environments to groups of people, as we shall see later.

It is clear, then, that problems with the definition, methodology and techniques of environmental economics, strike at the heart of the debate surrounding sustainable development. It is all the more important, then, that we are clear about the territory on which we seek to argue. Environmental economists like Pearce have advanced thinking within economics in a number of important ways, all of which retain importance for other social sciences such as sociology.

- a. They recognize that changes in natural capital stocks involve both costs and benefits. Unlike most conventional economics, environmental values are not determined by income flows alone, but by the stock of (natural) capital. Wetlands, for example, are converted, through drainage, for agricultural use.

Similarly, the open seas are used as sinks for the disposal of wastes (Pearce et al. 1989: 5).

- b. There is also a recognition that ‘non-use’ values are important, as well as ‘use-values’. Environmental values include ‘existence values’ which can be arrived at notionally, and a (theoretical) price attached to them.
- c. Environmental economics also recognizes uncertainty and irreversibility as principles in resource conservation, and as reasons for conserving the stock of natural capital, even if it is not ‘optimal’ (Pearce et al. 1989: 7).
- d. It is also recognised that ‘optimality’ refers only to economic uses and efficiency, and effectively excludes any social goals for conserving resources. (This does not prevent Pearce from encountering a problem in ‘non-efficiency’ goals, in that they might “be better served by converting natural capital into man-made capital...” [Pearce 1989: 7].)

The difficulty in fully incorporating social goals within the analysis of optimal resource utilization is, paradoxically, demonstrated by the principle which is used to defend it. Pearce declares that *we know natural capital is valuable because people are willing to pay to preserve it...*

A simple conceptual basis for estimating a benefit is to find out what people are willing to pay to secure it. Thus, if we have an environmental asset and there is the possibility of increasing its size, a measure of the economic value of the increase in size will be the sums that people are willing to pay to ensure that the asset is obtained. *Whether there is an actual market in the asset or not is not of great relevance. We can still find out what people would pay if only there were a market* (Pearce 1989: 8).

It is clear from the foregoing discussion that environmental economists like Pearce have proved able to push back the boundaries of the Neo-Classical paradigm, and to accommodate environmental concerns in their analysis. However, this accommodation has come at a price. Essentially, the analysis has widened the bounds of consumer choice, enabling the individual’s preferences to be expressed. In the next section we will examine the limitations of this approach. For the moment we need only register the fact that environmental economics leaves the Neo-Classical paradigm intact. Market values, or imputed market values, can be used to provide a fuller account of natural capital, and the benefits of sustainability. In seeking sustainable development, Pearce notes that “...*what constitutes development, and the time horizon to be adopted, are both ethically and practically determined*” Pearce 1989: 3). This observation should lead us to consider not only the political context in which decisions are taken about the environment, but also the circumstances under which environmental economics is used to help facilitate decisions. If ‘development’ is subject to value judgements, and lies outside the compass of objective science, why is environmental economics not subject to the same value judgements? Is develop-

ment to be subject to value judgements, but not the paradigm within which it is understood...?

THE LIMITATIONS OF ENVIRONMENTAL ECONOMICS: PARADIGM LOST

We have argued that environmental economics has succeeded in enlarging the Neo-Classical paradigm, with important consequences for the way in which the economic values of environmental impacts are calculated. It now remains to examine the assumptions of the paradigm itself.

The first problem with the paradigm is that it fails to recognize that monetary values are *always* exchange values, not use values. When Pearce refers to 'use benefits' and 'use values' he is referring to exploitation values. Use values do not attract monetary values because they exist outside the framework of market pricing. Environmental economists will argue that this is no impediment to using monetary values for them, and that the way we arrive at these prices is a matter of methodological refinement. Economics has developed techniques to impute such values, in the form of shadow pricing, and contingent valuation. There are no barriers to attaching prices on environmental goods and services, it will be objected – merely misplaced ideological objections.

This is to miss the point. *Economists cannot value what the environment is worth; merely its value in monetary terms.* As Oscar Wilde maintained, it is possible to find a price for everything and the value of nothing. The point is that monetary valuations do not capture the worth of the environment to different groups of people. Giving increased value to environmental assets is not simply a question of attaching larger figures to assets in the course of cost-benefit analysis. As Elson and Redclift (1992) demonstrate, this means attaching *cardinal valuations* through monetary measures, such as prices and taxes, when *ordinal valuations* (more/less valuable) may be more appropriate, and useful. We can undertake valuation by establishing the thresholds that operate for real people in the real world, rather than through monetization.

Let us use women's labour in the forest communities of the developing world as an example. Men and women value the environment differently because of the different use they make of it. The value women attach to the environment is usually invisible to others because the use they make of it is not subject to market values. Nevertheless women's activities, such as collecting firewood, gathering plants and fetching water, for both use and exchange, are vital for the sustainability of poor rural households. Many of the environmental goods that women collect, and households use, are 'free goods' in nature but vitally important for survival. Elson and Redclift (1992) note that one tribal community in Andhra Pradesh could identify one hundred and sixty nine different items of consumption, drawn from forest and bush land. Environmental accounting is ill-equipped

to measure the real value of the environment to women, when these use values are part of direct household provisioning.

The second problem with the paradigm is that it claims 'value neutrality', when environmental economics itself expresses the preferences and biases of the society in which it was developed. Values are a reflection of specific social systems, and express degrees of commitment to a specific social order, the order which espouses them. The values we place on nature, not surprisingly, reflect our priorities, not *the value of nature itself*. Nature is a mirror to our system of values, and in seeking monetary values for environmental goods and services we are merely 'naturalizing' our concern with market values.

Environmental economics provides a good illustration of the way we seek to construct the environment socially, through the mechanism of monetary valuation. Progress within the discipline aims to extend the paradigm, rather than to place it within its political and social context. Development projects, for example, such as large dams or irrigation schemes, are said to have 'environmental consequences', which environmental economics is well-placed to address.

This is to ignore the fact that development projects are socially created and socially implemented. They already internalize a view of nature, in their methodology and practices. They also seek to acquire legitimacy for the idea of projects – another instance of the way they are socially constructed. Development projects have already internalized a view of nature *from which environmental consequences themselves spring*. (In the same way ecological projects have internalized a position on society; but this is a still more difficult nut to crack!) What is at issue, then, is the appropriateness of environmental economics, which does not recognize its own relativism, in evaluating projects which are themselves an expression of specific values and interests in the social order.

There is a third area in which the Neo-Classical model can be faulted. It is that this model fails to recognise that *conventional economic analysis rests on a particular view of human nature and social relations*. It is important to establish the elements in this model of social relations which underlie the methodology of monetary valuation.

First, environmental economics sees social interaction as instrumental. That is, it is designed to maximize the individual's utility. As Hodgson points out, within environmental economics the tastes and preferences of individuals are considered a given (Hodgson 1992: 40).

Second, and related to this, environmental economics does not see social interaction as constituting value in its own right, because of the intrinsic value of human beings. Social interaction reveals the person as an 'object', surrounded by other 'objects', rather than a 'subject person' (in Max-Neef's phrase) able and willing to behave in ways that do not correspond to short-term economic advantage (Ekins and Max-Neef 1992). It is this failure to recognize human behaviour as culturally determined, and capable of a very wide range of variability, which cannot be easily married with the reductionism of economics.

The 'rational, individual calculator' beloved by economists sits uneasily in cultures other than those which helped to develop the paradigm in the first place. (And none too easily in many areas of behaviour within the developed countries.) This individual is supposed to make choices, expressed as market preferences, within a 'neutral' cultural context. Social and economic processes are never 'rational' in a universal sense: rationality is always culturally grounded. The calculations of individuals are not the same as individual calculations.

The calculations of individuals can be best understood as the outcome of social processes, peculiar (and unique) to every society. Concepts like the 'willingness to pay' concept, used by environmental economists, presuppose a set of cultural and ideological assumptions. Returning to the example we gave from Pearce earlier, although economists might look upon the North Sea as a 'waste sink resource', fishing communities in the area would view it otherwise, as would holidaymakers, or artists, or any individual or group of individuals.

The problem for modern environmental economics is compounded by a fourth set of issues, which concern the degree to which the 'individual, rational calculator' is fully appraised of the situation in which he is being asked to make choices. As Gleick puts it:

Modern economics relies heavily on the efficient market theory. Knowledge is assumed to flow freely from place to place. The people making important decisions are supposed to have access to more or less the same body of information... (Gleick 1988: 181)

These objections to the paradigm on which environmental economics is founded, suggest that environmental economics has a certain technical competency, in attaching monetary values to environmental benefits and losses, but that this competence, important though it is, should not be confused with an adequate basis for environmental valuation. Indeed, we need to look at environmental economics within a wider context, in which we consider it as a product of society itself.

Before considering where this leaves our discussion of sustainable development, we should examine the wider policy context from another perspective, which builds on the points above. We need to look at the environment within the context of the way science itself is socially constructed

THE ENVIRONMENT AND THE SOCIAL CONSTRUCTION OF SCIENCE

It is clear that the view we take of the environment is closely bound up with the view we take of science. Increasingly, environmental problems are looked upon as scientific problems, amenable to scientific 'answers'. An example is the current set of policy prescriptions surrounding global environmental changes,

particularly global warming. Since global warming is a 'scientific' problem, it is assumed that it must have a scientific solution. The 'greenhouse effect' is viewed as carrying social and economic implications, but scarcely as an 'effect', in that the human behaviour which underlies global warming is rarely considered. More attention is paid to ways of mitigating the effects of global warming, than to its causes in human behaviour and choices, the underlying social commitments which make up our daily lives.

Part of the problem with this approach is that the modes of inquiry in the natural sciences are themselves *social processes, into which crucial assumptions, choices, conventions and risks, are necessarily built*. Once we regard science as outside ourselves it becomes impossible to take responsibility for its consequences. And so it is with global warming: relegated to the sphere of 'consequences' we are able to avoid the environmental implications of our own behaviour, and that of our societies.

This process of disengagement from the consequences of our behaviour is well established in a variety of ways. The second World Conservation Strategy document *Caring for the Earth* (IUCN 1991), provides a useful example, in diagrammatic form, of the model through which we manage our resources (IUCN 1991: 76). The model portrays the way in which economic development, driven by fossil fuel resources, has taken society along a path which ignores the limits imposed by renewable solar energy (in all its forms). Instead our development model has channelled the material wealth which fossil hydrocarbons have helped to create, towards the creation of capital goods, themselves dependent on further fossil fuel exploitation. The model thus ensures a continued and spiralling demand for scarce and ultimately finite resources, which are fast contributing to global nemesis, by posing the ultimate, unsustainable, problem for the economies which consume them. Global warming, the loss of biodiversity, the problems associated with the 'ozone hole', and other global environmental changes, represent the ultimate 'externality', and point to problems in the growth model itself.

As *Caring for the Earth* points out, by concentrating investment on surplus value in order to maximize the accumulation of industrial capital, we have tended to neglect natural capital (environmental goods and services). Instead we have focused our support on the development of human capital, within a small intellectual elite, working within spheres of knowledge which are closely allied to new technologies and often wasteful resource uses.

This illustrates the lack of congruity between technological and scientific knowledge, and the social implications of using that knowledge in specific ways. Wherever we look – nuclear power, toxic wastes, pesticides, air pollution, water quality – we see examples of our failure to grasp the social implications of the scientific knowledge we possess, and the costs which are passed on to the environment. We know that environmental science cannot make political choices about the consequences of technology for the environment. At the same

time, environmental policy is nothing more than the formulation of one set of social and political choices, governing environmental uses, over another set of choices. It is hardly surprising that the discussion and practice of sustainable development is intimately linked to the social authority of our science and technology. In the North this authority is increasingly contested, especially by environmental groups and interested citizens. In the South it is frequently ignored, notably by development institutions, whose model of 'development' acknowledges no social authority but that of science. As we have argued, that is why development in the South is ultimately not socially and politically sustainable.

Where does this leave our discussion of sustainable development? It soon becomes clear that we cannot achieve more ecologically sustainable development without ensuring that it is also socially sustainable. We need to recognize, in fact, that our definition of what is ecologically sustainable answers to human purposes and needs as well as ecological parameters.

By the same token, we cannot achieve more socially sustainable development in a way that effectively excludes ecological factors from consideration. If the model for better environmental policy merely 'adds on' environmental considerations to existing models it is not equipped to provide a long-term view. The strong sense of 'sustainable development' emphasizes the sustainability of the interrelationship between biological, economic and social systems, rather than that of the component parts. Each system involves elements – social 'needs', levels of production, biodiversity – which are subject to modification. It follows that any environmental social science that does not seek to rethink the development agenda is ill-equipped to address environmental problems.

CONCLUSION

We have argued that much of the writing on sustainable development takes its message from the natural sciences. In the past this has been a message of hope, as people have lived longer, and consumed more goods, especially in the North. Sustainable development, in this tradition, is about seeking consensus and agreement, in the belief that we can manage the contradictions of development better. Sustainable development, then, represents a renewal of Modernism.

A more critical perspective regards science as part of the problem, as well as the solution. It takes issue with the inevitability of economic growth, and its consequences for the aptly-named 'hydrocarbon society'. It argues that the limits placed on development, are not merely limits in the resources available to us, as was believed in the 1970s. The limits today are 'external limits' too, represented most vividly by the challenge of global warming. The more critical perspective suggests that environmental management, as a strategy to cope with the externalities of the development model, is found wanting. Modern economics has

played a major role in the unsustainable development that characterizes North and South. For the pursuit of growth, and neglect of its ecological consequences, has its roots in the classical paradigm which informed both market economies and state socialist ones.

If we are to meet the problems presented by imminent global nemesis, we need to go beyond the assertion that such problems are themselves socially-constructed. We need to embrace a realist position, while recognizing and acknowledging the relativism of our values and our policy instruments. The challenge is to develop a 'third view', which enables us to assume responsibility for our actions, while exploring the need to change our underlying social commitments. We need to develop a broader and deeper foundation for the formulation of a realist policy agenda, and one which, unlike environmental economics, does not exclude 'interests' from its calculus. Sustainable development answers to problems initiated in the north, with our 'global' development model. We have also understood sustainable development within a cultural context of our own – *our* view of nature, *our* problems with science and technology, *our* confidence in the benefits of economic growth. But sustainable development has become a 'global' project, and our capacity to find solutions is seriously reduced by our inability to recognize we are the prisoners of our history. The global project is being developed in ignorance of the intellectual history which contributed to global environmental problems in the first place and made us poorly equipped to deal with them. It is time to redraw the frontiers of knowledge and belief, and to recognize that they both have a part to play in avoiding global nemesis.

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Environmental Philosophy: A Bibliography

In 1989 the *Centre for Philosophy and Public Affairs*, University of St. Andrews, completed a report on Environmental Philosophy commissioned by the *UK Nature Conservancy Council*. The following year the *Centre* and the *NCC* co-published a series of booklets on the same theme in which material from the earlier report was revised and updated.

The series is about to go out of print but a few copies of the third booklet: *Environmental Philosophy, A Bibliography* are still available. This runs to 75 pages and contains (1) a section of key books and articles, (2) a comprehensive and thematic listing of recent work in environmental ethics, philosophy and policy, and (3) a description of research centres, societies and educational programmes concerned with environmental philosophy.

Copies of this work are available at the discounted price of £3.00 (UK) and £4.00 (Australia/Canada/USA) – these prices being *inclusive* of post and packing. Orders accompanied by UK sterling or US dollar cheques for the relevant sum (or its US equivalent) should be sent to John Haldane, Centre for Philosophy and Public Affairs, University of St. Andrews, Fife KY16 9AL, UK.