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Sustainable development: modern elixir or sack dress?

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Summary

Over the past two decades 'sustainable development' has grown from a term expressing concern for social and environmental problems to an international craze. The concept purportedly offers cures for the many and diverse problems afflicting modern society, and because it involves an integrated approach, the sustainable development fashion has resulted in much-needed collaboration between specialists from diverse backgrounds, to work on the complex problems involved in the interactions between society and environment. However, the term is rarely defined, and, being stylish and institutionalized, the 'sustainability movement' now directs the way much science and policy for biological conservation and development are designed, executed and evaluated. Occult, but basic, in nearly all discourses of sustainable development is the axiom of continual growth; and, in most cases, instead of offering a true solution to contemporary problems, the term is a source of confusion, contention and even deception. It is imperative that the use of this term, especially in multidisciplinary, international and scientific spheres, be based on clear understanding of its meaning, and that the issue of growth and the concept of limits be clearly incorporated into the core of the discussion.

Keywords: continual growth, magic, policy, revitalization, science, society, taboo

Introduction

A logical opening to this essay might be a witticism about sustainably developing the discussion on 'sustainable development.' As numerous authors have explained, during the last few years the subject of sustainability has become a growth industry (Orr 1994; Dowie 1995); Lélé and Norgaard (1996) even refer to 'sustainability science.' Yet, confusion and contention surrounding the issue only compound. The beguiling two-word phrase, 'sustainable development', used in the *World Conservation Strategy* (WCS 1980), by the World Commission on Environment and Development ('Brundtland Commission') (WCED 1987), and again in *Caring for the Earth* (IUCN/UNDP/WWF 1991), was employed to express profound concern for both humanity and our environment (Westing 1996). That this apprehension is no mere product of doomsday advocates has been revealed repeatedly over the last two decades, for example, by an unprecedented joint report, expressed in austere terms, by two august scientific bodies: namely the Royal Society of London and the US National Academy of Sciences (1992). Even the illustrious weekly *Nature* has recently found relevance in dedicating space to global policy problems such as the fisheries' crisis (e.g., Masood 1997). In an effort to cure base maladies of contemporary society and our environment, 'sustainable development' (together with its countless variants) has been prescribed in ever-stronger doses.

Use of the term

The wide use of the term has given rise to a complex and interminable polemic in a variety of disciplines (e.g., Tisdell 1988; Nigh 1989; Shiva 1992; Levin 1993; Gatto 1995; Leff 1996). Not only are there few authors who use the expression in the same way and there is a multitude writing about sustainable development today, but specialists from different fields, as well as different academic and cultural backgrounds, focus on divergent concepts, often completely ignoring essential elements and points of view of other disciplines (Lélé & Norgaard 1996). Ecologists are preoccupied with the long-term persistence of biotic resources and the continuation of ecological processes; resource managers focus on maintaining long-term yields; social workers emphasize socio-economic development; economists do cost-benefit analyses and look for 'minimax' solutions to the conundrum; and business leaders talk about sustainable companies and the 'greening' of industry (Tisdell 1988; Hardoy *et al*. 1992; Solow 1992; Levin 1993; Belz & Ugelow 1994; Gatto 1995). For example, it is common for ecologists to begin a discussion with the phrase 'sustainable development', but very quickly unlink the two words and continue addressing just the issue of 'sustainable' in terms of environmental assets (see essays in Levin 1993; Rosenberg *et al*. 1993; Carpenter 1994). On the other hand, businessmen attach great importance to material wealth and 'sustainable industrial action' (Belz & Ugelow 1994). The concept of sustainable development includes much, much more than either the indefinite availability of environmental assets or long-term business success (Robinson 1993*a*, *b*; Lélé & Norgaard 1996).

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'Sustainable development' is not just fashionable, it has become institutionalized; and among the countless examples are numerous commissions and organizations which define policy for biological conservation, development, science, technology and society. These include: the 'Commission for Sustainable Development' which resulted from the 1992 United Nations Conference on Environment and Development; the 'World Commission on Forests and Sustainable Development'; the 'International Institute for Sustainable Development' in Winnipeg, Manitoba; the 'President's Council on Sustainable Development' in Washington, DC; the 'Centro de Educación y Capacitación para el Desarrollo Sustentable' (Centre for Education and Training for Sustainable Development) in Mexico City; the Alianza Centro Americana para el Desarrollo Sostenible (Central American Alliance for Sustainable Development); the 'Ministerio de Desarrollo Sostenible y Medio Ambiente' in La Paz, Bolivia; and the 'World Business Council for Sustainable Development' in Switzerland. This is to say nothing of neoterized academic departments, positions and curricula with the inclusion of the term (e.g., at institutes in Vienna, Austria and Canberra, Australia; as well as at the universities of Harvard, Idaho, Maryland and Michigan); or academic journals born of this 'matriarch' (e.g., *Energy for Sustainable Development*; *Journal of Sustainable Forestry*; *Journal of Sustainable Development and World Ecology*); or private companies that find it useful to affix the term to their banners (e.g., 'Sustainable Tourism and Natural Resource Development Services, Applied Technology and Management', Gainesville, Florida). In addition, there is a fast-growing library of official, governmental and international documents and policy statements, professing that sustainable development will solve the woes of society and its dwindling resource base (e.g., IUCN/UNDP/WWF 1991; González 1996). Today, most socially-conscious ecologists or conservationists feel obliged to disperse the phrase liberally throughout their communications, while those specializing on improving the human lot, but not wanting to forget the environment, pay homage to the same expression. This is not to mention the speed with which the term has been adopted by politicians and investors. A general perusal of recent literature related to the condition and improvement of environmental and/or human situations, as well as to the interactions between humans and their environment, reveals 'sustainable' being used in conjunction with a wide sweep of concepts and expressions, each made consequential by this fashionable modifier. The resulting phrases include 'sustainable biosphere', 'sustainable ecology', 'sustainable equilibrium', 'sustainable environment', 'sustainable landscape', 'sustainable pest management', 'sustainable mountain development', 'sustainable upland management', 'sustainable tourism', 'sustainable transportation', 'sustainable urban transport system', 'sustainable enterprise', 'sustainable communities', 'sustainable society', 'US sustainability', 'sustainable way of life', 'sustainable improvement in the quality of living', 'sustainable economic growth', 'sustainable progress', 'sustainable future', 'sustainable planet' and 'sustainable world'. Books and publishing companies active in the alternative, critical, academic press (e.g., Edward Elgar Publishing, Island Press, Kumarian Press and Zed Books) espouse the term with a profusion of new titles on the subject; and even critics of the sustainability mind-set regularly end up conforming to the use of these infectious words as parts of their arguments (e.g., Robinson 1993*a*, *b*; Orr 1994). At times, use of the term is redundant, hence rendered absurd, in attempts to accentuate it: for example, instructions for proposals to the US Agency for International Development (US AID), as well as reviews of global ecosystems (Sherman 1994) explain the need to 'manage … for sustainable harvests over the long term' and 'indicate clearly in the proposal how long-term sustainability is to be achieved', implying that there is also *short-term* sustainability.

From an anthropologist's point of view, social events surrounding the 'sustainable development' discussion show all the signs of a 'revitalization movement', typified by 'deliberate, organized attempts by some members of a society to construct a more satisfying culture by rapid acceptance of a pattern of multiple innovations', in response to disorganizing effects related to environmental and social changes (Wallace 1970; Kehoe 1989). Fervent discussion about human aspirations, dignity, morals, values, and conquering of an uncertain future, are regular elements of the debate on sustainable development (IUCN/UNDP/WWF 1991; essays in Levin 1993; Robinson 1993*a*, *b*; Emberson-Bain 1994; Gerlach & Bengston 1994; Orr 1994; Lélé & Norgaard 1996; Mangel *et al*. 1996). There is an uncanny similarity between this discourse and the 1890 'Ghost Dance of the Sioux', the classic revitalization movement, in which the dancers believed that simply wearing a 'ghost shirt' would make them invincible to bullets (Kehoe 1989). In the contemporary discourse, the mere use of the term 'sustainable development' seems to bestow miraculous powers on the user to solve daunting environmental and social dilemmas. With sustainable development so widely used, well known and influential, not to mention that it has the airs of a religious movement, an acronym is long overdue: '*susdev*'.

Undeniably, the uproar over the phrase has been an impetus in concentrating the attentions of many and diverse people onto grave global problems. Disparate professionals, such as development specialists, ecologists, economists and industrialists are finally concurring to meet the challenge together; for environmental and social problems freely cross and include most disciplines. However, despite this advance, there are dissenting voices amidst the brouhaha: instead of modifying and streamlining actions for improving the human situation and assuring the health of our environment, this best-known product of the Brundtland Commission has taken on a life of its own, and become a diversionary monster (Brennan 1992; Hardin 1993; Ludwig *et al*. 1993; Emberson-Bain 1994; Dowie 1995). The apparent interdisciplinary, inter-institutional, and international concordance over the importance of *susdev* is in fact masking fundamental differ-

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ences in the use and understanding of the concept (Leff 1996). All puns aside: is 'sustainable development' a sustainable, *objective*, *scientific* term and is it a sustainable *scientific* procedure (Lélé & Norgaard 1996)?

Definitions

The foremost and most obvious problem is that the use of *susdev* is hardly ever accompanied by a clear or basic definition of either 'sustainable' or 'development', and this gives rise to immense confusion. What is being sustained or developed? For whom? By what means? Why does it need to be developed? Why does it need to be sustained? (Shiva & Bandhyopadhyay 1986; Bodley 1988; Tisdell 1988; Estava 1992; Hardoy *et al*. 1992; Shiva 1992; Isbister 1993; Mangel *et al*. 1993; Robinson 1993*a*; Belz & Ugelow 1994; Emberson-Bain 1994; Orr 1994; Dowie 1995; Korten 1995; Moir & Mowrer 1995; Frazier 1996*a*, *b*; Leff 1996). *Susdev* defined in environmental terms is very different from *susdev* focused on contemporary economic or industrial values; *susdev* designed for the wealthy is unlikely to resemble *susdev* for the poor. Many authors who diagnose *susdev* make estimates of the number of interpretations in use. But that is like counting clouds; the point is, there are innumerable ways to understand the term. Without a comprehensive definition, acceptable to a broad span of professions and phrased in measurable terms, any quest for the conceptual essence of 'sustainability' or the unequivocal signification of 'development' is certain to divert yet more resources, efforts and attention from true and pressing problems.

Several key postulates must be clarified to avoid blindly following into the same maze. (1) 'Outside of a few meteors and spaceships, the Earth is a closed chemical system, in which various reactions including those that maintain life are fueled by sunlight' (Schlesinger 1991, p. ix). (2) From within this essentially-finite system, vast, unmeasurable quantities of diverse materials and processes (both living and non-living, complex and simple) are vital to human life, society and culture. (3) Most of these materials and processes (henceforth 'resources') occur independently of human actions. (4) Nonetheless, human activities affect (and even determine) the availability of certain materials and the functioning of certain processes. (5) The accessibility and distribution of resources is unequal, in both time and space. (6) Human access to resources is unequal and depends on both human and non-human factors. (7) The accumulation and control of resources by humans creates material wealth and political power. (8) The entire complex of the above relationships is highly dynamic, in both time and space, involving many unmeasured and unknown factors (Carpenter 1994).

In order to decipher *susdev*, it is crucial to bear in mind that 'development' is the noun, and 'sustainable' is the adjectival modifier. 'Development' is the act of progressing or developing; it is synonymous with 'expansion' or 'growth'. The term derives from 'des', meaning having a negative or reversing force, and 'envelope', meaning to wrap up, cover, or enclose: hence, 'develop' concerns the removing of an envelope or a constraint.

Clearly, human individuals and societies have many facets, tangible and intangible, which may grow and expand, and when applied to human beings and their societies, 'development' can mean many things, such as expanding or perfecting intellectual, spiritual and moral characteristics. Numerous authors have discussed these human traits in relation to *susdev* (e.g., IUCN/UNDP/WWF 1991; Golley *et al*. 1994; San Suu Kyi 1994). However, it would be naïve to pretend that this represents the consensus opinion. Worse, it would be completely irresponsible to ignore numerous key documents that have been fundamental in formulating policy on *susdev*, and which make it perfectly clear that central to the concept is growth in the production of goods and services for the world's human population.

Willers (1994) provided convincing arguments for this interpretation, by quoting directly from the Brundtland Report ('The international economy must speed up world growth while respecting environmental constraints.' 'A five to tenfold increase in manufacturing output will be needed.') and the Trilateral Commission ('The maxim of sustainable development is not "limits to growth"; it is "the growth of limits".'), as well as writings of US President Clinton and Vice-President Gore. Willers (1994) and Dowie (1995) further elucidated the political import of major transnational corporations in forming policy on 'sustainable development', for although routinely concealed from public view, they constitute the major (or only) presence on national and international committees dedicated to this goal. What is remarkable is that these same corporations are widely recognized for their continual, repeated assaults on both the environment and society, through their forms of exploitation, manufacturing, pollution, and other commercial activities. The fact that corporations and other international agencies function, compete and grow, essentially above the laws of any sovereign nation, is a crux for both biological conservation and development, and obviously also for *susdev* (Brennan 1992; Shiva 1992; Mitroff & Bennis 1993; Emberson-Bain 1994; Dowie 1995; Korten 1995).

Hence, in the present context the contemporary usage of 'developed' is tightly linked with the concept of 'industrialized' or 'modernized', where the idea of 'progress' is tacit. Indeed, these terms are frequently used as synonyms. The definition of *susdev* used in the *World Conservation Strategy* (WCS 1980) is typical: 'satisfy human needs and improve the quality of human life'. Quality of human life is routinely measured in terms of access to, and possession of, tangible objects, particularly manufactured goods. Adherence to the canon of growth could not be clearer than in some of the more noble attempts to identify and solve base problems of social inequality, poverty and resource distribution. For example, a United Nations Development Programme (UNDP) 1995 report defines human development as 'a

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process of *enlarging* people's choices' (emphasis added; ul Haq 1995, p. 11). The following year, with no less important a mission, the UNDP report states that 'Short-term advances in human development are possible – but they will not be sustainable without further growth.' (ul Haq & Jolly 1996, p. 5). The context makes clear that 'growth' refers to the production and distribution of goods and services, especially through industry and manufactured goods.

Consequently, the word 'development', as commonly used, presupposes that those processes of social change ('progress') put into motion with the development of nation states, and associated especially with the industrial and post-industrial revolutions, are the necessary and natural outcome of human liberation from the constraints of 'primitive' traditional cultures which are 'dependent on nature' (Shiva & Bandhyopadhyay 1986; Bodley 1988, 1990; Bates & Plog 1991; Shiva 1992; Emberson-Bain 1994). The basic premise is that 'modern' human societies have been 'freed' from the limitations of the geochemical and biological processes, which restrain other forms of life on the planet (Bodley 1988).

The word 'sustainable', which is derived from the verb 'to sustain', refers to holding up, supporting, supplying or providing for. It can refer to maintaining processes, as well as both physical and conceptual entities. Basic to the term is the concept of continuity, maintaining something indefinitely.

When the two words are used in conjunction, 'sustainable development' becomes the mantra of diverse camps, namely those concerned with the fate of 'natural resources', 'biodiversity', and the condition of 'the environment', as well as those preoccupied with 'socio-economic progress', 'eradication of poverty', 'human rights', and other issues of human well-being. Until recently, the people in these distinct camps rarely communicated, and commonly were at loggerheads. However, it could not be clearer that abuses to both human rights and to the environment have direct and powerful links (Bodley 1988, 1990; Clay 1988; Frazier 1990; Hardoy *et al*. 1992; LaMarch & Scheer 1992; Shiva 1992; Durning 1993; Emberson-Bain 1994; Gerlach & Bengston 1994; Dowie 1995; Gadgil & Guha 1995), and with *susdev* there is one expression that both sides can share in working towards a common, although complex, goal.

The rich and the poor

To a great extent, the essence of *susdev* is to assist the poor in acquiring greater access to resources, to facilitate their economic, social and political evolution, so that they will not be so miserable. Ideally, but often not the case, this should translate to *enabling* the poor to develop, not to develop the poor, e.g., as a source of labour or as human capital to be used in the enterprises of others (Bodley 1988, 1990; Clark 1990; Hardoy *et al*. 1992; ul Haq 1995). Although the concept of 'convergence' has been alluded to in some sectors, which indicates providing more for the poor and less for the rich, this idea clearly does not have much of a following among *susdev* policy-makers. Indeed, there is an implicit understanding that those who have reached a certain level of material and political wealth must at least maintain their *status quo* (IUCN/UNDP/WWF 1991); their situation must not be degraded, for clearly this would *not* be development to them. In short, *susdev* pretends to eradicate the poverty of the poor, but to preserve, at least, the status of the non-poor, in other words to keep the rich rich (Hardoy *et al*. 1992; Isbister 1993; Leff 1996).

In order for the poor to progress, they will need access to far more resources than they now have. Consider the *extremes* of poverty: of the world's estimated population of 5.5×10^9, a quarter does not even have potable water, 36% have no basic sanitary conditions, and 27% are illiterate (Tolba *et al*. 1993). A vastly unequal share of women are tallied in these general indices of poverty (ul Haq 1995), and although 'the poor' may be defined in many ways, regardless of the definition, they are in the majority (Estava 1992; Hardoy *et al*. 1992; Isbister 1993; Tolba *et al*. 1993; ul Haq 1995; ul Haq & Jolly 1996). Any increase in their share of resources implies a colossal change in accessibility as well as in processes of distribution and allocation. However, material reserves are finite; consequently, a major change in allocation will mean increasing resources in some places while *limiting* or *decreasing* them in others (Shiva 1992).

But who, least of all the rich and powerful, are wilfully going to relinquish access to resources, and purposefully surrender political power? Helping, or even sharing, is one thing, but self-debilitation is quite another (Gadgil & Guha 1995). It is worth clarifying that in relative terms of the world's population as a whole, 'the rich' include nearly all of us who read this journal.

There are obviously not just rich and poor people, or countries, but instead a broad, complex continuum. Nonetheless, it is critical to understand that the vast majority of the world's poor occupy the 'Third World', or 'less developed/industrialized', or 'lower income' nations, while most of the world's rich inhabit the 'First World', or 'industrialized' countries. However, this division is in no way complete or absolute; for example, the poor of the 'First World,' are often more miserable than their 'Third World' counterparts (Sklar 1980; Schwartz-Nobel 1981); the situation of indigenous peoples (the 'Fourth World') existing on conquered lands of both the 'First World' and the 'Third World' further elucidates this contrast (Bodley 1988; Gadgil & Guha 1995). On the other hand, the wealthy living in poor countries are moneyed by both national and global standards, and their interest in maintaining their affluence is generally no less than that of the wealthy living in the 'First World' (Sklar 1980; Bodley 1990; Hardoy *et al*. 1992; Isbister 1993; Gadgil & Guha 1995; Korten 1995; Painter & Durham 1995; ul Haq & Jolly 1996).

Demography, consumption and development

Nearly all 'Third World' countries, where the bulk of humanity is found, have broad-based demographic pyramids;

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on average more than 36% of their populations are under 15 years of age (Tolba *et al*. 1993). In simple terms this means that during the next decade and a half, without any further reproduction, more than a third of the present-day population, if it survives, will reach adulthood; these thousands of millions of people will be searching for resources and a means of livelihood to match their adult needs and expectations (Pinstrup-Andersen & Pandya-Lord, 1996). Simply providing basics, such as water, food, shelter, health, elementary education, security and peace, for the new additions to the adult population will cause tremendous strains on existing patterns and rates of consumption and processes of resource distribution, to say nothing of waste production and disposal, as well as global contamination. By analogy, the water level is now well above the chin, and it is rising swiftly.

If the planet had a numerically constant human population, the problem would be difficult enough, but there is absolutely no reason to believe that the numbers of people will remain stable. *Homo sapiens* might better be defined by its reproductive activity than by its wisdom; the demographic data indicate that our numbers will continue to expand rapidly for several decades; some 97% of this increase will occur in 'Third World' countries. Estimates are that by the year 2050 the world population of today will have doubled (Tolba *et al*. 1993). All of these people will need basic resources, to say nothing of a 'developed' life style. The tide is not even half in!

But simple head counts are only a part of the story, a part routinely emphasized by 'Neo-Maltusians' and authors from industrialized countries (essays in Levin 1993; Golley *et al*. 1994; citations in Willers 1994; Mangel *et al*. 1996), but vigorously repudiated by critics from the 'Third World' and defenders of women's rights (Shiva 1992; Emberson-Bain 1994; Gadgil & Guha 1995; Richter 1996). So-called 'developed', arguably '*over*developed', societies are dependent on seemingly perpetual and limitless (if not ever-increasing) sources of energy and materials. For example, a common pronouncement is that only 20% of the world's people, mainly those from *over*developed nations, consume 80% of global resources and produce 80% of the global contamination. Given this relationship, in terms of consumption patterns, sixteen 'Third Worlders' are equivalent to only one 'First Worlder'. However, considering that mortality in the 'Third World' is considerably higher than in the 'First World' (Tolba *et al*. 1993), the rough equivalents in terms of resource consumption would be more than 20 infants from *under*developed countries for every one from the *over*developed world.

Per capita rates of resource use snowball with socio-economic development and modernization. Were undeveloped societies to rise up economically and become developed (or perhaps even overdeveloped, as are the Group of Seven, namely Canada, France, Germany, Italy, Japan, UK, and USA), their requirements for resources and energy would be tremendous, greatly outstripping the demands of the present-day 'developed nations'. Of particular concern are vast, irreversible modifications to the living environment, notably massive extinctions and disruptions to 'ecosystem services'; the consumption of non-renewable resources, such as fossil fuels; the production of wastes, particularly those which have long-term, regional or global impacts; and the mutation of biogeochemical processes, such as thermal characteristics of the atmosphere and the carbon cycle (Schlesinger 1991). Clearly, a world development which involved these sorts of changes would alter the availability of resources for today's economically and politically powerful, and it is difficult to imagine a simple, peaceful transition in social and economic processes which would enable such an alteration in resource allocation (Bodley 1988, 1990; Hardoy *et al*. 1992; Brown 1993; Isbister 1993; Robinson 1993*a*; Gadgil & Guha 1995).

In other words, as with any process, development does not occur in a vacuum; it takes place in relation to other complementary and competing activities (Hardoy *et al*. 1992; Shiva 1992; Isbister 1993; Moir & Mowrer 1995; Lélé & Norgaard 1996). Unlimited development, everywhere, all the time, may be possible under certain theological or philosophical or mythical constructs. Shiva (1992) is very clear: the growth of affluence results in the growth of poverty; the growth of knowledge results in the growth of ignorance. Even without these philosophical considerations, within a finite system, and measured with unambiguous material units, development in one locus will precipitate a reduction of development in another, for the provisioning of goods and services to one population ultimately limits their availability to others. The concept of development where everyone grows and no one loses, is not unlike the miracle of the Sermon on the Mount: if we just knew how to do it, we could arrange, with limited resources, for everyone, no matter how many or how hungry (or how greedy), to have enough and be satisfied. However, until the facilities of an experienced miracle-maker are with us, it is patently impossible that our contemporary socio-economic systems are going to be able to keep everyone satisfied. Those who preach unlimited economic growth, while 'externalizing' accountability of environmental assets and ignoring 'environmental deficits', the disciples of 'economic imperialism', who reduce *all* values to monetary units, are *not* post-modern 'messiahs' (Rappaport 1984; Bodley 1990; Shiva 1992; Brown 1993; Durning 1993; Hall 1993; Colvin 1994; Orr 1994; San Suu Kyi 1994; Sherman 1994; Dowie 1995; Korten 1995; Lélé & Norgaard 1996). Even when environmental costs are not externalized, the conceptual transformation of nature, together with human beings, into economic capital is an ideological sleight of hand, giving unlimited economic growth and resource exploitation a modernistic, socially acceptable image (Leff 1996).

Sustaining growth

To integrate the concept of sustainability, no matter how vaguely defined, into this discussion of development can only further complicate an already convoluted situation. In the present context, there appear to be at least three broad interpretations of 'sustainable': essentially preserving a *status*

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quo; maintaining certain processes functioning; and assuring inter-generational equity in access to resources. The last two interpretations accept resource substitutions. Thus, if unicorn horn were no longer available, *susdev* could continue by replacing it with rhinoceros horn. However, many authors are unwilling to consider substitutions as consistent with sustainability (e.g., Gatto 1995). Certainly rhino horn could never be completely equivalent to unicorn horn and, if substitution were acceptable, what would be sustained would be the satisfaction of a demand, not a resource; once rhino horn became unavailable, it in turn would have to be substituted, perhaps with okapi horn.

In regard to *maintaining* either the *status quo* or the functioning of certain processes, there is a certain basic contradiction. It would be very difficult to argue that any but the most traditional ('primitive') of societies have functioned in a sustainable way; simply being 'traditional', or non-industrial, does not guarantee the long-term continuity of a society and its resource base (*viz*. 'sustainability'; Adams & Smith 1977; Rappaport 1984; Lowe 1985; Bodley 1988, 1990; Redford 1990; Young 1991; Durning 1993; O'Hara *et al*. 1994; Painter & Durham 1995; Spoerl & Ravesloot 1995). Moreover, modern world fishery, forestry and agricultural practices (with very few exceptions) are outstanding examples of *dominant, unsustainable* technologies on which modern societies *depend* (Tompkins 1989; Bodley 1990; IUCN/UNDP/WWF 1991; Brennan 1992; Ludwig *et al*. 1993; Myers 1992; Brown 1993; Postel 1993; Emberson-Bain 1994; Sherman 1994; Fairlie 1995; Moir & Mowrer 1995; Masood 1997). This is not to mention modern industrial, transportation and consumption practices, with the concomitant production of contaminants and gross environmental perturbation (Royal Society of London & the US National Academy of Sciences 1992; IUCN/UNDP/WWF 1991; Tolba *et al*. 1993; Dowie 1995).

The conundrum simply stated is: the contemporary mode of development, measured in terms of resource consumption and environmental perturbation, which largely benefits a minority of the world's population, is untenable as a sustainable strategy. Just to *retain* present levels of material wealth and comfort *for but 20%* of the world population, major changes in human behaviours, attitudes, and especially consumption patterns, are imperative: this means *redeveloping* modern society (Royal Society of London & the US National Academy of Sciences 1992; Brown 1993; Postel 1993; Robinson 1993*a;* Dowie 1995). To propose extending the contemporary level of development, which is unsustainable, to an even greater proportion of the world's population is preposterous; it is part of the myth of continual, unlimited economic growth.

The pledge of equity

The aspiration for *inter*generational equity is unquestionably valid, yet there is an element of incongruity in the proposition. If we cannot resolve today's developmental and resource problems (Hardoy *et al*. 1992; Royal Society of London & the US National Academy of Sciences 1992; Brown 1993; Hall 1993; Isbister 1993; Ludwig *et al*. 1993; Postel 1993; Tolba *et al*. 1993), and cannot achieve *intra*generational fairness such as social equity between women and men (ul Haq 1995) or between the citizens of the same country (Sklar 1980; Schwartz-Nobel 1981; Bodley 1988; Gadgil & Guha 1995; Painter & Durham 1995; ul Haq & Jolly 1996), then how can we realistically contemplate resolving the much greater, and often *unknown*, problems of tomorrow? Focusing on *inter*generational equity just procrastinates dealing with critical issues which are upon us and need immediate attention. Since attaining *intra*generational equity requires immediate adjustments in power and wealth within the present generation (Hardoy *et al*. 1992; Isbister 1993; Robinson 1993*a;* Lélé & Norgaard 1996; Solow 1996), the sacrifices contemporary individuals would have to make can be avoided by deferring the equity issue to the future, when members of coming generations will have to make even greater sacrifices.

Uncertainty and sustainability

This leads to another trend which is evolving out of the *susdev* mêlée; the more erudite discourses of systems solutions involved in sustainability clarify that there are unknowns, and that these need to be taken into account. This consideration may seem obvious, but these comments are now so frequent and prominent that the uninitiated might assume that ignorance has become not only acceptable, but fashionable, at least when it is known as 'uncertainty' and included in theoretical treatises, economic equations and other trappings of academia and high intellect. Obviously, humanity must wrestle with uncertainty, but it must also be realized that if society cannot react appropriately on the basis of what *is* known (Ludwig *et al*. 1993; Rosenberg *et al*. 1993; Tolba *et al*. 1993; Fairlie 1995; Moir & Mowrer 1995; Masood 1997), there is meagre chance that it will be able to respond adequately when key factors are not only unknown, but uncontrolled. Some authors give the impression that by including a mention of 'uncertainty' they are free to offer a strategy for some form of 'sustainability'; however, rather than professing 'sustainability', it is more realiotic, and honest, for managers to address fully the complexities of uncertainity, notably by keeping a diversity of alternatives available in order to reduce overall risks (Moir & Mowrer 1995)

The persistent myth of maximum sustained yield

To a great extent, *susdev* is an attempt to revive the notion of maximum sustained yield (MSY). It is remarkable that 20 years ago, Larkin (1977) elegantly interred MSY by showing that, despite vast amounts of scientific information and theory, fisheries stocks were being consistently mismanaged and overexploited (see Tucker 1995 and Mangel *et al*. 1996, as well as references therein for detailed discussions of the

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conceptual and practical problems implicit in MSY). The attractiveness of MSY is the ideal of taking as much as possible of a resource (*maximum* yield), essentially forever (*sustained*), *and* having a scientific stamp of approval to do so. It is telling of human nature, and the contemporary belief in myths and magic (Botkin 1990; Egerton 1993; Ludwig 1993), that two decades after Larkin publicly buried the concept of MSY, Ludwig *et al*. (1993) were compelled to re-entomb the zombie, since the dominant current of thought on *susdev* reflects many of the basic premises, and problems, of MSY (essays in Levin 1993; Robinson 1993*a*; Gatto 1995; Leff 1996).

Development or undevelopment?

At another level, *susdev* is one more attempt to rejuvenate a common dream of *nearly* all humanity: to satisfy basic material and spiritual needs, to progress, to have security, and even to acquire power. Nevertheless, despite ever-accelerating economic growth and technological advancements during the last half-century, the numbers of acutely poor and malnourished only seem to grow, together with many other indicators of social destitution; and this applies to both the 'First World' and the 'Third World' (Sklar 1980; Schwartz-Nobel 1981; Tolba *et al*. 1993; Gadgil & Guha 1995; Painter & Durham 1995), to say nothing of the 'Fourth World' (Bodley 1988, 1990). More than a quarter of the world's people is experiencing increasing privation, and there is increasing polarization between rich and poor in most countries (ul Haq & Jolly 1996). A plethora of rationalizations for failed development schemes, increasing inequity, growing poverty and other ruinous human endeavours, has resulted in endless explanations, faces of blame, and justifications; but in the end, modernization, technological advancement and ever-more sophisticated theoretical constructs have not alleviated human suffering and poverty (Isbister 1993); the history of the 'Fourth World', the extermination of tribal societies, shows this with great clarity (Bodley 1988, 1990). Overdeveloped societies are wrestling with ever-greater maintenance costs, and many of them have precipitating indices of quality of life, with growing insecurity and dissatisfaction (Brown 1993; Kaplan 1994; ul Haq & Jolly 1996). As Isbister (1993, pp. 140, 172) explained: 'One by one, the fashionable answers proved wanting – in some cases because they ignored the reality of a much-too-complex world . . .'; 'Very little, it is now clear, is actually understood about economic development.' Linked to increased human misfortune, the world's environment (particularly in the 'Third World') has also paid a heavy price for much-lauded, but failed, development undertakings (Botkin 1990; Royal Society of London & the US National Academy of Sciences 1992; Brown 1993; Postel 1993; Tolba *et al*. 1993). Hence, 'developing' nation is generally a misnomer, or illusion, if not a deceit, for with few exceptions those countries which were underdeveloped when it became fashionable to discuss this issue, not only continue to be underdeveloped, but the level of development for the majority of the population is *worse* than before and environmental health has declined precipitously (Bodley 1990; Hardoy *et al*. 1992; Royal Society of London & the US National Academy of Sciences 1992; Brown 1993; Isbister 1993; Tolba *et al*. 1993). There can be no doubt about it: the statistics show that there have been widespread and consistent failures in contemporary development policies (Gadgil & Guha 1995; ul Haq & Jolly 1996).

Basic myths

A root of this dilemma is conceptual: the fundamental, and time-worn problem of refusing to accept that *Homo*, despite being *sapiens*, has limits. 'In almost every country, rich or poor, the predominant ethic is growth, not limits' (Isbister 1993, p. 219). This simply shows that nation-states, independent of their political systems, are characterized by not only political centralization and class-based societies, but also by having expansionist tendencies, particularly in regard to resources and territory (Bodley 1988). Clear proof of the cultural dominance of the growth concept is seen in seminal reports of the UNDP (e.g., ul Haq 1995; ul Haq & Jolly 1996), IUCN/UNDP/WWF (1991) and the proceedings of major international meetings (e.g., Carpenter 1994). Even professional societies, dedicated to biological conservation and equitable academic development in the tropics, proudly announce increases in their memberships and subscriptions, as an apparent goal on its own (e.g., Association for Tropical Biology, Inc. Letter to members, 8 October 1994). A profound and thorough evaluation of the sanctified doctrine of growth is long overdue, in nearly all sectors of nearly all of today's societies.

This interminable myth of unlimited growth may itself derive from another ancient tradition: dividing the world into 'Man and nature', in modern times this has been expressed by regarding ecology as primarily a 'subversive science'. Various specialists from diverse disciplines have argued that humans are components of ecosystems, that detaching people, conceptually, from their environment is senseless, and elevating 'Man' above 'nature' is not only arrogant but obtuse (Bodley 1988, 1990; Shiva 1992; Egerton 1993; McDonnell & Pickett 1993; Emberson-Bain 1994; Gerlach & Bengston 1994). 'In the long run the planet has the upper hand; in the short run humans act as if they do . . .' (Hall 1993). 'It is more appropriate to think of resources as managing humans than the converse . . .' (Ludwig *et al*. 1993; see also Mangel *et al*. 1996). To be useful, these appreciations must become common knowledge for all humanity, not just the forlorn cries of a few dissenting souls.

Conclusions

As mentioned above, it is usual for ecologists to discuss *susdev*, but limit their arguments to the question of sustainable use of living resources. Obviously, omitting the multifarious issues of development greatly simplifies the problem. Nonetheless, there is a tremendous controversy about just

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sustainable use, and it is not at all clear how to identify, evaluate or prescribe it (Freese 1994; Moir & Mowrer 1995; Tucker 1995; Mangel *et al*. 1996). One of the two extreme positions maintains that the alternatives are either 'use it or lose it'. The other camp argues that 'sustainable use' is just a deception for business as usual, characterized by uncontrolled, quick-return, profit-oriented exploitation, and therefore strict preservation of the species and its habitat is the only effective way to save it (Adams 1994; Hoyt 1994). In fact, either paradigm may be valid, depending on the situation: neither one is a panacea, or an ultimate truth, all the time, for all species, under all conditions (Robinson 1993*a*). However, it is telling that even the more circumscribed discussion about sustainable use, with virtually no consideration of development, is a long way from reaching consensus about operative questions, such as how to set and implement sustainable harvest limits, and how to evaluate when a species or ecosystem is being used in a truly sustainable manner (Freese 1994; Moir & Mowrer 1994; Tucker 1995; Mangel *et al*. 1996). Even for relatively well-known and 'resilient' taxa, it is necessary to treat any wildlife harvesting (*viz*. extraction) as a manipulative experiment, with adequate controls, replications and monitoring (Tucker 1995). After analysing various cases, Carpenter (1994) concluded that 'Ecology is unlikely to develop any simplified indicator of sustainability', while Moir and Mowrer (1995) stated 'the use of the word, sustainability, is to be distrusted.' Since sustainable use is a central pillar in the *susdev* construct, this shows just how frail the theoretical edifice for *susdev* is, and until the issue of *sususe* is adequately resolved, it is unlikely that there will be many major advances in resolving the debate that besets *susdev*.

Susdev has clearly had its useful side. By being enticed (or forced) to work together and take into account both issues of human well-being and the condition of the environment, developers, conservationists, economists, industrialists and policy makers have learned that their problems interact, often have the same, deep roots, and are extremely complex. To a great extent, the issues of both sustainability and development have their marrow in politics and the struggle for power (Shiva & Bandhyopadhyay 1986; Bodley 1988; Hardoy *et al*. 1992; Shiva 1992; Isbister 1993; Robinson 1993*a*; Emberson-Bain 1994; San Suu Kyi 1994; Dowie 1995; Lélé & Norgaard 1996). This is no news to the poor, but it is a critical appreciation for scientists and technocrats, who routinely treat politics and power struggles as taboos (Hardin 1978; Shiva 1992). Neither issue, the human welfare problem or caring for the environment, will be solved separately; they must be resolved in concert (Westing 1996). Although discourses on *susdev* are customarily developed by separate disciplinary groups, each working in isolation, there is a growing recognition that interdisciplinary approaches are imperative for a thorough and just resolution to this deluge of dilemmas (Sherman 1994; Lélé & Norgaard 1996; Mangel *et al*. 1996).

Curiously, part of the discourse on *susdev*, especially from champions of the term, deliberates the question of whether or not it is an oxymoron; numerous authors (e.g., Pearce 1989; essays in Levin 1993; Golley *et al*. 1994) have specifically volunteered that 'sustainable development' is not an oxymoron. As this is not an everyday word for most people, it is important to clarify its meaning: 'A rhetorical figure by which contradictory or incongruous terms are conjoined so as to give point to the statement or expression; an expression, in its superficial or literal meaning self-contradictory, but involving a point. (Now often loosely or erroneously used as if merely = a contradiction in terms, an incongruous conjunction).' (*Oxford English Dictionary* [1989] 2nd Edition. Oxford, UK: Oxford University Press s.v. 'oxymoron') and 'Rhet. a figure of speech by which a locution produces an effect by a seeming self-contradiction, as in "cruel kindness" or "to make haste slowly".' (*Webster's Unabridged Dictionary of the English Language* [1989]. New York, USA: Portland House and Random House. *Dictionary of the English Language* [1987] 2nd Edition [unabridged]. New York, USA: Random House s.v. 'oxymoron'). These denials that *susdev* is an oxymoron indicate that the term is *not* even an effective rhetorical tool, which hardly adds to its efficaciousness or to a resolution of the problem.

Sustainable development, like the sack dress of the 1950s, is in fashion and is a convenient, simple covering for a multitude of issues, of diverse shapes and sizes. The fundamental, and ultimate, question is not if it is an oxymoron, but if it is a myth, an untestable construct that conveniently explains away human apprehensions. There is no small amount of ethnocentricity in the assumption, implicit or stated, that development is an essential goal of all humanity (Bodley 1988, 1990; Durning 1993), that 'progress is our most important product' (Orr 1994), and that sustainability for its own sake is a universal obligation (Robinson 1993*a*). Even more complex is the value-laden argument on just what 'poverty' means, and who has the right to determine who needs to be developed (San Suu Kyi 1994); as Estava (1992) has argued, there has been an unfounded, simplistic world-trend to homogenize and denigrate two-thirds of humanity with the supposedly compassionate categories of 'poor' and 'underdeveloped'. This is not to mention that simultaneous with the international show of compassion for the poor has been a systematic extraction of resources from the environments in which they live, for use in the developed world (Shiva & Bandhyopadhyay 1986; Bodley 1988; Shiva 1992, Emberson-Bain 1994). Post-modern inhabitants of this planet must realize that poverty is a product of the state, and is *not* a 'natural' condition for human beings (Bodley 1988).

Returning to the basic definitions of 'development' and 'sustainable', it is clear that *susdev* refers to maintaining the process of growth. With the exception of the cancer cell, which alone seems capable of interminable growth, an endless process of expansion seems intrinsically impossible, at least for our unique planet. That does not mean that astrophysicists dealing with the mysteries of an expanding universe, theoretical mathematicians, or even philosophers, magicians, continual-growth economists or eco-politicians would not find the idea attractive. The question is as to how

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the earthly professions can relate the enigma to improving the human and environmental situations. It is time to query if continued use of this terminological sack dress is really to the advantage of human well-being and the safeguarding of our environment.

Even worse than a 'sack dress' would be using *susdev* as a 'ghost shirt', while chasing the 'dream' [*sic* nightmare] of unlimited growth, which in the end will not preserve us from the onslaughts of environmental degradation and social decay. There is the continual danger of confusion or misuse of the term: verily, use of the far simpler concept of 'sustainability' is wrought with both false complacency and mistrust (Moir & Mowrer 1995). Politicians, continual growth gurus, and others who use discourses on conservation and development as vehicles to self-advancement, will keep mouthing 'sustainable development' as long as it is useful to them, and in that way create an air of earnest concern and appropriate action (Orr 1994). *Susdev* is prime material for the distortion of science to a kind of magic or 'transscience' (Weinberg cited in Gerlach & Bengston 1994), to say nothing of self deception and cognitive 'incontinence', at the level of both the corporation and the individual (Brennan 1992). It is perfectly clear that contemporary society not only has vast means to fabricate and perpetrate 'unreality,' but the average 'post-modern' denizen, despite all the science and technology on which they depend, routinely seeks to escape from reality (Mitroff & Bennis 1993). Not surprisingly, in some circles *susdev* has been rejected: for example, the editorial staff of the US National Academy of Sciences' periodical, *Issues in Science and Technology*, has decided that the term 'has no useful meaning', and that their 'readers don't care enough to want to read about it' (K. Finneran *in litt*. 27/XII/1994). Willers (1994) determined that *susdev* 'is one of the most insidious and manipulative ideas to appear in decades.'

Lee (1993) stated that 'Sustainability is a goal, like liberty or equality: not a fixed endpoint [*sic*] to be reached but a direction that guides constructive change . . .'. This is a most lucid perception. However, with this definition the concept is grouped with religious movements, not scientific methods, for no matter how attractive it is as a grand human endeavour, if *susdev* is undefined objectively, infinite in its perception, and internally contradictory, it will continue to be a source of interminable confusion and misunderstanding, to say nothing of deceptions. This is especially worrying if the term 'has come to mean whatever suits the advocacy of the individual concerned' (Pearce *et al*. 1989). Since the sustainability movement is popular, institutionalized and politically important on a global level, it is a major factor in determining the conception, design, execution, evaluation, and particularly the maintenance, of much science and policy relevant to biological conservation and development (Edwards 1994; Emberson-Bain 1994). As Robinson (1993*a*) concluded: 'While positive thinking is praiseworthy, there must also be a reality check.'

This is not to negate the importance of integrating the principles of biological conservation with human development, nor to belittle the complexity of the problem, nor to discredit the good intentions of proposals to resolve our global dilemma (e.g., WCS 1980; WCED 1987; IUCN/UNDP/WWF 1991; González 1996). However, those who would dare to question the positive thinking of *susdev* are commonly chastized, not only for their injurious pessimism, but also for not providing alternatives to *susdev* (Robinson 1993*b*; Gadgil & Guha 1995). Yet, *susdev* is *not* an operational alternative, but rather an aspiration, a slogan or logo. Until it is clearly and objectively defined, in a way that includes the consensus of a large part of humanity, it will continue to be only a statement of desire, to say nothing of a source of contention. If it is to be applied effectively in scientific and technical activities, it must be unambiguously defined and clearly measurable (Carpenter 1994); *and* it is imperative that objective means of evaluation be included in any proposed models of *susdev* (Marti & Stutz 1993; Sherman 1994; Mangel *et al*. 1996). Lélé and Norgaard (1996) make it perfectly clear that 'Alternative approaches (to sustainable development) will subscribe to different value systems, cater to different social groups, and have different social consequences, but they will be no less subjective.' Hence, as they explain, the magnitude of the burden of any scientist who deals with implementing *susdev* goes way beyond the conventional considerations of the natural (or social) sciences: 'the task of a researcher becomes horrendously complicated.' If sustainable development is in fact a revitalization movement, and not a scientific method, it behoves its practitioners to comprehend what it is that they are dealing with, namely the restructuring of modern society and the redefinition of its values. It is not valid simply to assume that because one wears the frock of science, the field of action is limited to just science. While scientific information and technological innovations are indispensable to modern society (Botkin 1990; Shiva 1992; Brown 1993; Postel 1993; Dowie 1995), science (notably ecology) and technology (notably resource management and development) have limitations (Royal Society of London & the US National Academy of Sciences 1992; Shiva 1992; Carpenter 1994; Edwards 1994; Edwards *et al*. 1994; Gerlach & Bengston 1994; Orr 1994; Sherman 1994; Fri 1995; Lélé & Norgaard 1996; Mangel *et al*. 1996). Moir and Mowrer (1995) concluded 'it is therefore essential to understand the limits of prediction', which become ever-more restrictive with greater spatial and temporal scales.

Finally, it is essential to appreciate that, no matter what they may be called, models for life styles and societies which develop *and survive* by *respecting* the limits of our unique world, need not derive *de novo* from modern, industrialized societies (Bodley 1988, 1990; IUCN/UNDP/WWF 1991; Emberson-Bain 1994). There is a largely unexplored, but fast-disappearing, wealth of information to be learned from pre-industrial, 'traditional' societies: peoples who are typified by a 'custodial concept of land and other resources', cultures which have endured for hundreds, even thousands, of years (Brokensha *et al*. 1980; Rappaport 1984; Bodley 1988, 1990; Clay 1988; Moran 1990; Bates & Plog 1991; Durning 1993;

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Emberson-Bain 1994). Clearly, as much as developing a modern elixir, humanity needs to retrieve what it has learned over millions of years, but since the industrial revolution has been depreciating and discarding at an ever-accelerating rate: the recognition that there are limits to our resources and to our technologies, that we have limited understanding of, and ability to predict Nature, and that we are *not* in control of Nature.

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