



Environmental Sciences

Publication details, including instructions for authors and
subscription information:

<http://www.tandfonline.com/loi/nens19>

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Published online: 16 Feb 2007.

To cite this article: Jacobus A. Du Pisani Professor of History (2006) Sustainable
development - historical roots of the concept, Environmental Sciences, 3:2, 83-96, DOI:
[10.1080/15693430600688831](http://dx.doi.org/10.1080/15693430600688831)

To link to this article: <http://dx.doi.org/10.1080/15693430600688831>

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ENVIRONMENTAL ESSAY

Sustainable development – historical roots of the concept

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Abstract

This article gives an overview of the origin of the concept of sustainable development by going far back in history to trace its roots. It shows how the idea of sustainability evolved through the centuries as a counter to notions of progress. The historical context in the latter half of the 20th century is outlined, in which a paradigm shift in thinking about development caused sustainable development to occupy the centre stage in development discourses.

Keywords: *Sustainable development, sustainability, history, development, progress, economic growth, conservation*

1. Introduction

‘Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.

(Brundtland Report, WCED 1987: 43)

Sustainable development, a concept that emerged in the context of a growing awareness of an imminent ecological crisis, seems to have been one of the driving forces of world history in the period around the end of the 20th century. However, as a contemporary buzzword ‘sustainable development’ has become rather overworked. We often use it without thinking of its real meaning and implications. Therefore a historical review of the roots of this concept, following a *longue durée* approach (see, e.g. Braudel 1982; Tylecote 1992: 1–3, 183–187; Goudsblom et al. 1996: 3–13), might be useful. Such a historical investigation will also reveal the main threads of discourse and the various issues subsumed under the term ‘sustainable development’. What caused the concept to emerge, what does it really mean in its historical context, and why is it necessary for development to be sustainable?

2. History of the idea of progress

When we wish to study the roots of issues related to the interaction between development and sustainability it would be a good starting point to briefly sketch the evolution of the idea of

progress, not only because it was the antecedent to notions of development, but also because it would in due course as its own antipode elicit calls for sustainability. In the literature progress, the idea ‘that civilization has moved, is moving, and will move in a desirable direction’ (Bury 1932: 2), has been investigated in terms of scientific (and technological), material and moral advancement (Von Wright 1997: 7).

In pre-modern times thinking about progress slowly started surfacing. During the classical Greco-Roman period the first ideas about progress were formulated (see, e.g. Guthrie 1950; Finley 1956; Edelstein 1967; Dodds 1973; Nisbet 1980: 11, 13–47; Burkert 1997: 34), but it was the Hebrew and Christian theology, giving expression to the linear conception of time as a directed succession of events, that transformed the way of thinking about history and progress (Von Wright 1997: 2; see also Crombie 1997: 54). Using a six-stage scheme of human history, Augustine in the *City of God* portrayed the advancement of humankind in terms of successive, emergent stages (Augustine 1610; see also Nisbet 1980: 64, 65; Crombie 1997: 56). Christian philosophy contributed to the idea of progress the notion of the gradual unfolding of a design present from the beginning of human history, and the concept of the eventual spiritual perfection of humankind in the next world (Nisbet 1980: 47). In the medieval period the Christian conception of progress encompassed millennialism, utopian ideas, and a sense of the importance of improving upon this world in preparation for life in the next. By the 13th century two crucial strands of the European conception of human progress had been established: awareness of the cumulative advancement of culture and a belief in a future golden age of morality on this earth (Nisbet 1980: 77, 100).

Western modernity and the belief in progress are almost synonymous. During the Renaissance ideas of cyclical recurrence were propagated, but Reformation thinkers recovered their belief in the linear progress of humanity (Nisbet 1980: 103, 117–119). In 1683 the French scientist Fontenelle first articulated the Great Idea of Progress, i.e. ‘that mankind with the new science and improved technology had entered on a road of necessary and unlimited progress’ (Von Wright 1997: 3). During the Enlightenment and its aftermath (1750–1900) the idea of progress reached its zenith in the Western civilization and as a result of the work of Turgot, Condorcet, Saint-Simon, Comte, Hegel, Marx, Spencer and many others became the dominant idea of the period (Nisbet 1980: 171). The link between progress and modern, empirical, and exact science was consolidated and the conviction that science was the golden avenue to the future and would give humankind mastery over nature grew stronger (Nisbet 1980: 208; Von Wright 1997: 3, 4).

As the Industrial Revolution was unfolding on the world stage from the 18th century, irrevocably transforming human societies, human progress was also linked to economic growth and material advancement. Donald Worster (1993: 178, 179, 180) describes how industrialization caused ‘the greatest revolution in outlook that has ever taken place’ by leading people to think that it is right for them to dominate the natural order and radically transform it into consumer goods, that it is necessary and acceptable to ravage the landscape in the pursuit of maximum economic production, and that only things produced by industry and placed on the market for sale have value.

The idea of a ‘law of progress’ and its potential benefits took shape in the 19th century in Auguste Comte’s writings on positive philosophy (Comte 1893). Comte, Hegel, Marx, Spencer and others described the inexorable, irreversible, stage by stage and unstoppable advance of humankind through successive stages toward a golden age on Earth. There was optimism that scientific and technological progress could lead to the moral perfection of humankind. Immanuel Kant, who believed in progress through increased enlightenment, saw as the driving purpose of the advancement of humankind the attainment of ever more perfect conditions for the exercise of individual freedom (Nisbet 1980: 10, 207, 211, 222–223, 229,

254–255, 258, 261–262, 276–277; Von Wright 1997: 11). The idea of progress was progressively secularized, shifting away from a notion of advancement in a divinely-ordained desirable direction to a promised land beyond the grave, to one of a better life on Earth, warranted by scientific and technological development (Mitcham 1995: 312; Crombie 1997: 61–62). Progress became ‘a secularized heir to the Christian ideal of salvation’ (Von Wright 1997: 5). Faith in the progress of humankind was almost universal in intellectual circles in the period between the middle of the 18th and the middle of the 20th century. For the vast majority of Westerners progress was, in the words of Spencer, not an accident, but a necessity (Spencer 1907: 33; Nisbet 1980: 178).

There was, however, a less optimistic side. Industrial capitalism was not an unqualified blessing to all. As the benefits and rewards of the world economic system flowed primarily to the industrial countries, the gap between the rich and poor societies widened. In the long term the uneven distribution of wealth would become a major factor in discourses about development and sustainability. A big issue linked to industrial development, of which the full implications were not realized at first, was environmental degradation caused by the exploitation of raw materials on an unprecedented global scale (see Goudie 1986: 22–23; Boyden 1997: 73). This would lead to growing concerns about sustainability.

3. Emergence and evolution of the concept of sustainability

Although the terms ‘sustainability’ and ‘sustainable’ appeared for the first time in the *Oxford English Dictionary* during the second half of the 20th century the equivalent terms in French (*durabilité* and *durable*), German (*Nachhaltigkeit*, literally meaning ‘lastingness’, and *nachhaltig*) and Dutch (*duurzaamheid* and *duurzaam*) have been used for centuries (Van Zon 2002: 20, 21, 22).

Van Zon (2002: 1, 9, 10) points out that the demand for raw materials and its impact on the environment have been a constant issue throughout human history. As early as the ancient Egyptian, Mesopotamian, Greek and Roman civilizations environmental problems such as deforestation and the salinization and loss of fertility of soil occurred, which we would today refer to as sustainability problems. Plato in the 5th century BC, Strabo and Columella in the 1st century BC and Pliny the Elder in the 1st century AD discussed different types of environmental degradation resulting from human activities such as farming, logging and mining (see Pliny the Elder 1938: 293; Columella 1948: 3, 5; Strabo 1949: 353; Van Zon 2002: 1, 2, 27, 29). These authors were not only aware of environmental degradation, but also recommended what we would call sustainable practices to maintain the ‘everlasting youth’ of the earth (Columella 1948: 3, 19). Varro (1st century AD) stated that ‘we can, by care, lessen the evil effects’ (Cato and Varro 1954: 13, 187).

Wood was both as fuel and construction material an indispensable raw material up to at least the 18th century and it was used in almost all production processes. Georg Agricola (1950: 8), a German mining engineer, described the negative impacts of woodcutting and mining on wildlife as early as the 16th century. By the 18th century, because of the massive consumption of wood for ship-building, mining and many other purposes, a shortage of wood became a very real danger in Europe. Fears that such a shortage would threaten the basis of people’s existence stimulated a new way of thinking in favour of the responsible use of natural resources in the interest of the present and future generations, very similar to the thinking behind sustainable development today (Van Zon 2002: 19, 20, 55–56, 58–66). The term ‘sustainability’ was first used in German forestry circles by Hans Carl von Carlowitz in *Sylvicultura Oeconomica* in 1713. Carlowitz suggested *nachhaltende Nutzung* (sustainable use) of forest resources, which implied maintaining a balance between harvesting old trees and

ensuring that there were enough young trees to replace them. Other experts on forestry, such as Marchand and Wilhelm Gottfried Moser, also condemned excessive wood consumption as a practice that would bring negative consequences for future generations. They advocated sustainable forestry and recommended measures for the conservation of forests. The term *ewige Wald* (eternal forest) was coined to refer to afforestation and the regeneration of growing timber (Van Zon 2002: 1, 2, 4, 19–21, 70, 76–80).

Also in the 18th century concern about population growth and its consequences for the consumption of resources started surfacing. Authors such as Matthew Hale and William Petty had already in the 17th century drawn attention to this issue. However, the most famous work in this regard, *Essay on the principle of population as it affects the future improvement of society*, by Thomas Robert Malthus, was published in 1798. He stated that because it threatened to outstrip food production the increase in population had to be restricted (Malthus 1926: iii, 13, 14, 346; Van Zon 2002: 87–92).

In the 19th century the focus shifted to coal as most important source of energy and alarms were raised that coal deposits may be exhausted. The most influential publication in this regard was W. Stanley Jevons's *The coal question* of 1866, in which he concluded that English coal reserves would be depleted in a hundred years. Should the wasteful consumption of coal continue unchanged, England would lose her dominant industrial position. Therefore it was necessary to adopt 'every means of sparing the fuel which makes our welfare' (Jevons 1866: 5). Jevons's book 'placed the exhaustibility of energy supplies on the public agenda for good' (Van Zon 2002: 3). In Germany Rudolf Clausius and others also argued that natural resources such as coal ought not to be wasted, because they were non-renewable (Van Zon 2002: 49–51).

More than a century before the term 'sustainable development' came into general use, a number of publications appeared which dealt with what we would today call sustainable development. In *Principles of political economy*, first published in 1848, John Stuart Mill included a short chapter on the 'stationary state', which implied a stationary condition of capital and population, but not of human improvement. 'I sincerely hope, for the sake of posterity', he wrote, that the world's population 'will be content to be stationary, long before necessity compels them to it' (Mill 1883: 452–454). George Perkins Marsh's *Man and nature*, published first in 1864, has been described as the fountainhead of the conservation movement (Lowenthal 1958: 246, 268). Marsh stated: 'Man has long forgotten that the earth was given to him for usufruct alone, not for consumption, still less for profligate waste' (Marsh 1965: 36). He described how different aspects of the natural environment had been disturbed by human intervention and argued that the Earth might become unfit for human habitation, which might even result in the extinction of humankind. But he also discussed possible remedies for environmental problems. Marsh did not want to protect nature for its own sake, but for the sake of humankind, which is similar to the approach of the contemporary proponents of sustainable development.

In his retrospective assessment of the successes and failures of the 19th century, called *Our wonderful century*, published in 1898, Alfred Russell Wallace included a chapter on the plunder of the Earth. He discussed the damage done by the 'reckless destruction of the stored-up products of nature' and regarded the unlimited extraction of coal, oil, gas and minerals, and the exploitation of the rain forests as an 'injury done to posterity'. Van Zon (2002: 101) concludes that all the themes covered in the Brundtland Report of 1987 were already present in Wallace's text.

When oil became the primary source of energy there was a drastic increase in oil consumption and the alarm was raised that oil supplies might be exhausted soon. In the first half of the 20th century scientists such as Gifford Pinchot, G. A. Brender à Brandis and

F. M. Jaeger discussed the limitations to the supply of raw materials and energy sources and warned against wasteful consumption (Van Zon 2002: 103–110). Thorstein Veblen (1917) and A. C. Pigou (1929) called for what we would today term sustainable development. Around the middle of the century Egbert de Vries (*De aarde betaalt*, 1948), William Vogt (*Road to survival*, 1948) and Henry Fairfield Osborn (*Our plundered planet*, 1948 and *The limits of the earth*, 1953) dealt with the consequences of the overexploitation of natural resources and called upon people to use these resources in a responsible manner in order to ensure the continued existence of civilized society (Van Zon 2002: 115–120). In 1950 K. W. Kapp published an analysis of most of the environmental issues which now form part of the sustainable development discourse (Kapp 1950; see also Leisinger 2003).

From this overview it is clear that the roots of the concept of sustainability can be traced back to ancient times, but that population growth, increase in consumption after the Industrial Revolution, and the danger that crucial resources such as wood, coal and oil could be depleted boosted the awareness of the need to use resources in a sustainable way. Fears that present and future generations might not be able to maintain their living standards stimulated a mode of thinking that would inform discourses which prepared the way for the emergence and global adoption of sustainable development.

4. Twentieth century ideas about growth and development

The 20th century was a century of fluctuation between optimistic and pessimistic outlooks with regard to human development. The optimism reflected by predictions at the beginning of the century, of almost unlimited possibilities opening up because of scientific and technological advances, was shattered by economic turmoil and destructive global wars during the first half of the century. At times the fall of the dominant Western civilization seemed imminent. Philosophical undertones were morbid. But soon after World War II, from the 1950s, an unprecedented economic boom paved the way for renewed optimism about the prospects of rising living standards worldwide. It was, however, during this period of industrial and commercial expansion that the environmental crisis started looming larger on the horizon, forcing people to change their basic assumptions about growth and development.

4.1. Expectations of unlimited economic growth and the creation of wealth

Never in the world's history had there been more drastic growth in production, consumption and wealth than after the Industrial Revolution. In the period between 1800 and 1970, when the world's population tripled from around 978 million to 3632 million, seemingly unslackened economic growth occurred and the quantity of manufacturing production in the world increased about 1730 times (Rostow 1978: 47–48). International annual average economic growth rates stayed between 2.9% and 3.7% from the 1780s to 1900, then rose above 4% at the start of the 20th century, dropped back to under 3% in the inter-war years, and rose to above 4% again in the 1940s and then to 5.6% between 1948 and 1971 (Rostow 1978: 49; see also Tylecote 1992: 255; Maddison 2001: 28).

The unprecedented growth during the long boom of the 1950s and 1960s stimulated expectations of unlimited economic growth and ever-increasing affluence. Mainstream economists from the neoclassical orthodox school were aware of the sustainability problems related to the massive consumption of resources, but assumed that, once a product or a factor input would become scarce, new technologies would be introduced to economize on the scarce input. Sir John Hicks (1941: 302), in his *Value and capital*, rejected the concept of a

'stationary state' in favour of that of a 'progressive economy'. He emphasized that in the process of economic development the amount of capital per unit of labour should not decrease, because this would diminish the growth potential of future generations.

4.2. *Theories of development*

Against the background of the advance of science and technology and the growth of the world economy the concept of 'development' received increasing attention from the mid-20th century. Development was defined as 'an evolutionary process in which the human capacity increased in terms of initiating new structures, coping with problems, adapting to continuous change, and striving purposefully and creatively to attain new goals' (Committee on Comparative Politics of the United States Social Science Research Council cited in Peet 1999: 77).

A particularly thorny issue for development theorists was the widening gap between developed and developing countries (the so-called First and Third Worlds) that had opened up in the colonial period (Zimmerman 1962: 38). High international economic growth rates could only be maintained if wealth could be distributed more evenly on a global scale, which would lead to the continued expansion of world markets. From the 1950s the modernization and dependency theories, informed by widely different theoretical assumptions and offering different solutions to the predicament of the developing countries, emerged as dominant theories of development.

Modernization theory, based on liberal values, argues that the developing countries should emulate the Western model of development by modernizing their societies to take on the features of the economically advanced countries. In modernization theory, according to Peet (1999: 85–86), 'development meant assuming the mental models of the West (rationalization), the institutions of the West (the market), the goals of the West (high mass consumption), and the culture of the West (worship of the commodity)'. Modernization theory favours free enterprise and the market economy as positive forces of progress. Societies wishing to develop should open their markets, welcome and encourage multinational corporations, advanced technology, and export-oriented activities, withdraw state aid and privatize their economies. If this is done the market will automatically spread a more affluent way of life around the globe, which will in turn fuel more economic growth and modernization in peripheral countries. In short: the way to reduce poverty in the periphery is to give the core more access to their resources and markets and encourage the continued growth of international capital, which will pull along the less-developed areas of the world as it advances (Peet 1999: 90).

Dependency theory, based on Marxist analysis, has quite the opposite approach. The linkages between the developed and developing world are conceptualized as 'a set of externally imposed, exploitative, dependent, economic relationships incompatible with development' (So 1990: 262). The basic message of the dependency theory is that Western development is 'predicated on the active *underdevelopment* of the non-European world' (Peet 1999: 107). Dependency theory focuses on the economic domination of the international capitalist system and argues that the 'core', i.e. the Western centres of power, maintains its control over the 'periphery', i.e. the former colonies, even in the post-colonial age. Capitalist development leads to an ever-widening gap between rich and poor. Supporters of dependency theory and its offspring, world-systems theory, suggest a solution opposite to that of the modernization theory: Developing countries should sever their linkages with Western capitalist countries in order to follow an autonomous, independent path of development based on socialism (So 1990: 262; Peet 1999: 108).

These basic theories have been adapted to the changing situation in the world, especially when international relations were transformed by the end of the Cold War in the late 1980s. However, their basic assumptions have remained influential in development discourses, including the discourse of sustainable development.

5. The historical context at the birth of sustainable development

By the late 1960s and early 1970s the melting pot of different ideas about progress, sustainability, growth and development which had developed over many years started pointing in a new direction, that of sustainable development.

After two global wars it was evident that, particularly in the moral domain, there was also a downside to scientific and technological advances, which had brought material progress and easier living. These advances provided people with the means for the perpetration of evil and suffering on a vaster scale than before (Von Wright 1997: 9, 10). By the 1970s the idea of continuous progress was losing much of the fascination it had had for earlier generations. The Great Idea of Progress had by then been exposed as a fiction. ‘Progress’, it was realized, had provided justification for the reign of the free market, for colonial exploitation of non-Western societies, and for ravaging the biosphere. But progress, according to the critics of the concept, was nothing but an illusion. They argued that the application of the criteria for progress would show that at no stage in world history had real human progress taken place (Gowdy 1994: 42, 46–48, 55). Although it was clear that science and technology would progress ever more rapidly, experience had taught that both the material and moral condition of humankind would remain open to regress as well as progress. The Enlightenment promise of the linear and continuous improvement of the human condition had proved to be a Myth of Progress, because it was based on human hopes and aspirations rather than human potentialities and limitations (Von Wright 1997: 11–12).

Scientific and technological progress was also causing terrible damage to the natural environment. During the period of unprecedented industrial and commercial expansion after World War II people became aware of the threats which rapid population growth, pollution and resource depletion posed to the environment and their own survival as humans. From the 1960s hair-raising scientific information about the damage caused to the natural environment by human activities was published in books such as Rachel Carson’s *The silent spring* (1962), Paul Ehrlich’s *The population bomb* (1968), Edward Goldsmith’s *A blueprint for survival* (Goldsmith et al. 1972) and Fritz Schumacher’s *Small is beautiful* (1973). Ecological disasters received much media publicity. Films, TV programmes and pop music popularized the idea of an imminent ecological crisis. Earth Day was celebrated for the first time in 1970. The Green Movement took off, the first environmental non-governmental organizations (ENGOS), Greenpeace and Friends of the Earth, were established, environmental groups became more outspoken, ecologism became an ideology of some importance and green political parties started making an impact (see SD Gateway 1999).

Environmental concern became more acute and radical because of the fear that economic growth might endanger the survival of the human race and the planet. Anxiety was expressed in a growing body of academic literature that ‘if we continue our present practices we will face a steady deterioration of the conditions under which we live’ (Nathan Glick in Dubos et al. 1970: 2) and about the real danger that humankind ‘may destroy the ability of the earth to support life’ (LaMont C. Cole in Dubos et al. 1970: 3). This alarmist mood, in expectation of an imminent ecological catastrophe, stimulated a new mode of thinking about development and prepared the way for sustainable development as an alternative to unlimited economic growth.

5.1. *Growing awareness of the limits to growth*

Expectations of unlimited economic growth were dampened when a worldwide recession occurred in the mid-seventies (1974–1976), following in the wake of the first oil crisis of 1973, which had demonstrated the potential consequences of resource shortages. Restrictions on the growth of world markets were ascribed to increasing inequalities, which obstructed the broadening of the market that was required for continued growth. All efforts to get the world economy going again failed and the downswing continued into the 1980s. Recovery in the northern hemisphere started only in the late 1980s (Tylecote 1992: 255–271).

Reflection upon the causes of the recession led to an awareness of the limits to economic growth. At this point people started realizing that it was ‘becoming increasingly doubtful whether the blissful effects of technology can be permanently extended beyond the confines of the industrialized countries to the vast and rapidly growing majority of people who do not yet share them but enviously long for them’ (Von Wright 1997: 9).

In the early 1970s the well-known report of the Club of Rome, a group of eminent economists and scientists, was published under the title *The limits to growth*. They warned that the Earth had a limited supply of physical resources and that exceeding the limits of exploitation could end in catastrophe. The authors came to an apocalyptic conclusion (Meadows 1972: 23):

“If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity”.

Michael Kenny (1994: 229) regards the publication of *Limits to growth* as ‘the key moment in the transformation of disparate anxiety about environmental problems into more focused discussion of an alternative to present-day society’. The need to challenge unrestricted economic growth was placed on the political agenda. *Limits to growth* started a debate over the question whether high rates of economic growth were desirable or even possible (Rostow 1978: 571).

On the one side of the debate were the advocates of growth. They did not deny the problems of population growth, energy supply and environmental degradation, but they were confident that humankind would find or create the new resources, as well as the methods of conservation and pollution control needed to cope with these problems. In some circles there was undiminished faith that the further development of science would open up humane possibilities. Advocates of modernization predicted that by the year 2000 birth rates would have been lowered, productivity of agriculture would have increased, problems to create new energy sources would have been overcome, air and water pollution would be under control, there would still be a sufficient supply of raw materials for industry and the developing countries would have doubled their income per capita (Rostow 1978: 580–581). Some of these predictions have been realized in the last 30 years, others not. This optimistic side of the debate represented a vulgarization of Kant’s belief in progress through enlightenment. The damage caused to the environment and the gulf between rich and poor were admitted, but the remedy was seen in further scientific and technological development. New technologies and ‘anti-technologies’ had to be developed to counter the damage caused by industrialization and wasteful consumerism, and to help the underprivileged to enjoy a better quality of life (Von Wright 1997: 12).

The other side of the debate expressed alarm about the ‘ecocide’ (the destruction of the natural environment) that was taking place and identified three major problem areas: the population explosion, pollution and the depletion of non-renewable resources. Seemingly uncontrolled population increase – 2% per annum at its peak in the late 1960s (United Nations 1999) – aggravated the other two problems and caused many problems, particularly in the developing countries: overcrowding, uncontrolled urbanization, housing shortages, slum conditions, and inability of governments to supply proper municipal, medical and educational services to fast-growing populations. Despite the so-called ‘green revolution’ it also became increasingly difficult to feed the population. When the implications of this ‘population explosion’ in terms of increasing pressure on the Earth’s resources became clear, doomsday scenarios were spelled out in gruesome detail and Thomas Malthus’s gloomy 18th century conclusion that population always grows faster than the food supply was revived.

It was evident that earlier expectations of industrial development and unlimited economic growth were no longer attainable. There was a growing awareness of the limits to growth. Several suggestions were put forward to counter the ecological crisis, ranging from radical zero-growth options – which was suggested in *Limits to growth* (Club of Rome 2003) – to the ‘small is beautiful’ type of notion, i.e. escaping from the imperatives of modern industrial society in smaller communities and developing a more self-sufficient lifestyle in harmony with nature and other humans.

5.2. Sustainable development introduced as solution to growth problems

Thus, by the 1970s the existing notions of ‘progress’, ‘growth’ and ‘development’ were being challenged. During the 1960s the mood had been optimistic and it had been assumed that the development problems of the underdeveloped world would be solved quickly as a result of world-wide economic growth, but in the 1970s the optimism faded. Economic growth did not prove to be the hoped-for solution to global inequalities. This realization necessitated a paradigm shift to a new notion of development.

Formerly development and conservation had been regarded as conflicting ideas, because conservation was understood as the protection of resources, and development as the exploitation of resources (Paxton 1993: 1). Now the concept of sustainable development emerged as a compromise between the notions of development and conservation, which came to be seen as interdependent issues. The term ‘sustainability’, a noun used in ecology to refer to a state or condition that can be maintained over an indefinite period of time, was introduced on a more regular basis than before into development discourses. At the start of the 1970s the term ‘sustainable development’ was coined, probably by Barbara Ward (Lady Jackson), founder of the International Institute for Environment and Development (see Ward & Dubos 1972).

The conceptual underpinnings for the current use of the term ‘sustainable development’ were consolidated in the early 1970s. *A blueprint for survival* (Goldsmith et al. 1972: 23) called for a ‘stable society’ that could be ‘sustained indefinitely while giving optimum satisfaction to its members’. *Limits to growth* (Meadows 1972: 24, 158) referred to a ‘condition of ecological and economic stability that is sustainable far into the future’ and capable of satisfying the basic material needs of all people. In the declaration of the United Nations Conference on the Human Environment, held in Stockholm in 1972 as the first in a series of international conferences on the threatening ecological crisis, it was stated:

‘A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreversible harm to the earthly environment on which

our life and well being depend. Conversely, through fuller knowledge and wiser action, we can achieve for ourselves and our posterity a better life in an environment more in keeping with human needs and hopes... To defend and improve the human environment for present and future generations has become an imperative goal for mankind'

(United Nations 1972).

Sustainability featured in several of the principles adopted by the conference. It was now realized that development needed to be sustainable – it should not focus only on economic and social matters, but also on matters related to the use of natural resources. Various writers started formulating their ideas about sustainable development. J. Coomer (1979) stated that the sustainable society was one that lived within the self-perpetuating limits of its environment, but that it was not a 'no-growth' society. It was rather a society that recognized the limits to growth and looked for alternative ways of growing. Robert Allen (1980) defined sustainable development as 'development that is likely to achieve lasting satisfaction of human needs and improvement of the quality of human life'.

Paxton (1993: 2) explains that the idea of sustainable development stemmed from the awareness that the solution to the poverty of the developing countries did not lie in 'throughput growth', i.e. by following the industrialization and high consumption patterns of the industrialized world. If everyone in the world reached those levels of consumption it would lead to an unsustainable situation, because the Earth's finite resources would not be able to support all the people. It was realized that economic growth would be necessary for a period of time in less developed parts of the world, but it would have to be a different kind of growth, targeted to the needs of the people and sensitive to the needs of the environment. Sufficiency should be the goal, not economic efficiency. A distinction had to be made between growth – quantitative change – and development – qualitative change (Viederman 1993: 181).

5.3. The Brundtland Commission and the popularization of sustainable development

In the 1980s the new paradigm of sustainable development was popularized and became more widely used. The term was used in the International Union for the Conservation of Nature's *World Conservation Strategy* (1980), Lester R. Brown's *Building a sustainable society* (1981) and Norman Meyers's *Gaia: an atlas of planet management* (1984) (see Worster 1993: 143).

The United Nations commissioned a group of 22 people from developed and developing countries to identify long-term environmental strategies for the international community. This World Commission on Environment and Development (WCED), better known as the Brundtland Commission, submitted their report, entitled *Our common future*, to the UN in 1987 (WCED 1987).

The Brundtland Report focused primarily on the needs and interests of humans, and was concerned with securing a global equity for future generations by redistributing resources towards poorer nations to encourage their economic growth in order to enable all human beings to achieve their basic needs. The report expressed the belief that social equity, economic growth and environmental maintenance are simultaneously possible, thus highlighting the three fundamental components of sustainable development, the environment, the economy, and society, which later became known as the triple bottom line. The report discussed the need to apply integrated, sustainable solutions to a broad range of problems related to population, agriculture and food security, biodiversity, energy choices, industry, and more. The Brundtland Report acknowledged the tension between economic growth and environmental protection. It concluded that economic growth was essential, particularly in the developing world, but that there should be a switch to 'sustainable development', which

would be environmentally sound (see Sustainability Reporting Program 2000; Euractiv 2002; Atmosphere, Climate and Environment Information Programme 2004; Columbia University's Biosphere 2 Center 2004).

The international impact of this report was strengthened by a series of ecological disasters at that time, which highlighted the threat to the environment. Henceforth sustainable development was discussed as a major political goal and defined in a way that drew the attention of the world. The Brundtland Commission's definition of sustainable development, still the most widely used definition, appears at the top of this article (for an overview of the academic literature dealing with the definition of sustainable development see Washington State University 2004). The new consensus that had grown out of the adaptation of the ideas of progress, growth and development in the light of the situation in the 1980s, was that, to be sustainable, development had to 'improve economic efficiency, protect and restore ecological systems, and enhance the well-being of all peoples' (IISD 2003). Sustainable development was meant to balance the limits to growth and the need for development (Mitcham 1995: 324).

Despite the political correctness of the concept of sustainable development there was criticism both from the radical and conservative sides. Less-developed countries were suspicious that sustainable development might be an ideology imposed by the wealthy industrialized countries to enforce stricter conditions and rules on aid to developing countries. There were fears that sustainable development would simply be employed to sustain the gap between developed and underdeveloped countries (Mitcham 1995: 323).

The major critiques of sustainable development were that it did not question the ideology of economic growth and did not adequately challenge the consumer culture, and was thus serving neo-liberal interests (Euractiv 2002). Worster (1993: 142–155) contends that sustainable development rests on 'shaky ground', because specific criteria of sustainability have never been formulated, thus leaving the back door open to advocates of economic growth and progressive secular materialism to hijack the concept of sustainable development for their purposes. The pre-1970 ecological thinking has been watered down to once again make the material demands of the human species the primary test of what should be done with the Earth.

Conservative critics interpreted sustainability as stasis, which would not be enough to meet the demands of growing populations (Mitcham 1995: 323). From a free-market perspective it was argued that sustainable development policies were unnecessary, because human ingenuity would be up to the task of coping with the issues of growth and development (Euractiv 2002).

Among economists there has been difference of opinion regarding the distributional issues related to sustainability, a core element of the Brundtland Report. As a compromise document the report offers a scenario incorporating the best of all worlds: less developed countries can improve their living standards through economic development, without undermining the growth prospects or the quality of the environment for future generations. This idealistic scenario can be realized on a global scale only if the developed countries can be persuaded to grow less and to make substantial income transfers from 'the west' to 'the rest'. It is questionable whether today's generation is willing (or in the case of poor countries able) to forgo consumption and to pay higher prices now, in order to provide future generations growth possibilities and good environmental quality. Also it is not easy to consider environmental quality as a 'product' in the market and to attach a price to it. Neoclassical mainstream economists argue that the total amount of capital (including both physical, human and natural capital) should remain constant for economic growth to occur. This amounts to weak sustainability, because the amount of natural capital is allowed to diminish, as long as this is compensated for by the rise in other forms of capital. Environmental economists are in favour of strong sustainability and argue that natural capital (things such as clean air) cannot be

substituted for by other forms of capital and should therefore not be allowed to decrease over time.

6. Conclusion

In this essay I have tried to portray the historic development of notions of progress, growth, development and sustainability in different social, economic and philosophical contexts from antiquity to postmodernity. In the second half of the 20th century, because of the failure of economic growth to evenly distribute wealth across the globe and because of the emerging ecological crisis, it became clear that former notions of progress, growth and development had become unfeasible. The positivistic approach to progress, growth and development, which had been carefully construed in the 19th and early 20th centuries, was overtaken by the events of world history. However, that did not mean that beliefs in the general benefits of scientific and technological progress and of economic growth had been discarded. In the light of the cost to the planet of growth and development, of which people became more aware as a result of the media coverage of ecological threats and disasters, a new morally defensible paradigm was necessary. This paradigm was formulated in the form of sustainable development, a concept that could rightly claim to be the heir to the concepts of progress, sustainability, growth and development. It continued the major threads of the progress–growth–development discourses of the past and adapted them to a new situation of ecological crisis, which had to be addressed in a world where the growing gap between rich and poor made any discussion of growth and development extremely complex.

The concept of sustainable development was a compromise between growth and conservation. It was not ideologically neutral, because it was intended as an alternative for the zero-growth option and was therefore positively inclined towards the growth and modernization viewpoints. The whole debate around sustainable development made it clear that anthropocentric views were stronger than ecocentric views, but that environmental concerns had at least become part of development discourses. Like any compromise, sustainable development was not fully embraced by either side in the debate about growth and conservation, particularly those representing extreme positions. It was a contradiction in terms, in the sense that genuine sustainability and genuine development would, from a puristic point of view, be irreconcilable. Sustainable development was, therefore, from the outset open to criticism from both the left and the right. It needed further refinement and it would, indeed, evolve in subsequent decades.

References

- Agricola G. 1950. *De re metallica*. Translated from the first Latin edition of 1556 by Herbert Clark Hoover and Lou Henry Hoover. New York: Dover.
- Allen R. 1980. *How to save the world*. London: Kogan Page.
- Atmosphere, Climate and Environment Information Programme, Atmospheric Research and Information Centre, Manchester Metropolitan University. *Encyclopedia of sustainable development*. 2004. The Brundtland Report. Available: http://www.euractiv.com/cgi-bin/cgint.exe/84776-510?714&1015=9&1014=id_sdintro&-tt=SSIN&s2=y (updated 2 August 2002, accessed 13 April 2004).
- Augustine, Saint (Bishop of Hippo). 1610. *The City of God*, 2 vols, a translation into English. London: Griffith, Farran, Okeder & Welsch.
- Boyden S. 1997. The human component of ecosystems. In: McDonnell MJ, Pickett STA (eds). *Humans as components of ecosystems. The ecology of subtle human effects and populated areas*. New York: Springer, pp 72–77.
- Braudel F. 1982. *On history*. English translation by Sarah Matthews. Chicago: University of Chicago Press.
- Burkert W. 1997. Impact and limits of the idea of progress in antiquity. In: Burgen A, McLaughlin P, Mittelstraß J (eds). *The idea of progress*. Berlin: Walter de Gruyter, pp 19–46.

- Bury JB. 1932. *The idea of progress*. New York: Dover.
- Cato MP, Varro MT. 1954. *Marcus Porcius Cato on agriculture; Marcus Terentius Varro on agriculture*. English translation by William Davis Hooper. Revised edition, second printing. Cambridge, MA: Harvard University Press.
- Club of Rome. 2003. 1968 – The Club of Rome. Available: <http://www.clubofrome.org> (updated 5 September 2003, accessed 2 April 2004).
- Columbia University's Biosphere 2 Center. 2004. Sustainability: an introduction for environmental studies students. Available: <http://www.eeexchange.org/sustainability/content/A/1.HTML> (accessed 13 April 2004).
- Columella LJM. 1948. *Res rustica*. Lucius Junius Moderatus Columella on agriculture, vol. 1 (Books I–IV). English translation by Harrison Boyd Ash. 1948 reprint. Cambridge, MA: Harvard University Press.
- Comte A. 1893. *The positive philosophy*. 3rd edn. English translation by Harriet Martineau. London: Paul, Trench, Trübner.
- Coomer J. 1979. *Quest for a sustainable society*. Oxford: Pergamon.
- Crombie A. 1997. Philosophical commitments and scientific progress. In: Burgen A, McLaughlin P, Mittelstraß J (eds). *The idea of progress*. Berlin: Walter de Gruyter, pp 47–64.
- Dodds ER. 1973. *The ancient concept of progress*. Oxford: Oxford University Press.
- Dubos R, Cole LC, Jacobs J, Carter LJ, Temko A, Bowen W, Wylie P. 1970. *The environmental crisis*. Washington, DC: United States Information Service.
- Edelstein L. 1967. *The idea of progress in classical antiquity*. Baltimore, MD: Johns Hopkins.
- Euractiv. 2002. Sustainable development. Available: http://www.euractiv.com/cgi-bin/cgint.exe/84776-510?714&1015=9&1014=ld_sdintro&-tt=SSIN&-s2=y (updated 2 August 2002, accessed 13 April 2004).
- Finley MI. 1956. *The world of Odysseus*. Harmondsworth: Penguin.
- Goldsmith E, Allen R, Allaby M, Davoll J, Lawrence S. 1972. *A blueprint for survival*. Harmondsworth: Penguin.
- Goudie A. 1986. *The human impact on the natural environment*, 2nd edn. Cambridge MA: MIT Press.
- Goudsblom J, Jones E, Mennell S. 1996. *The course of human history*. Armonk, NY: M.E. Sharpe.
- Gowdy JM. 1994. Discussion papers: progress and environmental sustainability. *Environ Ethics* 16:41–55.
- Guthrie WKC. 1950. *The Greek philosophers from Thales to Aristotle*. London: Methuen.
- Hicks JR. 1941. *Value and capital: an inquiry into some fundamental principles of economic theory*. Oxford: Clarendon Press.
- IISD (International Institute for Sustainable Development). 2003. Basics and issues. Available: <http://www.iisd.org/sd/> (accessed 26 March 2004).
- Jevons WS. 1866. *The Coal Question: an inquiry concerning the progress of the nation, and the probable exhaustion of our coal-mines*. Second revised edition. London: Macmillan. Available: <http://www.econlib.org/library/YPDBooks/Jevons/jvnCQ1.html> (accessed 4 November 2005).
- Kapp KW. 1950. *The social costs of private enterprise*. Cambridge, MA: Harvard University Press.
- Kenny M. 1994. Ecologism. In: Eccleshall R (ed). *Political ideologies: an introduction*, 2nd edn. London: Routledge, pp 218–251.
- Leisinger KM. 2003. Sustainable development at the turn of the century: perception, reality, and outlook. Novartis Foundation on Sustainable Development website. Available: http://www.foundation.novartis.com/sustainable_development_perception_reality_outlook.htm (accessed 13 April 2004).
- Lowenthal D. 1958. *George Perkins Marsh: Versatile Vermonter*. New York: Columbia University Press.
- Maddison A. 2001. *The world economy: a millennial perspective*. Paris: Development Centre of the Organisation for Economic Co-operation and Development.
- Malthus TR. 1926. *First essay on population*. (An essay on the principle of population as it affects the future improvement of society, with remarks on the speculations of Mr Godwin, M. Condorcet, and other writers, 1798). London: Macmillan (1926 edition with notes by James Bonar).
- Marsh GP. 1965. *Man and nature*, Edited by David Lowenthal. Cambridge, MA: Belknap Press.
- Meadows DH. 1972. *The limits to growth: a report of the Club of Rome's project on the predicament of mankind*. New York: Universe Books.
- Mill JS. 1883. *Principles of political economy, with some of their applications to social philosophy*. People's edition. London: Longmans, Green.
- Mitcham C. 1995. The concept of sustainable development: its origins and ambivalence. *Technol Soc* 17:311–326.
- Nisbet R. 1980. *History of the idea of progress*. London: Heinemann.
- Paxton L. 1993. *Enviro Facts 3: Sustainable development*. Howick, South Africa: Environmental Education Association of Southern Africa.
- Pett R. 1999. *Theories of development*. New York: Guilford Press.
- Pigou AC. 1929. *The economics of welfare*, 3rd edn. London: Macmillan.

- Pliny the Elder. 1938. *Natural history (Naturalis historia)* in ten volumes, vol. 1 (praefatio, libri I&II). English translation by H. Rackham. Cambridge, MA: Harvard University Press.
- Rostow WW. 1978. *The world economy. History and prospect*. London: Macmillan.
- SD Gateway. 1999. Sustainable development timeline. Available: <http://sdgateway.net/introsd/timeline.htm> (accessed 26 March 2004).
- So AY. 1990. *Social change and development. Modernization, dependency, and world-system theories*. London: Sage.
- Spencer H. 1907. *Seven essays selected from the work of Herbert Spencer*. London: Watts.
- Strabo. 1949. *The geography*, vol. II, Book V. English translation by Horace Leonard Jones. 1949 printing. London: Heinemann.
- Sustainability Reporting Program. 2000. *The sustainability report: a brief history of sustainable development*. Available: <http://www.sustreport.org/background/history.html> (accessed 2 April 2004).
- Tylecote A. 1992. *The long wave in the world economy: the present crisis in historical perspective*. London: Routledge.
- United Nations. 1972. *Declaration of the United Nations Conference on the Human Environment*, Stockholm, 16 June 1972. Available: <http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1503> (accessed 13 April 2004).
- United Nations. 1999. *Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, The World at Six Billion. (ESA/P/WP.154)*.
- Van Zon H. 2002. *Geschiedenis & duurzame ontwikkeling. Duurzame ontwikkeling in historisch perspectief: enkele verkenningen*. Nijmegen/Groningen: Werkgroep Disciplinaire Verdieping Duurzame Ontwikkeling.
- Veblen T. 1917. *The technicians and the revolution*. Reprinted in: *The portable Veblen*. New York: Viking Press, 1948.
- Viederman S. 1993. Sustainable development: what is it and how do we get there? *Current History*, April: 180–185.
- Von Wright GH. 1997. Progress: Fact and fiction. In: Burgen A, McLaughlin P, Mittelstraß J, (eds). *The idea of progress*. Berlin: Walter de Gruyter, pp 1–18.
- Ward B, Dubos R. 1972. *Only one earth – the care and maintenance of a small planet*. London: Deutsch.
- Washington State University. 2004. *General issues: defining sustainable development*. Available: http://www.wsu.edu:8080/~susdev/General_Issues.html (accessed 13 April 2004).
- WCED (World Commission on Environment and Development). 1987. *Our common future*. Oxford: Oxford University Press.
- Worster D. 1993. *The wealth of nature: environmental history and the ecological imagination*. New York: Oxford University Press.
- Zimmerman LJ. 1962. The distribution of world income, 1860–1960. In: De Vries E (ed). *Essays on unbalanced growth: a century of disparity and convergence*. s-Gravenhage: Mouton, pp 28–55.