

# STEPS TO NATURAL CAPITALISM



Frank Birkin\*

Sheffield University Management School, UK

The impact of concerns about environmental degradation has prompted many initiatives to improve the environmental efficiency of businesses, such as environmental management systems and industrial ecology as well as recycling, waste reduction and energy reduction programmes. Hawken *et al.* (1999) argue that these kinds of change are part of processes so profound that humankind is actually participating in another industrial revolution, a revolution to Natural Capitalism. These three authors outline basic changes to the capitalist system that necessitate different mind-sets and sets of values that ultimately lead to profound differences in the ways in which businesses are managed.

This paper considers the possibility that we are on the verge of an industrial revolution that will implement a new form of capitalism that will facilitate an easier transition to sustainable industrial development. This paper proceeds by first identifying key approaches to the management of the environment and then identifying six steps that will have

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## INTRODUCTION

Hawken *et al.* (1999) argue that the kinds of change they foresee are part of processes so profound that humankind is actually participating in another industrial revolution, a revolution to Natural Capitalism. These three authors outline basic changes to the capitalist system: 'Natural capitalism and the possibility of a new industrial system are based on a very different mind-set and set of values than conventional capitalism', (Hawken *et al.*, 1999, p 9).

Basic changes such as those proposed by Hawken *et al.* (1999) could have wide-ranging impacts on business practice, but the environmental movement has already brought about many and varied changes in business practice. Is there then a *a col*, a high-level pass that we are approaching after which there will be a new land, a hidden valley, laid out before us? Or, in other words, to what extent can the changes brought about by such as environmental management systems, whole-system engineering, life cycle assessments, demand management and industrial ecology as well as

\* Correspondence to: Frank Birkin, Sheffield University Management School, 9 Mappin Street, Sheffield, S1 4DT, UK. E-mail: f.birkin@sheffield.ac.uk



a holistic view of recycling, waste reduction and energy reduction programmes be accommodated effectively within the existing business framework?

This paper considers these questions and the possibility that we are on the verge of an industrial revolution that will implement a new form of capitalism. These considerations proceed in this paper by first identifying key approaches to the management of the environment in the section 'Representing the environment'. Then the section entitled 'Taking the next steps' identifies six critical steps that will have to be taken if the putative revolution is to be realized.

## REPRESENTING THE ENVIRONMENT

Business in practice is already committed to capturing something of the impacts of business activity upon the environment. Few, if any, of these representations of business and environment relationships have anything to do with traditional capitalism. Capitalism is stretching to accommodate these new representations.

In order to identify from whence the 'next steps' depart, this section reviews key ways in which the environment is already represented within business circles. In order to justify use of the word 'revolution', Natural Capitalism will have to do much more than has been achieved already.

### *Environmental economics*

Three criteria have been identified that distinguish environmental economics from traditional economics. The three criteria are the following:

1. economic systems should be designed less for a 'rational economic person' (*Homo economicus*) and more for people's collective needs;
2. a sustainable economy should be able to replicate itself indefinitely and
3. growth in economic activity needs to be decoupled from the impacts of that activity (Turner, 1995).

These criteria are argued to satisfy the requirements of sustainable development as defined by the World Commission on Environment and Development, the Brundtland Commission. This definition defines sustainable development as: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development, 1987).

In practice, much of environmental economics is concerned with externalities, i.e. the social and environmental costs of economic activity that have not been represented in previous economic calculations (Pearce and Warford, 1993). Economic instruments are proposed as the means by which externalities may be incorporated within economic calculations such as emission charges, user charges, product charges and marketable permits.

### *Environmental and social accounting*

Within an environmental economics framework, environmental and social accounting uses diverse ways of representing the 'external' impacts of industrial activity. These ways include: environmental cost accounting, environmental liabilities, environmental investment appraisal, life cycle assessment (LCA) and life cycle costing (Owen, 1992; Gray *et al.*, 1993; Environmental Protection Agency, 1995; Schaltegger *et al.*, 1996; Bennet and James, 1999). In summary: 'the 'greening of accountancy' involves reappraisal of how to identify and measure the relevant costs of processes and products (such as 'Total Cost Assessment') and a redesign of incentive mechanisms. Through these changes managerial decisions and corporate behaviour may be refocused towards the goal of achieving sustainable development, for example by pursuing a viable industrial ecology' (Macve, 1995, p 17).

### *Stakeholder management*

The importance of satisfying the requirements of a range of stakeholders has been widely



recognized and appropriate changes in management have been implemented by many companies (Royal Society of Arts, 1995; SustainAbility-UNEP, 1996; Wheeler *et al.*, 1998). Strong and weak stakeholder theory is differentiated by how much weighting is placed on non-economic stakeholders, weak stakeholder theory maintaining that only economic stakeholders are really significant.

The approach of stakeholder management has application beyond that of company management. It could, for example, be applied on a regional scale or to significant social groups (Grimble and Wellard, 1996).

#### *Environmental management systems (EMSs)*

Several environmental management systems standards have been developed by national and international agencies. The principal systems are the International Standards Organisation 14000 series and the European Eco-Management and Audit Scheme, EMAS (Sheldon, 1997).

These systems typically use output controls to initiate measures of industrial environmental impacts within the formal records and management procedures of companies and other institutions. Such systems have been adopted by parts of the hotel sector (Twist and Macmillan, 1996).

#### *Energy and mass balance accounts*

Environmental management systems typically use output controls and have little to say about the system by which environmental information is gathered. In the German-speaking world and Scandinavia, a systematic approach to collecting, monitoring and reporting the environmental impacts of process companies has been developed. In Danish Steel A/S, physical units (weights, volumes, energies etc) were substituted for costs in the company's computerized cost accounting system. The result is an analysis of the physical flows through the company that is represented in a physical balance sheet, the Green Account (Jorgensen, 1993; Danish Steel, 1998).

In German speaking countries, this approach is known as an Ecobalance (White and Wagner, 1996). It has been implemented to good effect by Kunert AG, who are also developing an integrated environmental cost management system (Kunert AG, 1998). The practice of monitoring energy and material inputs is the basis of life cycle management or life cycle inventory analysis (National Office of Pollution Prevention, 1999). The application of mass balancing techniques on a regional scale is the basis of industrial ecology such as has been developed in the Danish township of Kalunburg (Ehrenfeld and Gertler, 1997).

## TAKING THE NEXT STEPS

In response to social and ecological degradation, many steps have already been taken to broaden the content of existing economic and accounting concepts and accounts. This paper argues that these first steps are not big enough to satisfy the requirements of sustainable industrial activity. The reason for this is that the first steps represent the environment in significantly negative ways such as additional costs, penalties, licenses, permits and other obstacles that stand in the way of making a profit. A second series of step needs to be taken. Those second steps needs to incorporate sustainable development within core industrial values in such a way that economic wealth is synonymous with the wealth of social, environmental and ecological systems. These second steps might well precede an industrial revolution that may indeed establish a form of Natural Capitalism.

Some of the terminology used in the first steps reflects the problems encountered with these steps. The 'environment' is, by definition, a stymied response to the needs of sustainable development because of the meaning of the word. According to the Oxford English Dictionary (OED), 'environment' means 'surrounding, surrounding objects, region, or condition, esp. circumstances of life



of person or society'. Hence, environmental management and accounting, for example, define themselves as marginal activities. This does not help managers to work with sustainable development as a core issue. To satisfy the requirements of sustainable development an evolutionary change is required: this means that there are opportunities for industry on an evolutionary scale. The opportunities for industry created by the needs of sustainable development cannot be taken without a change of heart.

Six aspects of the next steps are now considered. These aspects are important to achieving that kind of change of heart that will make sustainable development a core business goal. In this way, the concept of sustainable development may itself become unsustainable, being replaced by normal business practice within a framework of Natural Capitalism.

#### *Aspect of the next step 1: new knowledge*

When the foundations of most contemporary technology and economics were laid down, 'scientific' knowledge about ecosystems and carrying capacity<sup>1</sup> was minimal and hence it was not a significant factor. Times have changed: 'the new information on the earth's carrying capacity brings with it a responsibility to educate and to act that, until recently, did not exist' (Brown, 1994, p 196).

In one understanding, such information is not new. There is, and always has been, a huge amount of information available about ecosystems and carrying capacity. Every living thing embodies such information. We just chose to ignore it. Wilson, the Harvard socio-biologist, argues that existing economic models are hermetic or sealed off from social and natural realities (Wilson, 1998). Sustainable development is about the recovery of this knowledge and its application in industry.

Failure to co-ordinate in this way will at worst lead to serious damage to fundamen-

tal life systems and will at best be inefficient. Such inefficiency arises in those ways in which it always arises when two separate approaches are taken to do the same job:

- duplicated effort;
- conflicts;
- stress and other dysfunctional attributes;
- confusion and
- inconsistencies.

The situation is, however, much more serious than one of inefficiency. We are living beyond our 'ecological means'. We are being paid in the 'wages of overshoot' (Catton, 1982), such as global warming, climate change and species loss, which cause more costs than benefits and threaten our existence.

There is simple common sense in acting in accordance with the ways of the living world. We do, after all, apply this principle to our own personal health care; we need to do the same for planetary health.

#### *Aspect of the next step 2: new values and meaning*

It is one thing to know what is the best thing to do and another to do it. To put the new knowledge into practice, an alternative framework for making and implementing decisions is needed. The framework has to be multidisciplinary since the living world knows no such distinctions.

However, certain descriptions of the world we now possess are exclusive; that is, they do not allow for other descriptions, other values and other meanings. This is nothing new in itself. In the second decade of this century, the philosopher Whitehead wrote 'every age produces people with clear logical intellects, and with the most praiseworthy grasp of the importance of some sphere of human experience, who have elaborated, or inherited, a scheme of thought which exactly fits those experiences which claim their interest' (Whitehead, 1997, p 223). Such insights are usually vigorously defended and are exclusive.

Whilst environmentalists in industry have to recognize and work within a multi-

<sup>1</sup> The maximum population of a given species that a particular habitat can support indefinitely (Catton, 1982, p 272).



disciplinary framework, industry itself does not. Economic core values dominate. An economic bottom-line for business activity is self-evident and essential but, in order to become sustainable, economics needs to move aside and make space for other core values. In order to accommodate these other core values, accounting for industrial activity will have to change: 'to summarise, the criteria [with regard to sustainable development] will affect the principles and practices of accounting in a number of ways. It is primarily the need to determine the category of resources used by the entity (renewable, non-renewable, critical to ecosystem functioning or subject to irreversible effects) and a longer-term view which produces these necessary changes in the practice of accounting. Daniel Rubenstein has labelled the quest for sustainable accounting as representative of the 'Age of Other Values' in the sense there is an expanded role for monitoring the stocks and flows of natural resources and that not all values pursued are in terms of historical costs or even monetary measures at all' (Geno, 1995, p 188).

Recognition that values and meanings are changing may be found along the corridors of the European Commission: 'the work of ensuring acceptance of environmental policies and sustainable development involves more than getting instruments to work. It is also changing the way we live' (European Commission, 1996, p 5). Black captures the essence of this change: 'the logic which undergirds the wholesale adaptation of nature to serve utilitarian ends is spent ... We must cease our peripatetic search for an analytical solution to what are political and philosophical problems ... Instead of gleefully manipulating nature, we must reinvent our own beliefs, behaviour and cultures in keeping with biologically healthy rivers. If westerners pay sufficient heed, wild salmon may just be capable of showing us the way' (Black, 1995, pp 63–64).

It is one thing to recognize other values and meanings but it is another to express them in practice. Hence a survey of rural accountants in Australia revealed that they

possess personal values that are favourable to sustainable development and also that these accountants do not put their beliefs into practice (Geno, 1998).

#### *Aspect of the next step 3: new skills*

To gain business benefits from sustainable development, managers require new skills. The main difference in approach has to do with the complexity and interdependence of the subject matter itself. It is impossible to deal with problems in isolation. Conversely, the best solutions are systems solutions that change not one or two factors but that affect a whole system or several systems at once. For example, an island waste disposal problem is best addressed not by better disposal facilities (i.e. treating the problem in isolation) but by a range of system changes involving such as

- importing less to be wasted (particularly with regard to packaging),
- reusing and recycling (such as kitchen wastes, building materials),
- efficiency in use gains (involving final use considerations as well as straight forward reductions) and
- redesigning for local solutions.

Each of these actions would help to solve the waste disposal problem but each of them also saves on transport costs, buying costs and material handling costs.

With a moment's reflection, it is clear that integrated solutions such as these need more than a technical remit to handle them. Diplomatic and political skills are also required. To effect change over a broad range of activities, a manager needs to consult, persuade, negotiate and motivate.

Consider the situation of life cycle assessments (LCAs) (Pederson, 1996). This is an account developed first all to assess the impact that a product or service has during its whole life cycle. This is a conceptually simple but very difficult to do in practise:

- 'the case study research indicated that it is virtually impossible to identify accurately the specific environmental impact of a



product' (Dermody and Hanmer-Lloyd, 1997, p 379), and

- 'such an approach [i.e. an LCA approach] will need to be ethical and take an ever wider view of the definition of the environment and sustainability' (Welford, 1995, p 113).

To use LCA in the tourism industry is to evaluate, say, the impact that a package holiday has on home country transport infrastructure; the host country's transport infrastructure, resources and community; road, rail, air and other transports in or over other countries; the making and service of the transport capital goods such as planes, cars and boats; the suppliers of goods and services to meet the tourist's needs; the tour operator's impacts; marketing impacts and a whole host of other items. Obviously, decisions have to be made that limit the scope of an LCA to make the account usable, but when such decisions are made subjectivity creeps in. Hence, LCA users need to be fully aware of any decisions made regarding (i) boundaries of the LCA study and (ii) any weights assigned to various social and ecological impacts in order to scale their priority. The boundaries and weights are chosen subjectively but can significantly alter the outcome of an LCA study.

In what way are we informed if the result of an LCA of the nuclear power industry shows that nuclear fuel is an environmentally friendly fuel when that LCA is paid for by the nuclear fuel industry? Do we expect that a Friends of the Earth LCA study of nuclear power will present a different result?

Adams performed a study of UK government applications of cost-benefit analysis (CBA), an account with similar boundary problems to LCA. The CBA account is used to evaluate significant decisions regarding such as motorway locations, siting of new towns and airports. Adams applied the CBA account to the decision regarding the siting of London's third airport. By applying government guidelines to the letter, Adams' CBA analysis showed that the best location for London's third airport was in the middle of Hyde Park. This is a ludicrous answer

that shows the fallacy of CBA (and LCA) objectivity. Adams concludes 'whenever people can be found arguing from different premises progress toward agreement can only be made if they can be persuaded to examine the foundation of their disagreement. The skills in shortest supply for this task are not economic, but scientific and diplomatic' (Adams, 1995).

#### *Aspect of the next step 4: new metrics*

Monetary measures of institutional performance do not capture enough relevant information to render institutions sustainable. Economics and traditional accounting measures represent only a subsidiary, possibly minor, performance system when the needs of sustainable development are encountered.

This limitation of existing economic systems is recognized by some economists. Daly (Daly and Cobb, 1990) argues that traditional economics possesses a 'misplaced concreteness' that relies excessively on abstract numeric analysis. In response to this kind of limit, elegant and detailed proposals have been made for enlarging the information content of both economics and accounting. Pearce (1989) proposed that the cost base of economics could be simply extended by introducing additional cost categories for such as social and environmental costs. The United States' Environmental Protection Agency (1995) has given Pearce's proposals a detailed and practical expression in the form of 67 new environmental and social costs in six new categories. Additional categories for social and environmental costs are popular because they make no fundamental changes (Society of Management Accountants of Canada, 1992; Schaltegger *et al.*, 1996; Bennet and James, 1999). Gray takes a different approach from that of merely identifying and accumulating additional costs. He proposes a 'sustainable cost' accounting system in which calculations are made to ascertain the additional cost that must be borne 'at the end of the accounting period to return the planet and biosphere to the point it was at the beginning of the accounting period' (Gray, 1992, p 419).



If it were the case that accumulated costs establish value then the simple recognition of social, environmental and 'sustainable development' costs would indeed bring about fundamentally change to the things we value and, consequently, the decisions we make, but business values are not derived in this way. In the contemporary world, values are established by market transactions based on supply and demand. This means that costs are not relevant to the derivation of economic values (this is not to say that costs are not important to economic decision-making).

Hence, for example, the accumulated social, environmental and sustainable development costs of clear-cutting a stretch of forests have no significance for creating economic value. The economic value of the forests depends on market valuations of the wood, labour and other resources needed for the 'production' and sale process. For the accumulated social, environmental and sustainable development costs to attain real value, a framework other than traditional economics is required.

Other frameworks are indeed on offer. In spite of the comments made above, there is much that is new in environmental economics (Daly, 1991; Pearce and Warford, 1993), environmental accounting (Gray *et al.*, 1993), social reporting (Zadek *et al.*, 1997) and stakeholder corporations (Wheeler *et al.*, 1998). The UK's Department of the Environment, Transport and the Regions (DETR) has the stated intention of working with diverse and multidisciplinary indicators across all industrial sectors (Department of the Environment, Transport and the Regions, 1999). The DETR's example effectively establishes a triple bottom line for measuring industrial performance. Mathews (1997) suggests that a mega-theory of accounting is emerging and that this also utilizes a triple bottom line measurement framework.

What is unrealistic about the first step approach that involves additional cost categories or other appraisal bases is that it assumes that values will change somehow on their own. It is unrealistic to expect busi-

ness accountants to simply add additional social and environmental costs to their profit statements to reflect their subjective assessments of impacts. As stated above, value, for contemporary economics and accounting, is based on free-market interactions; i.e. value equals price in a free market. But even those properties that are the essence of a business or which clearly are a business's greatest asset, may not be given a value by contemporary accounting because of the absence of appropriate market transactions. Such properties include brand names, market strengths, intellectual capital, innovative capacity, learning ability, *esprit de corps*, technical skills and organizational legitimacy. Furthermore, properties such as these will become increasingly important as e-commerce and virtual businesses develop. Microsoft, for example, is a business worth far more than an accountant's valuation of assets. However, values are, of course, critical in social and ecological accounting: 'one of the key elements of Ecologically Sustainable Development that has been identified and is evident is to ensure that environmental assets are valued appropriately' (Bell and Lehman, 1998, p 178).

#### *Aspect of the next step 5: new goals*

Issues of value cannot be separated from those of wealth. The wealth sought in the first step is clear enough: it is that wealth measured by economics. Crudely speaking, economic wealth means money in the bank or at least assets with price tags. In the OED, wealth is defined as 'riches, large possessions, opulence; being rich; abundance, a possession of a great quantity or display'. Hence wealth could also mean a rich, abundant, vibrant, fulfilling, opulent human and non-human community within which we live. 'Possession' in this alternative definition of wealth takes the form of common experiences, relationships, memories, shared identity and common fate.

Consideration of this second interpretation of wealth reveals that sustainable



development will be greatly assisted, and perhaps only feasibly, when real 'real' values and not economically 'real' values guide our decisions. We can only go a small way to moving industrial activity and society onto sustainable development pathways if the promised wealth, the goal, is biased and incomplete. If what we are really working for is money in the bank, then environmental and social aspects will always remain obstacles to our 'real' goals.

Money in the bank cannot be overlooked. This too would be unsustainable if absent. A truly integrative goal is required: a goal in which social and ecological values are not forced through the filter of established economic and accounting methods, and thus distorted beyond recognition in the process. A sustainable development goal is required within which all forms of desirable wealth are measured and valued on their own terms.

Integrated goals are now available. In the previous section, Mathews (1997) and the UK government's DETR (Department of the Environment, Transport and the Regions, 1999) explain how the three arenas of economic, social and environmental performance appraisal may be integrated in a multidisciplinary measurement system. Similarly, McDonough articulates sustainable development by means of the three categories of equity, economy and ecology (McDonough and Braungart, 1998). Callenbach *et al.* (1993) present an intriguingly organic illustration of the information systems that define an industrial entity. The illustration is suggestive of a new concept of industrial activity. However, in all these examples, it is not explained how the present economic core of industrial activity will be changed so that economic, ecological and social goals become equally desirable. In the absence of that explanation, it is assumed that in spite of the breadth of the schemes the real reality remains economic. Sustainable development is again that obstacle to be overcome in order to achieve our real desires.

On a more visionary level, perhaps sustainable development goals need to be as adaptable, as pervasive and as ancient as the

biosphere itself. Lehman understands this essential requirement and draws on Taylor's communitarian theory for a solution: 'An accountable world constructed according the tenets of modern communitarian theory invites our thinking to span across 'the earth, sea and sky and recognise that these forces are all a part of a formable world which is open to greater cosmic forces' (Taylor, 1995, p 122) 'that allow them to flourish and over which humanity has no ultimate control' (Lehman, 1999, No. 227, p 238). These are wonderful thoughts, but what do they mean on a Monday morning in the office?

McDonough and Braungart are creating the 'Next Step' or, in their terms, the next industrial revolution, by promoting the use of nature's design criteria. They write '... eco-efficiency is a valuable and laudable account, and a prelude to what should come next. But it, too, fails to move us beyond the first revolution. It is time for designs that are creative, abundant, prosperous, and intelligent from the start. The model for the Next Industrial Revolution may well have been right in front of us the whole time: a tree' (McDonough and Braungart, 1998). This is perceptive, inspirational and, indeed, revolutionary writing, but do the goals that a tree possesses translate without elaboration into the kind of goal that can motivate and organize several billion people around the world?

#### *Aspect of the next step 6: new management*

The previous five aspects of the next step (knowledge, values and meaning, skills, metrics and goals) each say something about New Management. But what is it that New Management does?

New Management could implement sustainable development according to such as Lamberton's five rules:

1. critical natural capital to be maintained intact;
2. use of non-renewable resources to be limited to the rate of creation of renewable substitutes;





3. use of renewable resources to be governed by natural regeneration rates;
4. waste discharges to be limited by assimilation rates and
5. scale of human activity to be within carrying capacity (Lamberton, 1998).

However, in the same way that recognition of the interconnectedness and interdependence of 'individuals' within an ecosystem has changed our understanding of the world within which we live, so too is the same recognition changing management practice. Senge argues that we need to develop 'learning organisations' in order to manage in this new environment (Senge, 1993). The old ways of management may be familiar and seemingly intractable: 'yet we are together running an economic system that violates the basic laws of natural systems, and just hoping that we can keep it going long enough that the problems will have to be solved by someone else' (Senge, 1998, p 126).

Handy is a professor of management development at the London Business School. He has a vision of what the new management might look like: 'these days almost nothing is certain. In the old days, when organisations were younger, there was a feeling that we would in due course arrive at some sort of scientific law about organisations. Companies would succeed because they would be able to predict the future and be able in some sense to even manage the future. So back then we designed and constructed our organisations on the basis of planning, predictability and control. We used words like plan, operate, control, measure. But in my view, all those words are now wrong. They are not terribly useful in a world which is flowing rather than standing still. All we can really do now is go with the flow, and try to steer things a little' (Handy, 1998, p 22).

## CONCLUSION

Futurology, like fortune-telling, gains increased probability of being right by keeping forecasts either vague or wide ranging. Hawken *et al.* (1999) are not vague about their

vision of Natural Capitalism but they are wide-ranging.

The 'next steps' identified in this paper complement the possibility of a transition to Natural Capitalism. If a critical mass of companies implement the practical solutions described in the book *Natural Capitalism* (Hawken *et al.*, 1999), and if some of this paper's 'next steps' had been taken, then perhaps a new form of capitalism will have been implemented, but capitalists will still want their returns and investors will look to movements in the financial markets to make their fortunes.

Furthermore, any new form of capitalism will come with a new set of problems. So to what extent do concepts or terminology matter, apart from providing a catchy title to boost book sales? There are many real problems in the world and is it highly unlikely that a new concept will solve them all.

Perhaps Natural Capital is telling us that we do not have to solve all our current problems. Natural Capital and the 'next steps' are not intended to solve our current problems at all: they work by the natural processes of evolution. They cannot solve current problems since these problems belong to those minds that created them: Natural Capital and the 'next steps' move on to a new kind of understanding, an evolutionary step. Natural Capital just might be related to existing forms of capitalism in the same way that all the trappings of our modern age relate to feudalism.

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## BIOGRAPHY

Frank Birkin can be contacted at Sheffield University Management School, 9 Mappin Street, Sheffield, S1 4DT, UK.  
Tel.: + 44 (0) 114 222 3452.  
Fax: + 44 (0) 114 222 3348.  
E-mail: f.birkin@sheffield.ac.uk