Accounting for the sustainable corporation

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Basic relationships

In order to be sustainable, a corporation must obey the principles of sustainable development. In the long term, there is no option to avoid this responsibility. These principles are ecological in origin and according to Brown (1994, p. 15) include that in the long term:

- resource use cannot exceed resource renewal rates;
- species extinction cannot exceed species evolution;
- soil erosion cannot exceed soil formation;
- carbon emissions cannot exceed carbon fixation; and
- human births cannot exceed human deaths.

Each of these principles requires that sustainable development assessments are to some extent external to traditional corporate boundaries. Even with regard to the emission of pollutants by industry, it is not the emission per se that is problematic but rather the effect of the pollutant in changing ecological, environmental and biological systems.

From this understanding, the ability of corporations to perform well in an ecological sense is of more fundamental importance than their economic performance; there can be no future for economic activity without compliance with the principles of sustainable development. While contemporary efforts to capture something of sustainable development in economic terms have their uses (such as maintenance of natural capital and intra- and inter-generational capital), the fundamental importance of an ecological understanding is missed by this approach and hence there is a need to re-conceive of industrial activity in ecological terms.

From an ecological perspective, the human community is one community among many. However, the volume of information, diversity of relationships and complex needs of the human community justify treating this community apart – the human community remaining a part of and being dependent on the ecosystem but separated for the purposes of this account. In this account, the human community is analysed into various “stakeholders”.

Nature of the relationships

The significance of the basic relationships outlined above is that both stakeholders and industrial entities are embedded within the ecosystem and, consequently, governed in some regards by ecosystem properties. Any account of the sustainable corporation needs to be aware of these properties which differ fundamentally from those proposed for traditional economics.

These properties include:

- Interdependence – where an entity can be fully defined only in terms of relationships within itself and with other entities. The wolf, for example, is a function of internal cell-biology and external habitat as well as being of a certain mass, shape, colour and so on – and hence in this account the corporation is both what has been regarded traditionally as the “corporation” plus stakeholder and ecosystem relationships.

- Indeterminacy – chaos theory and quantum physics reveal the inherent uncertainty of reality and this requires a different understanding of planning and control – Wheatley (1994, p. 151) writes of this new science in business leadership: “In this new world, you and I make it up as we go along, not because we lack expertise or planning skills, but because that is the nature of reality”.

It is beyond the scope of this paper either to justify this new understanding or to explore, even modestly, its full implications. However, as a result of this understanding profound changes in cultural as well as business phenomena can be recognized and interpreted. Perhaps two more quotations will reveal a little more of the impact of the new understanding:

With regard to ecological understanding: Our statements concerning things and qualities, fractions and wholes cannot be
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made more precise without a transition to field and relational thinking. (Naess, 1990, p.79).

With regard to chaos theory and deterministic controls in business:
First, many of the inappropriate aspects of the control forms they adopt interfere with the spontaneous political learning process...
The second harmful consequence of espousing unrealistic explanations of how a business can function is that very little attention is paid to the processes that in reality have to be applied to dealing with the unpredictable (Stacey, 1993, p. 342).

A fundamental reorientation is required of most business mind-sets. For example, one ultimate justification for business activity has been that of "wealth creation" but this no longer holds since the relationships with the ecosystem show that such a one-sided, almost god-like function is simply not true. It is more accurate to talk of a "wealth appropriation" process: "Wealth appropriation describes the new industrial corporation's activity of taking to itself or devoting to special purposes the wealth already present in the society or environment" (Birkin and Jørgensen, 1994, p. 25).

Hence it is our objective to establish a framework and methodology for accounting for the sustainable corporation - the nature of the account precludes the establishment of fixed reference points and contents.

Constructing the account
An integrated and comprehensive framework and methodology of accounting for sustainable development has not been successfully

applied to an individual corporation. For the purposes of a practical example, it is necessary to construct such an account from the best examples of several corporations and institutions.

Industrial metabolic processes
This is the part of the account that corresponds most closely to existing internal planning and control systems. It is perhaps best understood in terms of two information flows: eco-balance accounts and life-cycle assessments. These two information flows are frequently both included within the definition of "life-cycle assessments". However, when these two information streams are regarded from the point of view of operations management and reporting, they are sufficiently different and important to justify separation.

For example, the eco-balance (sometimes referred to as the "mass-balance" but this name excludes energy flows and fundamental ecosystem dependence) can be constructed from existing source documents within the corporation such as material receipts, invoices, waybills, stock records and sales despatches. And the eco-balance can be compiled and operated by existing company internal-information providers such as cost clerks, technicians and accountants. On the other hand, the preparation of a life-cycle assessment of the corporation incorporating a complete "cradle to grave" view requires much information external to traditional corporation databases and an expertise not found among traditional providers of corporate information. Figure 2 lists the parameters of the eco-balance input/output analysis at the total corporate level as developed and applied by Dr Christine Jasch, director of the Institute of Ecological Economics (IÖW) Vienna. The Danish Steel Company has successfully prepared and operated an eco-balance account for purposes of internal management and control and also external reporting (Jørgensen, 1993, pp. 2-5). An eco-balance approach has been used for several years by a number of German companies including Kunert AG and Mohndruck Graphische Betriebe GmbH.

However, in order to optimize an industrial metabolic performance it is necessary to consider more than internal functions alone. The information flow provided by life cycle assessment enables the corporation to embark on the systematic improvement of products and processes according to the objectives of cleaner technology and, ultimately, in accordance with the principles of sustainable development. While the engineers of many corporations are making use of
life-cycle assessments for development purposes, few are using the technique to construct an account. The Danish Engineering Company Danfoss refers repeatedly in qualitative terms to the use of life-cycle assessments within those pages of its annual report dedicated to product and process development and while quantitative performance improvement information is also given, the two are not linked. The large Swedish forestry company MoDo is working to integrate its industrial activities with the sustainable use of Swedish forestry resources and the company displays an effective life cycle for forests and forestry products in their 1993 environmental report. As the MoDo president has written in the foreword to that report: "Sustainability in every aspect and a
cyclic approach form the very foundation for the future development of our company”.

Stakeholders
Stakeholder reporting is achieved through many different communication channels and these channels can vary according to stakeholder needs and the nature of any particular piece of information. While the actual content of the stakeholder reports may vary considerably, it is of some use to classify corporate stakeholders and their information needs within a framework for reporting purposes.

Table I provides one such classification, based on ideas initially promulgated in The Corporate Report (ACCA, 1975), and updated by Woodward (1993), and which has been used successfully to analyse empirically the extent of stakeholder information provision by business enterprises. It should be noted that the stakeholder identified as “the natural environment” stands apart from the other interest groups shown, in that per se it has limited ability to demonstrate the three elements inherent in being a stakeholder of interest, claim (Carroll, 1993) and ability to influence the matter under consideration (Freeman, 1984). Elements of the environment cannot themselves give expression to their feelings about aspects of environmental concern, and rely on pressure groups to do this on their behalf for better or for worse. It may thus be better to envisage the natural environment as

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Information needed to assist in determining/assessing/evaluating</th>
<th>Information source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners: existing and potential shareholders</td>
<td>Share trading decisions, Comparisons with earlier years/other companies, Managerial performance, future performance</td>
<td>Corporate report, Value added statements, Forecasts</td>
</tr>
<tr>
<td>Lenders: existing and potential suppliers</td>
<td>Security of investment, Value of collateral, Cash generating ability</td>
<td>Corporate report, Cash-flow statements, Independent valuations</td>
</tr>
<tr>
<td>Human resources: existing potential and past</td>
<td>Security and prospects, Information for collective bargaining, Position, progress and prospects</td>
<td>Employee/employment reports at local (site) level, Corporate report</td>
</tr>
<tr>
<td>representatives</td>
<td>Long-term viability, Ability to meet obligations, Product information, Economic comparisons</td>
<td>Product literature, Trade press releases, Corporate report</td>
</tr>
<tr>
<td>Business contacts, customers, suppliers,</td>
<td>Economic indicators (balance of payments; output; employment; etc.), Tax data</td>
<td>Central Statistical Office returns, Special reports, Corporate report</td>
</tr>
<tr>
<td>competitors and those interested in business</td>
<td>Role of the enterprise in the community and how all its actions affect society at large</td>
<td>Media, Surveys/reports/investigations, Corporate report</td>
</tr>
<tr>
<td>amalgamations</td>
<td>The total effect of the enterprise on the natural environment</td>
<td>Environmental reports, Life-cycle analyses, Sustainability surveys, Environmental impact assessments</td>
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Table I
A model of corporate stakeholder information needs
The potential for stakeholder analysis and reporting to accommodate an account of sustainable development has yet to be fully realized, for as the CEO of the German hosiery company Kunert AG observes in its 1994 Environmental Report: “If our successful social market economy is also to integrate the preservation of the environment in its control circuit system, then ecology must become relevant for the market”.

Ecosystem
Since the new understanding of interdependence and indeterminacy places the corporation within the ecosystem in complex and unpredictable ways, relationships between the corporation and the ecosystem will be very difficult to summarize in accounts. Something of these relationships will of course have been incorporated in the other parts of the account for sustainable development. Life-cycle assessments and demanding stakeholders could on their own integrate industrial activity significantly within the ecosystem. What then is the role for this part of the sustainable development account?

The account so far has been directed by the experiences, abilities and needs of the corporation and human stakeholders. Any account of sustainable development for the corporation must also include the ability of the ecosystem (both local and non-local) to maintain itself at the given level of resources appropriated by the corporation. Even for the zero-polluting industrial activity, ecosystem collapse remains a possibility when too many resources, including land and water, are appropriated by the corporation. The assessment of the capacity for the ecosystem to maintain and renew itself is necessarily done on a regional level: few corporations exist alone in their local ecosystem. Also, the identification of appropriate boundaries for assessing the local ecosystem is not obvious in many cases where urban developments, large-scale engineering and non-ecological political borders exist. This part of the account is perhaps best handled by personnel capable of introducing a bioregional perspective and authority – local authorities being the obvious agents.

The carrying capacity of the ecosystem in which the corporation is situated could then be assessed by means of measures of health of the ecosystem such as water acidity or alkalinity, water available oxygen demand, indicator species such as lichens and birds, habitat and species diversity, air quality, land utilization, pollution load and so on. Given the high level of urban and economic development in parts of the UK, such as London and Birmingham, it is problematic how their local ecosystem can be capable of carrying independent local sustainable development. There is some potential for “buying” their carrying capacity elsewhere such as by protecting areas of tropical forest but these measures can only “buy” time. The interdependence and indeterminacy of the ecosystem and economic activity requires that all participants behave according to the principles of sustainable development – there is no “opting-out”. For example, why should those countries with extensive tropical forests not appropriate all their ecosystem wealth for immediate use when significant regions of the so-called developed world have done exactly that? - forest cover in the UK is now a small fraction of that existing at the beginning of this century, which was itself a small remnant of the post-glacial forest cover. A few moments reflection on issues such as these show that considerable changes in cultural values are required before sustainable development gains an essential, everyday practical expression.

The implementation of Agenda 21 as agreed at the Rio Earth Summit is the main focus for the integration of economic and ecological criteria within the UK. Peterborough Environment City Trust, for example, has completed the first stages of a comprehensive environmental audit of the city and has a scheme now operating whereby all small and medium-sized enterprises within the city limits can receive consultancy assistance in preparing an energy audit for their company. The trust has also been experimenting with the application of biological measures in the urban, human community.
A compromise is to agree on the broad framework and methodology for the account. This agreement should be narrow enough to enable meaningful communication about the accounts to be made between operators and users in, say, London and Rio de Janeiro but broad enough to permit the evolving local and regional variations of different sites to be considered. A benchmark approach seems most suitable for this purpose. Table II gives an example of a benchmark account for corporate sustainable development. Detailed procedures and categorizations could be incorporated within the account by use of environmental management system standards such as ISO 14001; further work could establish a standardized framework for stakeholder reporting; the assessment of ecosystem carrying capacity is technically feasible. However, the preparation of such an account is nowhere near as difficult as creating the cultural values in which such an account has meaning.

### Table II
Benchmarks for a sustainable development corporate account

<table>
<thead>
<tr>
<th>Sustainable development</th>
<th>Life cycle assessment</th>
<th>Ecobalance accounts</th>
<th>Stakeholder analysis</th>
<th>Carrying capacity assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Verification by competent body</td>
<td>No waste verification</td>
<td>90% stakeholder support</td>
<td>High transparency Demand management</td>
<td>100% renewable resources Diverse biotic environment</td>
</tr>
<tr>
<td>Product redesign</td>
<td>Process redesign</td>
<td>Stakeholder dialogues Analysis of stakeholder needs</td>
<td>Industrial ecology Habitat restoration High use of renewables</td>
<td></td>
</tr>
<tr>
<td>Material sourcing and disposal</td>
<td>Material efficiency Environmental performance indicators</td>
<td>Regular stakeholder reports EMAS credentials</td>
<td>Tolerance of competitor species Dematerialized growth</td>
<td></td>
</tr>
<tr>
<td>Customer use analysis</td>
<td>Reuse Recycle</td>
<td>Environmental reports Press releases</td>
<td>CO\textsubscript{2} / O\textsubscript{2} stabilized Harvest rates monitored</td>
<td></td>
</tr>
<tr>
<td>Linear processes</td>
<td>No waste records</td>
<td>Minimum stakeholder communications</td>
<td>No recognition of ecosystem limits Habitats fragmented</td>
<td></td>
</tr>
</tbody>
</table>

References


