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MAPPING OUT FUZZY BUZZWORDS – WHO SITS WHERE ON SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

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Environmentalism has spawned a new vocabulary. Even frequently used words are still poorly defined. Different groups use the same words to express different ideas; often definitions are coloured by the groups' incompatible core value systems. This leads to fuzziness and misunderstanding.

Such tendencies mean that a common vocabulary does not necessarily make for better communication. Quite the contrary: the use of fuzzy buzzwords prevents different groups from working together to define a shared agenda. Terms like 'sustainable development' and 'sustainability' are widely used but rarely defined by consensus. They succeed in sustaining dialogue but bring with it confusion.

Here, the constituent elements of sustainable development are mapped graphically using the principles said to underlie the concept. This not only has the advantage of visually discriminating between so-called weak and strong forms of sustainability but it also opens up the possibility of comparing and contrasting other formulations. © 1997 by John Wiley & Sons, Ltd and ERP Environment.

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VISIONS OF SUSTAINABILITY

Sustainable development is one of a dozen key concerns for researchers and policy makers to emerge over the last decade. Whilst its most widely cited meaning is 'meeting the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987), the term has evolved in several directions to encompass the concerns of people working in a wide range of disciplines: from sociology to engineering, geology to mathematics.

The term was originally coined to pinpoint the (sometimes) conflicting objectives of economic development and environmental protection. David Pearce (1989) believed 'sustainable development' to be an oxymoron; that development as currently defined contradicts sustainable existence. This has prompted some commentators to revert back to the original term 'sustainability' instead. Yet, while the choice of label between sustainability and sustainable development sometimes gives a clue as to the likely viewpoint of the commentator, this is not always the case: some people use the terms as per-

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fect synonyms. So, for the sake of convenience, in this analysis the two terms are examined together.

In much current usage, sustainability and sustainable development are fuzzy buzzwords: terms that appear to encapsulate a discrete notion but which actually have multiple interpretations. Sustainability has come to mean different things to different people yet appears to unite them under what is actually a (falsely) shared banner. Like happiness, it is something everyone wants, but precisely what it encompasses varies between individuals, and even changes over time.

The time frames for reaching a sustainable society are rarely defined. However Ekins (1993) provided a pointer: because of the predicted doubling of global population, he said that humanity must reduce its consumption by 75% by 2030 to become sustainable. Friends of the Earth (FoE Scotland, 1995: p. 5) is another exception. They set an ambitious target:

> Sustainability should be achieved by the year 2050.

Yet the Brundtland Report's emphasis on inter-generational inheritance suggests that the idea was first conceived to operate over a very long period. This is still implicit in most contemporary discussion of sustainability and sustainable development.

Sustainable development, when used by policy-makers and ambitious (or ill-informed) organisations as part of a 'greening' initiative, conveys the notion of trying to maximise economic wealth, while ensuring that exploitation of environmental resources does not translate into a lower overall standard of living (however measured). This is not only a human-centred viewpoint but is also based on the assumption that quality of life is inextricably tied to wealth creation and consumption. The wealth and resources available to future generations are given special concern. In most cases the 'development' side dominates the equation. The 'sustainable' qualifier only comes into play when resource shortages or the side effects of consumption pose a threat to the economy or health. This conception of sustainable development is made explicit in the phrase *sustainable economic growth* (for example, Bartelmus, 1994: p. 69).

Gordon Mitchell *et al.* (1995) have identified four main components, or principles, that underlie sustainability in the literature, see Figure 1. This is the framework for analysis which we use here. Naturally, because of the holistic nature of sustainability issues, the four principles are very closely inter-

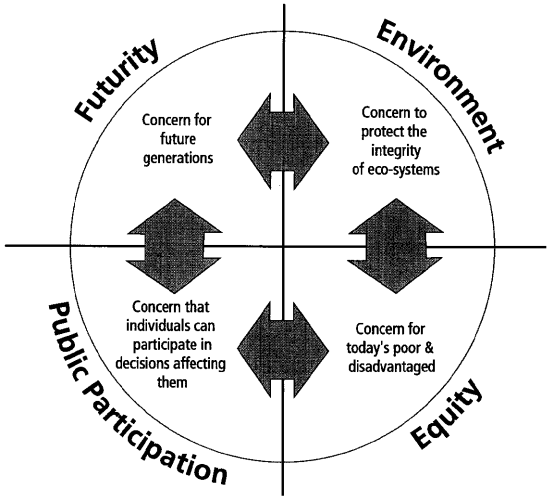

Figure 1. The principles underlying sustainable development (adapted from Cooper, 1995)

linked. The arrows of the chart reflect that each component inter-relates with all others.

RESOURCE-BASED SUSTAINABILITY

Futurity

In view of the original 'Brundtland' definition of sustainable development (WCED, 1987), we would anticipate that early work in the field should focus on *futurity*, the notion that present generations should leave to the future the ability to maintain present standards of living. Some schools of thought, notably the UK government, hang on to this principle without picking up the newer associations of the term.

The UK government has adopted the term sustainable development enthusiastically, even to the extent of publishing a strategy document (DoE, 1994a) looking at the challenges we face over the next 20 years, but the government (DoE, 1994b: p. 8) is clear that:

> sustainable development does not mean having less economic development: on the contrary, a healthy economy is better able to generate the resources to meet people's needs.

The government line on sustainability embraces (*ibid.*):

- human health
- conserving natural resources
- scientific (and risk) analysis

- precautionary action
- consideration of ecological impacts, and
- the 'polluter pays' principle.

While the solutions proposed in the strategy centre on ways of improving the efficiency with which we use resources, and at the same minimising the waste society generates and leaves for future generations to deal with. That is, the emphasis is on *futurity*, with *environment* in softer focus; *equity* and *participation* are out of the picture.

This emphasis on the future is ironic, given that governments have been heavily criticised (for example, by Johnson, 1991: p. 299) for taking a short-term stance on environmental issues. Perhaps the real achievement of the debate about sustainable development will be in extending government horizons beyond the next general election.

Plus Environment

The ecology movement has been concerned about sustainability for longer than other groups (Tisdell, 1993: Ch. 10). One of its greatest victories has been to begin to draw this framework for environmental improvement into the portfolios of policy makers and the business community. Yet unlike these groups, the ecology movement has historically assigned more weight to the integrity of eco-systems than to worrying about future (or indeed present) human generations. Typically, when ecologists use the term sustainability, they avoid using a human-centred frame of reference.

This ecological perspective has been distorted as their vocabulary has been adopted and moved into government and business circles (Palmer and van der Vorst, 1996). As outlined above, the UK government has adopted a much narrower view of sustainable development. In the past, they have been guided by David Pearce to see it as economic growth that does not deplete natural 'capital assets' (Bowring, 1994). This economics orientation is not foremost in ecologists' minds. Indeed, the UK Department of the Environment's definition only meshes with part of the older suggestion, from the World Conservation Strategy (IUCN, 1980), that sustainable economic development requires:

(1) maintenance of essential ecological processes
(2) preservation of genetic diversity, and
(3) sustainable utilisation of species and ecosystems.

The overlap here is in the *futurity* principle: '*maintenance . . . , preservation . . . , sustainable . . .*' all imply concern for the well-being of future generations. Moreover, there is little to split '*sustainable utilisation*' from 'resource management'. Yet the IUCN failed to club together *futurity* and *environment* in a manner that would satisfy rigorous environmental and ecological requirements. Genetic diversity and ecological processes are not 'resources' in the conventional sense of the word, nor can they be 'managed' in the same way.

Although the IUCN confined their requirements to purely environmental factors, they provided footholds for governments and others whose first priority is the economy. Tisdell (1993) has enlarged these footholds by making explicit, and emphasising, the economic orientation. This emphasis, along with his omission of genetic diversity, dilutes the environment component still further in his perspective on sustainability. He asserted that genuine sustainable economic development requires:

(1) sustainable ecological systems (on which economic production is based)
(2) sustainable patterns of economic exchange, and
(3) sustainable utilisation of species and eco-systems.

This appears to match the government's view, but is sharply differentiated from that of ecologists.

As Rob Gray has pointed out (1994: pp. 14–15), some elements of sustainability are at odds with current business and accounting orthodoxy. In particular, the social side of sustainability, *equity and participation*, are not key business concerns and they are hardly ever addressed in current industry attempts at improving environmental performance. Indeed, among the low numbers of leading edge organisations that have published environmental reports, few even mention sustainability or sustainable development. One exception to this is Thorn EMI. This group of companies were recognised by the Chartered Association of Certified Accountants (ACCA, 1995; 1996) as having the best reporting mechanism in use two years running.

The company's 1995 environmental report (Thorn EMI, 1995) has added even more improvements in this direction. It opened with a statement from the chairman saying that the group aims to 'demonstrate how [its] operations can be conducted more sustainably'. He also recognised that in order to cover ground towards sustainability, the business community needs 'the incentive of a high level of public and governmental commitment'.

The report defined policy principles for incorporation in the operating companies' environmental policies. In addition to the ubiquitous references to legislation, communication, energy and waste minimisation was one more innovative commitment (p. 36):

> to 'develop, design and operate facilities taking into account ... the sustainable use of renewable resources ... '.

The report also contained wide-ranging environmental performance data and detailed objectives and targets for improvement. Yet even this jewel in the crown of UK environmental reporting failed to make explicit a commitment to *futurity*, there were holes in its treatment of the *environment* component, and it completely failed to address the two other principles underlying the sustainability agenda, *equity* and *public participation*.

THE SOCIO-TECHNICAL SIDE OF SUSTAINABILITY

In addition to the widely accepted inclusion of resource-based components in sustainability and sustainable development, some groups now use the terms to encompass broader, social aspects also.

Futurity plus environment plus equity

Thus Friends of the Earth Scotland (1995: p. 5), for example, have added to concerns about environmental quality and the resources available to future generations a concern for equity:

> If there is a finite amount that we may consume or use beyond which we cannot go ... then we must share what we already have far more than is currently the case. Equality of access to the world's global resources therefore must be the guiding principle.

Strong and weak sustainability

Daly and Cobb (1989) have used social concerns like this to highlight another sharp division in perspectives on sustainability. They differentiated between strong and weak sustainability ethics. Here the strong sustainability ethic dictates that a society is only sustainable if quality of life is equally distributed among all people, and if the biosphere is not over-exploited by people as a resource. The weak ethic, on the other hand, allows for individual opportunity, and permits the use of the biosphere for the good of society (Mitchell, 1994: pp. 6-7). Thus weak sustainability excludes resource degradation and inter-generational equity; it is concerned only with 'environment' principle of sustainable development. Proponents of weak sustainability typically have greater faith in technology for providing solutions (for example, Faucheux and O'Conner, 1995). In addition, they rarely distinguish between human-made capital, and natural capital.

Faucheux and O'Conner (1995: p. 2) said that technology was at the root of divisions between the strong and weak sustainability perspectives:

> The conflict between advocates of weak sustainability and of strong sustainability is founded ... on a divergence in the confidence placed in technical change.

Science and technology are often considered to be the primary factors shaping society in the post-industrial age. A clear expression of this view is the UK Engineering and Physical Science Research Council's Clean Technology Initiative (CTU, 1994). Technology is seen to be capable of providing solutions to environmental and other resource-based sustainability problems. According to this view, new resources will be found to replace those that are exhausted, new methods of energy generation will remove human dependency on fossil fuels, and cleaner methods of production will resolve problems of pollution. Technological innovation will save the day and the planet. Future society will be similar to today's, but more technologically advanced, and the historical pattern of economic growth since the industrial revolution will continue.

Some see technological change as a way into industrial ecology: mirroring natural processes where all the wastes from one organism become raw materials for others. Indeed, were such a redesign of production possible, it would side-step many of the problems of pollution and waste. Sadly, this will not solve problems on the energy side of the equation. As Jackson (1996) observed, we share with the non-human world the thermodynamic constraints which make it unsustainable to use more energy than what we can collect from the sun. However, unlike our non-human counterparts, our present industrial system avoids these constraints by relying on fossil fuel resources. To move industry away from fossil fuel dependency, towards renewable fuels, is seen as inconceivable from today's starting point.

Technological innovation may also be seen as a way to resolve environmental problems, if it is accompanied by changes in ways of living that address broader social problems and issues of futurity. In some situations, as Faucheux and O'Conner (1995: p. 14) noted, 'Social or organisational changes should precede and anticipate major technical change . . . '. Alternatively, technological innovation may simply be viewed as a stop-gap, as a means of helping us manage the transition into a new socio-economic pattern, one that is more resource efficient than at present. This is a view that has underpinned UK energy policy since at least the mid 1970s (Cooper, 1982).

Gray (1994 p. 14) and Stone (1994: pp. 3-5) shared with Daly and Cobb the strong sustainability perspective, though they reformulated its components. They divided sustainability into two dimensions:

- eco-efficiency ('not demanding more from the planet than it can provide in the long-term, using the world's resources efficiently, within its carrying capacity'), and
- eco-justice ('recognising both inter-generational and intra-generational fairness in the use and distribution of resources').

Their phrase 'eco-efficiency', which maps perfectly on to von Weisäcker's notion of efficiency (above) meets the *environment* principle underpinning sustainable development, while 'eco justice' welds together both *futurity* and *equity*.

Mitchell (1994) felt that the range of different levels of equity and quality of life across the sustainability spectrum vary according to ethics and that, ultimately, 'whether we want a weakly or strongly sustainable society is decided through the political system'.

Plus public participation

The Rio Declaration on Environment and Development (UNCED, 1992) outlined wide-ranging principles aimed at ensuring sustainable development. It recognised each of the previously discussed principles, futurity, environment and equity, and added a fourth: concern that the public should be aware of, and participate in, the process of change. Thus Principle 10 of the Declaration stated (*ibid*.: p. 10):

> Environmental issues are best handled with the participation of all concerned citizens . . . each individual should have . . . [information], and the opportunity to participate in decision-making processes.

This additional social aspect of sustainability is critical to ensuring widespread support for the process of change (see Palmer and Cooper, 1995), and making sure that the way society develops in the future is acceptable, and hence sustainable, for all members of a society and not just those who can manipulate the global or local political system most effectively.

Many UK local authorities have accepted and are attempting to act on this wider definition of sustainability (UNA-UK SDU/CDF, 1995: p. 22). Moreover, prompted into action by Local Agenda 21, they are running with the principle of *public participation*. Their first steps towards change have centred on consulting with their populations to build a consensus for community action (*ibid*.).

MAPPING COMMITMENT

As this brief review has made clear, different groups aspire to and put widely differing emphases upon the four principles which Mitchell *et al*. have identified as underpinning sustainable development:

- futurity
- environment
- equity, and
- public participation.

Applying these principles is helpful when trying to situate where particular groups or individuals stand on sustainability issues (after Cooper, 1995). We have mapped their relationship to these principles graphically below, in Figure 2.

The multitude of competing definitions for sustainable development goes some way towards explaining the term's attraction for the widely differing groups and individuals cited above. The precise meaning of the term is still contested ground, still worth fighting over. As Pezzey commented seven years ago (Pezzey, 1989: p. 1),

> a large selection of quotations from recent writing on sustainability shows that there is no agreement on what exactly sustainability means. This fuzziness is useful in forging a consensus to promote sustainable development . . . .

The critical point to draw from the analysis presented in this paper is that, as the meaning of sustainability has changed over time, it has broadened. Some groups have been slow, or are unwilling, to adapt to the newer, wider interpretation. Some may wish to keep running with their original inter-

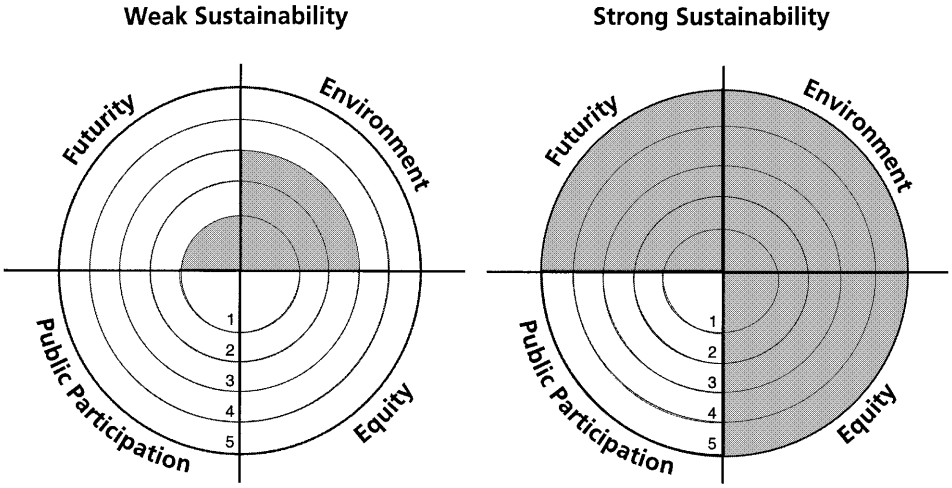

Figure 2. Charts mapping different kinds of commitment to sustainability.

pretation because it suits their own, more circumscribed, purposes better. But this lack of consensus leads to confusion and is a real barrier to intergroup dialogue.

One solution, we suggest, is for all those with something to offer the continuing debate about sustainability to make explicit where they stand in relation to the four principles that underpin the term. One way for them to do so is by identifying where they currently fit on our sustainability chart, (see Cooper, 1996).

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REFERENCES

Bartelmus, P. (1994) *Environment, Growth and Development: The concepts and strategies of sustainability*, Routledge, London.

Bowring, F. (1994) *Naivety, Politics and the Environment*, in: Letters to the Editor, The Guardian (2.2.94).

Chartered Association of Certified Accountants (ACCA). (1995) *Environmental Reporting Still a Minority Activity*, ACCA Press Release, London.

Chartered Association of Certified Accountants (ACCA). (1996) *Corporate Environmental Disclosure*, ACCA , London.

Cooper, I. (1982) *Energy Conservation in Buildings*, A commentary on British government thinking, Applied Energy, (V, 10. pp. 1–45) Applied Science Publishers Ltd., Barking.

Cooper, I. (1995) Environmental assessment methods for use at the building and city scales: Constructing bridges or identifying common ground?, in: *conference proceedings of the International Workshop on Environmental Evaluation of the Built Environment for Sustainability*, Florence, Italy, September 1995, forthcoming in Brandon, P. and Lombardi, P. (eds.).

Cooper, I. (1996) Mapping Commitment to Sustainable Development: A self-assessment technique for policymakers and practitioners, in: *proceedings of the International BEQUEST Workshop*, April, 1996, Bassenthwaite, Cumbria.

Daly, H.E. and Cobb, J. (1989) *For the Common Good: Redirecting the economy toward community, the environment, and a sustainable future*, Beacon Press, Boston.

Department of the Environment (D.E). (1994a) *Sustainable Development: The UK strategy*, HMSO, London.

Department of the Environment (DoE). (1994b) *Sustainable Development: The UK strategy*, summary report, HMSO, London.

Ekins, P. (1993) *The Gaia Atlas of Green Economics*, Anchor Books, Doubleday, New York.

Faucheux, S. and O'Conner, M. (1995) Technological Change, Ecological Sustainability and Industrial Competitiveness, in: *conference proceedings of Sustainable? International Conference on Technology, Sustainable Development and Imbalance*, UPC, Barcelona.

Friends of the Earth Scotland. (1995) *The Environmental Space for Energy in Scotland* (draft), FoE Scotland, Edinburgh.

Gray, R. (1994) *The Developing State of the Art in Environmental Reporting in the UK and Continental Europe*, CSEAR, Dundee.

International Union for the Conservation of Nature (IUCN). (1980) *World Conservation Strategy*, IUCN, Gland, Switzerland, cited in Tisdell C, 1993, Environ-

mental Economics, Edward Elgar Publishing, Aldershot.
Jackson, T. (1996) *Material Concerns From profit and pollution to quality of life*, Routledge, London.
Johnson, C. (1991) *Green Dictionary: Keywords, ideas and relationships for the future*, Optima, London.
Mitchell, G. (1994) *Modelling Sustainable Development: A consultation document for the Quantifiable Cities project* (draft), University of Leeds, Leeds.
Mitchell, G., May, A. and McDonald, A. (1995) PICABUE: A methodological framework for the development of indicators of sustainable development, *International Journal of Sustainable Development and World Ecology*, 2, 104–123.
Palmer, J. and van der Vorst, R. (1996) Which Hue of Green: Is environmental performance improvement in organisations coloured more by Environmental than Ecological concerns?, *Environment and Society 2(2)*, 43–54.
Palmer, J. and Cooper, I. (1995) The Unsustainable Charm of Environmental Reporting, in: *Conference proceedings of Sustainable? International Conference on Technology, Sustainable Development and Imbalance*, UPC, Barcelona.
Pearce, D. (1989) 'Sustainable futures: some economic issues', in: Botkin, D., Caswell, M., Estes, J. and Orio, A, (eds) *Changing the Global Environment: Perspectives on human involvement*, Academic Press, Boston, Mass.
Pezzey, J. (1991) *Definitions of Sustainability* (No. 9), CEED, UK, cited in Gray, R., Bebbington, J., Walters, D. (1993) Accounting for the Environment (The greening of accountancy part 2), Paul Chapman Publishing/ ACCA, London.
Research Councils' Clean Technology Unit (1994) *Directory of Clean Technology Research*, CTU, Swindon.
Stone, D. (1994) *No Longer at the End of the Pipe, but still a long way from Sustainability: a look at management accounting for the environment and sustainable development in the US*, CSEAR, Dundee.
Thorn EMI plc. (1995) *Focus on the Environment 95*, Thorn EMI, London.
Tisdell, C. (1993) *Environmental Economics*, Edward Elgar Publishing, Aldershot.
UNA-UK Sustainable Development Unit/Community Development Foundation. (1995) *Towards Local Sustainability: A review of current activity on Local Agenda 21 in the UK*, UNA-UK/CDF, London.
United Nations Conference on Environment and Development (UNCED). (1992) *Earth Summit '92*, Regency Press, London.
World Commission on Environment and Development (WCED). (1987) *Our Common Future (the 'Brundtland Report')*, Oxford University Press, Oxford.

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Ian Cooper is a partner in Eclipse Research Consultants and currently visiting professor to the Research and Graduate Centre at Salford University. Eclipse keeps a watching brief on the expansion of 'green consciousness' in both the private and public sectors in the UK and is particularly interested in mapping convergence/divergence between leading edge exponents of environmental management and sustainable development.

Rita van der Vorst recently departed Brunel University to take up a position in Imperial College's Centre for Environmental Technology. Her research interests cover a broad range of environmental issues and include: environmental management, life cycle planning, engineering education and continuing professional development.

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